SAS® Offer Optimization for Communications 5.2 (First Maintenance Release)

User's Guide

SAS® Documentation

The correct bibliographic citation for this manual is as follows: SAS Institute Inc 2011. *SAS® Offer Optimization for Communications 5.2 (First Maintenance Release): User's Guide* . Cary, NC : SAS Institute Inc.

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SAS Institute Inc., SAS Campus Drive, Cary, North Carolina 27513.

1st electronic book, February 2011

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About This Book

Audience

This documentation focuses on explaining the tasks that you can perform by using the SAS Offer Optimization for Communications interface. You might be assigned to a specific role, which determines the tasks that you can perform. SAS Offer Optimization for Communications is designed for the following roles:

- Administrators responsible for setting up and maintaining the application environment and data. Administrators also have the rights over all tasks that can be performed by using the SAS Offer Optimization for Communications interface.
- Business analysts responsible for designing and creating reports and performing tasks that are involved in the workflow of the application.
- Business users responsible for analyzing report data and making decisions based on that data.

For details, see "Managing Roles and Capabilities" on page 11.

Prerequisites

Here are the prerequisites for using SAS Offer Optimization for Communications:

- A user ID and password for logging on to SAS Offer Optimization for Communications.
- A supported browser installed on your desktop client.
- A user ID and password for logging on to SAS Enterprise Miner to create and register analytical models.
- A user ID and password for logging on to SAS Web Report Studio to generate reports.
- Access to data sources or stored processes that can be used to obtain data for reports.

What's New in SAS Offer Optimization for Communications 5.2 (First Maintenance Release)

Overview

SAS Offer Optimization for Communications has the following changes and enhancements:

- support for cross-sell and up-sell
- enhanced method for processing batch runs of analytical models
- enhanced method for processing the extension node
- new parameter setup
- export functionality for workflow reports
- new reports for Customer Offer Ranking workflow step
- new BI metadata
- new tables in data marts
- documentation enhancements with additional information about external interfaces

Support for Cross-Sell and Up-Sell

In addition to Customer Retention and Customer Segmentation, SAS Offer Optimization for Communications supports the Cross-Sell and Up-Sell module. Cross-sell is a sale of additional (supplemented) products to existing customers. Up-sell is a sale of higher value products or services to existing customers. The target of cross-sell and up-sell is to maximize the revenue that is gained from each customer and thereby increase the value of customers. In addition, the objective of this module is to increase customer satisfaction.

Using appropriate analytical techniques, this module provides the probability that the customers will accept a particular offer or service that is recommended to them. The cross-sell or up-sell scores are generated as an output of this module.

Enhanced Method for Processing Batch Runs of Analytical Models

SAS Offer Optimization for Communications supports enhanced batch run processing for all analytical models. This method enables you to generate scoring ABTs, apply score code, and write back the scores by running a macro instead of running the SAS Data Integration Studio jobs. In the previous method, only a single project was run at a time. However, the enhanced method supports parallel processing of multiple projects.

Enhanced Method for Processing the Extension Node

When the extension node is processed, the value for the ANALYTICAL_MODEL_ID column of the ANALYTICAL_MODEL_D table of the Foundation data mart is automatically generated. This ID is now generated based on the SAS Enterprise Miner project metadata instead of the ABT name. Also, the score code has the filename as **`optimizedcode.sas`** instead of **`<ABT name>..sas`**. This method resolves the problem of space characters being included in the ABT name that resulted into failure of the process. In addition, the enhanced method resolves the problems that were caused if the ABT name exceeded 32 characters, which is the length of the ANALYTICAL_MODEL_ID column.

New Parameter Setup

New parameters are added in the CFDN_ANALYTICS_CONFIG_PARAM data set and the SAS Enterprise Miner start-up code in order to support the Cross-Sell and Up-Sell module. In addition, two new parameters are added in the Setup_Param table.

A new parameter is added in the BPP_PARAMETERS_MASTER table in order to provide the new feature of applying the missing value imputation method for the Microsegmentation workflow step.

Export Functionality for Workflow Reports

The SAS Offer Optimization for Communications interface provides the export functionality for workflow reports. You can export the information that is displayed for a workflow report to a .csv (comma-separated) file and save this file in a suitable location.

This information can then be imported into tools such as Microsoft Excel for further analysis.

New Reports for Customer Offer Ranking Workflow Step

The following three new revenue impact analysis reports are generated when you run the Customer Offer Ranking workflow step:

- Revenue Report – Project
- Revenue Report – Microsegment
- Revenue Report – Representative Customer

You can view these reports on the **Reports** tab of the SAS Offer Optimization for Communications interface. These reports give information about the percentage change in revenue. This value is the difference between the revenue that is earned before customers accept the best offer and the revenue that is earned after customers accept the best offer.

New BI Metadata

In order to enable you to generate business intelligence reports for the Cross-Sell and Up-Sell module, new cubes, information maps, and ETL jobs are added.

The following new cubes are added:

- cfd_cust_offer_mth_csus_cube
- cfd_cust_offer_weekly_csus_cube
- cfd_cust_service_wkly_csus_cube
- cfd_cust_service_mth_csus_cube
- cfd_subscrp_offer_mth_csus_cube
- cfd_subscrp_offer_wkly_csus_cube
- cfd_subscrp_srvc_mth_csus_cube
- cfd_subscrp_srvc_wkly_csus_cube

The following new information maps are added:

- cfd_cust_offer_mth_csus_infomap
- cfd_cust_offer_weekly_csus_infomap
- cfd_cust_service_wkly_csus_infomap
- cfd_cust_service_mth_csus_infomap
- cfd_subscrp_offer_mth_csus_infomap
- cfd_subscrp_offer_wkly_csus_infomap
- cfd_subscrp_srvc_mth_csus_infomap

- cfd_subscrp_srvc_wkly_csus_infomap

The following new BI jobs are added:

- cfd_cust_monthly_csus_job
- cfd_cust_weekly_csus_job
- cfd_subscrp_montly_csus_job
- cfd_subscrp_weekly_csus_job

The following new customer analytics jobs are added:

- cfd_pre_pd_cust_offer_snpsht_b_job
- cfd_pre_pd_cust_snpsht_b_job
- cfd_pst_pd_cust_offer_snpsht_b_job
- cfd_ps_pd_cust_snpsht_b_job

The following sample reports are added for the cross-sell and up-sell module:

- Cross-sell and up-sell Offer Reports (Weekly and Monthly)
  - Offer Purchase Propensity Across Segments
  - Offer Purchase Propensity Across ARPU Bands
  - Offer Purchase Propensity Across Tenure Bands
  - Offer Purchase Propensity by Demographics
- Cross-sell and up-sell Service Reports (Weekly and Monthly)
  - Service Purchase Propensity Across Segments
  - Service Purchase Propensity Across ARPU Bands
  - Service Purchase Propensity Across Tenure Bands
  - Service Purchase Propensity by Demographics

New Tables in Data Marts

The following new tables are added in the Foundation data mart:

- CUST_MTH_CSUS_F
- CUST_WEEKLY_CSUS_F
- SUBSCRP_MTH_CSUS_F
- SUBSCRP_WEEKLY_CSUS_F
- ANALYTICAL_MODEL_DTL
- CUST_MODEL_STEPLEVEL_SCORE_DTL
- SUBSCRP_SCORE_STEPLEVEL_DTL

The following is the list of new base tables for analytics:

- PRE_PD_CUST_OFFER_SNPSHT_B
- PRE_PD_CUST_SNPSHT_B

- PST_PD_CUST_OFFER_SNPSHT_B
- PST_PD_CUST_SNPSHT_B

Documentation Enhancements

The details of various tables that are populated when SAS Offer Optimization for Communications interfaces with external source systems are now included in the *SAS Offer Optimization for Communications: Administrator's Guide*.

Part 1

Introduction to SAS Offer Optimization for Communications

Chapter 1

About SAS Offer Optimization for Communications

Overview of SAS Offer Optimization for Communications

The communications industry is undergoing an unprecedented change as a result of convergence that is enabled by IP broadband. Products, applications, solutions, and offers that were previously disconnected have to be delivered on to a single platform. Convergence is forcing communications service providers in formerly niche markets such as telecommunications, media, and entertainment to become connected business partners. To succeed in a converged market, communications service providers have to evolve rapidly and adapt effectively to the ongoing business changes. While meeting these challenges, communications service providers also have to satisfy customers' expectations and win their loyalty. As a result, attracting and retaining profitable customers becomes a critical factor for maximizing profits. Therefore, communications service providers need a technology infrastructure that helps them make the right offers, at the right time, and through the right channel.

SAS Offer Optimization for Communications addresses the churn problem in the communications industry. This solution also gives you the insight that you need to effectively implement business strategies, retain and nurture customer relationships, and maximize profits. SAS Offer Optimization for Communications is empowered with the award-winning capabilities of SAS solutions—analytics, data integration, and business intelligence. With its next-generation service architecture, SAS Offer Optimization for Communications offers an extensible platform to reduce customer churn, increase customer lifetime value, and provide authentic data for various channels of customer interaction.

Benefits of Using SAS Offer Optimization for Communications

Reduced Customer Churn

SAS Offer Optimization for Communications anticipates churn behavior through the real-time churn-modeling techniques. It further leverages the automated segmentation model to target the at-risk customers who have higher churn rates. SAS Offer Optimization for Communications, through its core analytical components, aims to retain customers by deriving appropriate offers for them and enabling communications service providers to promote them through appropriate service channels.

Higher Profits

SAS Offer Optimization for Communications takes a quantum leap forward in the speed and accuracy of behavior analysis and prediction by automating the crucial processes of customer profiling, segmentation, and modeling. Using state-of-the-art statistical intelligence and algorithms, the solution quickly analyzes customer behavior. This analysis, in turn, enables communications service providers to identify and target their high-value customers with timely cross-sell and up-sell offers. As a result, communications service providers can meet their customers' communications needs and satisfy their demand for new services. The result is higher profits and more satisfied customers. As customer retention rates rise and customer-acquisition costs drop, profits continue to increase.

Greater Market share

SAS Offer Optimization for Communications leverages behavior analysis and modeling to deal with customer churn. This feature enables communications service providers to predict which customers are likely to leave, even before the thought occurs to the customer. It also enables rapid dissemination of this churn data to key decision makers and customer contact points within the corporation. As a result, communications service providers can have a powerful edge in retaining their valued customer base, in spite of competitive efforts to entice those customers away. Decreased churn and higher customer retention translate to significant gains in the market share.

Improved Return on Investment

With SAS Offer Optimization for Communications, communications service providers incur lower up-front costs in order to obtain the tools that are necessary to gather, analyze, and store data. Using this data, communications service providers can assess customer churn. Moreover, they can further leverage this data to create effective customer retention programs. As a result, they can measure improved return on investment (ROI) in terms of decreased churn, higher marketing response rates, and drop in overall customer acquisition expenditures.

Solution Features

Customer-Centric Database

SAS Offer Optimization for Communications is empowered with fully documented, customer-centric dimensional models that contain information about an operator's portfolio of customers. The information contains historical, highly detailed, transformed, and aggregated customer data. The data layer is designed to support maximum flexibility in the types of relationships that can exist in operations.

Optimized Data Management

SAS Offer Optimization for Communications requires data from various operational and transactional systems such as the billing system, the customer relationship management system, the order management system, and the activity-based management system. The flexible architecture ensures seamless integration with all these systems to extract the required data and information.

Support for Multiple Product Lines

SAS Offer Optimization for Communications is available for fixed and mobile communications service providers with prepaid or postpaid customers. It is also available for a few hybrid price plans that are designed by combining the two types of product lines.

Optimized Analytical Techniques

SAS Offer Optimization for Communications implements the state-of-the-art optimization techniques for all its core analytical objectives:

- Divide the target segment into homogenous clusters.
- Derive representative customers for each cluster.
- Determine the best offers in ranked order for each representative customer and for each customer of the target segment.

Seamless Integration with Other Analytical Models

SAS Offer Optimization for Communications needs certain analytical inputs such as customer lifetime value, churn scores, cross-sell and up-sell scores, payment risk scores, and profitability values. Hence, it is tightly integrated with all these models that facilitate customer retention.

Dual Modes of Operation

SAS Offer Optimization for Communications operates in two modes, design mode and batch mode.

Design mode
: In the design mode, users perform tasks by using the SAS Offer Optimization for Communications interface. Also, in this mode, a sample of customers is drawn from the customer base. Therefore, all activities and analyses are based on sample data. Users can configure and perform tasks until they are satisfied with the results. Users can save the configuration setup and the results for batch mode processing.

Batch mode
: The configuration setup that users finalize in the design mode is promoted in the batch mode. In the batch mode, tasks are performed automatically without much manual intervention. Results are derived and reports are generated based on the data of the entire customer base.

Automated Workflow

SAS Offer Optimization for Communications ensures a structured working environment for all its user groups through its predefined workflow. The automated workflow supports the following objectives of the solution:

- Provide a guided development and management of the solution strategy in order to support customer retention initiatives.
- Automate functional tasks and analytical processes.
- Support a flexible architecture to enable changes in the workflow based on unique requirements of the communications service provider.
- Offer prebuilt capabilities to support a collaborative environment for all user groups.

Effective Reporting

At each stage of the workflow, SAS Offer Optimization for Communications enables users to generate customized reports and analyze results. This feature helps users verify and confirm results with their business requirements. Based on these reports, users can decide whether they have to configure a certain workflow step again.

SAS Offer Optimization for Communications also supports the business reporting features. These reports help decision makers to quickly develop strategies for their business goals and take appropriate actions at the right time.

How Does SAS Offer Optimization for Communications Work?

SAS Offer Optimization for Communications is a comprehensive solution that interacts with external source systems in order to produce best offers for customers. This solution can be divided into the following components:

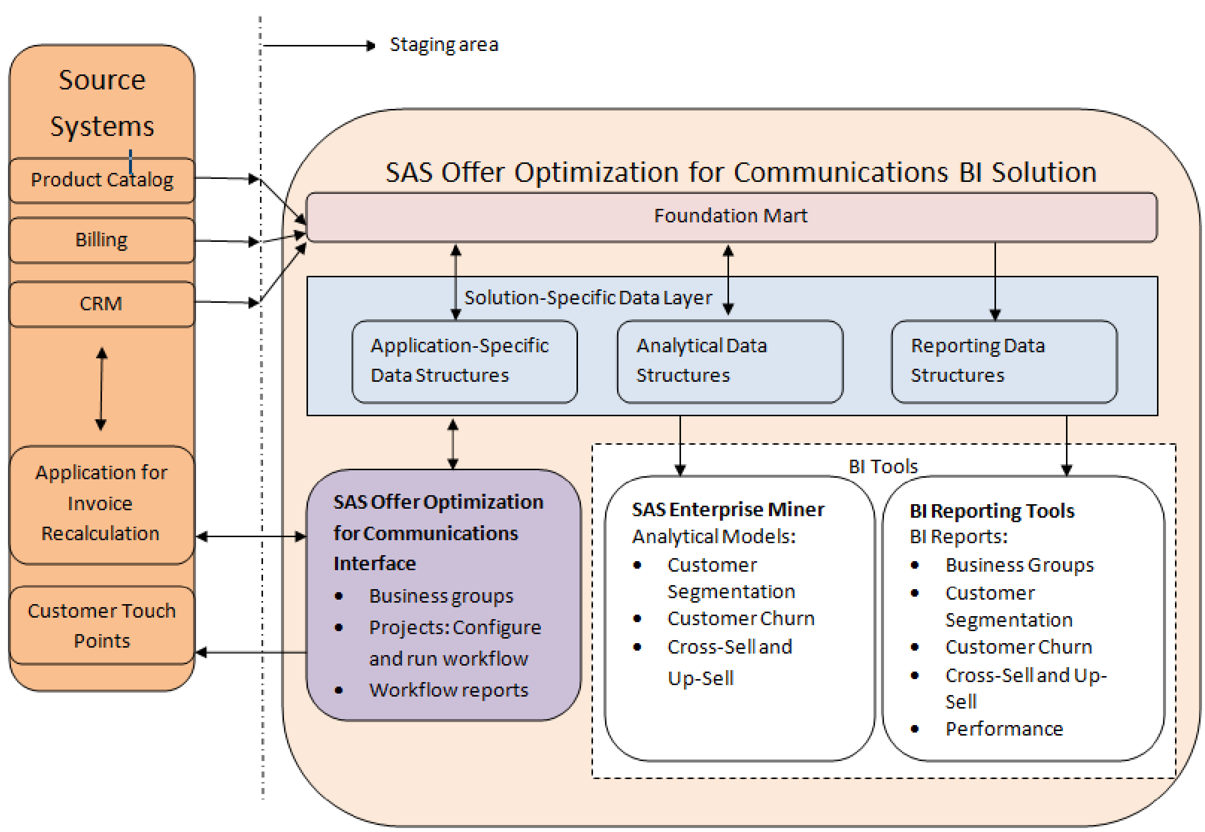
Foundation mart
: stores communications-related data that is extracted from external source systems.

Solution-specific data layer
: stores data that is required for application processing, analytical processing, and business reporting.

SAS Offer Optimization for Communications interface
: workflow-based application to define business groups, configure and run projects, view reports, and produce best offers for customers in the target segment.

BI Tools
: workbench for analytical modelers to define analytical models. Also, provides reporting tools for business analysts to analyze business reports and make business decisions.

Figure 1.1 *Working of SAS Offer Optimization for Communications*



The SAS Offer Optimization for Communications workflow explains the interactions among various components. To summarize, the solution workflow contains the following steps:

1. Populate data into the common data layer from the external source systems through the staging area.
2. Populate data into the solution-specific data layer:
   - application-specific data
   - analytical data
   - reporting data

   Note: For tasks that are detailed in step 1 and 2, see *SAS Offer Optimization for Communications: Administrator's Guide*.
3. Log on to SAS Offer Optimization for Communications with the profile of an administrator.
   a. Define business groups.
   b. Run process to add customers to business groups.

   Note: For tasks that are detailed in step 3, see the relevant chapter of this guide.
4. Log on to SAS Enterprise Miner with a certain profile.
   a. Build and register an analytical model to analyze customer churn.
   b. Build and register an analytical model to analyze customer segmentation.
   c. Build and register analytical models to analyze cross-sell and up-sell.
5. Run back-end processes.
   a. Create segments of the business groups.
   b. Generate churn scores for each customer.
   c. Generate cross-sell and up-sell scores.

   Note: For tasks that are detailed in step 4 and 5, see *SAS Offer Optimization for Communications: Administrator's Guide*.
6. View business reports in SAS Web Report Studio.
   a. Analyze churn reports.
   b. Analyze segmentation reports.
   c. Analyze cross-sell and up-sell reports.
   d. Analyze business groups reports.
   e. Identify business problems associated with each business group.
7. Log on to SAS Offer Optimization for Communications with a certain profile.
   a. Define projects with specific objectives for different business groups.
   b. Configure and run project workflow to derive representative customers.
   c. Export information about representative customers to external source systems.
   d. Import billing details of representative customers and recalculate invoices.
   e. Produce best offers for customers in the target segment.
   f. Promote the project to batch mode.

Note: For tasks that are detailed in step 6 and 7, see the relevant chapters of this guide.

8. Run the project in batch mode and produce best offers for each customer in the customer base.
9. Export information about best offers to external source systems.

   Note: For details about step 8 and 9, see *SAS Offer Optimization for Communications: Administrator's Guide*.

10. Log on to SAS Web Report Studio with a certain profile and view reports to evaluate the performance of SAS Offer Optimization for Communications.

    Note: For details about this step, see the relevant chapter of this guide.

Accessing Help for SAS Offer Optimization for Communications

Help is embedded in the SAS Offer Optimization for Communications interface as various help components. For example, help pop-ups and tooltips give required information to users whenever needed. For details, see “Help Overview” on page 18.

Accessibility Features of SAS Offer Optimization for Communications

Overview

SAS Offer Optimization for Communications 5.2 includes the following accessibility and compatibility features that improve usability of the product for users with disabilities. These features are related to accessibility standards for electronic information technology that were adopted by the U.S. Government under Section 508 of the U.S. Rehabilitation Act of 1973, as amended.

If you have questions or concerns about the accessibility of SAS products, send e-mail to **`accessibility@sas.com`**.

Accessibility Features of the Supported Browser

The supported Web browsers for SAS Offer Optimization for Communications 5.2 are Microsoft Internet Explorer and Mozilla Firefox. For information about the accessibility features of Internet Explorer, use the Contents and Indexs option on the Internet Explorer Help menu to locate the topics on "accessibility.” Similarly, for Mozilla Firefox, use the Help Contents option on the Help menu.

Standard Keyboard Navigation

SAS Offer Optimization for Communications 5.2 can be navigated by using the keyboard. The following table includes some guidelines:

Table 1.1 *Standard Keyboard Navigation Controls*

Task	Keyboard Control
Move forward through controls	TAB
Move backward through controls	SHIFT+TAB
Display the contents of drop-down lists	CTRL+DOWN ARROW
Scroll through contents of drop-down lists	DOWN ARROW and UP ARROW
Activate buttons, icons, links, menu selections, and list items when they are not dimmed	ENTER
Select check boxes when they are not dimmed	SPACEBAR
Select a different radio button when a radio button is not dimmed	DOWN ARROW, UP ARROW, RIGHT ARROW, and LEFT ARROW

Chapter 2

Managing Access to SAS Offer Optimization for Communications

Managing Roles and Capabilities

Different users of SAS Offer Optimization for Communications might have access to different functionality depending on the roles that are assigned to them. Each role is mapped to a set of predefined capabilities. A capability, also known as an application action, defines operations that a user can perform. SAS Offer Optimization for Communications has three predefined roles—administrator, business analyst, and business user. Capabilities are further categorized into three levels—General, Analytical, and Advanced.

General Capabilities

Each role is assigned the general capabilities. The following are examples of general capabilities:

- View information about a business group.
- View information about a project and its workflow.
- View reports.
- Send e-mail notifications.

Analytical Capabilities

Analytical capabilities are assigned to administrators and business analysts. However, administrators and business analysts are not assigned the same analytical capabilities. The analytical capabilities of adding and managing business groups are assigned only to administrators. Similarly, the analytical capabilities of creating and managing reports in SAS Web Report Studio are assigned only to business analysts. The following are examples of analytical capabilities that are commonly assigned to administrators and business analysts:

- Create, manage, and share projects.
- Define or import workflow of the project.
- Run and manage workflow steps of the project.
- Define reports in SAS Offer Optimization for Communications.

Advanced Capabilities

Advanced capabilities are assigned to administrators and business analysts. The following are examples of advanced capabilities that are assigned to both the roles:

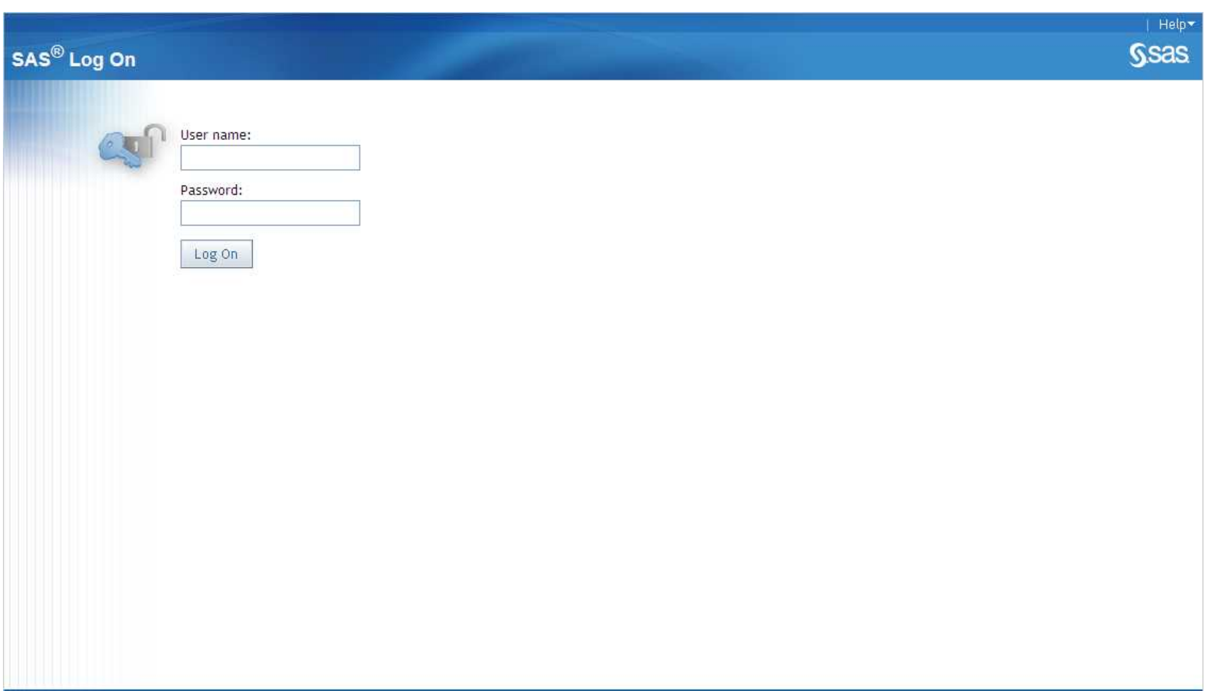
- Delete a project.
- Reset a workflow step of a project.

Log On to SAS Offer Optimization for Communications as a Registered User

To log on to SAS Offer Optimization for Communications:

1. To display the SAS Offer Optimization for Communications logon window, click on the URL that is supplied by your system administrator or paste it in the address field of your browser. For example, you might enter **`http://server01.abc.com:8080/SASOfferOptForComm`** as the URL.

Display 2.1 *Log On Window for SAS Offer Optimization for Communications*



2. To log on:
   a. In the **User name** field, enter your user ID.

b. In the **Password** field, enter the password for the user ID that you have just specified.

c. Click **Log On**.

The main application window appears. For details, see "Overview of the SAS Offer Optimization for Communications Interface" on page 15.

Note: Your password is case-sensitive. Also, your user ID might be case-sensitive depending on the operating system that is used to host the Web application server. If you need assistance, contact your system administrator.

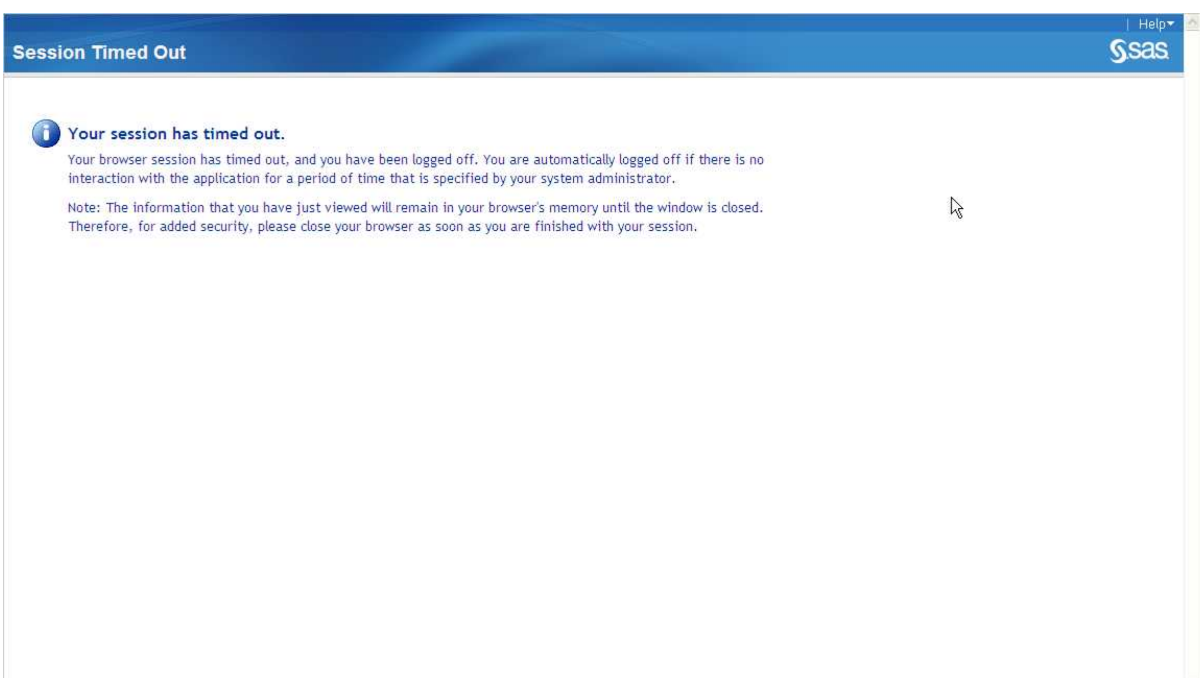
Log Off from SAS Offer Optimization for Communications

To log off from SAS Offer Optimization for Communications, on the Application bar, click **Log Off** .

If your connection to SAS Offer Optimization for Communications remains inactive for a certain time, then your session might time out. By default, the session time-out due to inactivity is 30 minutes. Your administrator can change this duration. The application prompts you about your inactive session, and you can log on and continue with your session. However, if you lose your connection, then you must begin at the same point where you last saved your work. As a best practice, save your work frequently.

The following is an example of the message that appears when your session has timed out.

Display 2.2 *Session Timed Out Message for SAS Offer Optimization for Communications*



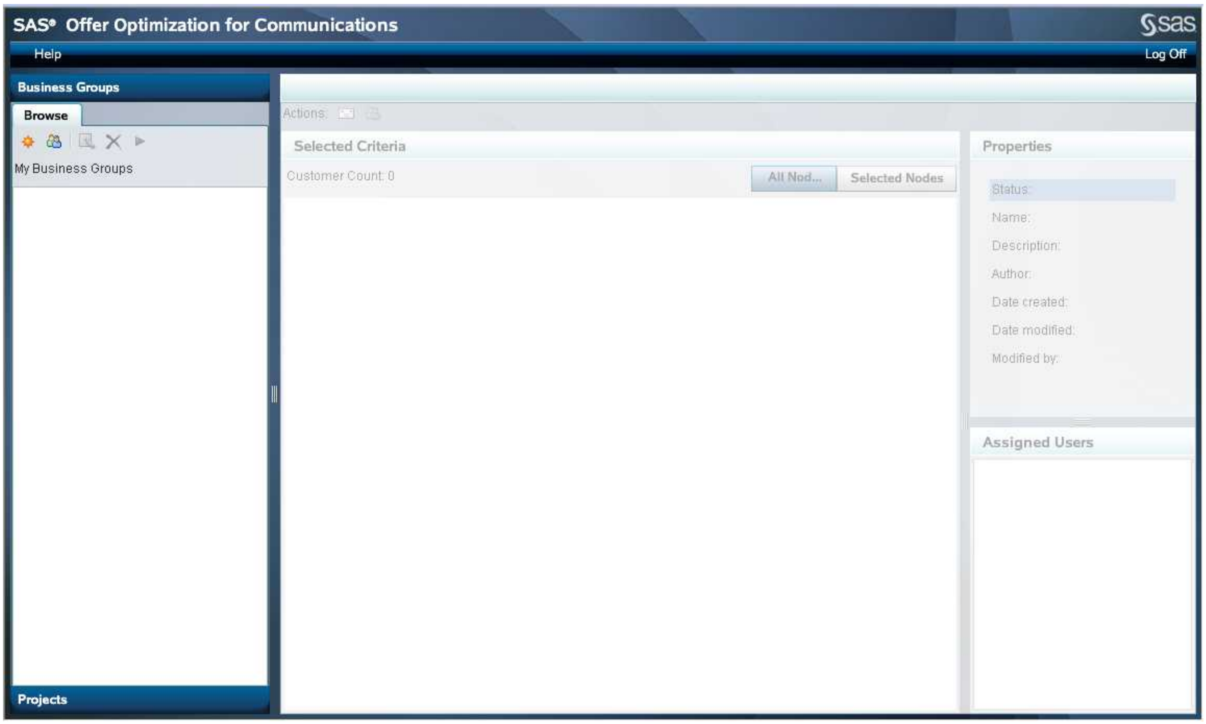
Chapter 3

The SAS Offer Optimization for Communications Interface

Overview of the SAS Offer Optimization for Communications Interface

When you log on to SAS Offer Optimization for Communications, the main application window appears. The main application window comprises the application bar, the navigation pane, and the object details pane. The navigation pane and the object details pane together form the workspace. When you log on for the first time, both the panes are empty. This indicates that your administrator has not defined any business groups.

Display 3.1 *First Logon of SAS Offer Optimization for Communications*



However, after your administrator defines one or more business groups, by default, the **Business Groups** section is selected in the navigation pane. The object details pane displays information only after you select a business group object in the navigation pane.

Figure 3.1 *SAS Offer Optimization for Communications User Interface*

1 Application bar

2 Navigation pane

3 Object details pane

Using the Application Bar

Overview

The application bar is located at the top of the application window and is part of the application banner. The application bar contains the **Help** menu and the **Log Off** option.

The Help Menu

The following options are available on the **Help** menu:

SAS on the Web

Offer Optimization for Communications 5.2
opens the product page of SAS Offer Optimization for Communications 5.2. This page gives information about the documentation that is available for SAS Offer Optimization for Communications 5.2.

SAS Home Page
opens the home page of the SAS corporate Web site.

About SAS Offer Optimization for Communications 5.2
displays copyright and other information about SAS Offer Optimization for Communications 5.2.

The Log Off Option

The **Log Off** option enables you to log off from the application.

Overview of the Navigation Pane

The navigation pane contains two collapsible sections, **Business Groups** and **Projects**. You can view and work in only one section at a time.

The **Business Groups** section
displays a list of business groups that you have defined. The **Business Groups** section also provides you a toolbar for creating and managing business groups. For details, see "Working in the Navigation Pane of the Business Groups Workspace" on page 27.

The **Projects** section
displays two categories of project lists. The **Projects** section also provides you a toolbar for creating and managing projects. For details, see "Working in the Navigation Pane of the Projects Workspace" on page 53.

Overview of the Object Details Pane

The information in the object details pane changes depending on the section that you select and the task that you initiate in the navigation pane. In the object details pane, you perform tasks that you initiate in the navigation pane. The title bar that is displayed at the top of the object details pane uniquely identifies the object details pane. Information in this pane is further divided into tabs and panes.

For details, see "Working in the Object Details Pane of the Business Groups Workspace" on page 29 and "Working in the Object Details Pane of the Projects Workspace" on page 54.

Help Overview

The following types of online Help are available with SAS Offer Optimization for Communications:

Tooltip Help
: displays short, descriptive information about fields, columns, and icons in a pane. Tooltip Help appears automatically, when you move your pointer over an item on your screen. For example, tooltips display the purpose of each toolbar option.

Pop-up Help
: displays detailed information about fields and columns in a pane. Pop-up Help is represented using the Help icon. Click  to view the information, which is displayed in a pop-up dialog box. For example, while working in a window, users might need complete details of certain fields, in order to provide appropriate information.

Help Text
: displays information persistently in the interface near an associated field, group of fields, or a table. For example, data entry instructions and introductory text for fields and tables are provided.

Chapter 4

Performing Common Tasks in SAS Offer Optimization for Communications

Overview of Commonly Performed Tasks

Here are the common components of the SAS Offer Optimization for Communications interface:

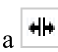
- panes
- sections
- tables
- lists

This chapter explains the common tasks that you can perform when you work on these components.

Resize a Pane

You can resize a pane if the default size of the pane does not display complete information. Also, you can resize a certain pane in order to provide more area for other panes. .

To resize a pane:

1. Move your pointer to the horizontal or vertical divider.
2. When your pointer changes to a , drag to resize the pane.

Select a Section in the Navigation Pane

In the navigation pane, you can work either in the **Business Groups** section or the **Projects** section. To switch between the two sections, click the respective section heading. The view of the object details pane changes depending on the section that you select in the navigation pane.

Select an Object in a Section

About Sections

The business groups and projects that you define are identified as individual objects in the respective sections of the navigation pane. At a time, you can work on a single object of a particular section. Before performing any task, you have to select the appropriate object from the respective section.

Select a Business Group

1. In the navigation pane, select the **Business Groups** section by clicking the section heading.
2. Select the **Browse** tab.
3. From **My Business Groups** list, select the business group on which you want to perform a task.

Select a Project

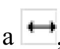
1. In the navigation pane, select the **Projects** section by clicking the section heading.
2. Select the **Browse** tab.

3. In the **My Projects** list, select the project on which you want to perform any task. Alternatively, you can also select a project that is available in the **Shared Projects** list.

Resize a Window

You can resize a window if the default size of the window does not display complete information.

To resize a window:

1. Move your pointer to any of the borders of the window.
2. When your pointer changes to a , drag to resize the window.

Working With Tables

Change the Width of a Column

If the default width of a column does not display complete information, you can change the column width. To change the width of a column, drag the boundary on the right side of the column heading until the column is the width that you want.

Move a Column

If the order in which the columns are displayed does not meet your needs, you can change the sequence of the columns. To move a column, click the column heading and drag the column to the desired location.

Change the Sort Order of a Column

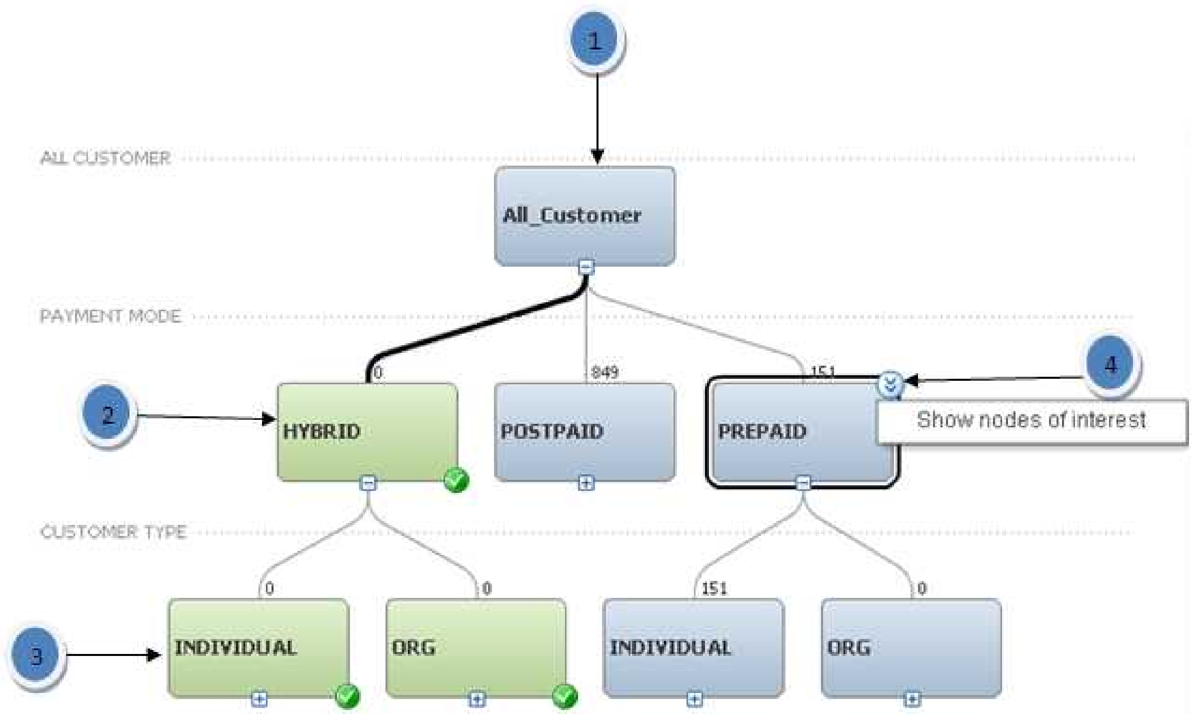
You can sort data by only a single column at a time. To change the order in which a column is sorted, click the up or down arrow that is displayed in the column heading.

About Hierarchical Lists

Overview

In certain panes, information is displayed in a list that progresses from top to bottom. These lists are called hierarchical lists. A hierarchical list contains one or more levels of information displayed in the form of nodes. Each node represents a certain value or a definition. The hierarchical structure indicates the relationships and dependencies that exist between the nodes.

Figure 4.1 Structure of a Hierarchical List



1 Primary node

2 Parent node

3 Child node

4 Pop-up menu

Node Types

The first level of the hierarchical list contains a single node, which is called the primary node. Any subsequent level of the list is called a child level. At each child level, there can be one or more nodes, which are called child nodes. Each child node originates from a single parent node, which is a child node at a previous level.

Mode Types

A hierarchical list can be either in view mode or edit mode.

In view mode, the hierarchical list displays information that you select or define at various levels. You can expand and collapse the child nodes.

In edit mode, each node has a pop-up menu. The pop-up menu enables you to perform certain tasks.

Examples

Hierarchical lists are used while defining business groups and target segments. For details, see “Working with Hierarchical Lists for Defining Selection Criteria for Business Groups” on page 35 and “Working with Hierarchical Lists for Defining a Target Segment” on page 83.

Part 2

Working in the Business Groups and Projects Workspaces

Chapter 5

Introduction to the Business Groups Workspace

About Business Groups

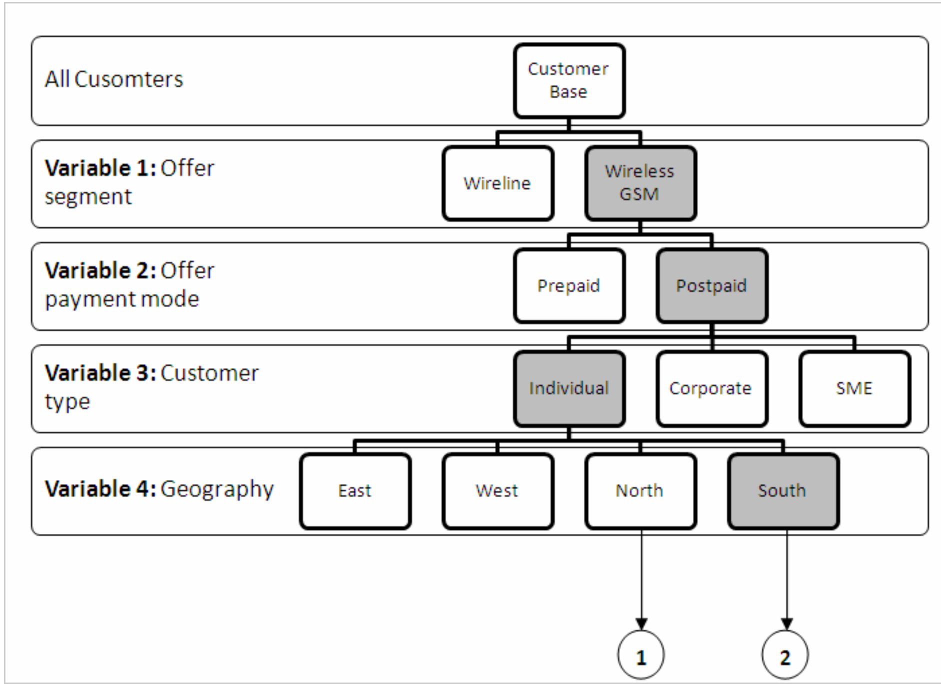
Communications service providers divide their customer base into distinct groups in order to map it with their business operations and goals. The customer base is divided into groups based on certain business rules. Business rules are the strategic parameters that are defined according to the goals that are set by an organization. These parameters are mostly static and therefore do not change frequently.

In order to divide the customer base according to the strategic parameters, SAS Offer Optimization for Communications enables you to define distinct customer groups. Each group is identified by a name and a description and is called a business group. Business groups are created based on a set of predefined variables. The values of each variable are also predefined. The unique combination of a variable and the values that you select for that variable is the selection criterion for the business group. You can define one or more selection criteria for a business group. In addition, you can define a hierarchy in which you want to define the selection criteria. Customers who satisfy all selection criteria are added as members of the business group. Moreover, the selection criteria that you define for a business group are unique across business groups. In other words, the selection criterion that you have added to a business group cannot be added to another business group. As a result, a customer can belong to only one business group.

You can create and manage business groups using the business groups workspace.

For example, you can define a business group with the following selection criteria:

Figure 5.1 *Example of Selection Criteria for a Business Group*



1 Deselected value

2 Selected value

Therefore, customers who satisfy the following criteria are added to the business group:

Offer segment = Wireless GSM

Offer payment mode = Postpaid

Customer type = Individual

Geography = South

Overview of the Business Groups Workspace

The business groups workspace contains two panes:

The navigation pane
: displays a list of business groups, which you can access. In the navigation pane, you can also initiate tasks for creating and managing business groups.

The object details pane
: displays information about the business group that you select in the navigation pane. In the object details pane, you can also perform various tasks related to the business groups.

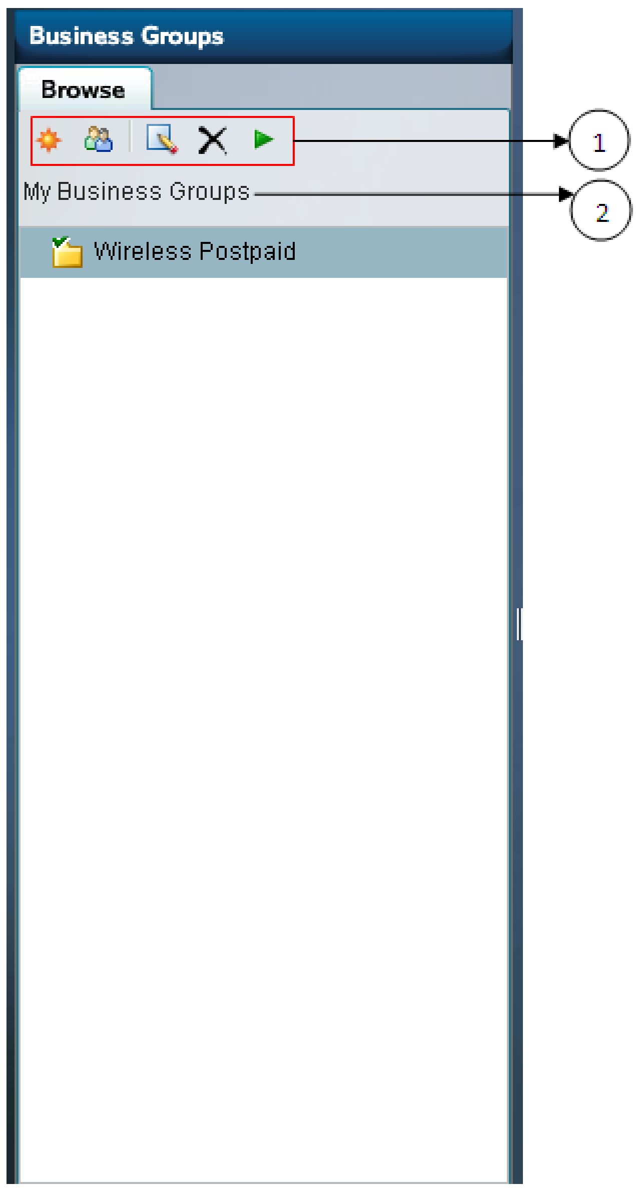
You can resize the navigation pane and the object details pane by using the vertical divider that is available between the two panes.

Working in the Navigation Pane of the Business Groups Workspace

Overview

The navigation pane includes the following components:

Figure 5.2 Navigation Pane of a Business Group



1 Section toolbar

2 Business groups list

Section Toolbar Options

The section toolbar enables you to initiate tasks for creating and managing business groups. The options on the section toolbar might differ depending on the role that is assigned to you.

Table 5.1 *Section Toolbar Options for a Business Group*

Icon	Action
	defines a new business group.
	defines user access for business groups.
	modifies details of a business group.
	deletes a business group.
	runs a process in order to add customers to the business group.

Business Groups List

The **My Business Groups** list displays the business groups for which your administrator has granted you access rights. The current status of a business group is indicated using the following icons:

Table 5.2 *Processing Status for a Business Group*

Icon	Status	Description
	`Ready to run` or `Awaiting inputs`	represents an active business group. Selection criteria might or might not be specified for this business group.
	`Successful`	indicates that customers are added to this business group.
	`Failed`	indicates that one or more errors occurred when the process to add customers to this business group was run.

Note: If you have administrative rights, then the list displays all business groups that are defined in the application.

Working in the Object Details Pane of the Business Groups Workspace

Overview

The object details pane displays information about a business group. At the top of the object details pane, the header bar is displayed. The header bar displays the name of the selected business group.

The **Actions** toolbar is located below the title bar. Using this toolbar, you can complete the following tasks for the selected business group:

- To send an e-mail notification, click .
- To define user access, click .

The object details pane displays information about the selected business group in the following panes:

- **Selected Criteria**
- **Properties**
- **Assigned Users**

The Selected Criteria Pane

The **Selected Criteria** pane shows a hierarchical list, which indicates the business rules defined for the business group. For details, see “Viewing the Customer Selection Criteria” on page 47.

The Properties Pane

The **Properties** pane gives details about the business group, such as name, description, author, and date of creation and modification. For details, see “Viewing Properties of a Business Group” on page 48.

The Assigned Users Pane

The **Assigned Users** pane displays the list of users who can access the business group and view its details. For details, see “Viewing Users of the Business Groups” on page 48.

Chapter 6

Managing Business Groups

About Managing Business Groups

You can create a business group only if you have administrative rights. As an administrator, you can perform the following tasks:

- Add customers to a business group.
- Assign users to a business group.
- Change the details of a business group.
- Delete a business group.

If you do not have administrative rights, you can view only the details of the business groups that are created and managed by your administrator.

Define a Business Group

Defining a business group involves the following main tasks:

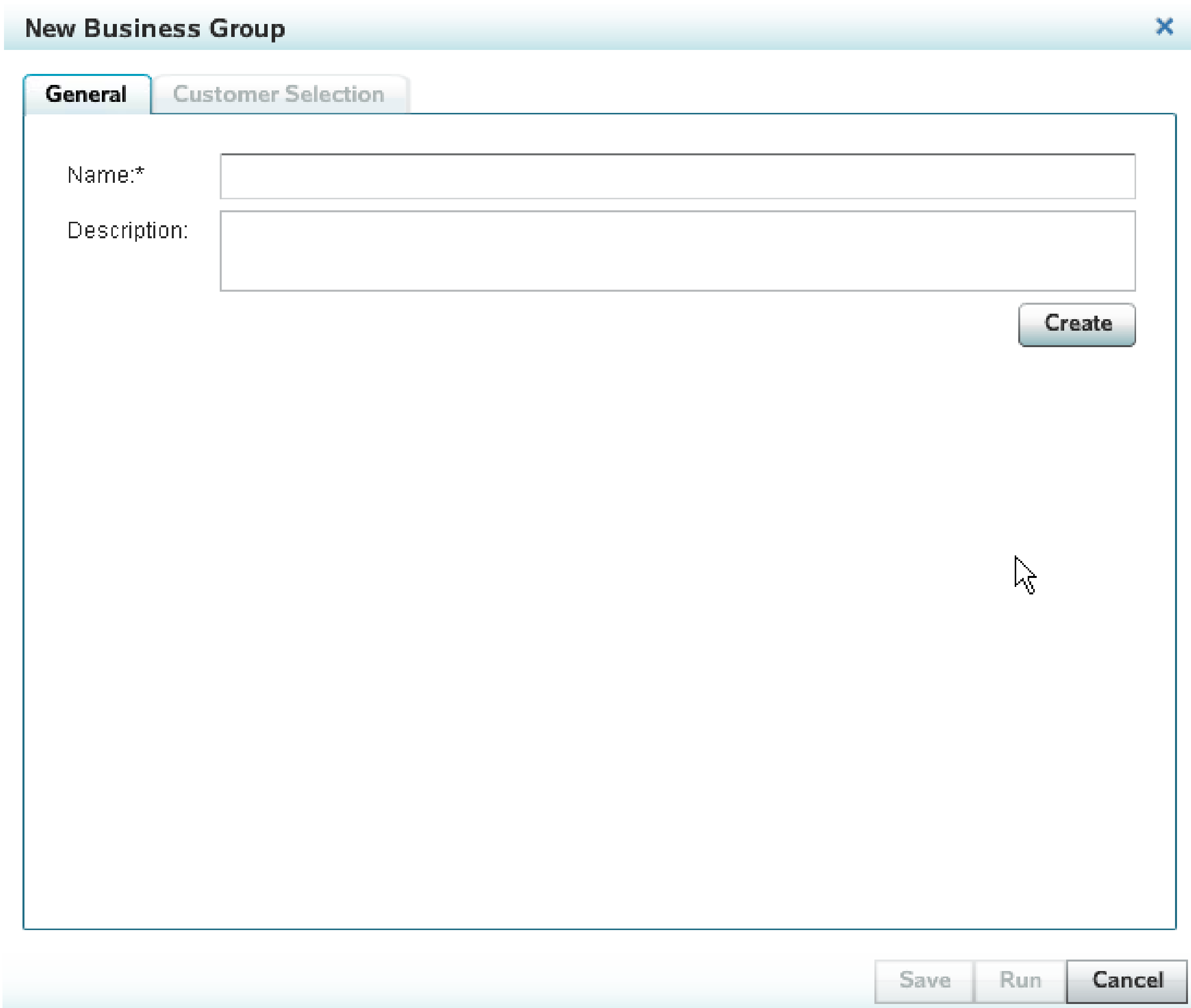
- Identify the business group with a name and a description.
- Define the selection criteria for adding customers to the business group.

Note: Before you begin defining a business group, make sure that you are familiar with hierarchical lists. For details, see "About Hierarchical Lists" on page 21.

To create a business group:

1. In the navigation pane, select the **Business Groups** section.
2. On the section toolbar, select . The New Business Group window appears.

Display 6.1 *General Tab of the New Business Group Window*



3. On the **General** tab, enter the following details:

    a. Enter a name for the business group. The business group will be identified by this name.

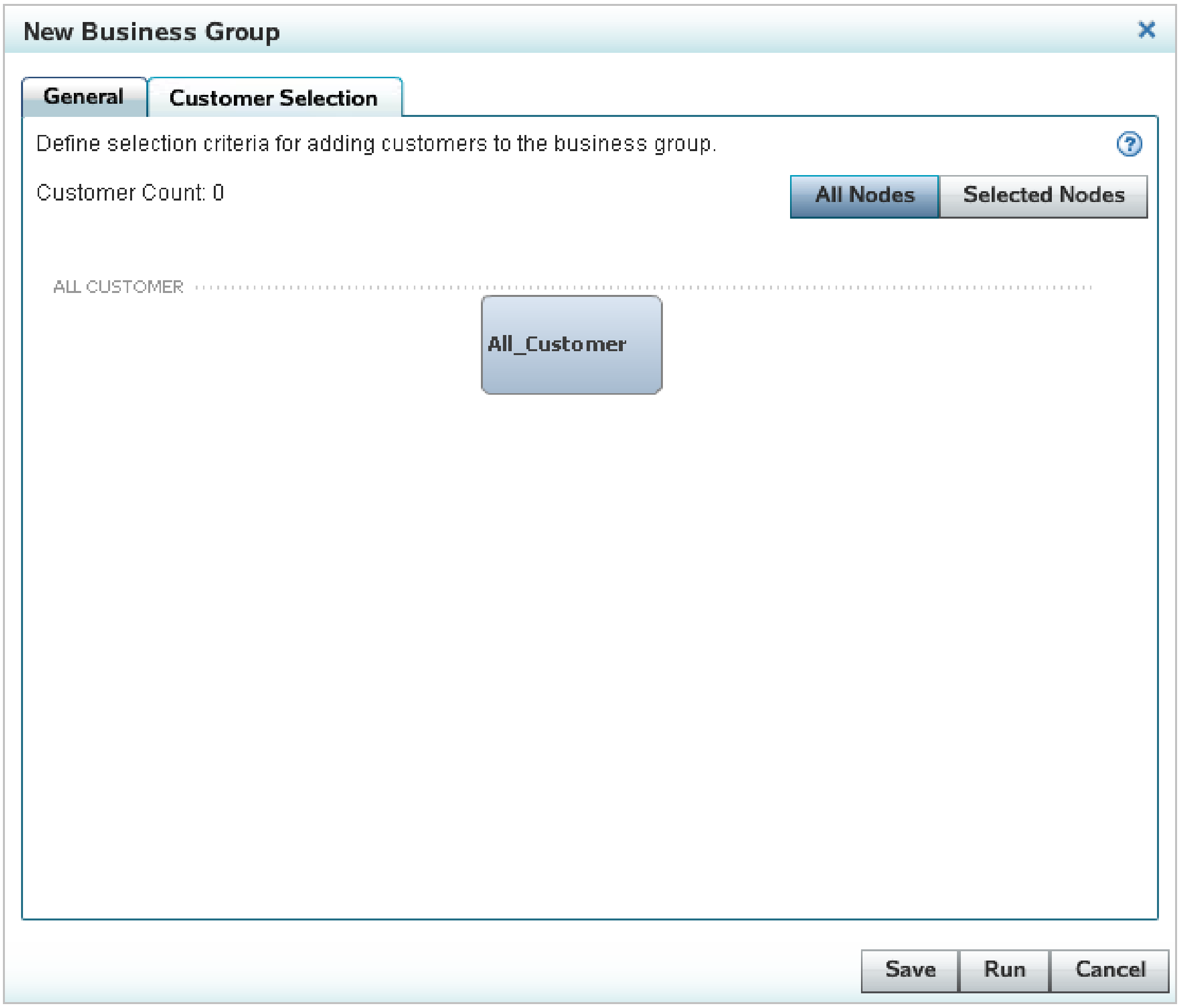
    b. Enter a short description for the business group.

4. Click **Create**.

    TIP If you do not want to define the business group, click **Cancel**. The window closes, and you will lose the information that you have entered.

5. Select the **Customer Selection** tab. You can access this tab only after the business group is created successfully. By default, the primary node representing the entire customer base is displayed in the hierarchical list.

Display 6.2 *Customer Selection Tab of the New Business Group Window*



6. Define the criteria for selecting customers for the business group. For details, see "Working with Hierarchical Lists for Defining Selection Criteria for Business Groups" on page 35.

   a. Add one or more child levels.

   b. Select the nodes that you want to add as selection criteria.

   TIP **Customer count** displays the number of customers who satisfy the selection criteria that you have defined for this business group. This number also indicates the total number of customers in the business group.

7. Click **Save**.

8. (Optional) To add customers to the business group, click **Run**.

Working with Hierarchical Lists for Defining Selection Criteria for Business Groups

Prerequisites

Before using the hierarchical lists, make sure that you are familiar with their basic functionality. For details, see "About Hierarchical Lists" on page 21.

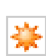
Overview

When you define selection criteria for adding customers to a business group, the hierarchical list opens in edit mode. To specify the selection criteria, you have to first add one or more child levels. The sequence in which you add variables defines the hierarchy of the variables that you want to consider for selecting customers. After this, you have to select one or more child nodes at each level to indicate the values that you want to consider for each variable. The hierarchical list has two views. You can either view all nodes or only selected nodes.

Icons in a Node

Each node has one or more icons. A few of the icons that are displayed in a node might differ depending on the action that you take on the node. The following table lists all icons that are displayed in a node and the purpose of each icon.

Table 6.1 *Icons in a Node*

Icon	Purpose
	opens a pop-up menu.
	enables you to scroll horizontally across the child nodes. Also, shows distribution of customers who are represented by the child node.
	indicates that the child node is selected and included in the selection criteria of the business group that you are defining.
	indicates that this node is considered in the selection criterion of some other business group. The node to which this icon is attached is deactivated.
	indicates that a new child node is added for a selected parent node after you have saved the business group. That is, a new value is added for a variable that you have included in the selection criteria of a business group.

Icon	Purpose
	expands the child nodes that originate from a parent node.
	collapses the child nodes that originate from a parent node.

Pop-up Menu of a Node

Each node of the hierarchical list has a pop-up menu. The options on the pop-up menu differ depending on the current mode of the hierarchical list and the type of the node. The following options are available on the pop-up menu:

Show nodes of interest
displays the nodes that you have selected at various levels of the hierarchical list.

Show all nodes
displays all nodes of the hierarchical list.

Add child level
displays a list of variables that are not added at previous levels of the hierarchical list. From the list, select a variable that you want to add at the specific level.

Select node
selects a child node. The value that this node represents is added in the selection criteria.

Deselect node
deselects a child node. The value that this node represents is removed from the selection criteria.

Clean node
cleans a dirty node.

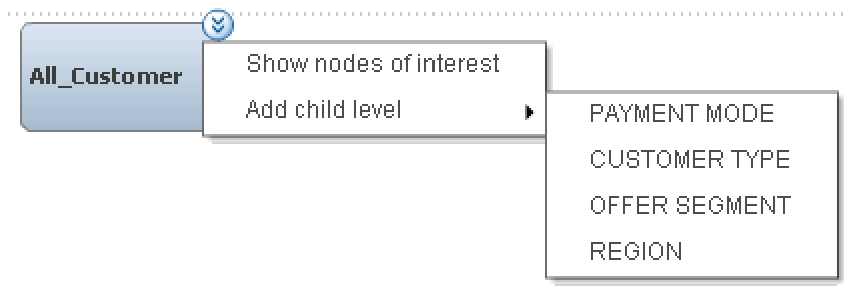
Add One or More Child Levels

You can define one or more child levels. The number of child levels that you can define depends on the number of variables that you have defined for setting up the business rules of a business group. Each child level represents a variable. A child node represents a value of the variable that is selected at the child level.

To add child levels:

1. Click the primary node.
2. From the pop-up menu, select **Add child level**.

Display 6.3 *Add Child Level*



3. From the list, select a variable that you want to add as the first level of the selection criterion. The values of the variable that you add are displayed as child nodes. For example, if you select the geography variable, then the values East, West, North, and South are added as child nodes.

   Note: At each subsequent level, the variable that is added at the previous level is not available for selection.

4. (Optional) Select a child node, and then select **Add child level** from the pop-up menu. Select the variable that you want to add as the next level of the selection criterion. The values of this variable are added as child nodes for each parent node. For example, you add the payment mode variable at the next level. For each parent node, two child nodes, prepaid and postpaid, are added.

   TIP Similarly, you can add child nodes for the next levels.

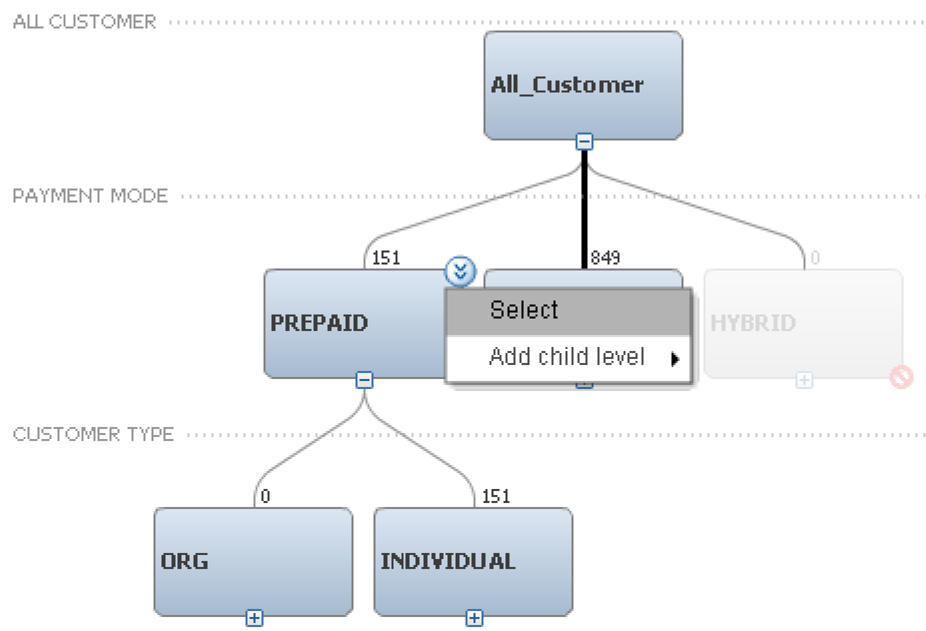
Select a Child Node

After you add variables, you can select the values for the variables. If you select a node at the highest level (from the top), then all the child nodes that originate from the parent node are automatically selected. This is also true for child levels that you have not yet added. Therefore, you need to individually select nodes from bottom to top if you want to select only particular values for the selection criteria.

To select a child node:

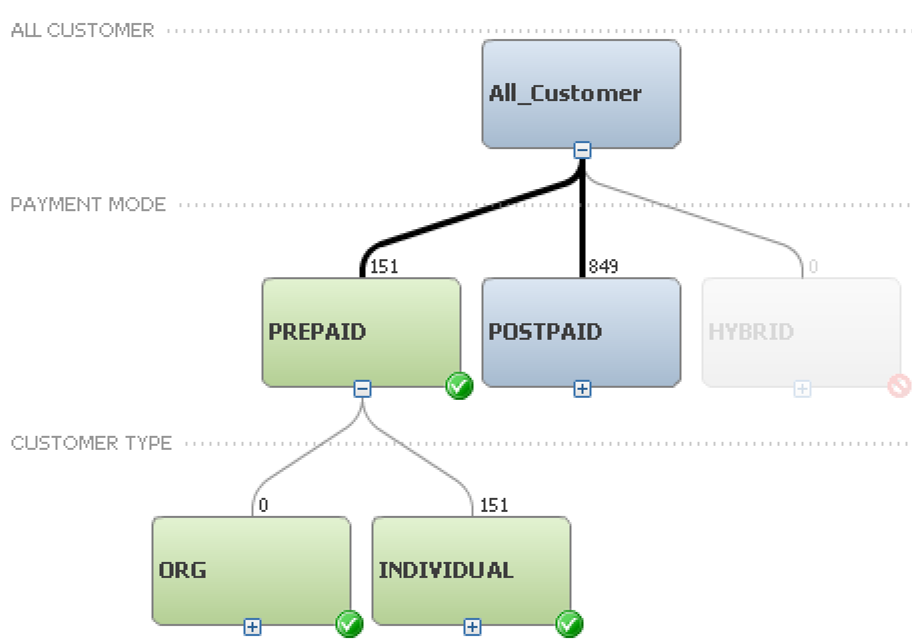
1. Click the node that you want to include in the selection criteria.

Display 6.4 *Select Node*



2. From the pop-up menu, select the **Select** option. The selected child node is depicted in a different color to distinguish it from the child nodes that are not selected.

Display 6.5 *Selected Nodes*



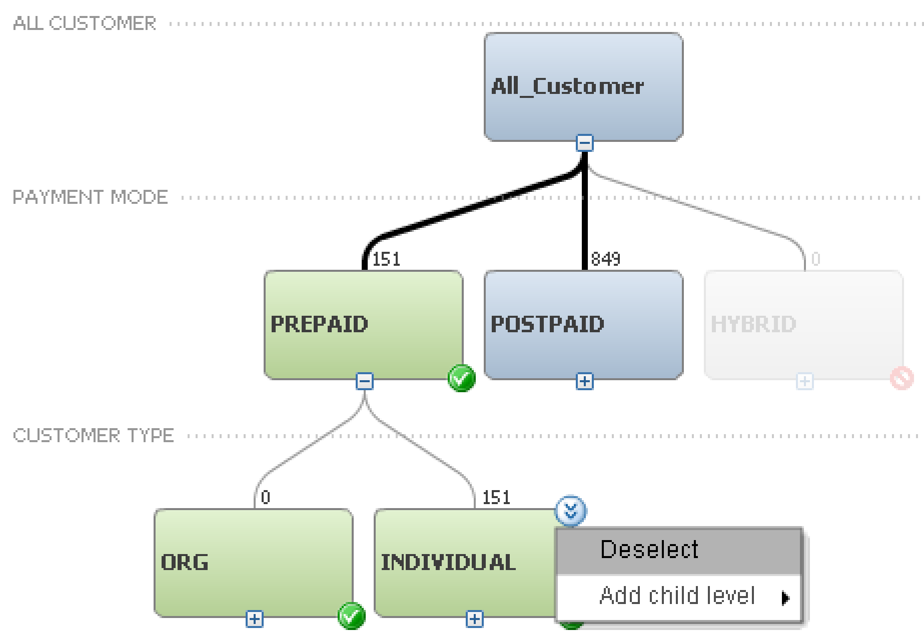
Note: In some cases, you might not be able to select the parent node in the selection criteria. The reason can be that one or more child nodes of this parent node are already used as selection criteria for some other business group.

Deselect a Node

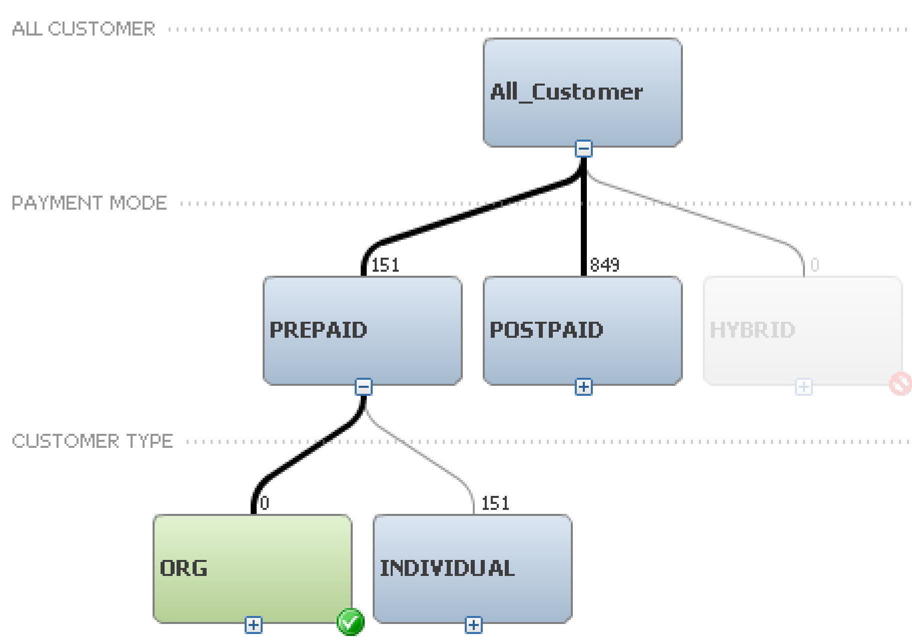
You can remove a node that you have added in the selection criteria. You can either deselect a parent node or a particular child node.

To deselect a node:

1. Click the node that you want to deselect.



2. From the pop-up menu, select **Deselect**. If this is a parent node, all the child nodes that originate from this node, are also deselected. Otherwise, only the selected node is excluded from the selection criteria.



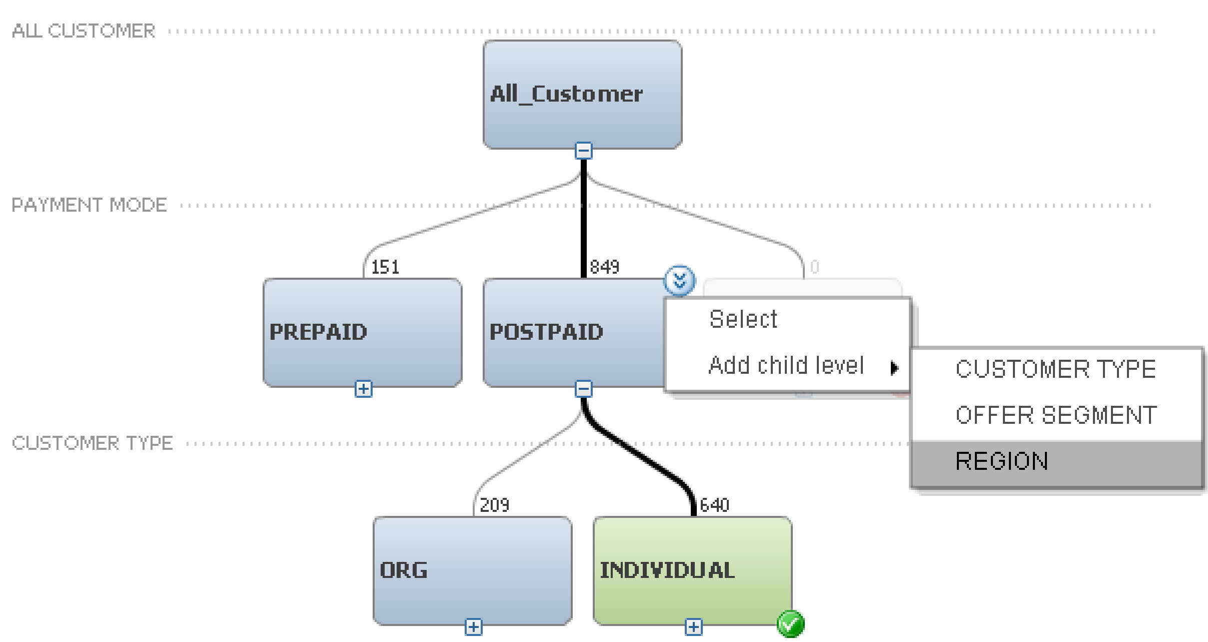
Change a Child Level

You can change the hierarchy of variables that you have defined.

To change a child level:

1. Click a child node, which is at the level that you want to change.
2. From the pop-up menu, select **Add child level**.
3. Select a variable from the list. The list contains variables that are not added at any levels or that are added at subsequent levels.

Display 6.6 *Change a Child Level*



Clean a Node

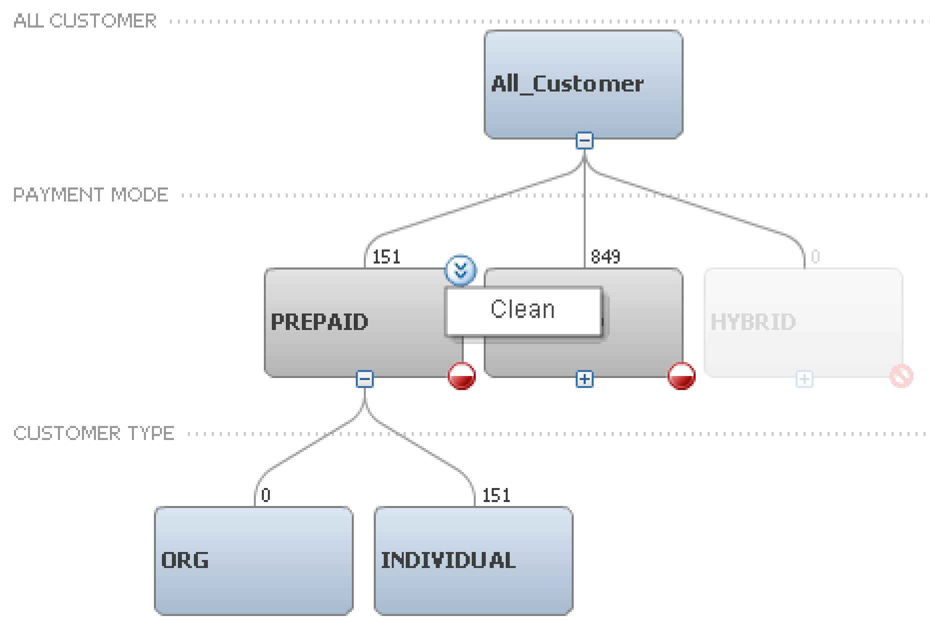
A parent node that you have selected can be marked as a dirty node. This indicates that a new child node is added below this parent node, and you have to reconsider your selection. If you clean the selected parent node, then it will be deselected. You can check the new child node that is added, and then decide whether you want to select the parent node or select specific child nodes individually.

Note: If you clean a dirty node, you must run the business group.

To clean a node:

1. Select the dirty node that you want to clean.

Display 6.7 *Clean Node*



2. From the pop-up menu, select **Clean node**. The icon that represents a dirty node disappears.

Change the View of the Hierarchical List

You can view either all nodes of the hierarchical list or focus only on the selected nodes. There are two methods to change the mode of the hierarchical list.

To view only the selected nodes, use any one of the following methods:

- From the pop-up menu of a node, select **Show nodes of interest**.
- Click **Selected Nodes**.

To view all nodes of the hierarchical list, use any one of the following methods:

- From the pop-up menu of a node, select **Show all nodes**.
- Click **All Nodes**.

Example: Defining a Business Group

Define Selection Criteria

In this example, you define a business group named Wireless Postpaid. You want to define the following levels of selection criteria.

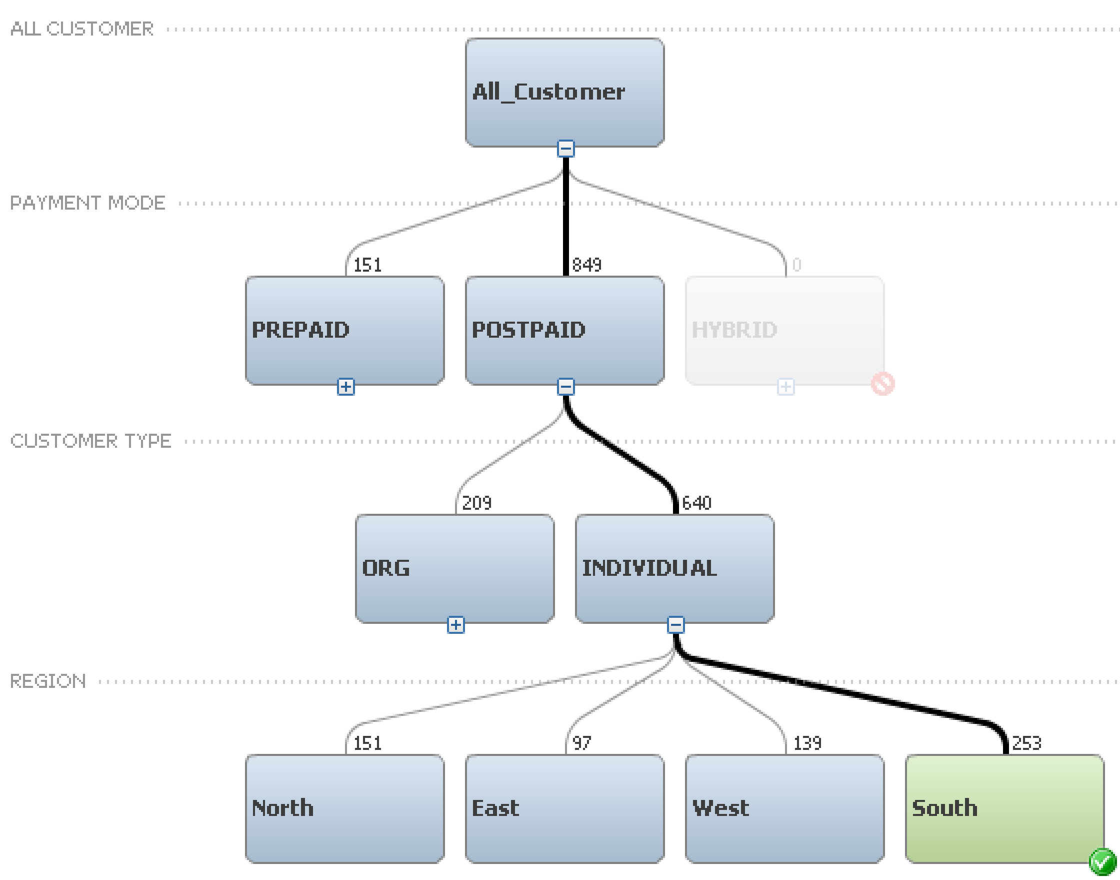
Table 6.2 Selection Criteria for a Business Group

Variable Name	Available Values	Selected Value
Payment mode	Postpaid, Prepaid, and Hybrid	Postpaid
Customer type	Individual and Organization	Individual
Region	East, West, North, and South	South

To define these selection criteria:

1. Add child levels in the following order:
   a. Payment mode
   b. Customer type
   c. Geography
2. Expand the nodes that are displayed below the **Postpaid** node. Make sure that you are viewing child nodes that originate from this parent node.

Display 6.8 Selection Criteria for a Business Group



3. Select the **South** child node that originates from the **Individual** parent node. The required nodes are automatically selected.
4. Click **Save**.

Reading the Customer Count at Various Levels

At each node, a number that represents the customer count is displayed. This feature helps you understand the distribution of your customer base according to the business rules that you have set up. For the selection criteria that you have defined above, the distribution of your customers at various levels of the selection criteria can be as follows.

Table 6.3 *Customer Distribution in a Business Group*

Level	Selected Node	Customer Count	Description
0	Primary	1000	The total population in the customer base is 1000.
1	Postpaid	849	Out of the 1000 customers, 849 are postpaid customers.
2	Individual	640	Out of the 849 postpaid customers, 640 customers are of the Individual type.
3	South	253	Out of the 640 customers, 253 customers belong to the South region. Therefore, the customer count for this business group is 253.

Adding Customers to a Business Group

Overview

After you define a business group, you have to identify the customers who belong to this business group. In order to perform this task, you have to run a process. This process filters customers from the customer base, depending on the selection criteria that you have defined for the business group. A customer can belong to only one business group.

There are two methods for adding customers to a business group. You can use either the section toolbar in the navigation pane or the Edit Business Group window.

Add Customers to a Business Group Using the Section Toolbar

To add customers to a business group:

1. In the navigation pane, select the **Business Groups** section.

2. From the **My Business Groups** list, select the business group to which you want to add customers.

   TIP Business groups to which customers are already added are identified using .

3. On the section toolbar, click . If the process runs successfully, then the status of the business group changes to **`Successful`**.

   Note: If there are any errors while adding customers to a business group, the status of the business group changes to **`Failed`**. Resolve the errors and run the process again.

Add Customers to a Business Group Using the Edit Business Group Window

To add customers to a business group:

1. In the navigation pane, select the **Business Groups** section.
2. From the **My Business Groups** list, select the business group to which you want to add customers.

   TIP Business groups to which customers are already added are identified using .

3. On the toolbar, click . The Edit Business Group window appears.
4. Click **Run**. If the process runs successfully, then the status of the business group changes to **`Successful`**.

   Note: If there are any errors while adding customers to a business group, the status of the business group changes to **`Failed`**. Resolve the errors and run the process again.

Defining User Access for Business Groups

Overview

As an administrator, you can define user access for a business group. You can assign a user to multiple business groups. Conversely, you can assign multiple users to a business group. You can assign users to a business group using the icon, which is available on the toolbar of both the panes.

Users who are assigned to a business group can view the details of that business group. The assigned users can also create projects for the business group or view details of other projects that are defined for the business group.

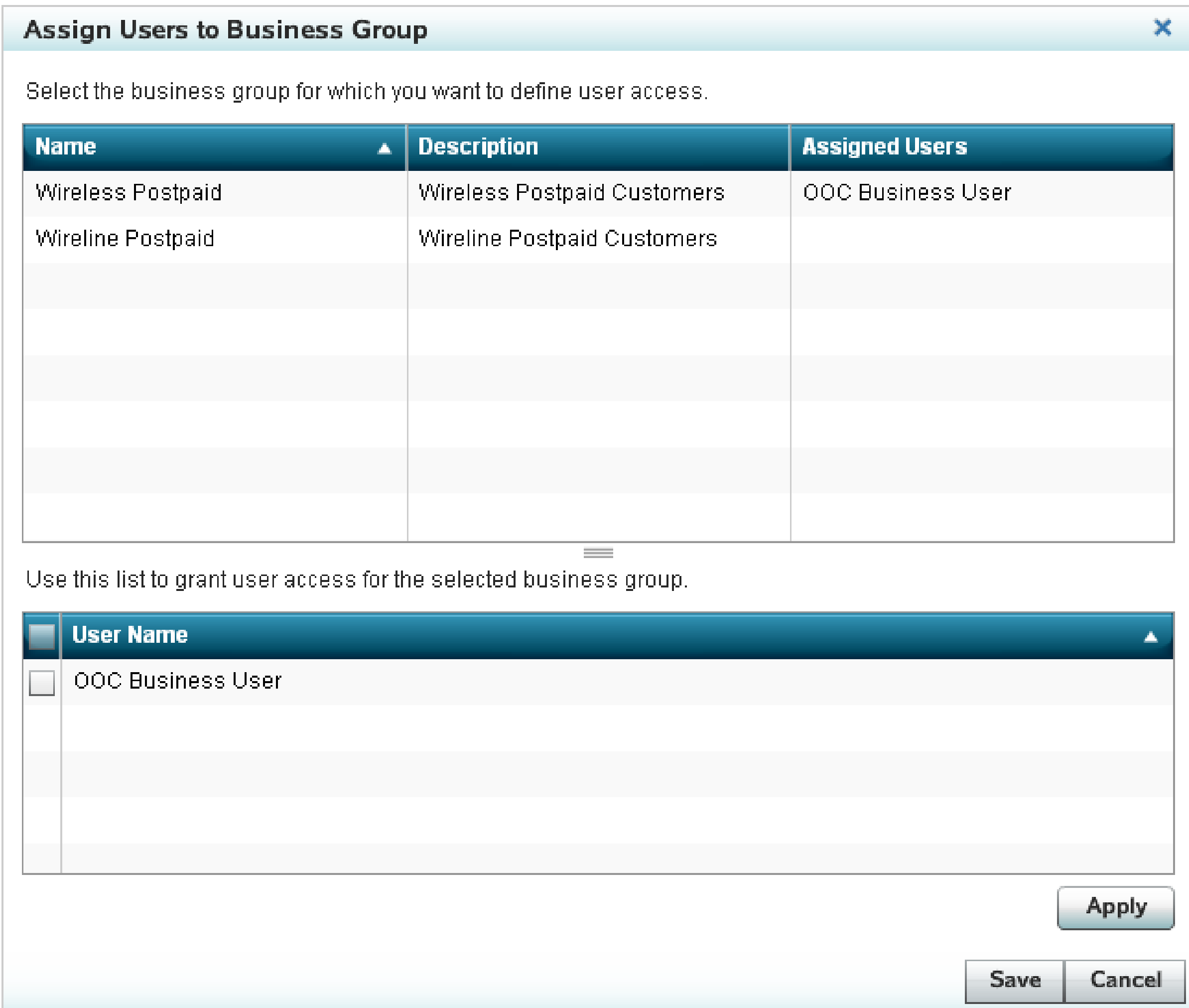
Assign Users to Business Groups Using the Section Toolbar

Using the section toolbar in the navigation pane, you can assign multiple users to a business group.

To assign users to a business group:

1. In the navigation pane, select the **Business Groups** section.
2. On the section toolbar, select . The Assign Users to Business Groups window appears.

Display 6.9 *Assign Users Window*



3. Select the business group to which you want to assign users.
4. Select the users whom you want to assign to the business group.
5. Click **Apply**.

   TIP Repeat steps from 3 to 5 to define user access for another business group.
6. Click **Save**.

TIP Users can see the business groups that are assigned to them in the **My Business Groups** list.

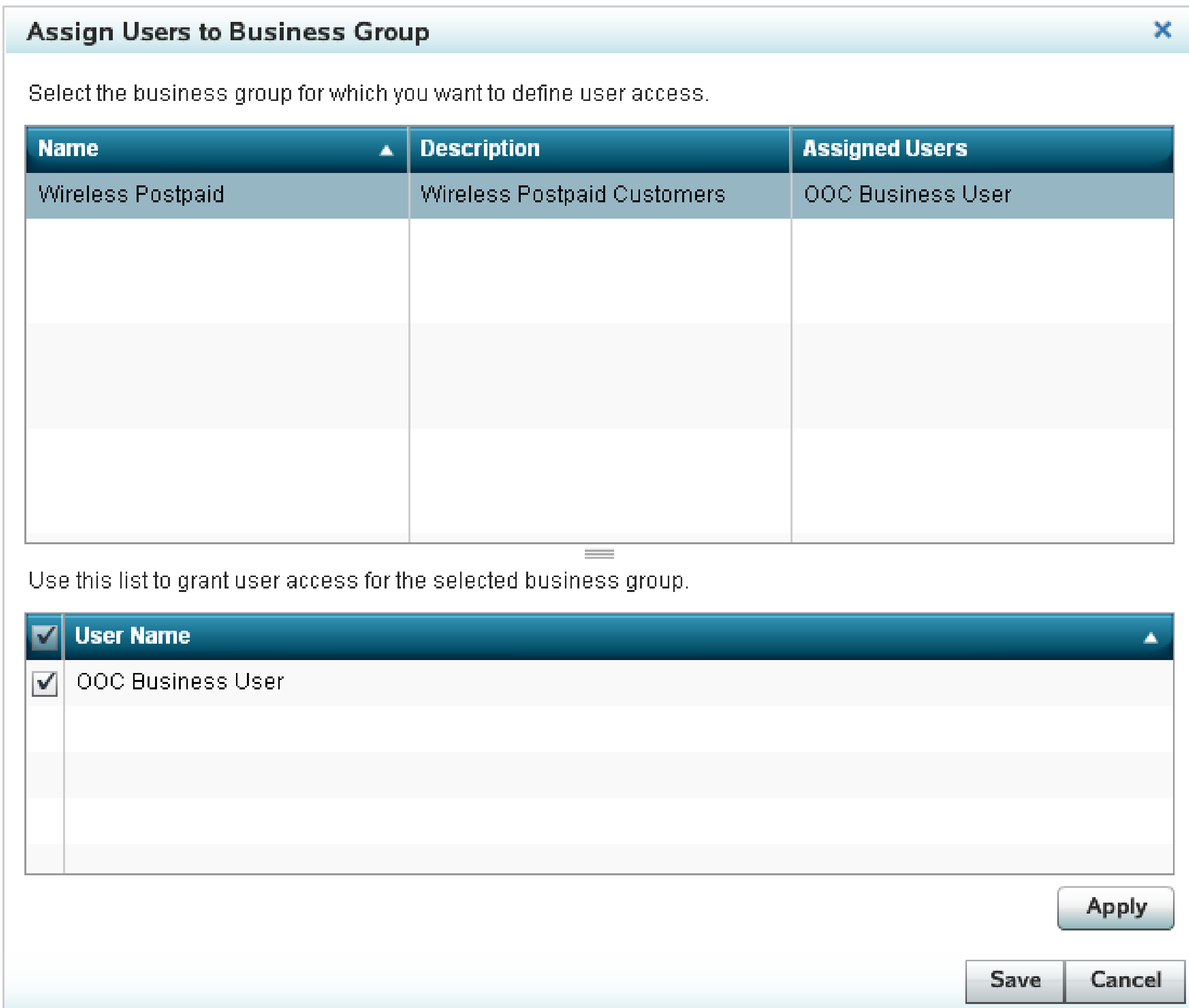
Assign Users to a Business Group Using the Actions Toolbar

Using the **Actions** toolbar, you can assign users to the business group that is currently selected.

To assign users to the currently selected business group:

1. Make sure that the correct business group is selected. You can confirm this by viewing the name of the business group that is displayed in the header bar of the object details pane.
2. On the **Actions** toolbar, select . The Assign Users to Business Groups window appears.

Display 6.10 *Assign Users Window*



3. Select the users whom you want to assign to the business group.
4. Click **Apply**. The business group is added to the **My Business Groups** list for the selected users.
5. Click **Save**.

Viewing Details of a Business Group

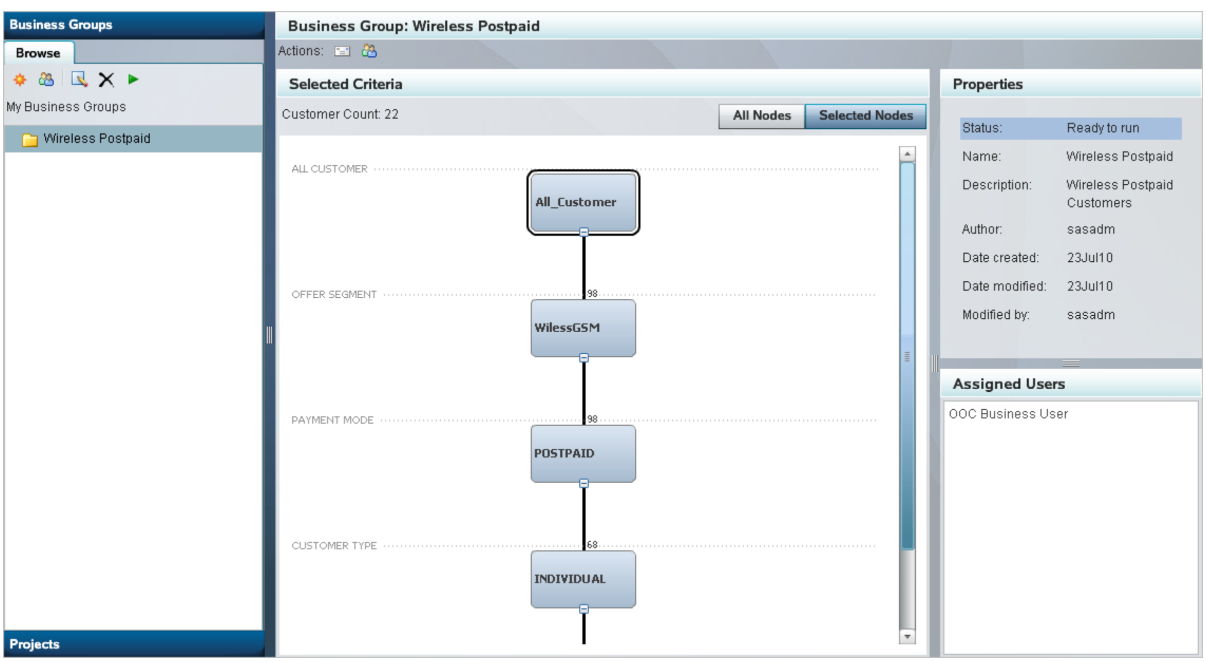
Select a Business Group

As an administrator, you can view details of all business groups. However, if you do not have administrative rights, then you can view details of only those business groups that your administrator has assigned to you. The business groups that are assigned to you are displayed in the **My Business Groups** list.

To select a business group:

1. In the navigation pane, select the **Business Groups** section.
2. Select the **Browse** tab.
3. Select the business group from the **My Business Groups** list. The details of the business group are displayed in the object details pane.

Display 6.11 *Business Groups Workspace*



Viewing the Customer Selection Criteria

The **Selected Criteria** pane shows a hierarchical list that indicates the selection criteria for this business group. Each level represents a variable, and each node indicates the value for the variable. You can view either all nodes or only the selected nodes.

TIP **Customer count** displays the number of customers who satisfy the selection criteria that you have defined for this business group. This number also indicates the total number of customers in the business group.

Viewing Properties of a Business Group

The **Properties** pane displays the following information about the business group:

Status
displays the current status of the business group.

Table 6.4 *Processing Status for a Business Group*

Status	Description
Ready to run	indicates that you can run the process to add customers to this business group.
Awaiting inputs	indicates that you have to specify the selection criteria for adding customers to this business group.
Running	indicates that the process to add customers to this business group is in progress.
Successful	indicates that customers are added to this business group.
Failed	indicates that one or more errors occurred when the process to add customers was run.

Name
displays the name of the business group. This name is also displayed in the header bar of the object details pane.

Description
displays the description of the business group.

Author
displays the name of the user who has defined the business group.

Created
displays the date on which the business group was defined.

Modified
displays the date on which the details of the business group were modified.

Modified by
displays the name of the user who has modified the details of the business group.

Viewing Users of the Business Groups

The **Assigned Users** pane displays the users who can view the details of the business group. Only these users can create and manage projects that are associated with this business group. An empty list indicates that the administrator has not assigned any users for this business group.

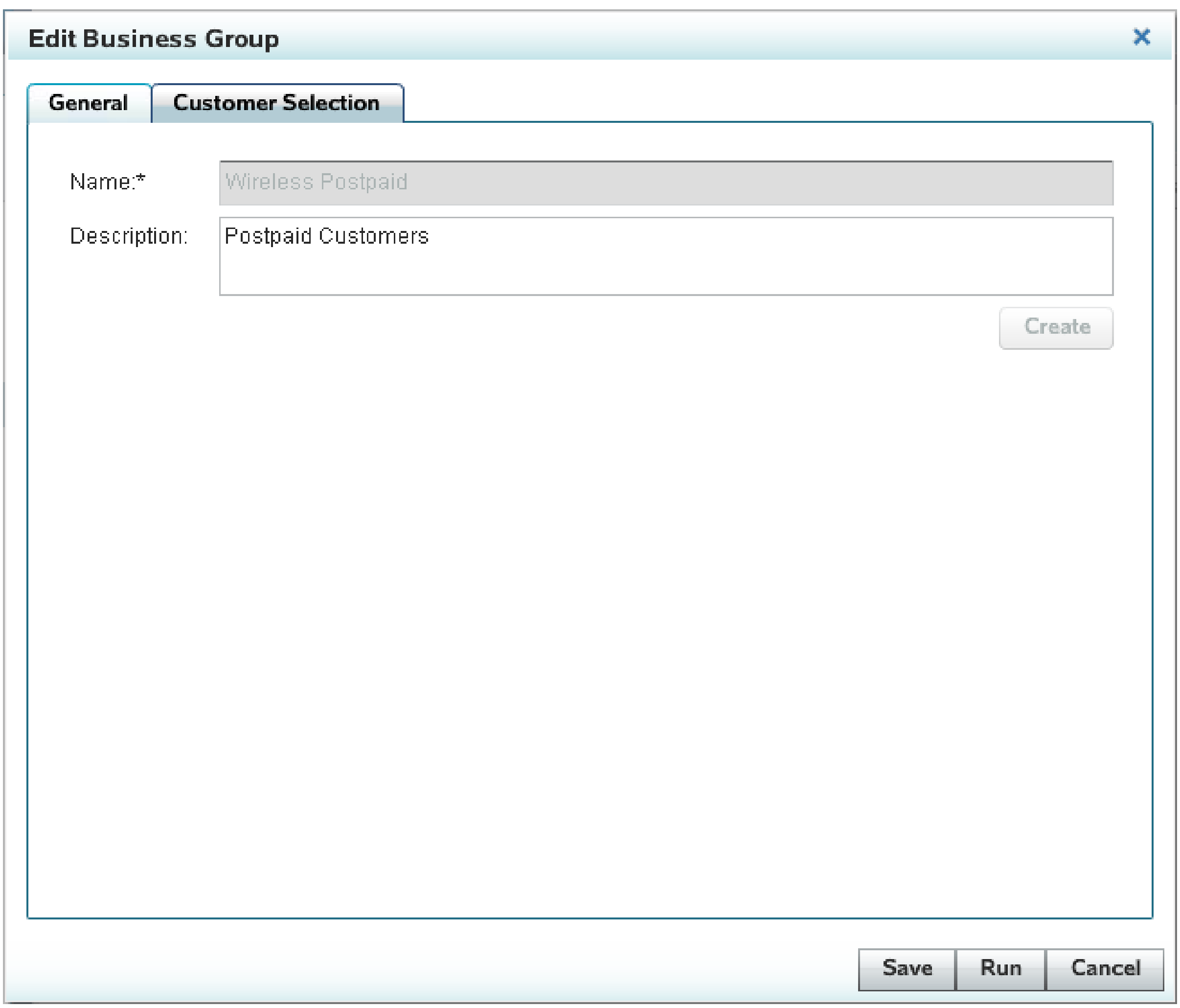
Edit a Business Group

You can edit a business group only if you have administrative rights. Editing the general details of a business group does not affect any underlying task. However, if you are changing the selection criteria, then you have to consider the effect of this action on the associated tasks. For details, see *SAS Offer Optimization for Communications Administrator's Guide*. Also, if you change the selection criteria, make sure that you also run the process of adding customers to the business group.

To edit a business group:

1. In the navigation pane, select the **Business Groups** section.
2. From the **My Business Groups** list, select the business group that you want to edit.
3. On the section toolbar, select . The Edit Business Group window appears.

Display 6.12 *Edit Business Group Window*



4. Select the tab on which you want to make changes.
5. Change the details of the business group.

6. (Optional) Click **Save**.
7. Click **Run**.

Delete a Business Group

You can delete a business group only if you have administrative rights and only if it does not have any projects that are running in the batch mode. Therefore, before deleting a project, pull the projects that are in the batch mode to the design mode. For details see, “Pull a Project to Design Mode” on page 72. If you delete a business group that has one ore more projects associated with it, then these projects are also deleted. For details about the back-end activities that you have to complete after you delete a business group, see *SAS Offer Optimization for Communications Administrator's Guide*.

To delete a business group:

1. In the navigation pane, select the **Business Groups** section.
2. From the **My Business Groups** list, select the business group that you want to delete.
3. On the section toolbar, select .

Running Back-End Processes

After you create business groups, administrators have to perform back-end activities. For details, see *SAS Offer Optimization for Communications Administrator's Guide*. You can then begin working on projects.

Viewing Reports for Business Groups

SAS Offer Optimization for Communications offers you business reporting features to analyze customer distribution and usage and revenue patterns across business groups. For details see, “Chapter 18 Business Groups Reports” on page 230.

Chapter 7

Introduction to the Projects Workspace

About Projects

SAS Offer Optimization for Communications is built around the concept of projects. After you analyze business groups reports, you can identify the problems associated with each business group. You can then define one or more projects for each business group. A project is a user-defined group associated with a particular business group and focuses on a specific business problem. A project enables you to group, organize, and track all your tasks that you need to perform in order to address the business problem. You can create and manage your projects using the **Projects** workspace.

A project can be in any one of the following modes:

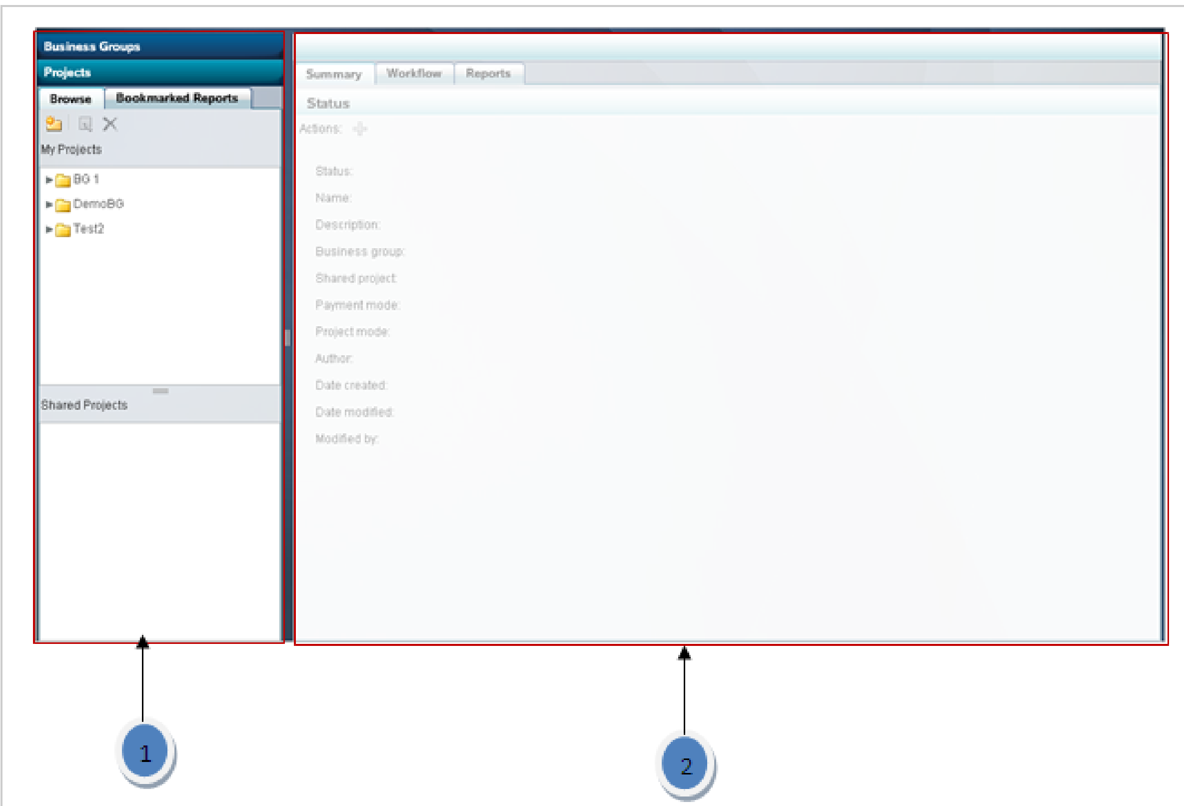
Design mode
: A project is in design mode until you run all the workflow steps. After you complete all the workflow steps successfully, you complete one run of your project in design mode. You can then push a project to batch mode.

Batch mode
: After you push a project to batch mode, all workflow steps that you perform in design mode are automatically run on the entire population (customer base). You can view the progress of the project run on the **Workflow Diagram** tab. If you are not satisfied with the results that are derived in batch mode, you can pull a project back into design mode. You can configure and run the workflow steps again and then push it to batch mode.

Overview of the Projects Workspace

The Projects workspace contains two panes.

Figure 7.1 *The Projects Workspace*



1 Navigation pane

2 Object details pane

The navigation pane
: displays a list of your projects and also a list of projects that are created by other users. Here, you can initiate tasks for creating and managing projects in the navigation pane.

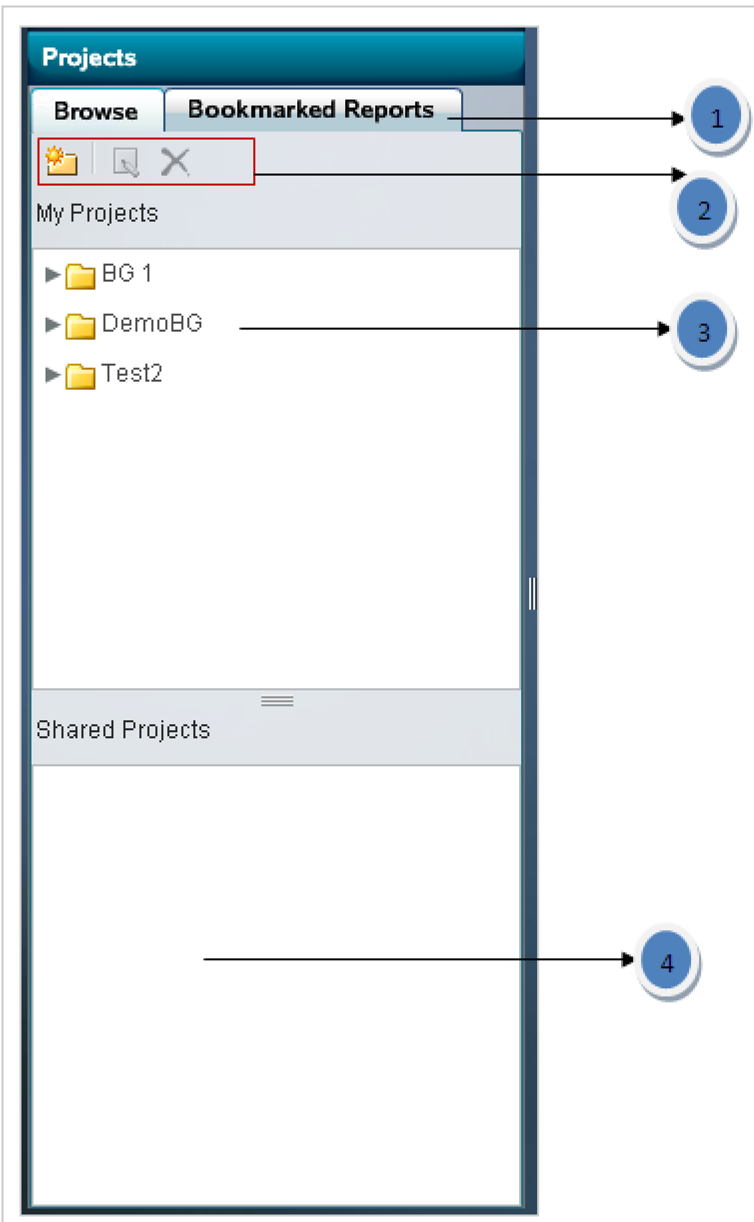
The object details pane
: displays information about the selected project. Here, you can complete tasks that you initiate in the navigation pane.

Working in the Navigation Pane of the Projects Workspace

Overview

The navigation pane contains the following components.

Figure 7.2 *Navigation Pane of the Projects Workspace*



1 Tabs

2 Section toolbar

3 My projects list

4 Shared projects list

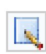
Tabs

The navigation pane contains two tabs, **Browse** and **Bookmarked Reports**. On the **Browse** tab, you can select the project that you want to work on. On the **Bookmarked Reports** tab, you can view reports that are generated automatically when you run a project.

Toolbar Options

Depending on the role that is assigned to you, the following options are available on the section toolbar for creating and managing projects.

Table 7.1 Section Toolbar Options in the Projects Navigation Pane

Icon	Purpose
	defines a new project.
	enables you to change the project details.
	deletes a project.

My Projects List

The **My Projects** list displays the projects that you own.

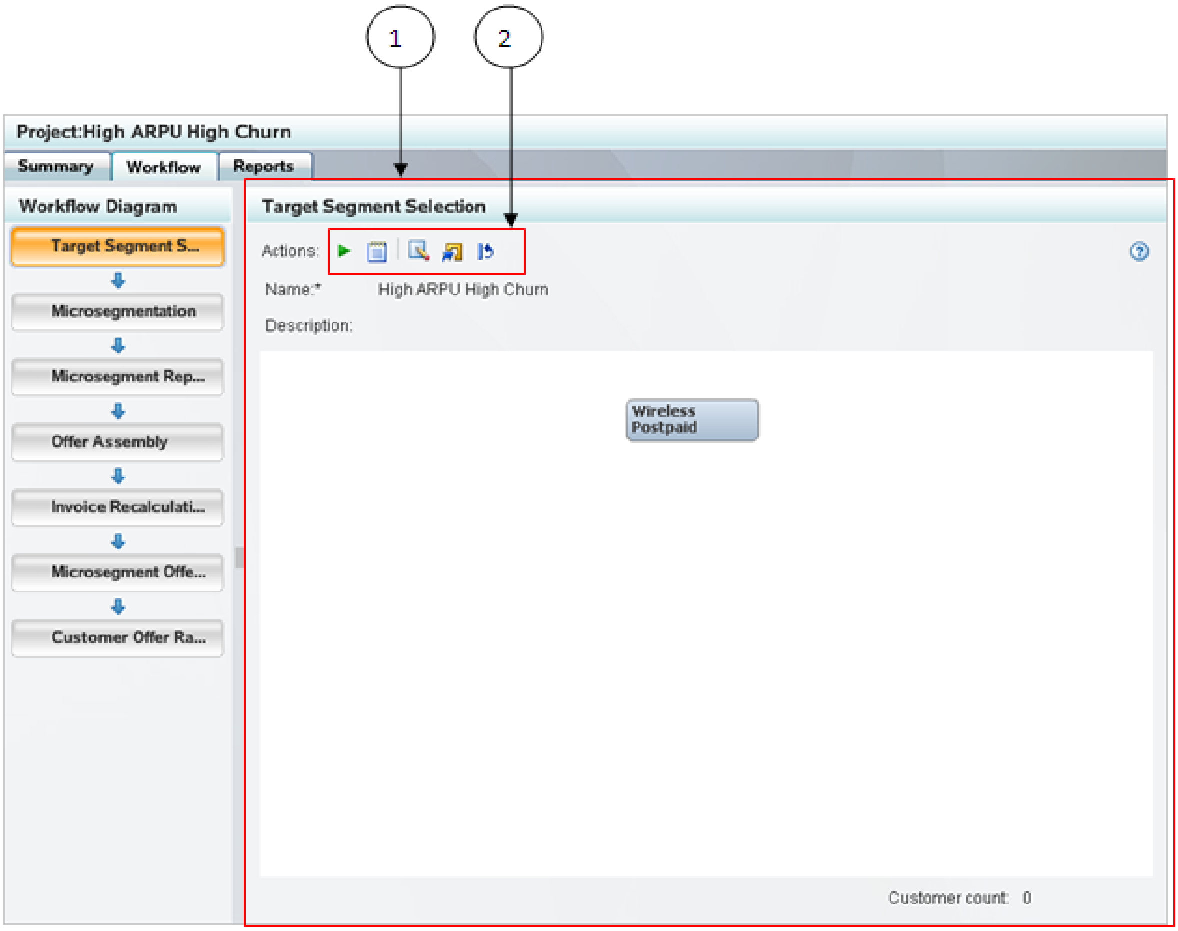
Shared Projects List

The **Shared Projects** list displays the projects that are defined and shared by other users. You can view only the details of the projects that are displayed in this list.

Working in the Object Details Pane of the Projects Workspace

Overview

The object details pane contains three tabs, **Summary**, **Workflow**, and **Reports**. Each tab is further divided into panes.



1 Actions toolbar

2 Workflow step pane

The Summary Tab

The **Summary** tab displays information about the project that is currently selected in the navigation pane.

The Workflow Tab

The **Workflow** tab provides a guided approach for all your activities with the project. The **Workflow** tab contains the following panes:

Workflow Diagram pane
: shows a diagram that indicates individual stages of the project workflow. Each stage of the project is called a workflow step. The diagram pane also displays the processing status of each workflow step.

Workflow Step pane
: displays information about the current workflow step. The **Workflow Step** pane contains the **Actions** toolbar with which you can configure and run workflow steps.

The Reports Tab

The **Reports** tab enables you to define, organize, and view reports at various stages of the workflow. You can also add bookmarks for reports that you want to generate automatically when you run a project.

Chapter 8

Managing Projects

About Managing Projects

Depending on your assigned role, you can create projects and work on them. You can create projects for business groups that are assigned to you. A project can be associated with only one business group. However, you can create multiple projects for a business group. When you create a project, you are the author and the owner of the project. Therefore, you can also modify or delete projects that you have created. However, if your administrator changes the owner of the project, you as an author can view only details of the project. The owner of the project can work on the project and perform all the tasks related to it.

Create a Project

You can define a project for a business group that is assigned to you. After you create a project, a default workflow is attached to it. You can view this workflow on the **Workflow** tab.

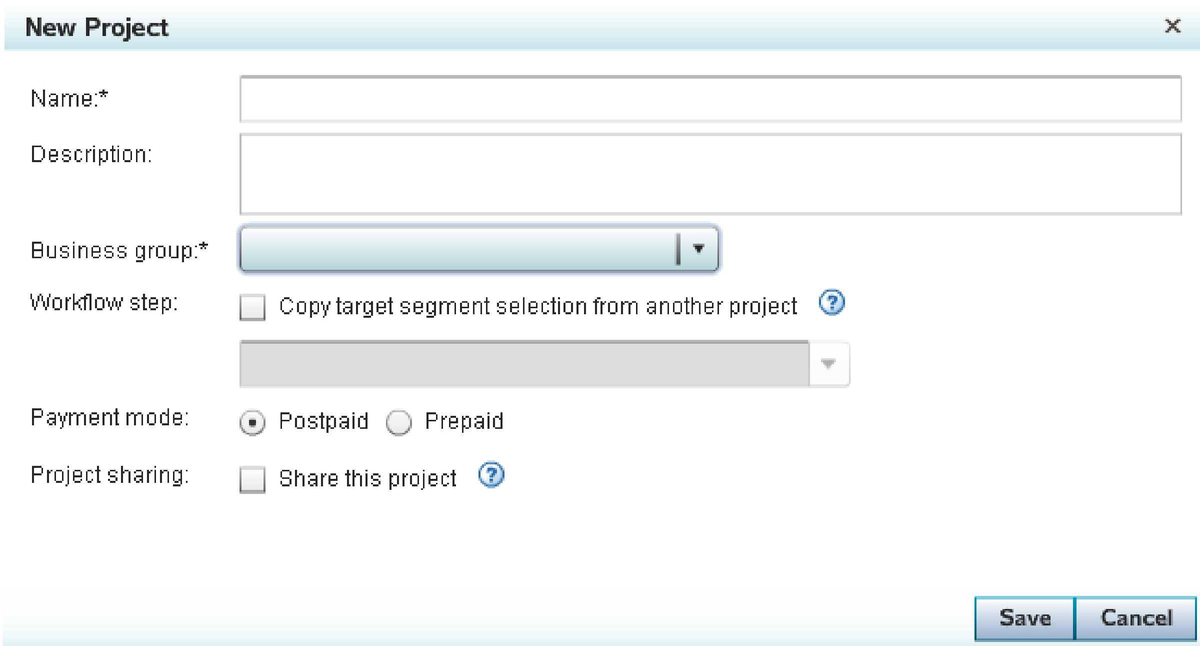
When you define a project, you are the author and the owner of the project. Therefore, you can perform all tasks for a project until the administrator changes the project owner. After your administrator changes the owner, you can view only the details of the project.

To create a project:

1. In the navigation pane, select the **Projects** section.
2. Select the **Browse** tab.

3. On the section toolbar, select . The New Project window appears.

Display 8.1 *New Project Window*



4. Enter the following details:
   a. In the **Name** field, enter a suitable name for the project.
   b. In the **Description** field, enter a short description for the project.
   c. Select the business group for which you are defining this project. The **Business group** list displays only those business groups that are assigned to you.
   d. To share your project with other users, select the **Share this project** check box.
   e. In order to copy the target segment selection workflow step, select the **Copy target segment selection from another project** check box. This option enables you to copy the criteria that you define for filtering customers from the business group.
   f. From the list, select the project whose target segment selection workflow step that you want to copy. The list displays projects of the business group that you have selected.
   g. Select the **Payment mode**. This option enables you to filter customers from the business group based on the payment mode. This option also ensures that the customers in the target segment have the same type of payment mode. For example, if you select the **`Prepaid`** option, then customers who have prepaid payment mode are filtered from the business group. In other words, the target segment that you define for this project will contain customers who have prepaid payment mode.
5. Click **Save**. The project is added to your **My Projects** list.

   TIP If you do not want to create the project, click **Cancel**. The window closes and you will lose the information that you have entered.

Change the Project Owner

When you create a project, you are the default owner of the project. However, according to the business requirements, your administrator can assign the ownership of the project to another user.

To change the project owner:

1. In the navigation pane, select the project for which you want to change the owner.
2. In the object details pane, select the **Summary** tab.
3. On the **Actions** toolbar, select . The Change Project Owner window appears.

   Display 8.2 *Change Project Owner Window*

   TIP The **Current owner** field displays the name of the user who is the current owner of the project.

4. From the **New owner** list, select the user whom you want to assign as the owner of the project. The list displays users that are assigned to the business group associated with the project.
5. Click **Save**.

Viewing Project Details

Select a Project

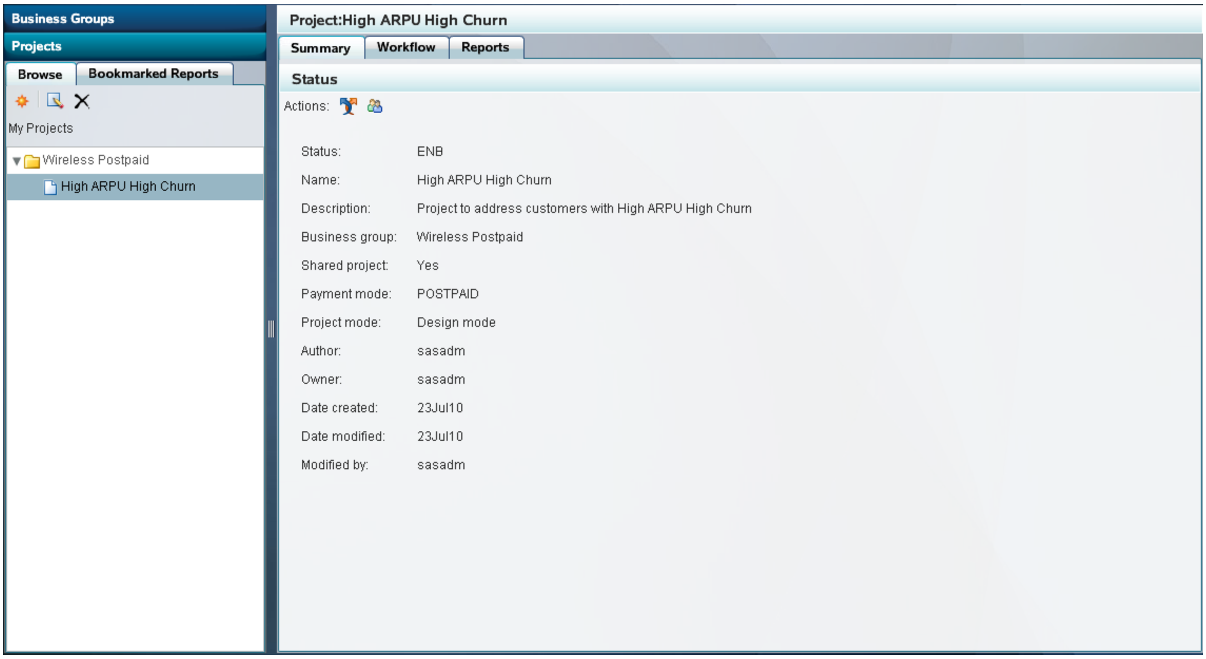
You can view details of a project for which you are either an author or an owner. You can also view details of shared projects. The projects that you own are displayed in the **My Projects** list. The projects that other users share are displayed in the **Shared Projects** list.

To select the project whose details you want to view:

1. In the navigation pane, select the **Projects** section.
2. Select the **Browse** tab.

3. From the **My Projects** list or from the **Shared Projects** list, select the project whose details you want to view. The project details are displayed in the object details pane.

Display 8.3 *Projects Workspace*



Viewing the Properties of a Project

The **Properties** pane displays the following information about the project:

Status
displays the current status of the project.

Table 8.1 *Processing Status for a Project*

Status	Description
Active	indicates that a project has one or more active workflow steps.
Modified	indicates that a workflow step of a project is being configured.
Running	indicates that one of the workflow steps is being run.
Successful	indicates that all workflow steps of a project workflow are successfully run.

Status	Description
Failed	indicates that a workflow step of a project has not run successfully. If the project is in design mode, you can view the error details. To do so, select the workflow step and on the **Actions** toolbar, click . Contact your administrator if you need any assistance with the error details. If the project is in the batch mode, your administrator can access the log file and view the error details.

Name
: displays the name of the project. This name is also displayed in the header bar of the object details pane.

Description
: displays the description of the project.

Type
: displays the type of the project.

Business group
: displays the name of the business group that is associated with the project.

Shared project
: indicates whether the project is shared with other users.

Payment mode
: indicates the mode of payment of customers. The target segment that is defined for this project will contain customers who have the selected payment mode.

Project mode
: displays the project's current mode. A project can be either in design mode or batch mode.

Author
: displays the name of the user who has defined the project.

Owner
: displays the owner of the project. For a new project, the author and the owner are the same user. However, after you create a project, your administrator can change the owner. The user who is the owner of the project can perform all tasks for a project and run its workflow.

Date Created
: displays the date on which the project is defined.

Date modified
: displays the date on which the details of the project are modified.

Modified by
: displays the name of the user who has modified the details of the project.

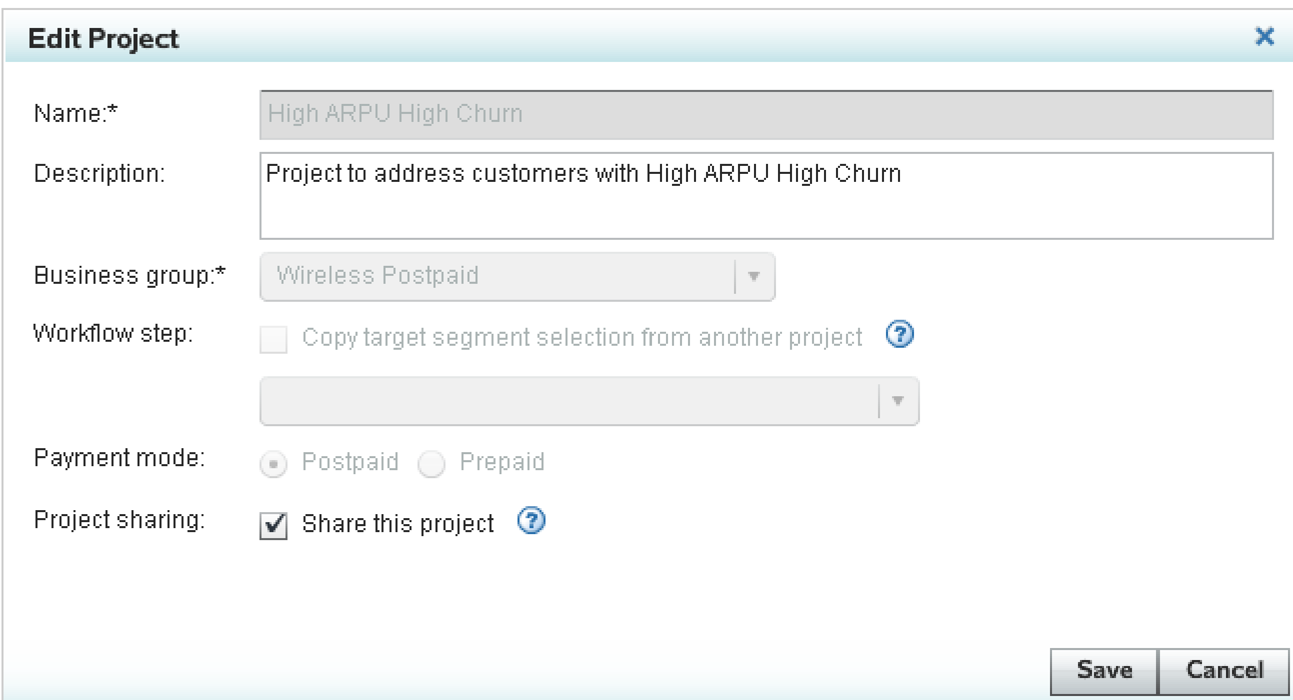
Edit a Project

You can edit a project if you are the owner of the project. You can edit only specific information about a project.

To edit a project:

1. In the navigation pane, select the **Projects** section.
2. Select the **Browse** tab.
3. From the **My Projects** list, select the project that you want to edit.
4. On the section toolbar, select . The Edit Project window appears.

Display 8.4 *Edit Project Window*



5. Change the project information according to your requirements.

   Note: You can change either the description of the project or the shared status of the project.

6. Click **Save**.

   TIP Click **Cancel** if you want to discard the changes that you have made.

Delete a Project

You can delete a project if you are the owner of the project, but only if the project is in design mode. If you want to delete a project that is in batch mode, you have to first pull it to design mode. For details, see "Pull a Project to Design Mode" on page 72.

To delete a project:

1. In the navigation pane, select the **Projects** section.
2. Select the **Browse** tab.
3. From the **My Projects** list, select the project that you want to delete.
4. On the toolbar, select .

Part 3

Workflow Steps

Chapter 9

Introduction to the Project Workflow

About Project Workflows

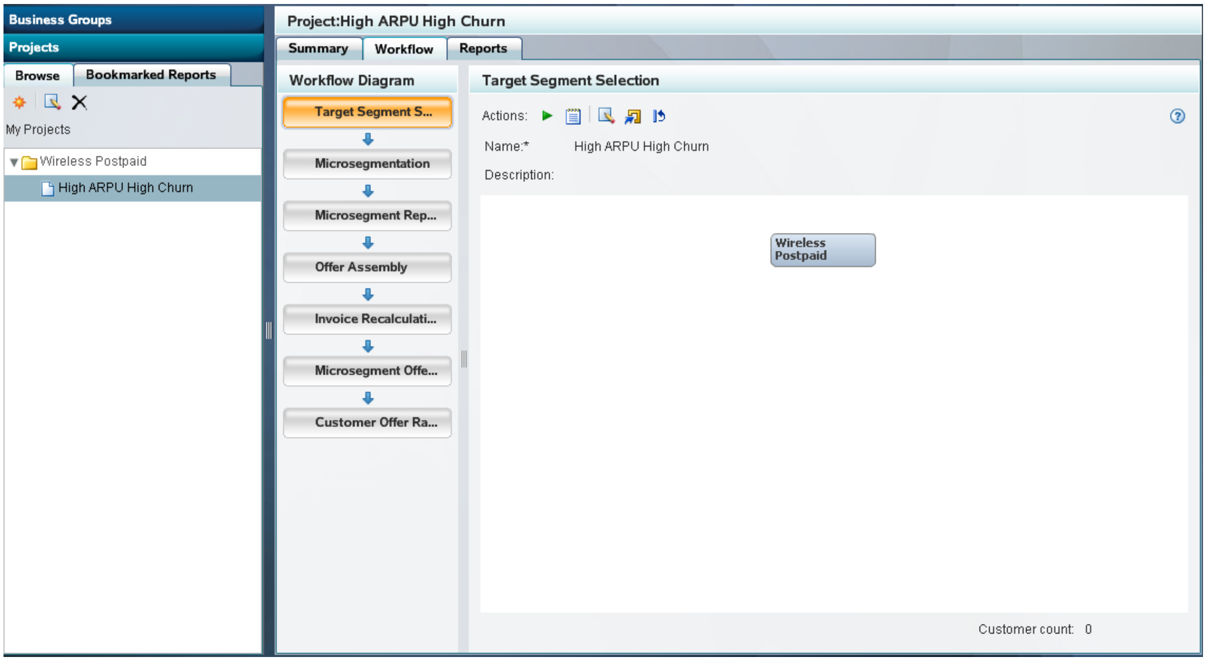
In SAS Offer Optimization for Communications, each project has a workflow that enables you to complete your tasks in a structured manner. The project workflow provides you a guided approach for performing tasks that are associated with your project. You can initiate and complete your project tasks on the **Workflow** tab. The **Workflow** tab further contains the **Workflow Diagram** pane and the **Workflow Step** pane.

Using the Workflow Diagram Pane

Overview

The **Workflow Diagram** pane shows the workflow steps of the project. It also gives the sequence of workflow steps and displays the processing status of each workflow step.

Display 9.1 *Project Workflow Tab*



Workflow Steps

A workflow step represents an individual stage of the workflow. Here is the list of project workflow steps and the objective of each step:

1. **Target Segment Selection**

   Derive a subset of customers from the business group based on certain filter criteria. The subset of customers is called a target segment.

2. **Microsegmentation**

   Create homogeneous groups (also called clusters) of the target segment using the appropriate clustering technique. Identify each group with a unique description in accord with the business definition. Such a group is also called a microsegment.

3. **Microsegment Representation**

   Derive a predefined number of customers from each microsegment such that the revenue and usage patterns of these customers represent the corresponding values for the entire microsegment. These customers are called representative customers.

4. **Offer Assembly**

   Determine suitable offers for the representative customers from the product catalog based on certain business rules.

5. **Invoice Recalculation**

   Retrieve invoice information for each combination of representative customer and offer and recalculate invoices for the current usage of representative customers.

6. **Microsegment Offer Ranking**

   Produce best offers in ranked order for representative customers.

7. **Customer Offer Ranking**

Produce best offers in ranked order for all customers in a microsegment.

Processing Status

Each workflow step can either be active or inactive. A workflow step is automatically activated when the previous workflow step runs successfully. An active workflow step can have any one of the following processing status:

Table 9.1 *Processing Status of Workflow Steps*

Icon	Status	Description
	Successful	The workflow step was successfully run without any errors.
	Failed	Errors occurred when this workflow step was run. You have to resolve the errors and run the workflow step again.
	Running	The workflow step is currently running.
	Modified	The workflow step is configured, and you can run the workflow step.

Working in the Workflow Step Pane

Overview

The **Workflow Step** pane displays information about the current workflow step. This information includes configuration details and results of the workflow step. In this pane, you can perform certain common tasks for a workflow step of a project that is in design mode. For a project that is in batch mode, the workflow step pane displays the configuration and results of each workflow step. If you want to make any changes, you have to pull the project to design mode.

Actions Toolbar

The **Actions** toolbar enables you to perform certain common tasks for each workflow step. The options that are available in the **Actions** toolbar might differ depending on the task that you perform. You can use this toolbar to perform tasks on a workflow step of a project that is in design mode. If a project is in the batch mode, the options on this toolbar are deactivated.

Table 9.2 *Options on Actions Toolbar*

Button	Purpose
	customizes the default setup of the workflow step.
	reverts the changes that were made to the setup of the workflow step.
	displays information about errors that occurred when the workflow step was run.
	runs the workflow step.
	imports details from a workflow step of another project. This option is available only for the **Target Segment Selection** workflow step.

Working with the Project Workflow

Select a Project

When you work on a workflow step, make sure that you select the correct project. For quick reference, the project name is displayed in the header bar of the object details pane.

To select a project:

1. In the navigation pane, select the **Projects** section.
2. Select the **Browse** tab.
3. From the **My Projects** list, select the project that you want to work on.
4. In the object details pane, select the **Workflow** tab.

Configure and Run Workflow Steps

The **Workflow** tab enables you to perform project tasks. Refer to the **Workflow Diagram** pane to get a quick overview of the progress of the project. In the **Workflow Step** pane, you can view the information about a workflow step.

You can configure a workflow step only after you have successfully run the previous workflow step. When you successfully run all workflow steps, a project completes its one run in design mode.

Note: You can work on the project workflow if you are the owner of the project.

To complete a project run in design mode:

1. Select the **Workflow** tab.

2. In the **Workflow Diagram** pane, select **Target Segment Selection**.
   a. On the **Actions** toolbar, select .
   b. Configure the workflow step. For details, see “Defining a Target Segment” on page 78.
   c. On the **Actions** toolbar, select .
3. In the **Workflow Diagram** pane, select **Microsegmentation**.
   a. On the **Actions** toolbar, select .
   b. Configure and run the workflow step. For details see, “Create Microsegments” on page 94.
4. In the **Workflow Diagram** pane, select **Microsegment Representation**.
   a. (Optional) On the **Actions** toolbar, select .
   b. (Optional) Configure the workflow step. For details, see “Draw Representative Customers Based on the Customized Parameter Setup” on page 106.
   c. On the **Actions** toolbar, select .
5. In the **Workflow Diagram** pane, select **Offer Assembly**.
   a. (Optional) On the **Actions** toolbar, select .
   b. (Optional) Configure the workflow step. For details, see “Assemble Offers for Representative Customers” on page 113.
   c. On the **Actions** toolbar, select .
6. In the **Workflow Diagram** pane, select **Invoice Recalculation**.
   a. (Optional) On the **Actions** toolbar, select .
   b. (Optional) Configure the workflow step. For details, see “Recalculate Invoices” on page 115.
   c. On the **Actions** toolbar, select .
7. In the **Workflow Diagram** pane, select **Microsegment Offer Ranking**.
   a. On the **Actions** toolbar, select .
   b. Configure the workflow step. For details, see “Configure Offer Ranking Setup at Microsegment Level” on page 118.
   c. On the **Actions** toolbar, select .
8. In the **Workflow Diagram** pane, select **Customer Offer Ranking**.
   a. (Optional) On the **Actions** toolbar, select .
   b. (Optional) Configure the workflow step. For details, see “Configuring the Offer Ranking Setup at Customer Level” on page 122.
   c. On the **Actions** toolbar, select .

Design Mode and Batch Mode of a Project

Overview

After you complete a project run in design mode, you can promote it to batch mode. When a project is in batch mode, you have to perform certain back-end activities in order to run its workflow. However, you can view the progress of the current or last batch run of the project on the **Workflow** tab. At any time, you can pull the project back into design mode if you want to configure a workflow step.

Push a Project to Batch Mode

You can push a project to batch mode if the **Project mode** is `Design`. All the workflow steps of the project must be complete.

To push a project to batch mode:

1. In the navigation pane, select the project that you want to promote to batch mode.
2. In the object details pane, on the **Actions** toolbar, select . The Push Project to Batch Mode window appears.
3. Select the frequency for scheduling the project runs in batch mode. For example, select the `Weekly` option if you want to run the project every week. The frequency that you select here is used by the scheduler to schedule the projects in batch mode. For details, see *SAS Offer Optimization for Communications Administrator's Guide*.
4. Click **Save**. In the **Properties** pane, the **Project mode** changes to `Batch`. After you promote a project to batch mode, options on the **Actions** toolbar will not be available. You can view only the status and results of each workflow step.

Pull a Project to Design Mode

A project that is promoted to batch mode can be pulled back to the design mode.

To pull a project to design mode:

1. In the navigation pane, select the project that you want to pull back to the design mode.
2. In the object details pane, on the **Actions** toolbar, select . In the **Properties** pane, the **Project mode** changes to `Design` mode.

Chapter 10

Performing Common Tasks for Workflow Steps

About Common Workflow Tasks

After you define a project, the default workflow with predefined workflow steps is displayed in the **Workflow Diagram** pane. You must perform workflow steps in the sequence shown in the diagram. For each workflow step, you can perform certain common tasks. The tasks that you can perform differ depending on the workflow step that you are currently working on. Using the **Actions** toolbar, you can perform the following common tasks:

- Configure a workflow step.
- Run a workflow step.
- View the log for a workflow step.
- Reset a workflow step.

Note: You can perform any of these tasks on a workflow step only if the project is in design mode and you are the owner of the project.

Configure a Workflow Step

SAS Offer Optimization for Communications provides a default configuration setup for each workflow step. If you do not want to customize this setup, you can directly run the workflow step. You can also change the setup according to your business requirements. You can configure and run a workflow step until you are satisfied with the results of the workflow step. However, if you change the configuration of a workflow step, all the subsequent workflow steps that have successfully run are reset to the default setup. Therefore, you have to configure and run these workflow steps again.

Note: You can configure a workflow step only if the project is in design mode.

To configure a workflow step:

1. Select the **Workflow** tab.
2. In the **Workflow Diagram** pane, select the workflow step that you want to configure.
3. On the **Actions** toolbar, select . A window appears.
4. Change the details as needed.
5. Click **Save**.

   Note: After you change the configuration of a workflow step, make sure that you run the workflow step.

Run a Workflow Step

After you configure a workflow step, you can immediately run the workflow step using the **Run** button that is available in the window. You can also run a workflow step using the **Actions** toolbar.

To run a workflow step:

1. Select the **Workflow** tab.
2. In the **Workflow Diagram** pane, select the workflow step that you want to run.
3. On the **Actions** toolbar, select . The processing status of the workflow step changes to `Successful` or `Failed`.

View the Log for a Workflow Step

If any errors occur when you run a workflow step, then the errors are maintained in a log file.

To view the log for a workflow step:

1. Select the **Workflow** tab.
2. In the **Workflow Diagram** pane, select the workflow step.
3. On the **Actions** toolbar, select . A window that displays the log details appears.
4. View the error details.
5. Click **OK**.

Reset a Workflow Step

In order to discard the changes that you have made to the default configuration for a workflow step, you can reset the workflow step. However, when you reset a workflow step, the subsequent workflow steps that you have configured and run are deactivated. You have to configure and run them again.

To reset a workflow step:

1. Select the **Workflow** tab.
2. In the **Workflow Diagram** pane, select the workflow step.
3. On the **Actions** toolbar, select . The processing status of the workflow step changes to `Active`.

Chapter 11

Target Segmentation

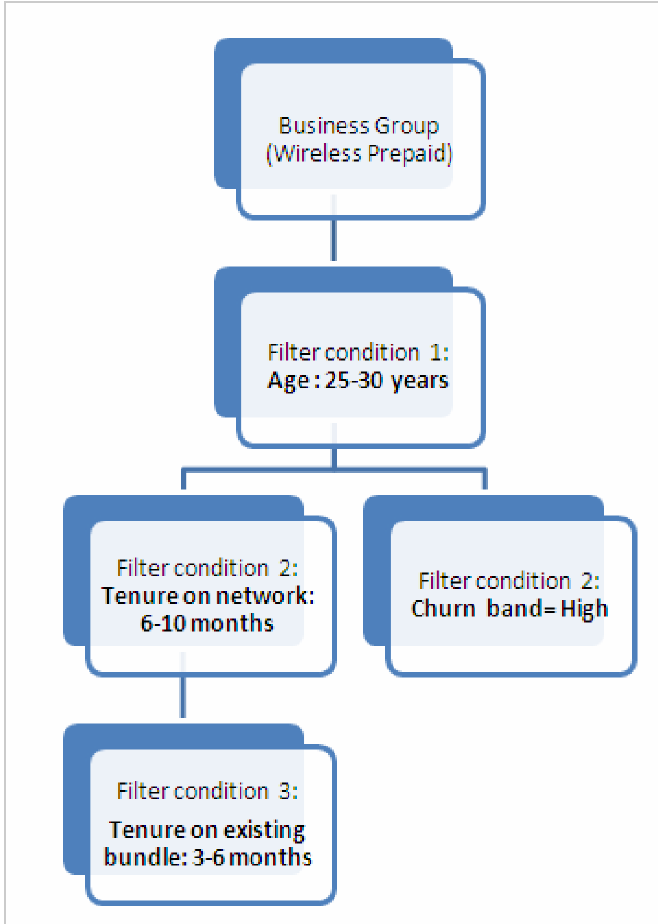
About Target Segments

After you analyze the business groups reports, you can identify the highly profitable customers of a business group, who usually have a high ARPU (average revenue per user). In order to focus on this subset of a business group, you have to define the target population. The target population is derived from the business group based on certain business rules. These business rules are different from the business rules that are defined for a business group. The subset of customers that is derived from the business group is called a target segment.

SAS Offer Optimization for Communications enables you to define a target segment based on a set of predefined variables. Using these variables, you can define filter criteria for deriving the target segment from the business group. You can define the filter criteria using a hierarchical list. This feature enables you to explore the customer distribution in the business group based on a set of conditions. Moreover, you can define the target segment after analyzing the customer counts at each level of the filter criteria.

For example, you can define filter criteria for a target segment as shown in the diagram below.

Figure 11.1 *Sample Filter Criteria for a Target Segment*



Defining a Target Segment

Overview

Defining a target segment involves the following tasks:

- Identify the target segment with a name and a description.
- Define filter criteria for deriving the target segment from the business group.

Note: Before you begin defining a target segment, make sure that you are familiar with hierarchical lists. For details, see "About Hierarchical Lists" on page 21.

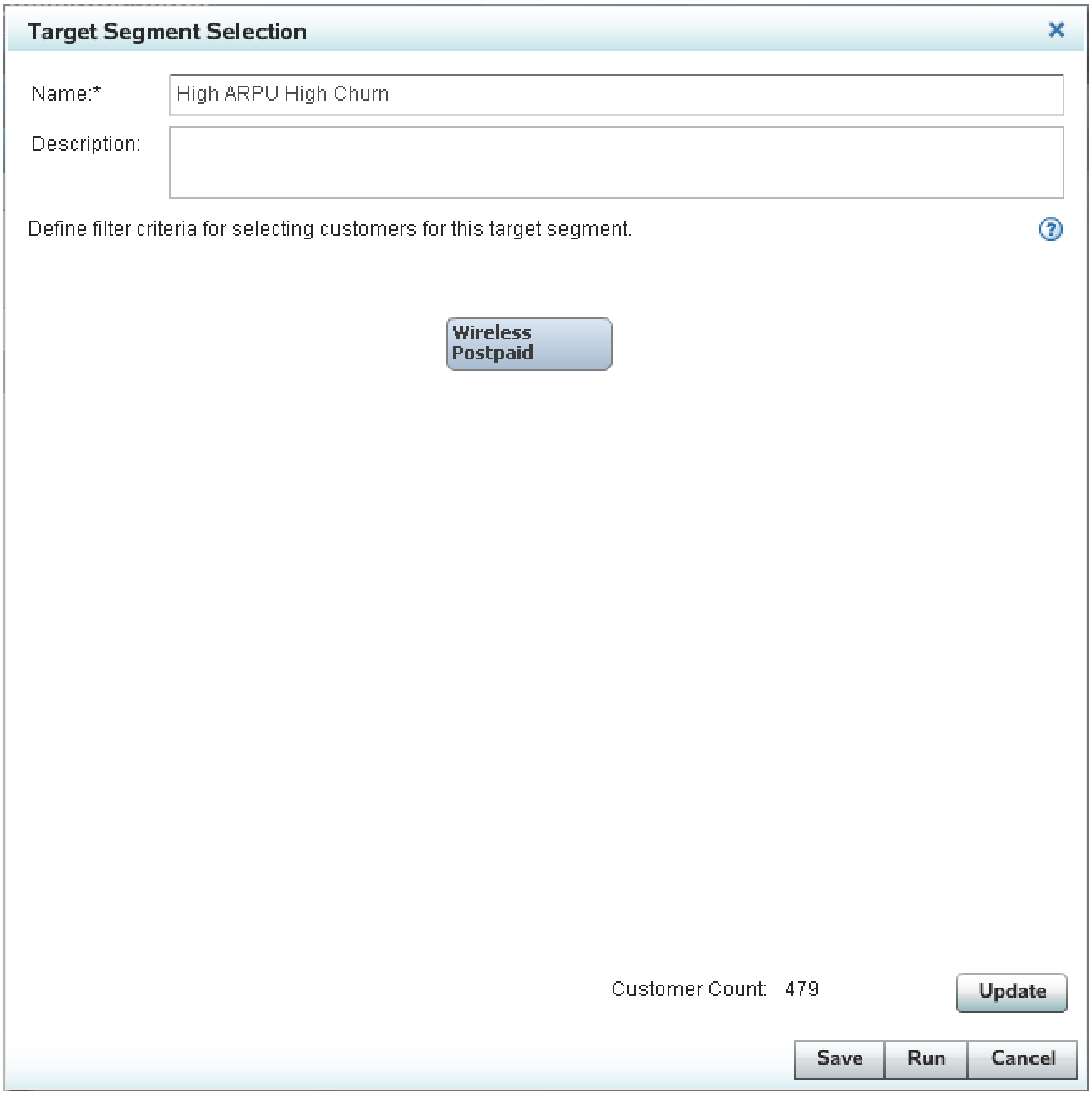
Define a Target Segment

To define a target segment:

1. Select the **Workflow** tab.
2. In the **Workflow Diagram** pane, select **Target Segment Selection**.

3. On the **Actions** toolbar, select . The Target Segment Selection window appears.

Display 11.1 *Target Segment Selection Window*



4. Enter the following information about the target segment.

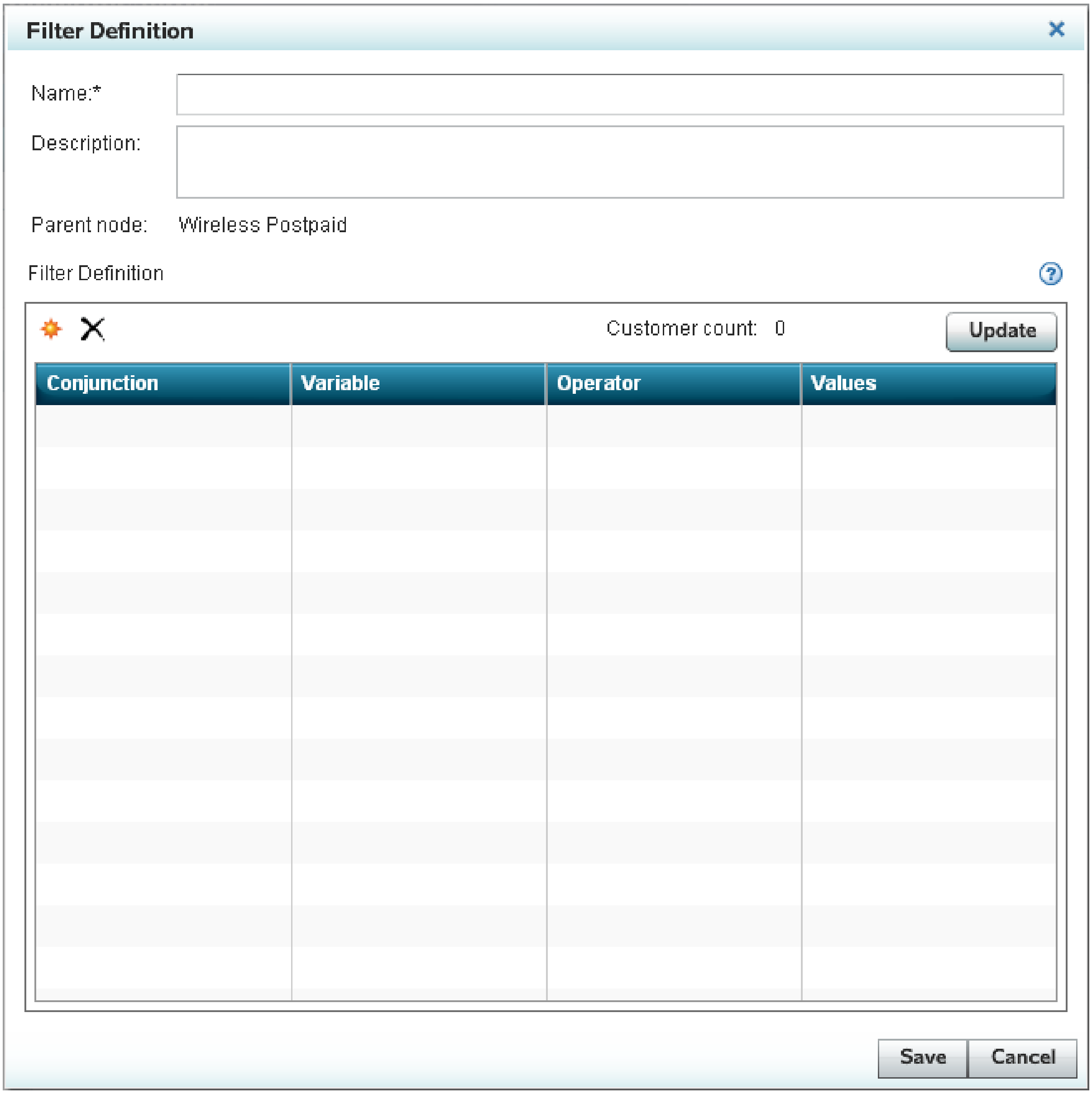
   a. In the **Name** field, enter the default name for the target segment is displayed. You can change this name.

   b. In the **Description** field, enter a brief description about the target segment.

5. In the hierarchical list, select the primary node. The primary node represents the business group from which you will derive the target segment.

6. From the pop-up menu of the node, select **Add** to add a filter definition. The Filter Definition window appears.

Display 11.2 *Filter Definition Window*



7. Enter the following details for the filter definition.

   a. In the **Name** field, enter the filter name. The name that you type here is assigned as the node name in the hierarchical list. Make sure that you enter an appropriate name in order to easily identify the filter definition. You can view the filter name when you move the mouse pointer over the filter node.

   b. In the **Description** field, enter the description of the filter.

      TIP The node in the hierarchical list from which this filter definition originates is displayed as the **Parent node**.

8. Define filter conditions in order to filter customers from the business group.

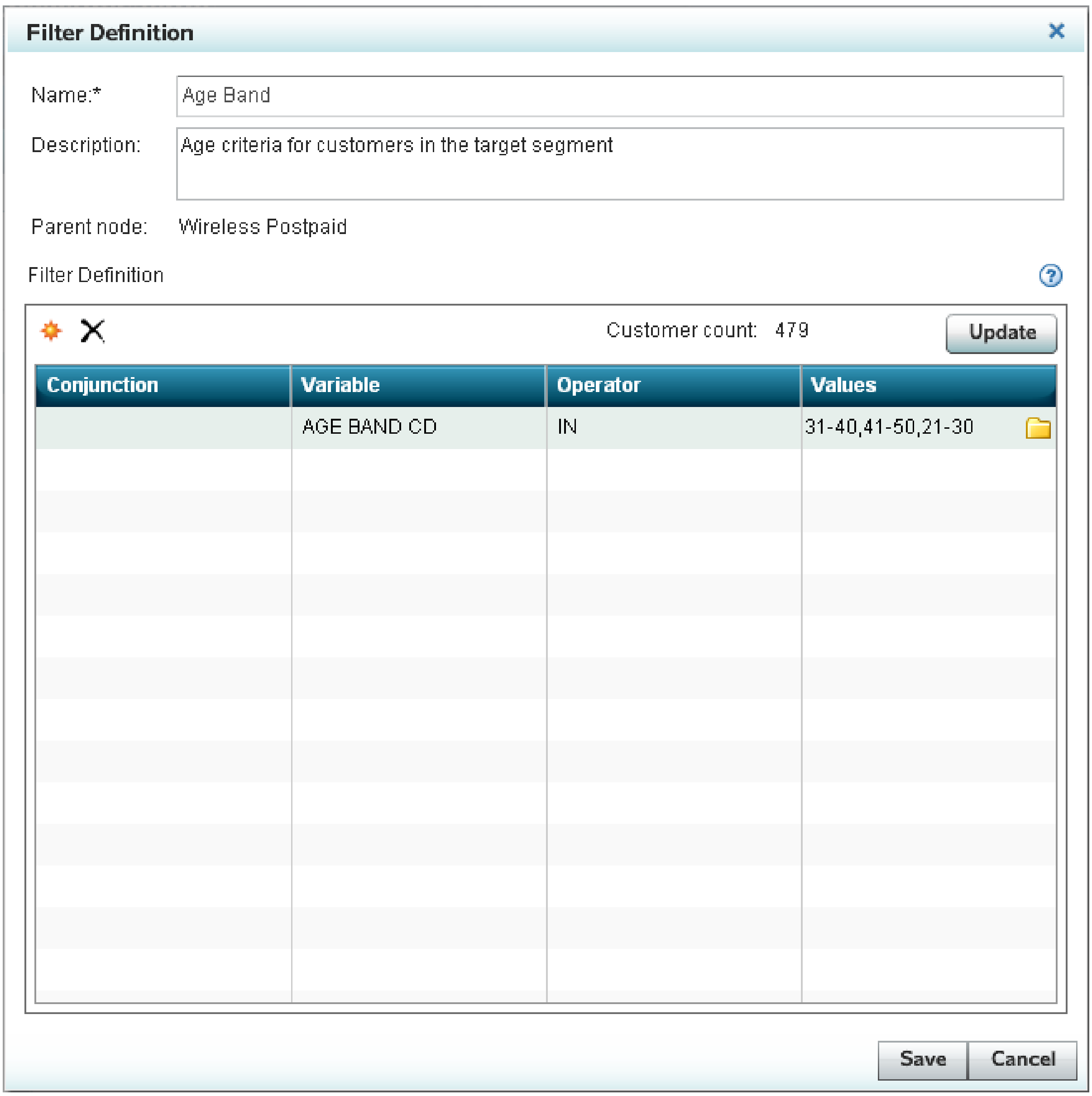
   a. To add a row, click .

   b. From the **Variables** list, select the filter variable. The list contains variables based on which target segment is derived from a business group.

c. From the **Operators** list, select the operator for filtering the values. The values in this list differ depending on which type of variable you select. For character variables, you can use text operators such as `=` (equal to), **`NOT IN`**, and **`Contains`**. For numeric variables, you can use arithmetic operators such as `=` (equal to), `<>` (Not equal to), `<` (less than), and `>` (greater than).

d. In the **Values** column, specify the filter value. For numeric values, enter the filter value in the field. However, for character variables, select a value from the list. To do so, click .

Display 11.3 *Filter Definition Window*

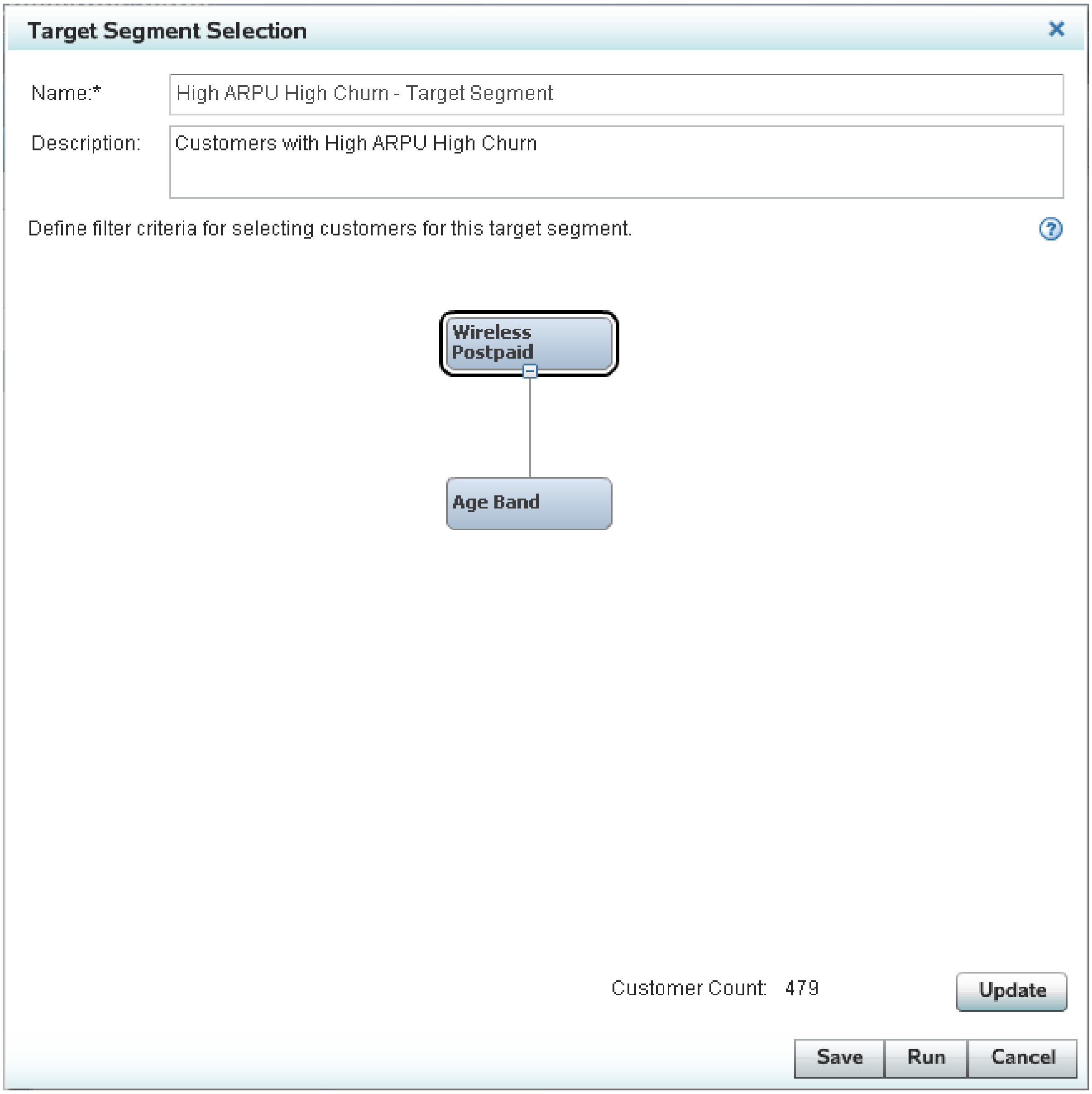


9. (Optional) Similarly, you can specify other filter conditions. You have to select a **Conjunction** from the list. If you want a customer to satisfy the current condition along with the previous conditions, select **`AND`**. Otherwise, select **`OR`**.

TIP At each stage of the filter definition, you can verify the number of customers who satisfy the filter definitions that you have specified so far. To do so, click **Update**.

10. Click **Save**. The filter definition is added as a child node of the primary node.

Display 11.4 *Filter Hierarchy*



11. (Optional) Select the primary node or the child node, and repeat steps from 6 to 9 to define more levels of filter definitions.

Note: You can add one or more child nodes to a parent node. The customer count will always be the number of customers who satisfy the filter conditions at the lowest level of the child nodes. For details, see "Working with Hierarchical Lists for Defining a Target Segment" on page 83.

Working with Hierarchical Lists for Defining a Target Segment

Overview

The hierarchical list enables you to define filter criteria for a target segment. At each level of the hierarchical list, you can add one or more nodes. Each node has a pop-up menu, which enables you to work on the filter criteria.

In the edit mode, the pop-up menu of a node enables you to perform the following tasks.

- Add a child node.
- Edit a node.
- Delete a node.
- Copy a node.
- Move a node.

Pop-up Menu of a Node

In the selected node, click . The pop-up menu appears. The following options are available on the pop-up menu of a node:

Add
enables you to add a node, which represents a filter definition of the target segment.

Edit
enables you to edit a filter definition.

Copy
enables you to create a copy of a filter definition.

Delete
enables you to delete a filter definition and all the child definitions attached to it.

Move
enables you to move a filter definition from one level to another.

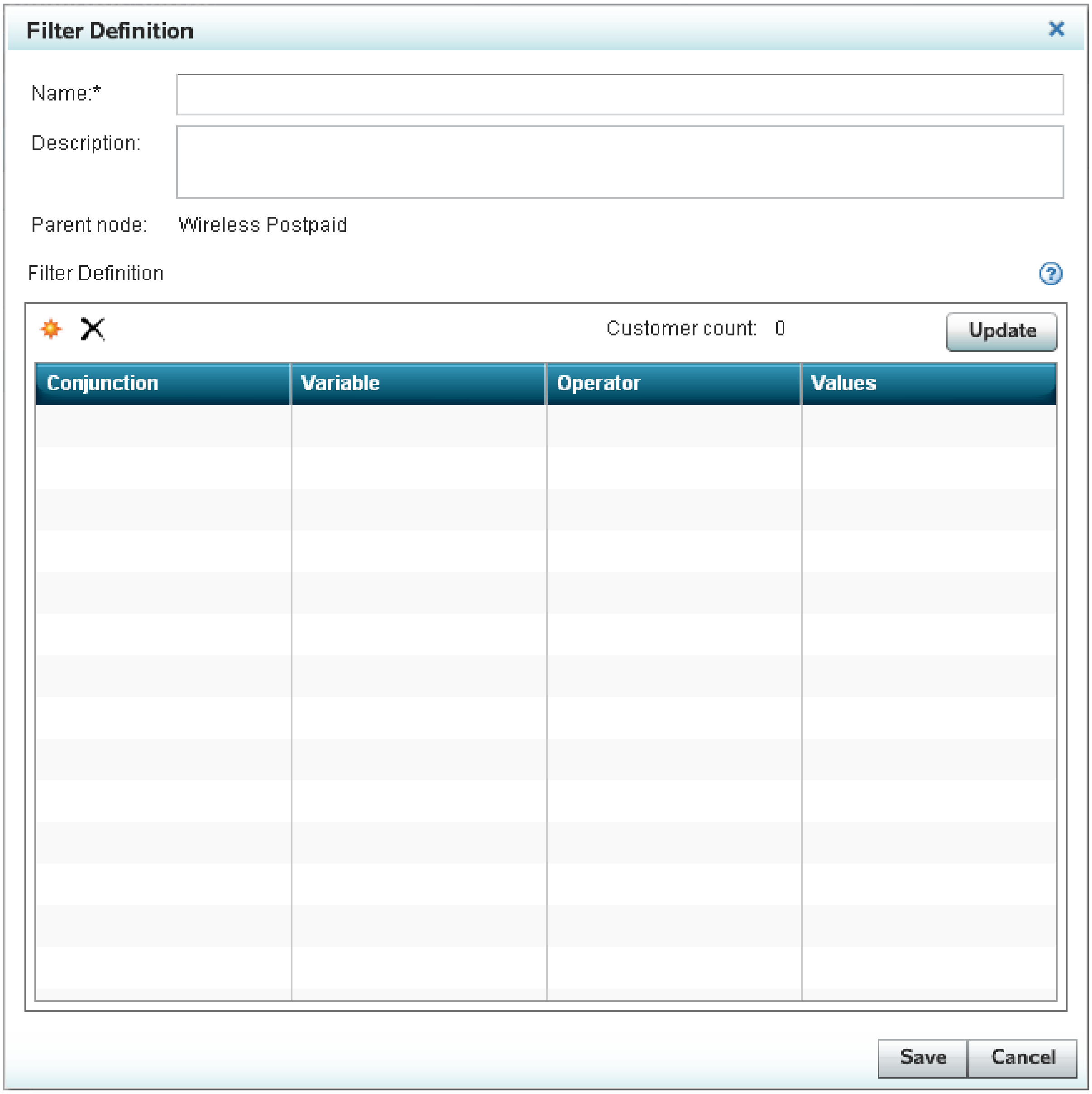
Add a Child Node

You can add a node for a parent node. Each child node represents a filter definition. A child node automatically inherits the filter definition that is defined at the parent node.

To add a child node:

1. Select the parent node below that you want to add the new node.
2. From the pop-up menu, select **Add** . The Filter Definition window appears in which you can specify the filter conditions.

Display 11.5 *New Filter*



Delete a Node

When you delete a node, all its child nodes are also deleted.

To delete a node:

1. Select the node that you want to delete.
2. From the pop-up menu, select **Delete**.

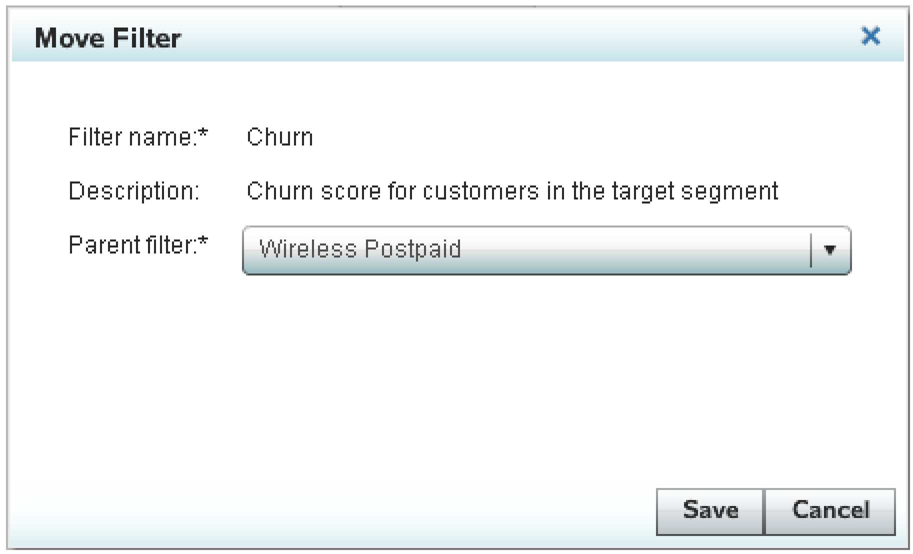
Move a Node

You can move a node from its current level to another level, which can be either above or below the current level. If the node has one or more child nodes, then they are also moved with their parent node. However, you cannot move a parent node to the level of its own child node.

To move a node:

1. Select the node that you want to move.
2. From the pop-up menu, select **Move**. The Move Filter window appears.

Display 11.6 *Move Filter Window*



3. Select the parent node where you want to move the node.
4. Click **OK**.

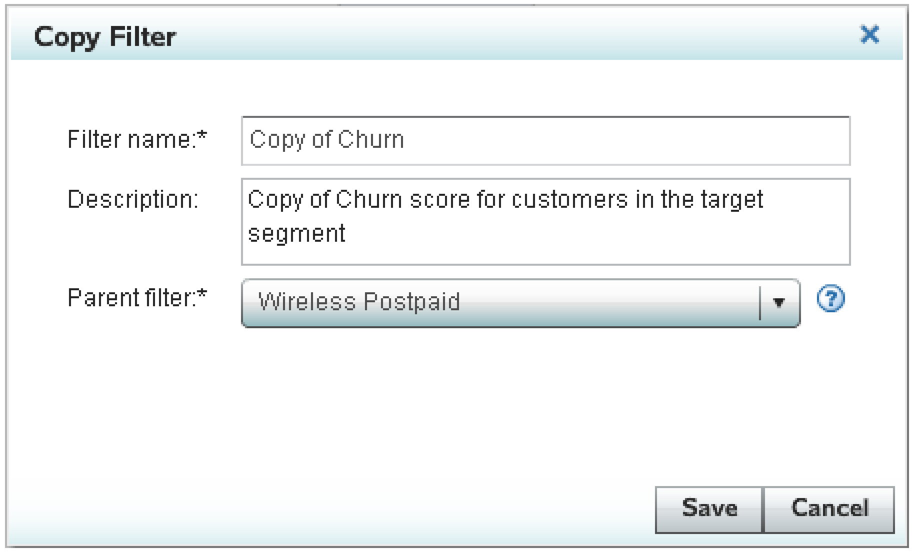
Copy a Node

You can copy a node from its current level to another level, which can be either above or below the current level. If you want to copy a parent node along with its child nodes, you have to copy each node individually.

To copy a node:

1. Select the node that you want to copy.
2. From the pop-up menu, select **Copy**. The Copy Filter window appears.

Display 11.7 Copy Filter Window



3. Select the parent node where you want to copy the node.
4. Click **OK**.

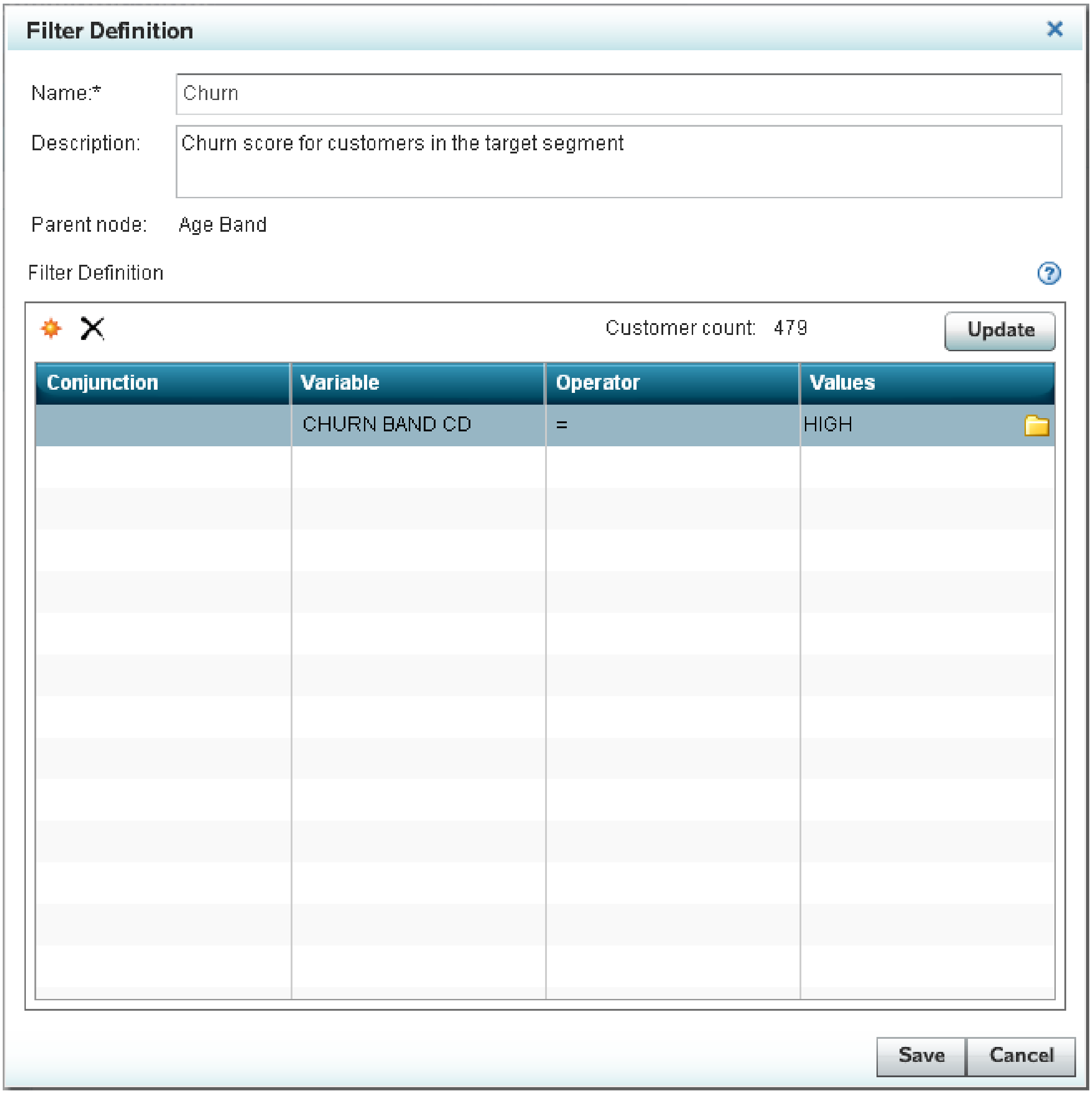
Edit a Node

You can change the filter conditions that each node represents.

To edit a node:

1. Select the node that you want to edit.
2. From the pop-up menu, select **Edit**. The Filter Definition window appears. In this window, you can view the filter conditions that you have defined.

Display 11.8 *Edit Filter*



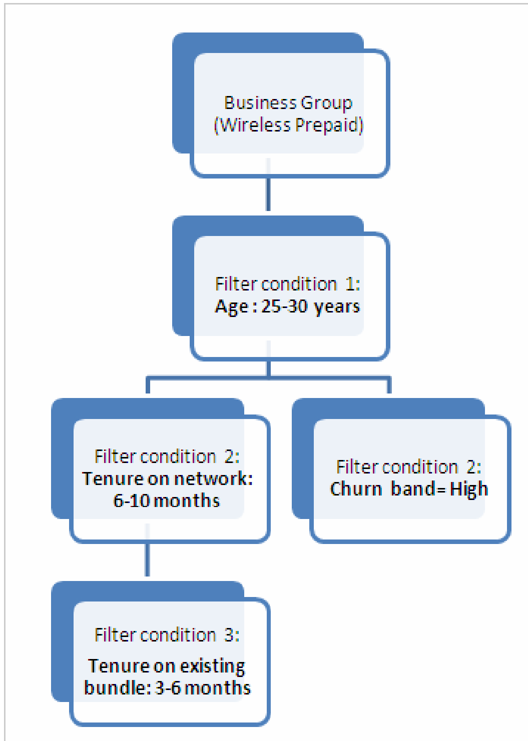
3. Change the filter conditions.
4. Click **Save**.

Example: Defining a Target Segment

Define Filter Criteria

You have defined a business group, Wireless Prepaid, with a customer count of five million. From this business group, you want to focus only on customers who satisfy the following filter criteria:

Figure 11.2 Sample Filter Criteria for a Target Segment



The target segment contains customers who satisfy either of the following set of conditions:

Condition set 1
: Customers with age greater than 25 years whose tenure on the network is greater than six months and tenure on the existing offer is greater than three months.

Condition set 2
: Customers of age greater than 25 who have a high churn score.

To define the filter criteria:

1. In the hierarchical list, add a node for the **Wireless Prepaid** business group.
2. In the New Filter window, enter the filter name and description.
3. Click and, in the row that is added in the table, enter the following details:

   Variables
   From the list, select the **`Age band code`** variable.

   Operators
   From the list, select the = (equal to) operator.

   Values
   Click . From the list, select the `25-30` age band.

   TIP Click **Update**. The number of customers in the business group whose age is greater than 25 is displayed.
4. Click **Save**.
5. In the hierarchical list, select the **Age** node and select **Add** from the pop-up menu.
6. In the New Filter window, enter the filter name and description.

7. Click and, in the row that is added in the table, enter the following details:

   Variables
   From the list, select the **`Tenure on network`** variable.

   Operators
   From the list, select the **=** (equal to) operator.

   Values
   Click . From the list, select the **`6-10 months`** churn band.

   TIP Click **Update**. The number of customers in the business group whose age is greater than 25 and whose tenure on network is in the 6–10 months band is displayed.

8. Click **Save**.
9. In the hierarchical list, select the **Age** node and select **Add** from the pop-up menu.
10. In the New Filter window, enter the filter name and description.
11. Click and, in the row that is added in the table, enter the following details:

    Variables
    From the list, select the **`Churn band code`** variable.

    Operators
    From the list, select the = (equal to) operator.

    Values
    Click . From the list, select the **`High`** churn band.

    TIP Click **Update**. The number of customers in the business group whose age is in the 25–30 age band and whose churn score is high is displayed.

12. Click **Save**.
13. In the hierarchical list, select the **Tenure on network** node and select **Add** from the pop-up menu.
14. In the New Filter window, enter the filter name and description.
15. Click and, in the row that is added in the table, enter the following details:

    Variables
    From the list, select the **`Tenure on existing bundle`** variable.

    Operators
    From the list, select the = (equal to) operator.

    Values
    Click . From the list, select the **`3-6 months`** band.

    TIP Click **Update**. The number of customers in the business group who satisfy the following criteria is displayed:

    - Age of the customer is in the 25–30 range.
    - Tenure on network is in the 6–10 months band.
    - Tenure on existing offer is in the 3–6 months band.

16. Click **Save**.

TIP The target segment would contain customers who satisfy either or both of the following set of conditions:

- Age is in the 25–30 band, and churn score is high.
- Age is in the 25–30 band, tenure on network is in the 6–10 months band, and tenure on existing bundle is in the 3–6 months band.

Import the Target Segment Selection Workflow Step

When you define a project, you can decide whether you want to copy the target segment from another project. However, if you want to make this decision at a later stage, you can import the target segment from another project using the **Actions** toolbar. This feature enables you to replicate a target segment across projects of a business group. You can further configure the target segment according to your requirements.

To import the target segment selection workflow step:

1. Select the **Workflow** tab.
2. In the **Workflow Diagram** pane, select the **Target Segment Selection** workflow step.
3. On the **Actions** toolbar, select . The Import Target Segment Selection window appears.
4. From the list, select the project whose target segment selection workflow step you want to copy. The list displays projects of the business group that you have selected for your current project.
5. View the filter criteria that are defined for the target segment of the selected project. Make sure that you are importing the workflow step from the correct project.
6. Click **Save**.

Derive Customers for a Target Segment

In order to filter customers from the business group, you have to run the **Target Segment Selection** workflow step.

To derive customers for a target segment:

1. In the navigation pane, select the **Projects** section.
2. From the **My Projects** list, select the project that you are working on.
3. In the object details pane, select the **Workflow** tab.
4. In the **Workflow Diagram** pane, select **Target Segment Selection**.
5. On the **Actions** toolbar, select . If the process runs successfully, a subset of customers is derived from the business group based on the filter criteria. This subset of customers forms the target segment. The target segment is the actionable population for the subsequent workflow steps of the project.

TIP Alternatively, to run the workflow step, in the Target Segment Selection window click **Run**.

Target Segmentation Reports

After you run the **Target Segment Selection** workflow step, you can define reports for this workflow step. These reports can be generated each time you run the project. For details, see *Chapter 16 Generating Workflow Reports* of this guide.

Chapter 12

Microsegmentation

Overview of Microsegmentation

Definition

Microsegmentation divides the target segment into a specific number of groups such that customers within each group have similar revenue and usage patterns. Microsegmentation involves two processes—clustering and profiling.

Clustering

In the clustering process, using the statistical clustering technique, the target segment is divided into customer groups that are called clusters. Each cluster represents a group of customers who have homogeneous patterns for variables that are related to usage and revenue. Conversely, there is heterogeneity across clusters. For example, one cluster might have customers who have high usage for voice calls and another might have customers with very low usage for voice calls.

The clustering technique requires the following inputs:

- Variables that define the revenue and usage pattern of the customers.
- Parameters that are required by the clustering technique.

SAS Offer Optimization for Communications provides a default setup for these inputs. The mandatory variables (also called statistically significant variables) are automatically selected. Similarly, a default value is set up for each clustering parameter.

Table 12.1 Recommended Default Values for Clustering Parameters

Parameter Description	Default Value
Maximum number of clusters	5
Elbow criterion	0.01
Convergence criterion	0.01

You can create clusters based on the default setup. Alternatively, you can also change the default setup and create microsegments.

Profiling

Profiling enables you to add a business description for each cluster. Each such cluster that is associated with a business description is called a microsegment. Microsegments form the actionable groups for further processes of the workflow.

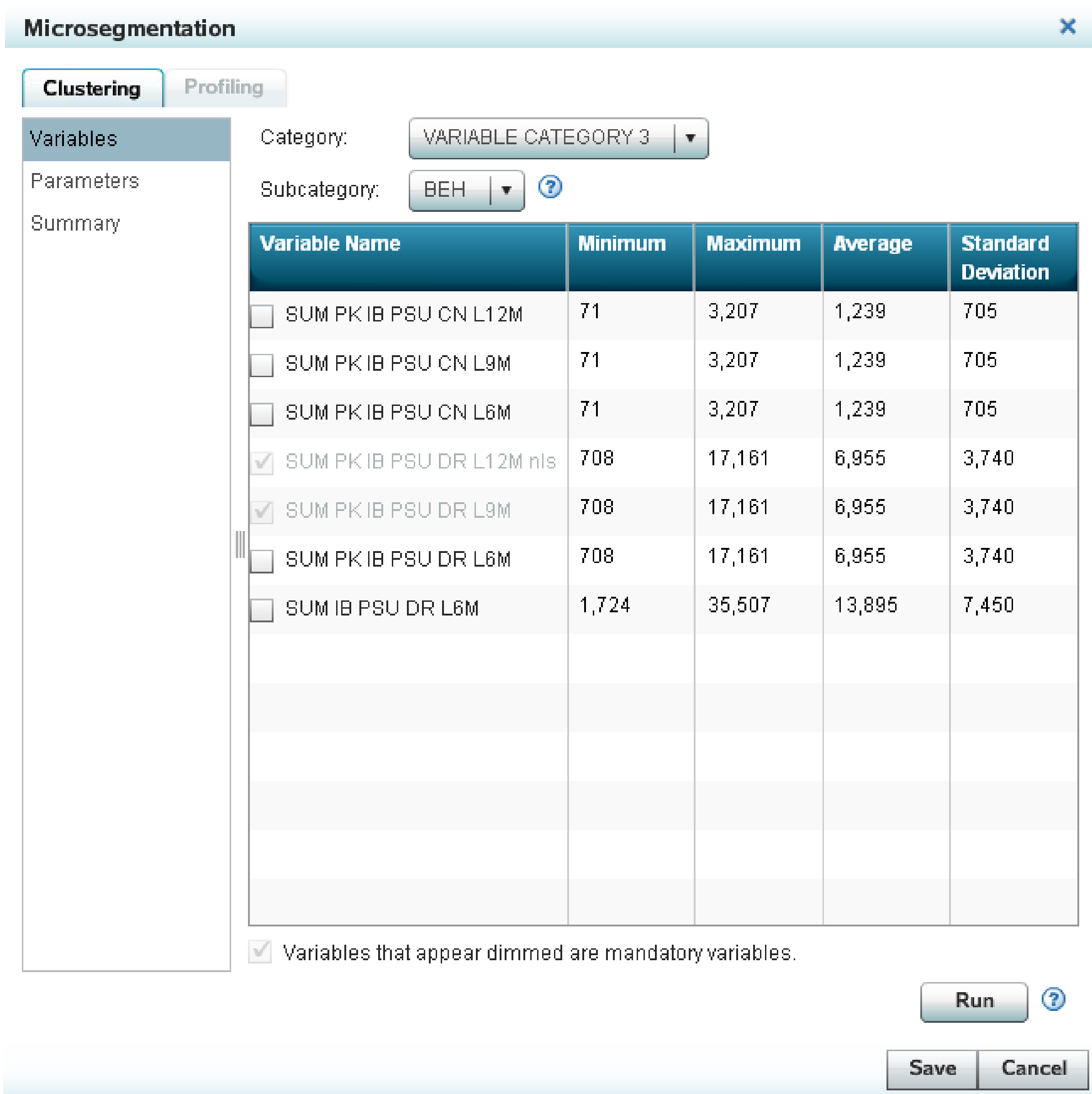
Create Microsegments

Create Clusters

To create clusters:

1. Select the **Workflow** tab.
2. In the **Workflow Diagram** pane, select **Microsegmentation**.
3. On the **Actions** toolbar, select . The Microsegmentation window appears.

Display 12.1 *Microsegmentation — Clustering Tab*



Note: SAS Offer Optimization for Communications provides a default setup to create clusters. If you want to create clusters based on this setup, skip steps from 4 to 7 and perform step 8 directly.

4. Select the **Clustering** tab. In the wizard pages, specify the inputs that are required for creating clusters in the target segment.

5. (Optional) Select the **Variables** page and complete the following steps:

   a. Select the **Category** and **Subcategory** of the variable. The **Variables** list displays mandatory and non-mandatory variables that are defined for the selected combinations of the categories and subcategories. Mandatory variables are automatically selected, and these are statistically significant variables. In addition to these variables, you can select non-mandatory variables according to your business requirements.

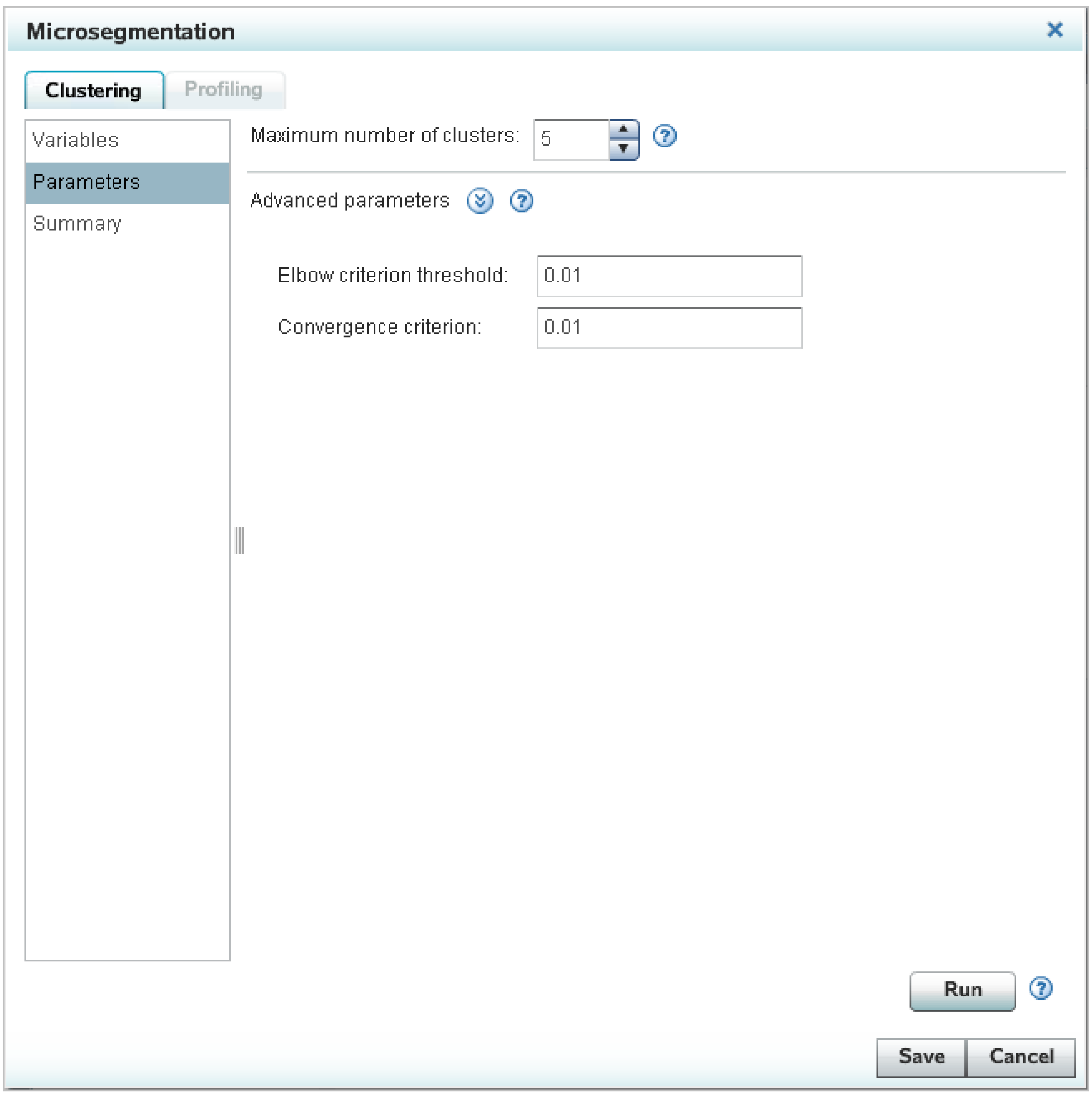
   b. Review the values that are displayed in each column of the variable. This information might help you when you select non-mandatory variables. The column values indicate how the variable is represented in the target segment. For example, consider the **TOT OB SMS CNT** variable that represents the total number of outbound SMS in the target segment. The values that are displayed in the **Minimum**, **Maximum**, **Average**, and **Standard Deviation** columns indicate the corresponding values for usage of outbound SMS in the target segment.

c. Select the additional variables that you want to consider for creating clusters in the target segment.

TIP Repeat steps from 5a to 5c above to include variables that belong to a combination of another category and subcategory.

6. (Optional) Select the **Parameters** page and specify the parameter values:

Display 12.2 *Microsegmentation Parameters Page*

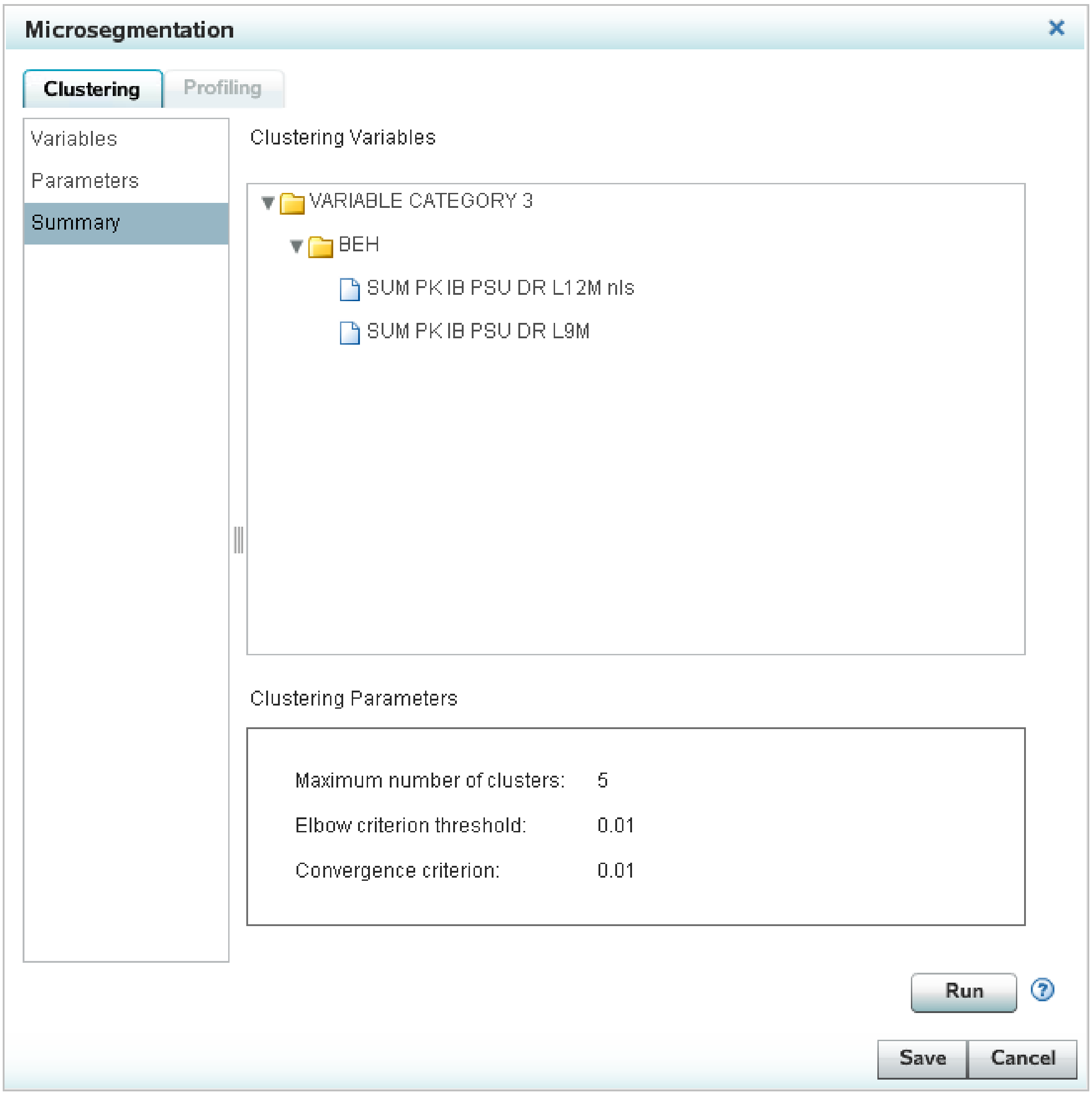


a. In the **Maximum number of clusters** field, enter or select the value for the maximum number of clusters that you want to create in the target segment. However the number of clusters that are created depends on the clustering technique that is used for creating clusters.

b. Click and enter values for **Elbow criterion threshold** and **Convergence criterion**. It is recommended that you consult your statistical analyst when you enter values for these variables. For details, see "Clustering Parameters" on page 299.

7. (Optional) To view the variables that you have selected and the parameter setup that you have configured, select the **Summary** page.

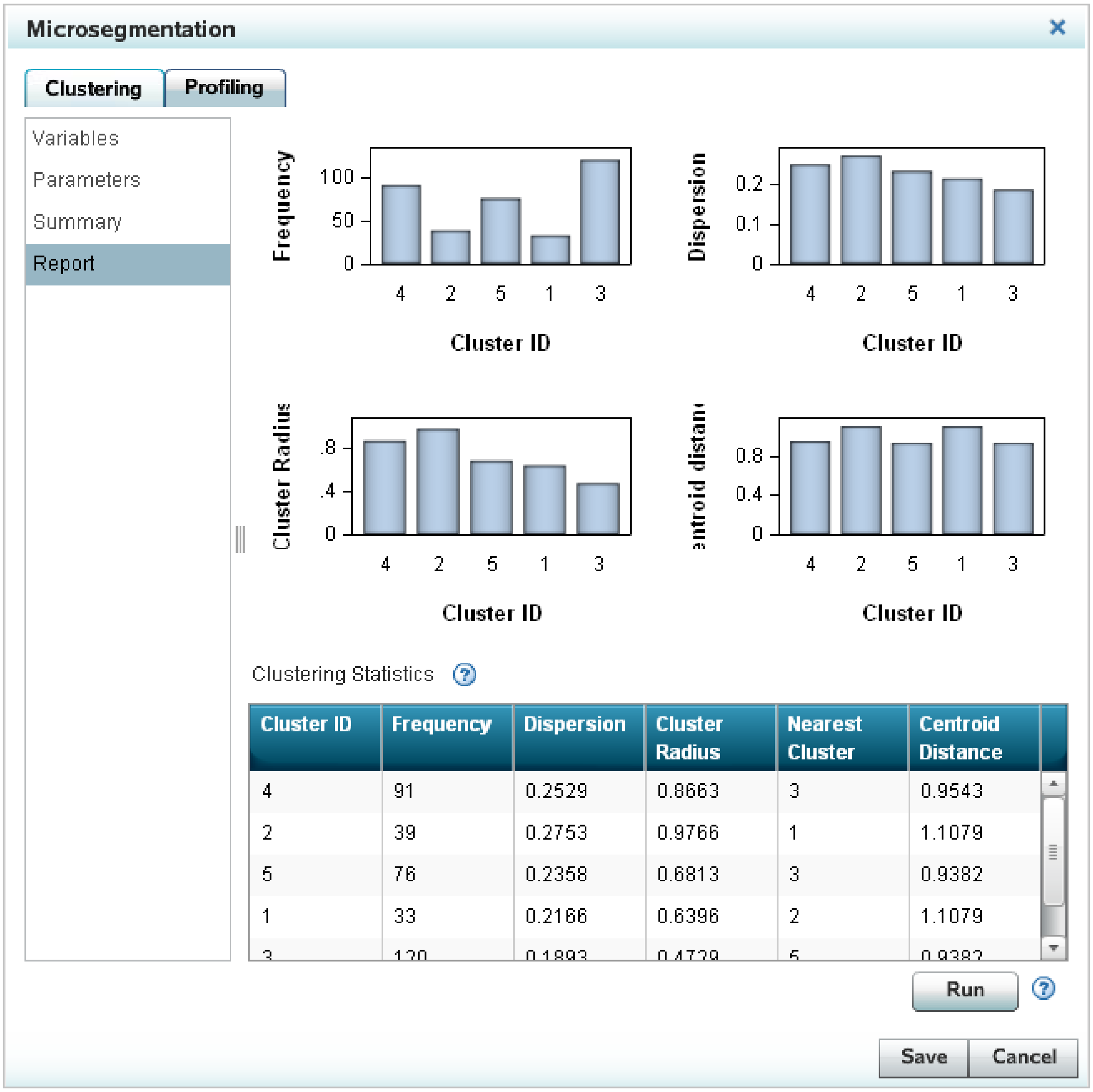
Display 12.3 *Clustering — Summary Page*



8. Click **Run**. A new page, **Report** is added.

9. Select the **Clustering Report** page and view the clustering summary.

Display 12.4 *Clustering Report*



a. Review the values that are displayed for various clustering statistics such as Frequency, Dispersion, Centroid Radius, Nearest Cluster, and Centroid Distance.

b. View the graphs that are generated. These graphs explain the homogeneity within the clusters.

- The Cluster ID versus Frequency graph indicates the number of customers in each cluster.
- The Cluster ID versus Dispersion graph indicates the variation of the observations within the cluster. The lesser the variation, the higher is the homogeneity within the cluster.
- The Cluster ID versus Farthest observation graph indicates the distance between the cluster centroid and the observation that is the farthest from the cluster centroid. This graph represents the radius of the cluster. The greater the radius, the greater is the spread of the observations within the cluster.

- The Cluster ID versus Centroid distance graph indicates the distance between the centroids of the current cluster and the cluster that is nearest to it.

Note: If the clusters that are created do not satisfy your business requirements, you can configure the clustering setup again. Repeat steps from 2 to 7.

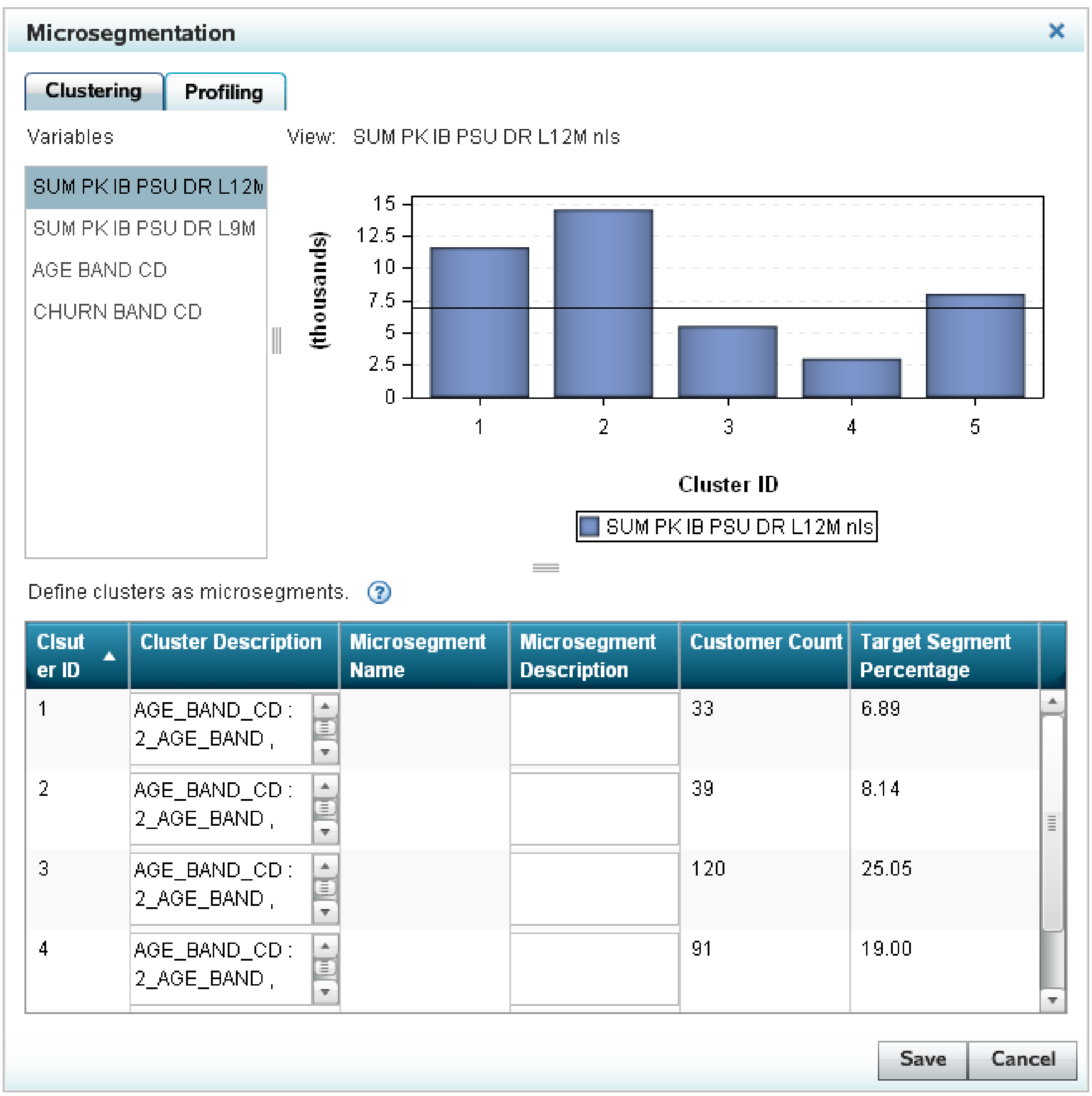
10. Click **Save**.

Define a Business Profile for a Cluster

To define a business profile for a cluster:

1. Select the **Profiling** tab. The **Profiling** tab is enabled after clusters are successfully created. On this tab, you can approve the clusters that are statistically derived.

Display 12.5 *Microsegmentation — Profiling Tab*



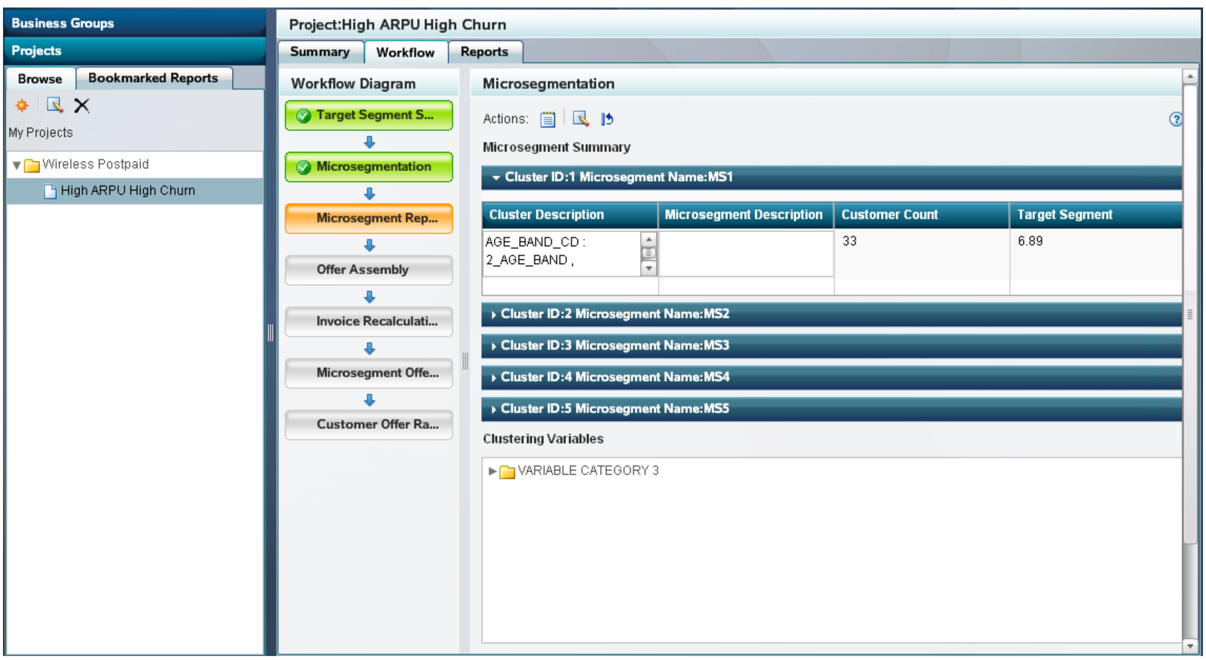
2. From the **Variables** list, select variables and view the representation of those variables across the clusters. The graphical representation of each variable across clusters can help you to enter an appropriate description for the cluster.

3. Enter a suitable name and description for each cluster. These details help you identify the cluster in accord with your business definitions. For example, you can enter the following description for a microsegment: *Very high number outbound voice calls to Onnet mobile in peak hours. Call duration is relatively high. Voice usage charges are high. Low MMS and SMS usage.*

   Note: You can proceed with the **Microsegment Representation** workflow step only after you enter a name for each cluster in the target segment.

4. Click **Save**. For each microsegment, the following information is displayed in the **Microsegmentation** workflow step pane:

Display 12.6 *Microsegmentation Workflow Step Pane*



Cluster ID
: displays the cluster number that is generated after running the clustering process.

Microsegment Name
: displays the name of the microsegment.

Microsegment Description
: displays the description of the microsegment.

Customer Count
: displays the number of customers in the microsegment.

Target Segment Percentage
: displays the percentage this microsegment forms in the target segment. For example, if this value is 35, then it indicates that this microsegment forms 35% of the target population.

Microsegmentation Reports

After you run the **Microsegmentation** workflow step, you can define reports for this workflow step. These reports can be generated each time you run the project. For details, see For details, see Chapter 16 Generating Workflow Reports on page 131 .

Chapter 13

Microsegment Representation

Overview of Microsegment Representation

Definition

Microsegment representation involves drawing one or more customers from each microsegment such that the usage and revenue patterns of the customers who are drawn represent the entire microsegment. The process of drawing representative customers requires a parameter setup. Moreover, the algorithm for selecting representative customers differs depending on whether you want to consider the eligibility criteria when you draw the representative customers. For details, see "Eligibility Criteria" on page 297.

Parameter Setup

SAS Offer Optimization for Communications provides a default parameter setup for the **Microsegment Representation** workflow step. You can directly draw representative customers from each microsegment based on this default setup. You can also change the default value, and then draw the representative customers.

For each microsegment, you can set up different parameter values. The parameter setup enables you to provide the following inputs:

- Include or exclude eligibility rules.
- Select the sampling method.
- Fix the number of representative customers that is to be drawn from a microsegment.

Sampling Methods

SAS Offer Optimization for Communications supports two sampling methods for drawing representative customers. Irrespective of the sampling method that is used, the customer that is closest to the cluster centroid is selected as the representative customer. For each sampling method, the algorithm for drawing representative customers differs, depending on whether eligibility rules are considered. For details, see “Eligibility Criteria” on page 297.

Centroid method
: In the centroid method, if the eligibility criteria are not considered, then the centroid sampling method derives only one representative customer from the microsegment. However, if eligibility criteria are considered, then the microsegment is divided into eligibility bands depending on the number of unique combinations of the eligibility rules. The centroid method derives a representative customer from each eligibility band. For example, say that six unique combinations of eligibility rules are applicable for a microsegment. Then six representative customers (one from each eligibility band) that are closest to the cluster centroid are selected from that microsegment.

Spread-based method
: In the spread-based method, depending on the number of representative customers that is drawn from the microsegment, the microsegment is divided into a corresponding number of spread bands. If eligibility criteria are not considered, then the customer that is closest to the cluster centroid is selected from each spread band. However, if eligibility criteria are considered, then before creating spread bands, each microsegment is divided into the eligibility bands depending on the number of unique combinations of the eligibility rules. A customer who exists in an eligibility band and in a spread band and is also closest to the cluster centroid is selected. In this case, it might so happen that there are no customers who belong to a particular eligibility band and also to a particular spread band. Therefore, the number of representative customers that is actually drawn from the microsegment can be less than or equal to the value obtained by multiplying the number of eligibility bands with spread bands. For example, if you want to draw three representative customers, then the microsegment would be divided into three spread bands. If six eligibility bands are applicable for the microsegment, then 18 (3 x 6) representative customers should be drawn. However, it might happen that there are no customers in a particular combination of a spread band and an eligibility band. Therefore, the number of customers that is actually drawn can be less than 18.

Draw Representative Customers Based on the Default Parameter Setup

To draw a representative customer from each microsegment using the default parameter setup:

1. On the **Workflow** tab, in the **Window Diagram**, select **Microsegment Representation**.
2. Review the default setup based on which of the representative customers will be derived for each microsegment.

Display 13.1 *Default Microsegment Representation*

Microsegment Representation

Microsegment Name	Customer Count	Target Segment Percentage	Sampling Method	Number of Spread Bands	Number of Representative Customers
MS1	105	16.41	SPREADBASED_US	2	0
MS2	55	8.59	SPREADBASED_US	2	0
MS3	55	8.59	CENTROID_US	1	0
MS4	162	25.31	SPREADBASED_US	2	0
MS5	112	17.50	SPREADBASED_US	2	0

Microsegment Name
displays the name of the microsegment.

Customer Count
displays the number of customers in the microsegment.

Target Segment Percentage
displays the percentage that this microsegment forms in the target segment. For example, if this value is 35, then it indicates that this microsegment forms 35% of the target population.

Sampling Method
displays the default sampling method that will be used to derive representative customers from the microsegment.

Number of Spread Bands
displays the number of spread bands in the microsegment. For the centroid sampling method, this value is 1. Therefore, only one representative customer will be drawn from the microsegment. However, for the spread-based sampling method, a representative customer will be drawn from each spread band of the microsegment.

Number of Representative Customers
displays the number of representative customers that will be drawn from the microsegment. For the centroid sampling method, this value is 1. However, for

the spread-based sampling method, the number of representative customers that will be drawn depends on the number of the spread bands of the microsegment.

3. On the **Actions** toolbar, select . Depending on the default parameter setup, representative customers are drawn from each microsegment.

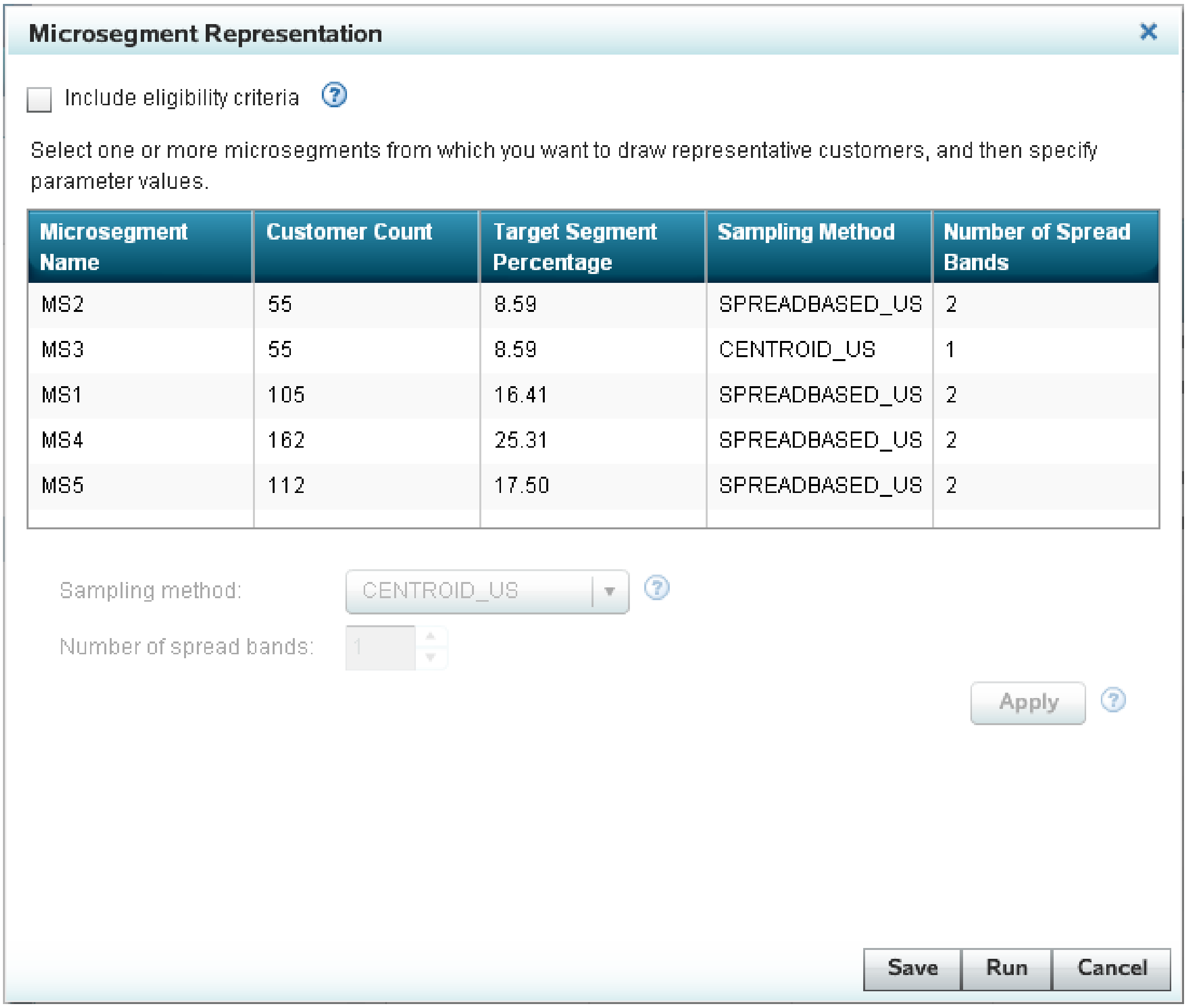
Draw Representative Customers Based on the Customized Parameter Setup

The default parameter setup uses the same parameter values for each microsegment. Therefore, if you want to set up different parameter values for one or more microsegments, you can configure the **Microsegment Representation** workflow step.

To draw representative customers based on customized parameter setup:

1. Select the **Workflow** tab.
2. In the **Workflow Diagram** pane, select **Microsegment Representation**.
3. On the **Actions** toolbar, select . The Microsegment Representation window appears.

Display 13.2 *Microsegment Representation Window*



4. To draw representative customers based on the eligibility combinations that are defined for the microsegments, select the **Include eligibility criteria** check box.

5. Select the microsegments for which you want to change the parameter setup. The following details are displayed for each microsegment:

   Microsegment Name
   displays the name of the microsegment.

   Customer Count
   displays the number of customers in the microsegment.

   Target Segment Percentage
   indicates the percentage that this microsegment forms in the target population. For example, if this value is 35, then it indicates that this microsegment forms 35% of the target population.

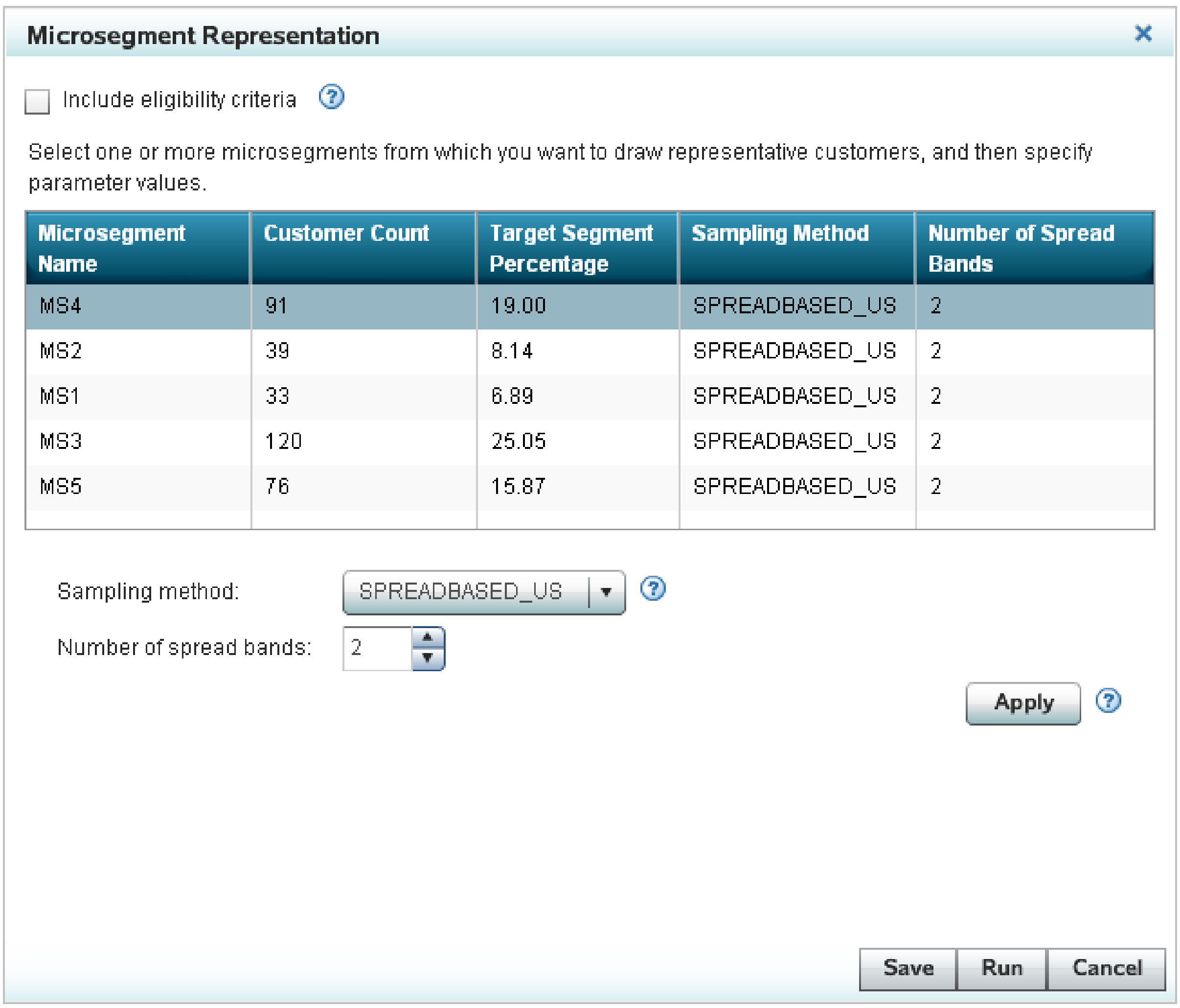
   Sampling Method
   displays the default sampling method that is used to derive representative customers from the microsegment.

   Number of Spread Bands
   displays the number of spread bands in the microsegment. For the centroid sampling method, this value is 1. Therefore, only one representative customer will be drawn from the microsegment. However, for the spread-based sampling

method, a representative customer will be drawn from each spread band of the microsegment.

6. Enter the appropriate values for the following parameters:
   a. Select the sampling method. The available options are **`Centroid`** and **`Spread-based`**.
   b. Enter or select the number of representative customers that you want to draw. If you select the **`Centroid`** sampling method, then this field defaults to 1 and you cannot change this value. However, if you select the **`Spread-based`** sampling method, you can enter or select a value that is greater than 2 but less than 15.

Display 13.3 *Microsegment Representation Parameters*



Microsegment Representation

Include eligibility criteria

Select one or more microsegments from which you want to draw representative customers, and then specify parameter values.

Microsegment Name	Customer Count	Target Segment Percentage	Sampling Method	Number of Spread Bands
MS4	91	19.00	SPREADBASED_US	2
MS2	39	8.14	SPREADBASED_US	2
MS1	33	6.89	SPREADBASED_US	2
MS3	120	25.05	SPREADBASED_US	2
MS5	76	15.87	SPREADBASED_US	2

Sampling method: SPREADBASED_US

Number of spread bands: 2

Apply

Save Run Cancel

   c. Click **Apply**.

      TIP Repeat steps from 6a to 6c if you want to set up parameter values for other microsegments.

7. Click **Save**. The summary of the parameter setup is displayed in the **Microsegment Representation** pane.

8. On the **Actions** toolbar, select ▶. The representative customers are drawn based on the parameter setup.

Display 13.4 *Microsegment Representation Summary*

Microsegment Representation

Microsegment Name	Customer Count	Target Segment Percentage	Sampling Method	Number of Spread Bands	Number of Representative Customers
MS1	33	6.89	SPREADBASED_US	2	2
MS2	39	8.14	SPREADBASED_US	2	2
MS3	120	25.05	SPREADBASED_US	2	2
MS4	91	19.00	SPREADBASED_US	2	2
MS5	76	15.87	SPREADBASED_US	2	2

A report is displayed on the **Reports** tab. This report gives information about the representative customers who are drawn from each microsegment. For details, see "Microsegment Representation Reports" on page 109.

Microsegment Representation Reports

Overview

After you run the **Microsegment Representation** workflow step, the following reports are generated on the **Reports** tab.

- Representative Customer Summary
- Representative Customer Variable Summary

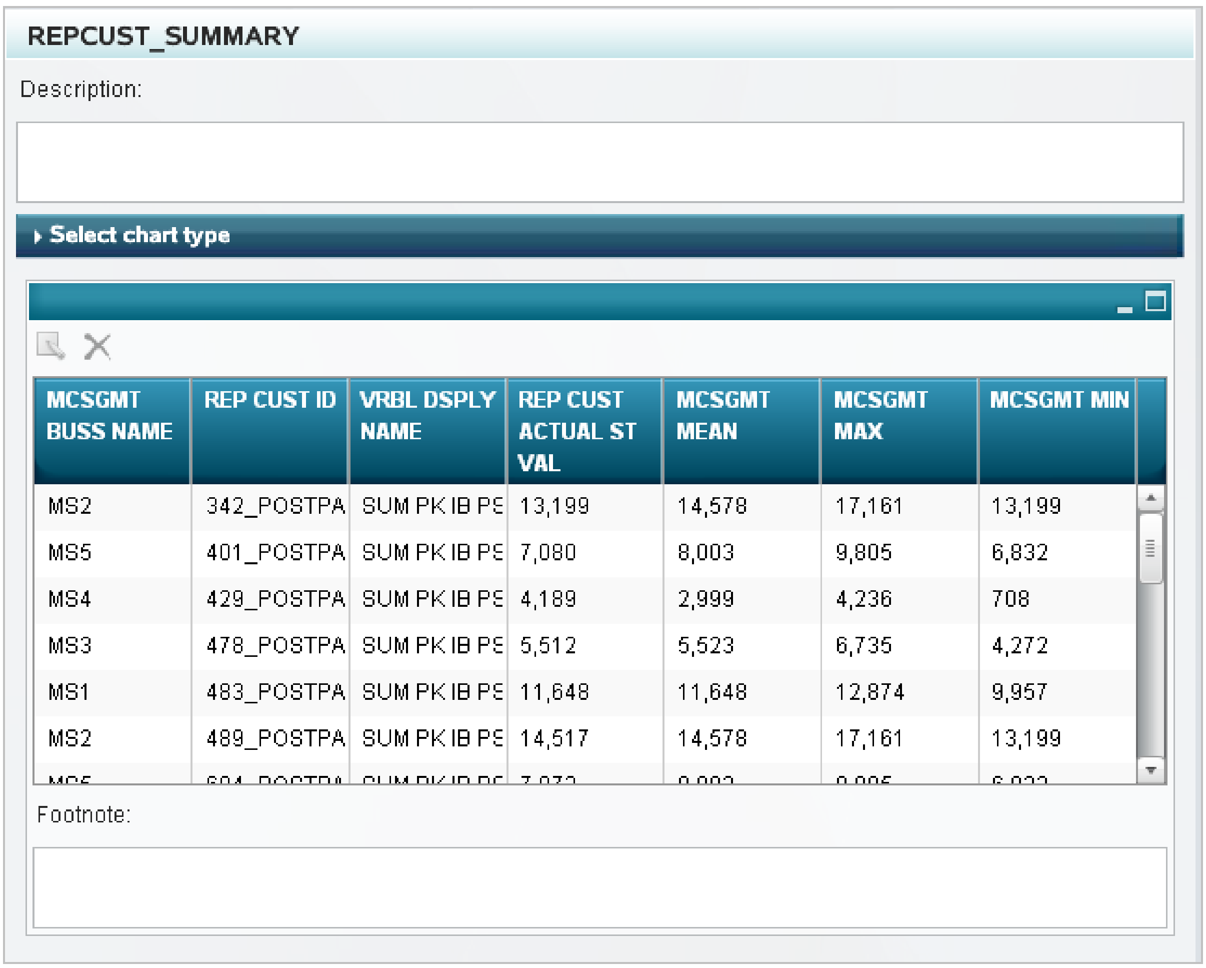
These reports are generated each time you run the microsegment representation workflow step. These reports are also generated on the **Bookmarked Reports** tab when you run this workflow step in design or batch mode.

You can also define your own reports for this workflow step. For details, see Chapter 16 Generating Workflow Reports on page 131

Representative Customer Summary

The Representative Customer Summary report gives information about clustering variables that are selected to create clusters in the target segment. This report indicates how a selected variable is represented in the microsegment. It also indicates the actual value of the variable for a representative customer.

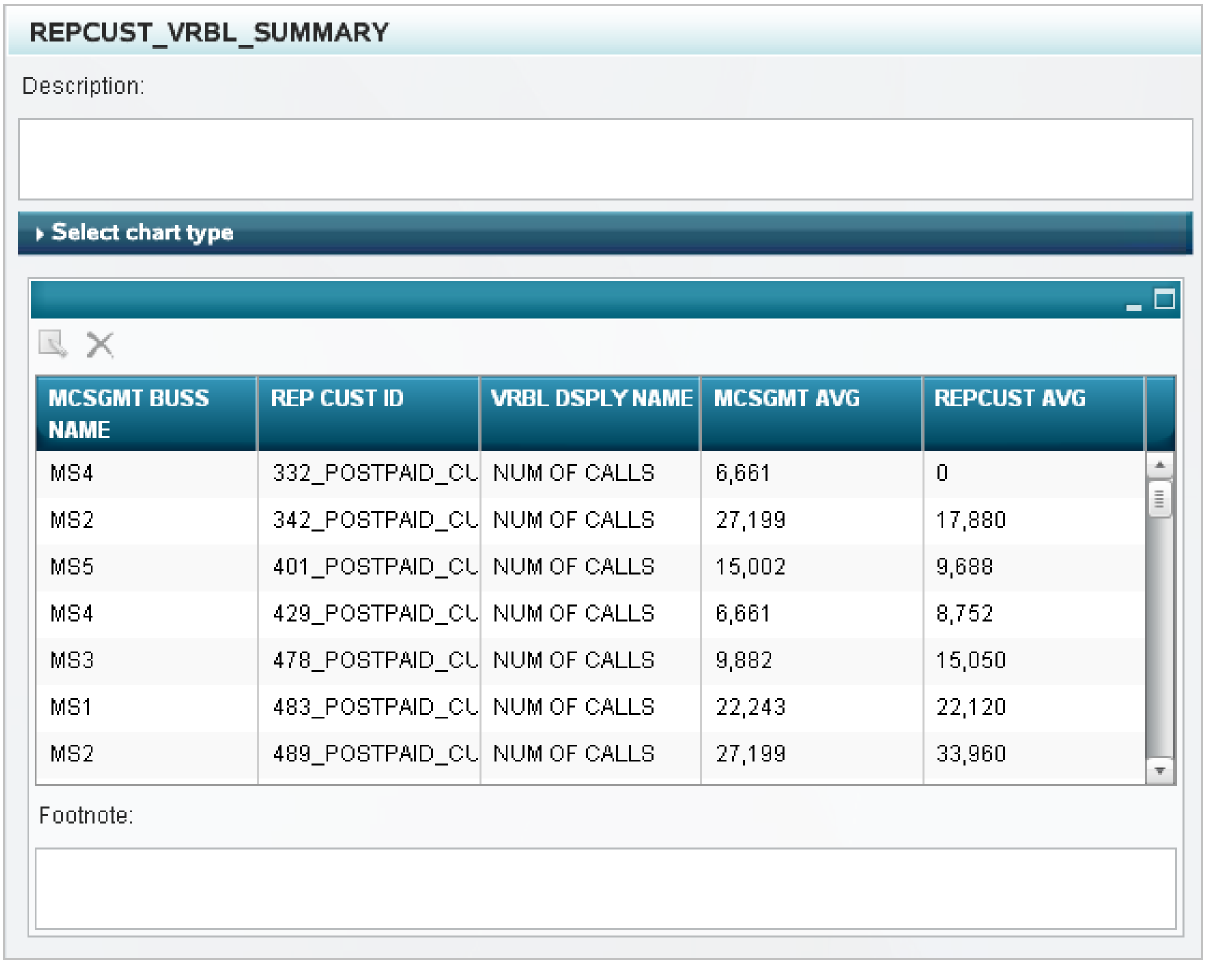
Display 13.5 *Representative Customer Summary Report*



Representative Customer Variable Summary

The Representative Customer Variable Summary report provides the list of variables that are considered for creating clusters in the target segment. Moreover, this report gives the average value of each variable for the microsegment and the representative customer. This report enables you to compare variable values across representative customers of a microsegment. For example, for the variable that represents the number of calls, this report gives both the average number of calls in the microsegment and the average number of calls for each representative customer of that microsegment.

Display 13.6 *Representative Customer Variable Summary Report*


REPCUST_VRBL_SUMMARY

Description:

Select chart type

MCSGMT BUSS NAME	REP CUST ID	VRBL DSPLY NAME	MCSGMT AVG	REPCUST AVG
MS4	332_POSTPAID_CU	NUM OF CALLS	6,661	0
MS2	342_POSTPAID_CU	NUM OF CALLS	27,199	17,880
MS5	401_POSTPAID_CU	NUM OF CALLS	15,002	9,688
MS4	429_POSTPAID_CU	NUM OF CALLS	6,661	8,752
MS3	478_POSTPAID_CU	NUM OF CALLS	9,882	15,050
MS1	483_POSTPAID_CU	NUM OF CALLS	22,243	22,120
MS2	489_POSTPAID_CU	NUM OF CALLS	27,199	33,960

Footnote:

Chapter 14

Offer Assembly

Assemble Offers for Representative Customers

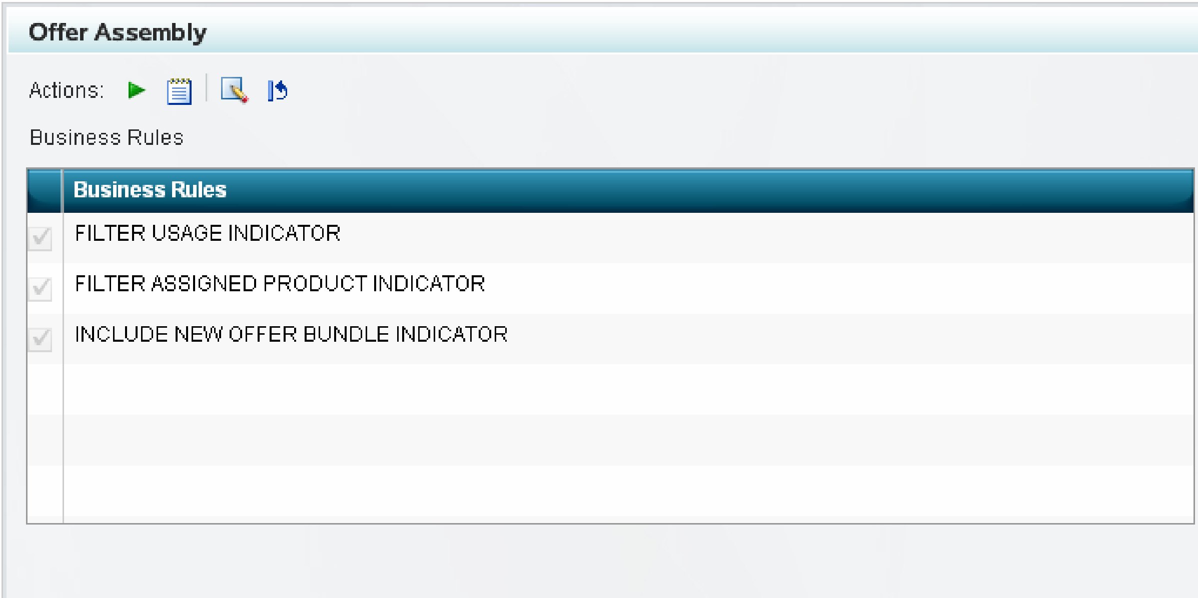
In the **Offer Assembly** workflow step, offers for which the representative customer are eligible are assembled from the product catalog. SAS Offer Optimization for Communications interfaces with the external system to exchange data. The information about the representative customers is exported to the external system, and the relevant information about the offers is imported into SAS Offer Optimization for Communications.

You can assemble offers based on a set of predefined business rules. You can view these default business rules when you select the **Offer Assembly** workflow step. After you confirm the default business rules, you can directly run this workflow step. To do so, on the **Actions** toolbar, select . You can also change the business rules that you want to consider for assembling the offers.

To change the business rules to assemble offers from the external system:

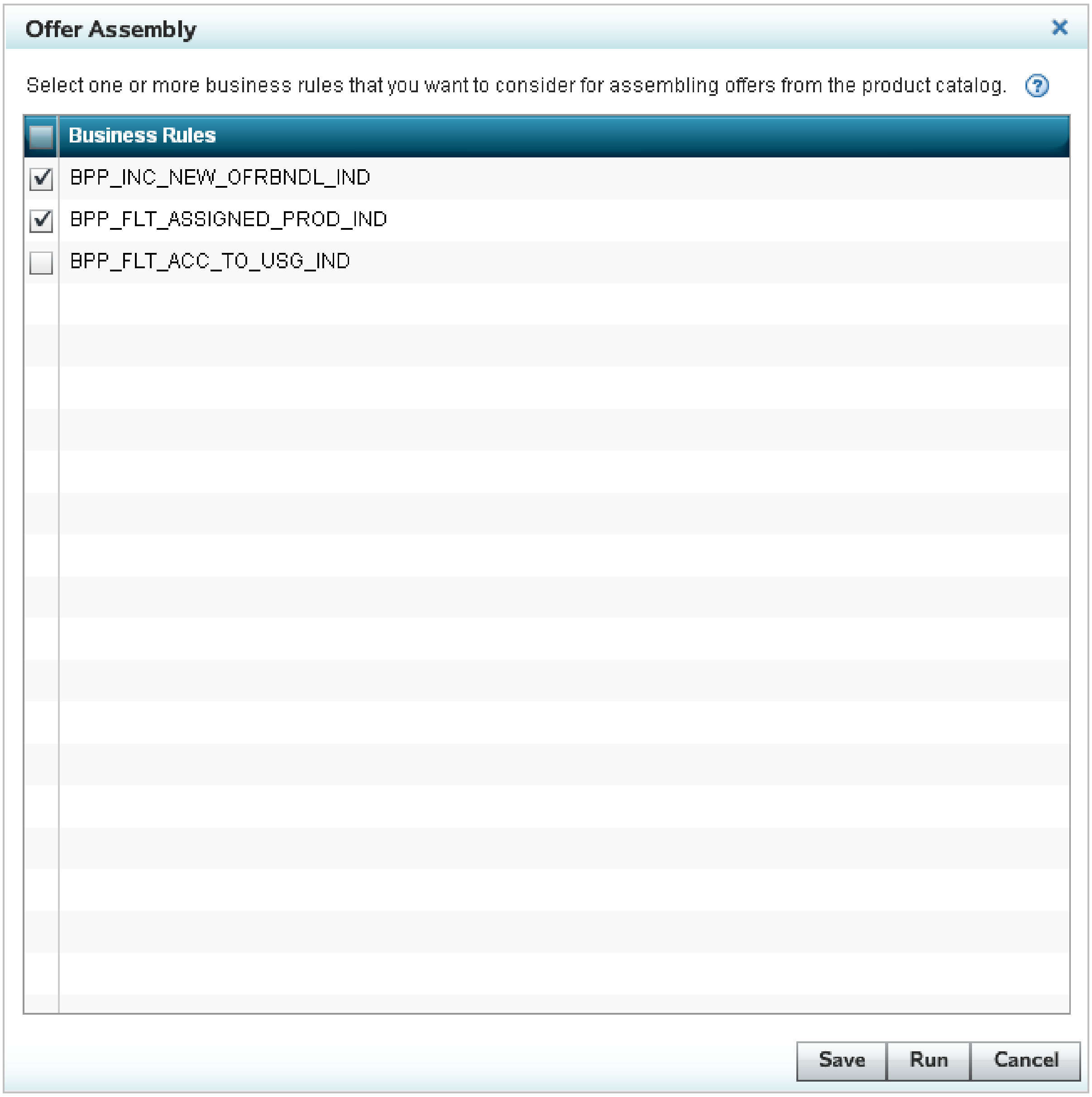
1. Select the **Workflow** tab.
2. In the **Workflow Diagram** pane, select **Offer Assembly**. The business rules based on which offers are assembled from the external system are displayed.

Display 14.1 *Offer Assembly Rules*



3. On the **Actions** toolbar, select . The **Offer Assembly** window appears.

Display 14.2 *Offer Assembly Window*



4. Select the business rules that you want to consider for retrieving offers.
5. Click **Save**.
6. (Optional) Click **Run**.

   TIP Alternatively, on the **Actions** toolbar, select .

Recalculate Invoices

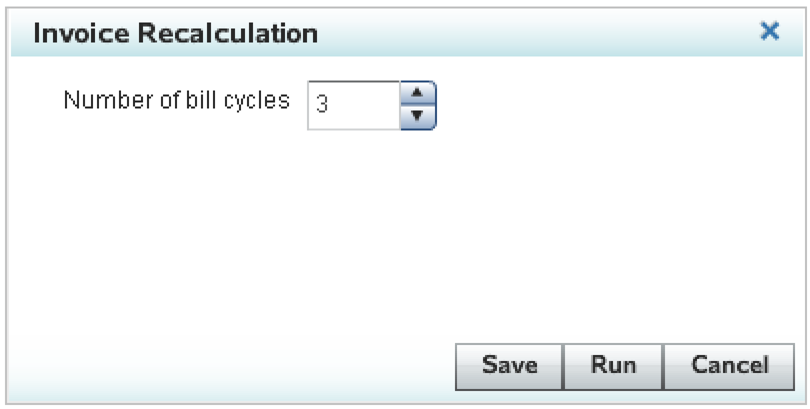
Invoice information needs to be gathered for each offer that is retrieved from the product catalog. Using this information, invoices are computed for each combination of representative customer and offer.

SAS Offer Optimization for Communications enables you to retrieve invoice information for a predefined number of bill cycles. If you want to recalculate invoices for the default number of bill cycles, you can directly run this workflow step. To do so, on the **Actions** toolbar, select . You can edit this workflow step if you do not want to calculate the invoices for the default number of bill cycles.

To edit the number of bill cycles, complete these steps:

1. Select the **Workflow** tab.
2. In the **Workflow Diagram** pane, select **Invoice Recalculation**.
3. On the **Actions** toolbar, select . The Invoice Recalculation window appears.

Display 14.3 *Invoice Recalculation Window*



4. In the **Number of bill cycles** field, enter or select the number of bill cycles for which you want to extract the billing data.
5. Click **Save**.
6. (Optional) Click **Run**.

TIP Alternatively, on the **Actions** toolbar, select .

Chapter 15

Offer Ranking

Generating Best Offers in Ranked Order

Overview

From the offers that are assembled for a representative customer, the offer ranking workflow steps produce best offers in ranked order. The offer ranking workflow steps are available at two levels:

Microsegment level
: In this type of offer ranking, best offers are produced in ranked order for each representative customer of a microsegment.

Customer level
: In this type of offer ranking, best offers are produced in ranked order for each customer of a microsegment. Best offers are produced for a customer based on the best offers that are derived for the corresponding representative customer. Therefore, best offers are produced at customer level, depending on how you configure the microsegment representation workflow step.

Table 15.1 *Rules for Producing Best Offers at Customer Level*

Microsegment Representation Configuration		
Sampling Method	**Eligibility Criterion**	**Best Offers**
Centroid	No	The best offers that are produced for the representative customer of the microsegment are assigned to all customers of that microsegment.
Centroid	Yes	The best offers that are produced for each representative customer of an eligibility band are assigned to all customers of that eligibility band.
Spread-based	No	The best offers that are produced for the representative customer of a spread band are assigned to all customers of that spread.
Spread-based	Yes	The best offers that are produced for the representative customer of the combination of a spread band and an eligibility band. These best offers are then assigned to all customers of that combination of the spread band and the eligibility band.

Ranking Setup

The best offers are derived based on the ranking setup that you configure. The ranking setup includes selection of certain predefined ranking variables such as bill differentials and revenue. The offer ranking workflow steps produce best offers based on the variables that you select. You can also specify the number of best offers that you want to derive for a customer.

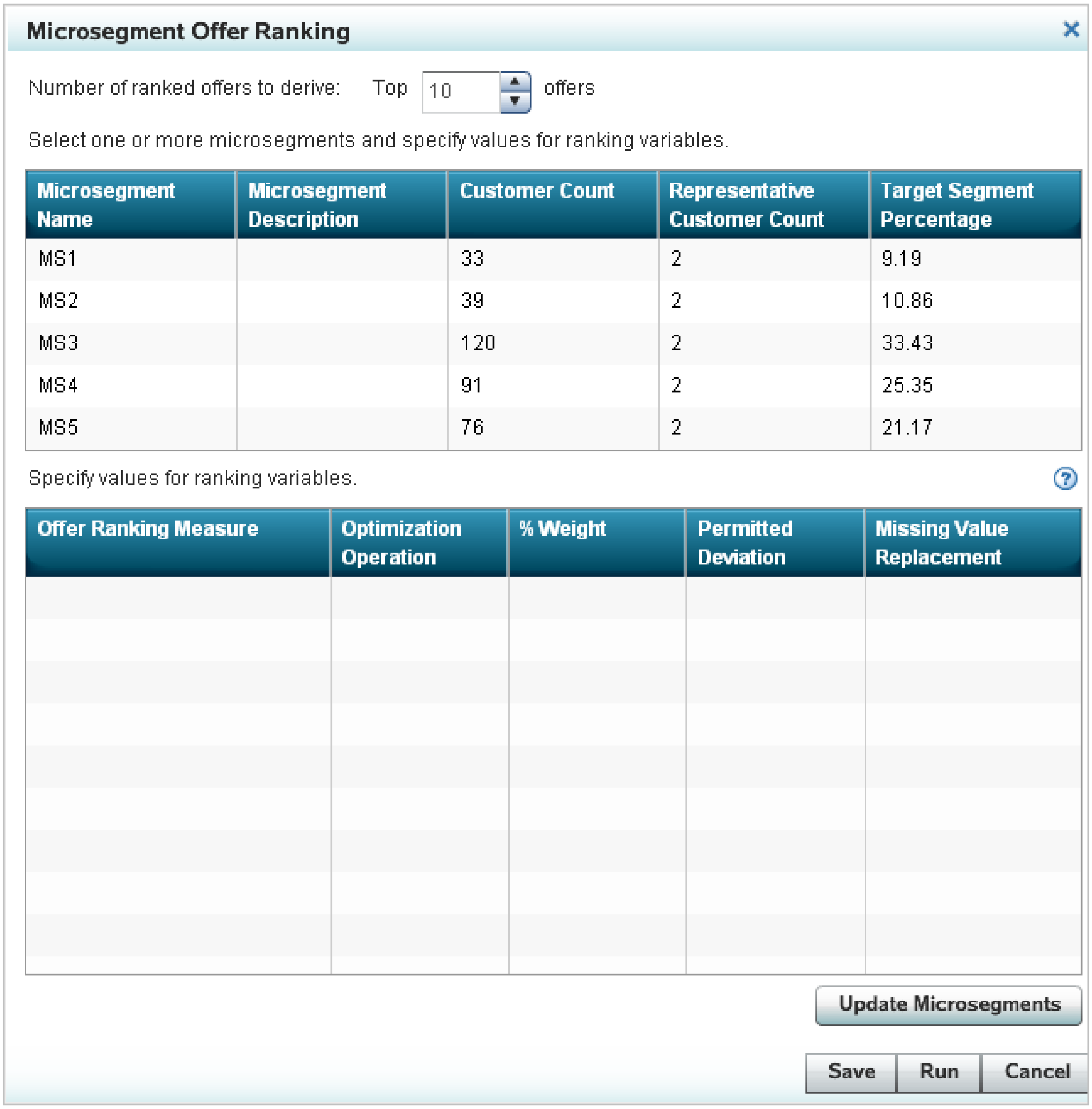
Configure Offer Ranking Setup at Microsegment Level

Offer ranking at microsegment level involves producing best offers for representative customers of all microsegments. The number of best offers that you want to produce for a representative customer is fixed across microsegments. However, you can configure the ranking variables for each microsegment.

To configure offer ranking setup at microsegment level:

1. Select the **Workflow** tab.
2. In the **Workflow Diagram**, select **Microsegment Offer Ranking**.
3. On the **Actions** toolbar, select . The Microsegment Offer Ranking window appears.

Display 15.1 *Microsegment Offer Ranking*



4. In the **Number of ranked offers to produce** field, enter or select the number of best offers that you want to produce for each representative customer. The value that you select here is applicable to all microsegments in the target segment.
5. View the details of the microsegments.

   Microsegment Name
   displays the name of the microsegment.

Microsegment Description
displays a business-specific description of the microsegment.

Customer Count
displays the number of customers in the microsegment.

Representative Customer Count
displays the number of representative customers that is derived for the microsegment.

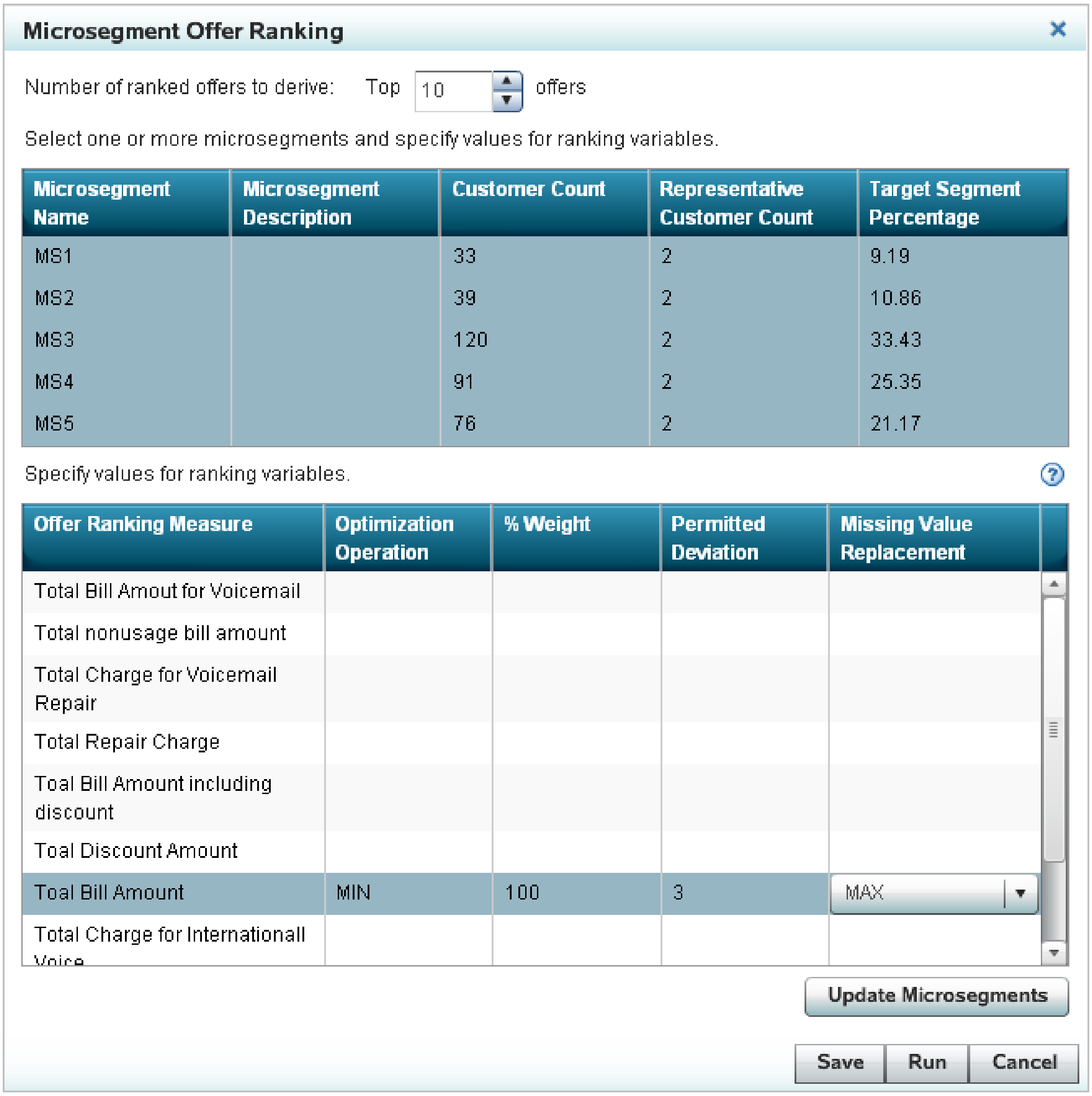
Target Segment Percentage
indicates the percentage of population that the microsegment forms in the target segment.

6. Select one or more microsegments from the list for which you want to configure the ranking variables.

   Note: You must configure the ranking variables for all microsegments. Otherwise, you cannot save the offer ranking setup.

7. Select the ranking variable that you want to consider for ranking the best offers and specify value for each column.

Display 15.2 *Microsegment Offer Ranking Parameters*



Note: The ranking procedure derives the best offers depending on how you configure the ranking variables. Therefore, make sure that you configure the correct set of variables.

8. Click **Update Microsegments** to assign the setup of the ranking variables to the selected microsegments.

   TIP Repeat steps from 3 to 8 to define ranking variables for other microsegments.

9. Click **Save**. The ranking variables that you configure for each microsegment are displayed in the **Microsegment Offer Ranking** pane.

Derive Best Offers in Ranked Order at Microsegment Level

After you configure the setup for ranking the best offers at the microsegment level, run the process that produces the best offers for representative customers of each microsegment.

To derive best offers for representative customers of each microsegment:

1. Select the **Workflow** tab.
2. In the **Workflow Diagram** pane, select **Microsegment Offer Ranking**.
3. On the **Actions** toolbar, select .
4. After the processing is complete, you can view the Offer Ranking Variable Summary report on the **Reports** tab. For details, see “Microsegment Offer Ranking Report” on page 124.

Configuring the Offer Ranking Setup at Customer Level

Overview

The **Customer Offer Ranking** workflow step produces best offers for all customers of each microsegment. In order to produce best offers for each customer of a microsegment, you can use the ranking setup that you have configured at the microsegment level. Alternatively, you can change a few parameters of the ranking setup, and then derive the best offers.

Rank Best Offers for a Customer Using the Default Setup

The ranking setup that you have configured at the microsegment level is by default available to you when you rank best offers at customer level. If you want to use the same setup, run the process for computing the ranked offers. To do so, on the **Workflow** tab, select **Customer Offer Ranking**. On the **Actions** toolbar, select .

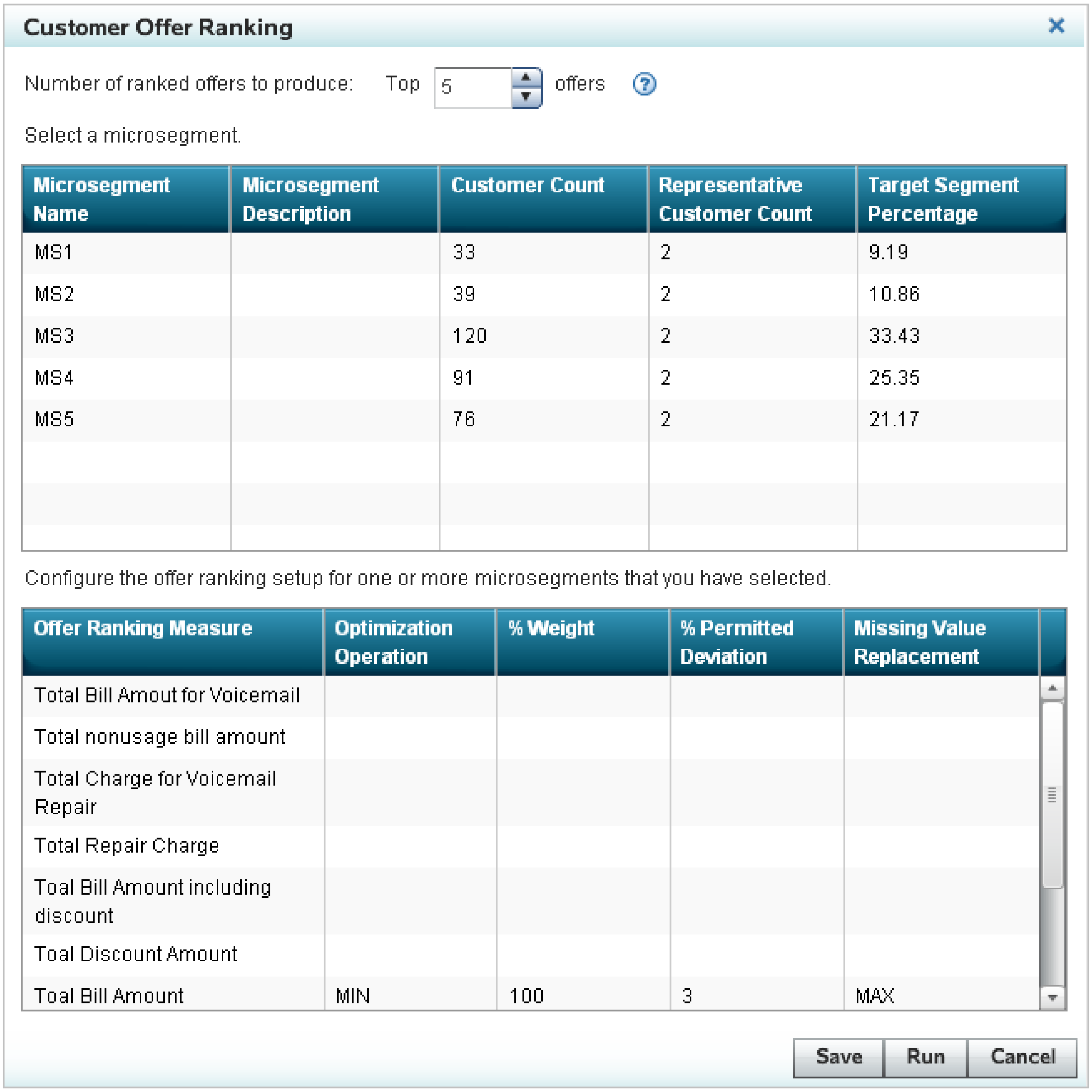
Change the Ranking Setup at Customer Level

When you produce best offers at customer level, you can change the number of best offers that you want to produce for each customer.

To configure the ranking setup at customer level:

1. Select the **Workflow** tab.
2. In the **Workflow Diagram** pane, select **Customer Offer Ranking**.
3. On the **Actions** toolbar, select . The Customer Offer Ranking window appears.

Display 15.3 *Customer Offer Ranking*



4. In the **Number of ranked offers to produce** field, enter or select the number of best offers that you want to compute for each customer of a microsegment. The same number of best offers is produced for all customers across all microsegments.

   Note: The number of best offers cannot exceed the number of best offers that you have set up at microsegment level.

5. (Optional) View the ranking variables that you have configured for each microsegment.

6. Click **Save**. The ranking variables that you have configured for each microsegment are displayed.

7. (Optional) If you want to produce the ranked offers, click **Run**.

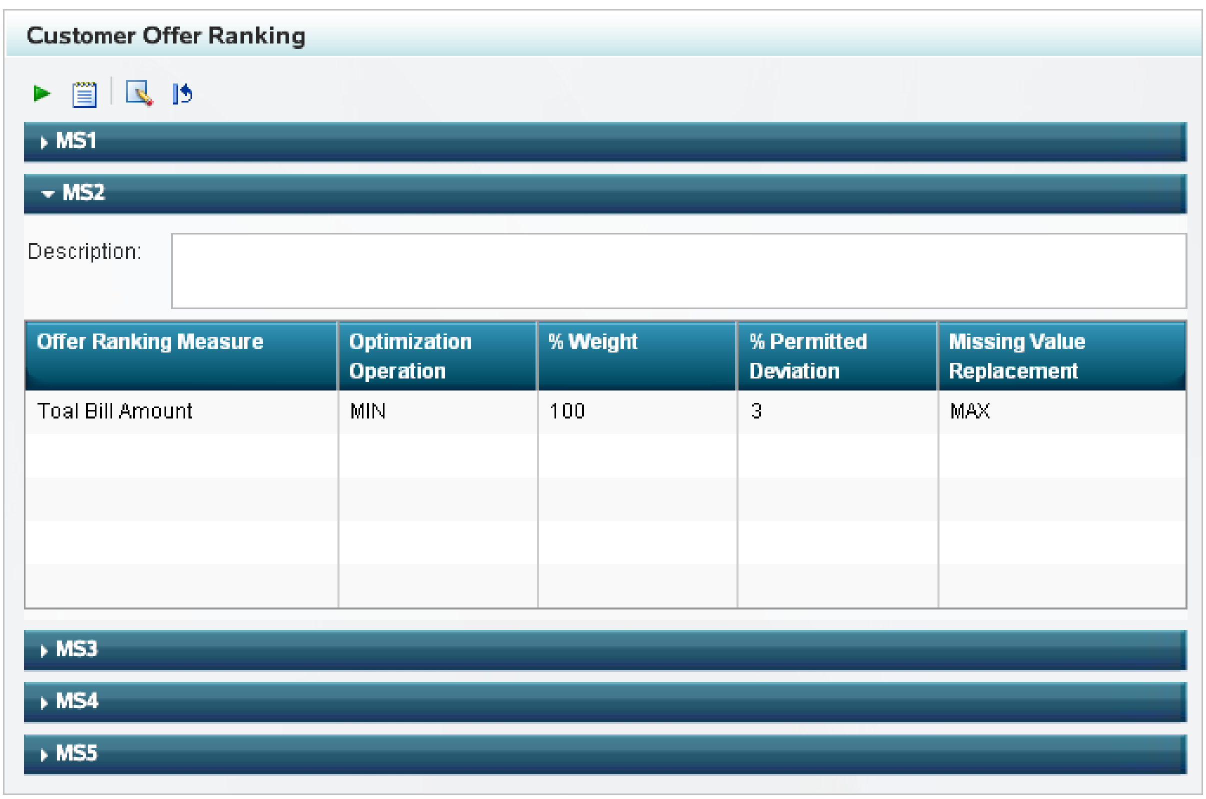
Derive Best Offers in Ranked Order for a Customer

Whether you use the default setup or configure the setup for ranking best offers at customer level, you have to run the process that produces best offers at customer level. In other words, best offers of each customer of the target segment are produced.

To produce best offers at customer level:

1. Select the **Workflow** tab.
2. In the **Workflow Diagram** pane, select **Customer Offer Ranking**.
3. On the **Actions** toolbar, select . When the workflow step runs successfully, the customer offer ranking summary is displayed.

Display 15.4 *Customer Offer Ranking Summary*



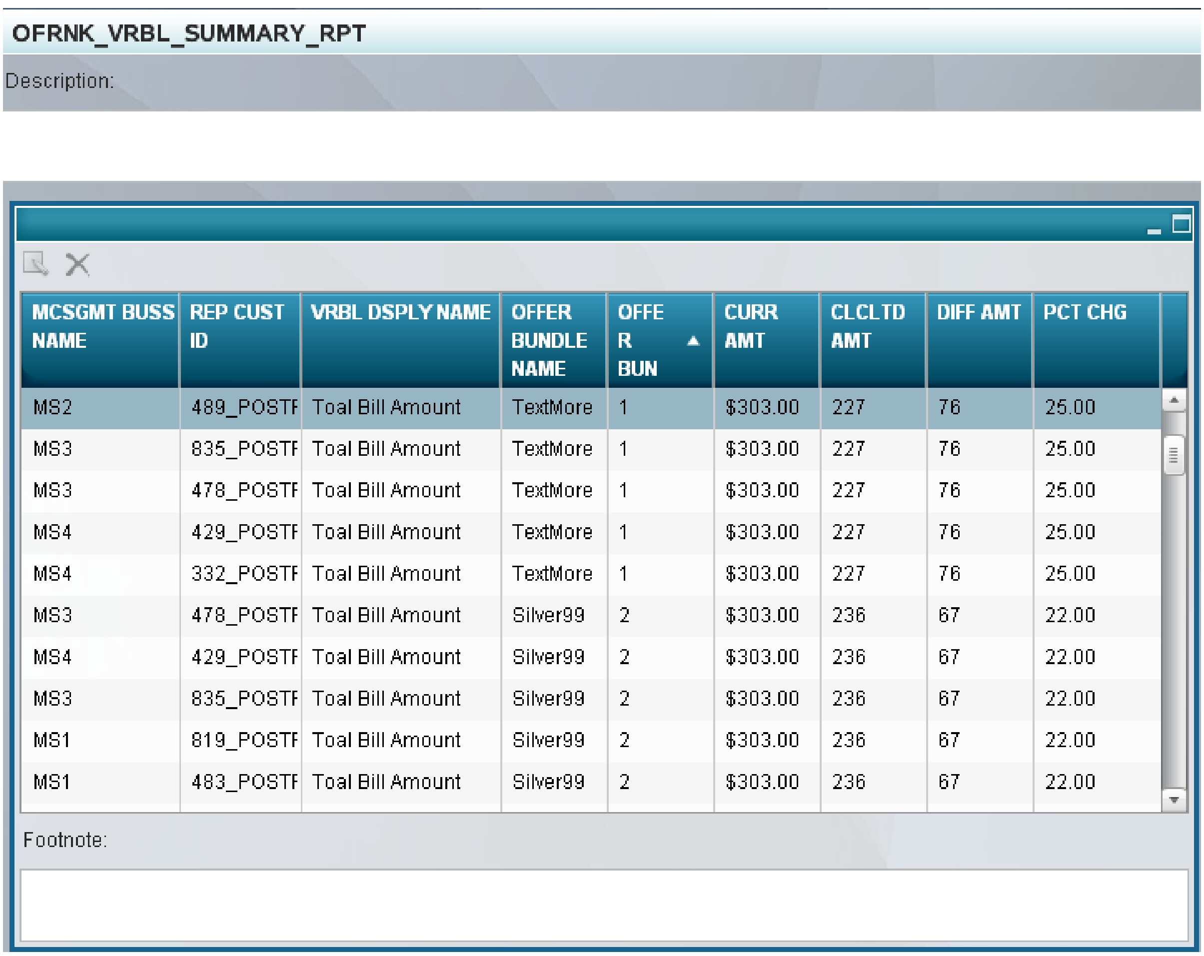
Microsegment Offer Ranking Report

After you run the **Microsegment Representation** workflow step, the Offer Ranking Variable Summary report is generated on the **Reports** tab. This report is also generated on the **Bookmarked Reports** tab when you run this workflow step in design or batch mode.

The Offer Ranking Variable Summary report gives the values of the ranking measures that you configure when you define the ranking setup at microsegment level. For each ranking measure, comparative values are generated for the current and the recommended best offer. For example, you configure the TOTAL BILL AMOUNT as the ranking measure. The Offer Ranking Variable summary gives the following information for each representative customer of a microsegment:

- current amount based on the current offer
- calculated amount based on the recommended best offer
- difference amount
- percentage change

Display 15.5 *Offer Ranking Variable Summary Report*



OFRNK_VRBL_SUMMARY_RPT

Description:

MCSGMT BUSS NAME	REP CUST ID	VRBL DSPLY NAME	OFFER BUNDLE NAME	OFFE R BUN	CURR AMT	CLCLTD AMT	DIFF AMT	PCT CHG
MS2	489_POSTF	Toal Bill Amount	TextMore	1	$303.00	227	76	25.00
MS3	835_POSTF	Toal Bill Amount	TextMore	1	$303.00	227	76	25.00
MS3	478_POSTF	Toal Bill Amount	TextMore	1	$303.00	227	76	25.00
MS4	429_POSTF	Toal Bill Amount	TextMore	1	$303.00	227	76	25.00
MS4	332_POSTF	Toal Bill Amount	TextMore	1	$303.00	227	76	25.00
MS3	478_POSTF	Toal Bill Amount	Silver99	2	$303.00	236	67	22.00
MS4	429_POSTF	Toal Bill Amount	Silver99	2	$303.00	236	67	22.00
MS3	835_POSTF	Toal Bill Amount	Silver99	2	$303.00	236	67	22.00
MS1	819_POSTF	Toal Bill Amount	Silver99	2	$303.00	236	67	22.00
MS1	483_POSTF	Toal Bill Amount	Silver99	2	$303.00	236	67	22.00

Footnote:

Revenue Impact Analysis Reports

Overview

The Revenue Impact Analysis reports are generated after you run the Customer Offer Ranking workflow step. These reports give the impact on the revenue of the communications service providers if the customers accept the best offers that are recommended to them.

The Revenue Impact Analysis reports are available at three levels.

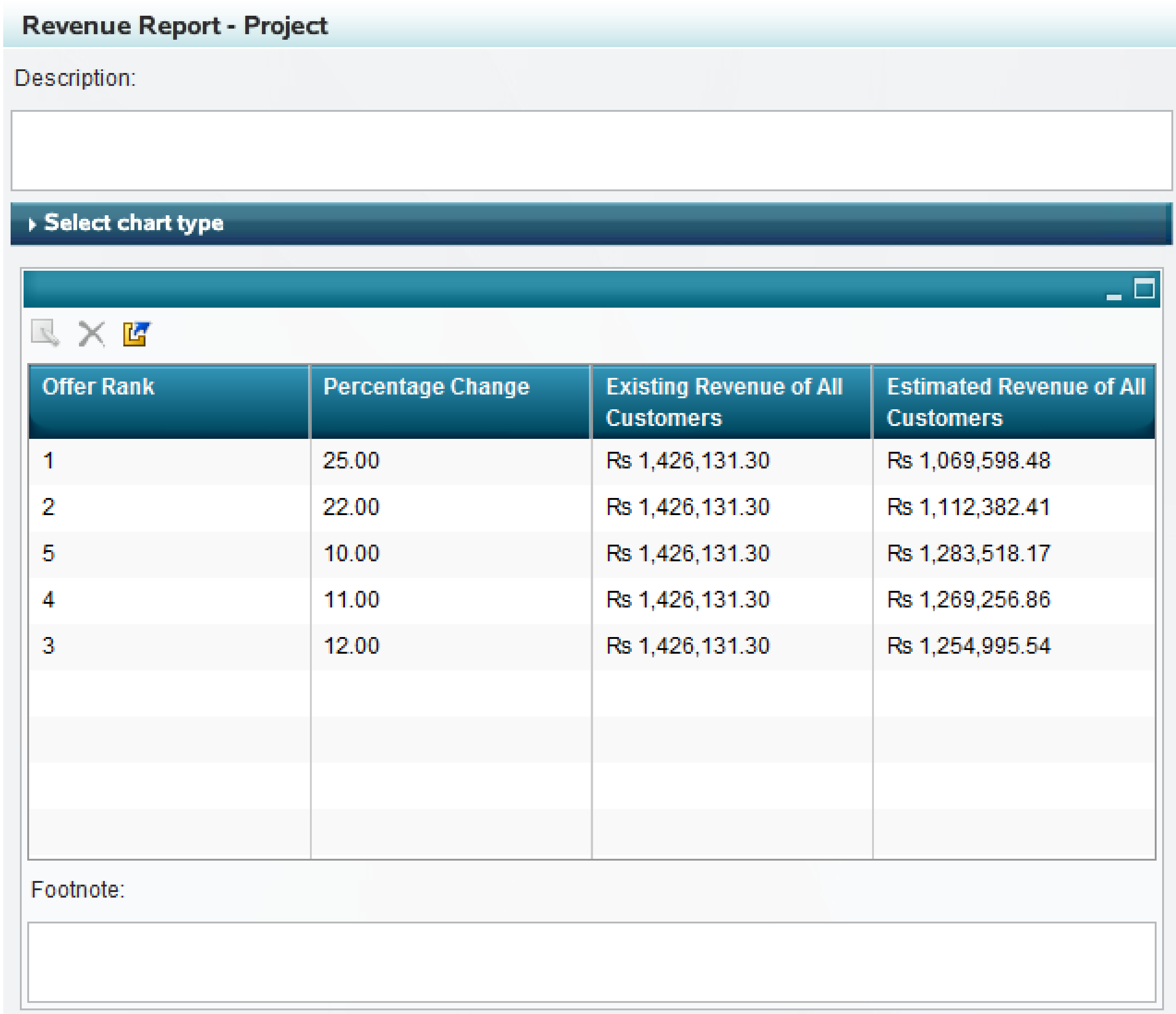
- project
- microsegment
- representative customer

These reports are generated based on the ranking setup that you have configured for the offer ranking workflow steps. Each report gives information about the percentage change in revenue. This value is the difference between the revenue that is earned before customers accept the best offer and the revenue that is earned after customers accept the best offer.

Revenue Report — Project

The Revenue Report – Project report projects the percentage change in revenue for each ranked offer that is derived for all customers of the target segment. The report gives a comparative analysis of the impact on the revenue depending on the ranked offer that all customers of the target segment select.

Display 15.6 *Revenue Report at Project Level*



Offer Rank	Percentage Change	Existing Revenue of All Customers	Estimated Revenue of All Customers
1	25.00	Rs 1,426,131.30	Rs 1,069,598.48
2	22.00	Rs 1,426,131.30	Rs 1,112,382.41
5	10.00	Rs 1,426,131.30	Rs 1,283,518.17
4	11.00	Rs 1,426,131.30	Rs 1,269,256.86
3	12.00	Rs 1,426,131.30	Rs 1,254,995.54

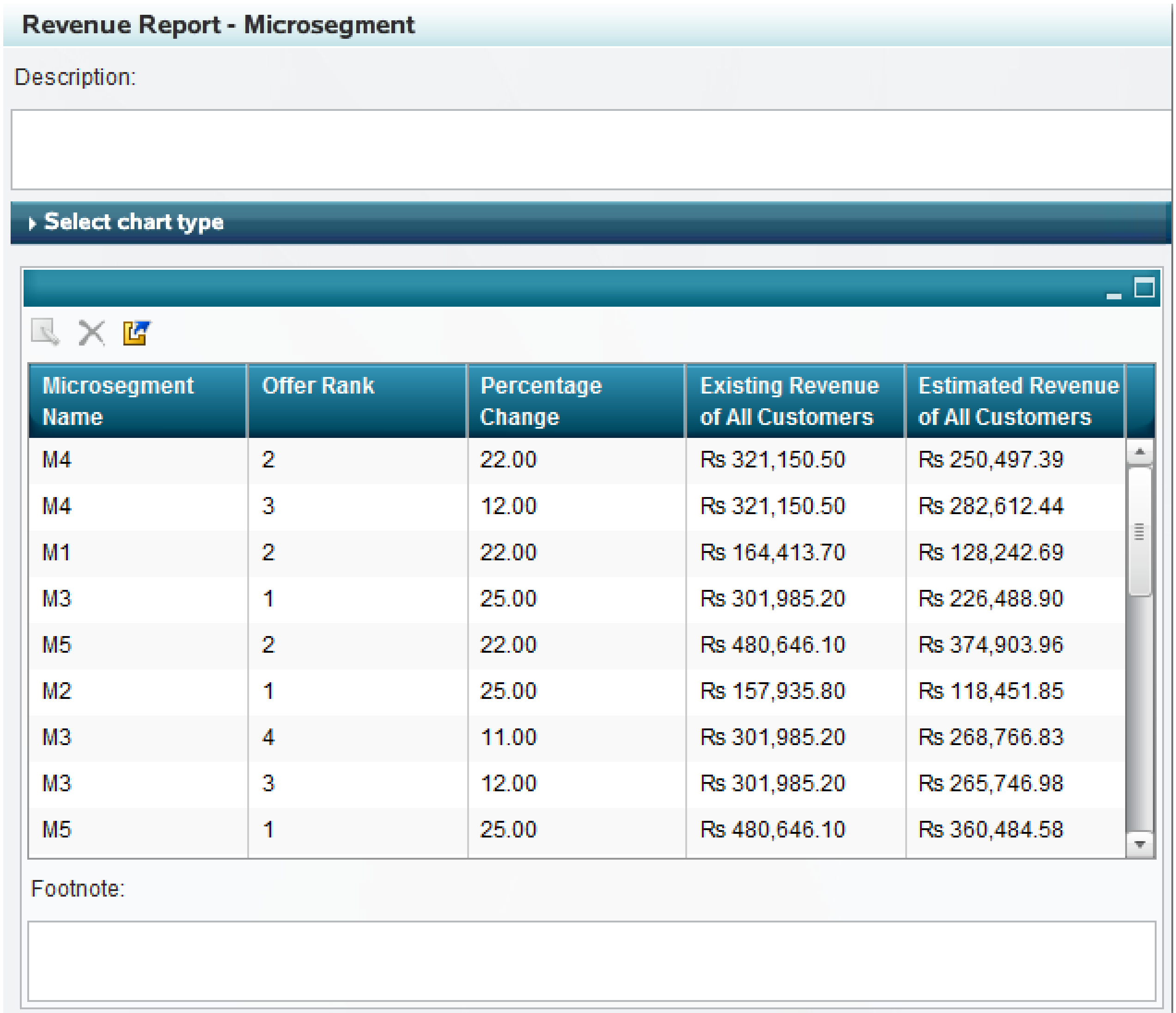
Example of report data

If all customers in the target segment select the best offer that is ranked third, then the percentage change in the revenue can be 12. However, if all the customers in the target segment select the best offer that is ranked first, then the percentage change in the revenue can be 25.

Revenue Report – Microsegment

The Revenue Report – Microsegment report projects the percentage change in revenue for each ranked offer of a microsegment. The report gives comparative analysis of the impact on the revenue depending on the ranked offer that all customers of the microsegment select.

Display 15.7 *Revenue Report at Microsegment Level*



Microsegment Name	Offer Rank	Percentage Change	Existing Revenue of All Customers	Estimated Revenue of All Customers
M4	2	22.00	Rs 321,150.50	Rs 250,497.39
M4	3	12.00	Rs 321,150.50	Rs 282,612.44
M1	2	22.00	Rs 164,413.70	Rs 128,242.69
M3	1	25.00	Rs 301,985.20	Rs 226,488.90
M5	2	22.00	Rs 480,646.10	Rs 374,903.96
M2	1	25.00	Rs 157,935.80	Rs 118,451.85
M3	4	11.00	Rs 301,985.20	Rs 268,766.83
M3	3	12.00	Rs 301,985.20	Rs 265,746.98
M5	1	25.00	Rs 480,646.10	Rs 360,484.58

Example of report data

For the microsegment M41, if all customers of this microsegment select the best offer that is ranked second, then the percentage change in the revenue can be 22. However, if all the customers in the microsegment select the best offer that is ranked third, then the percentage change in the revenue can be 12.

Revenue Report — Representative Customer

In the Revenue Report – Representative Customer report, the impact of revenue is projected for each ranked offer that is recommended to a representative customer of a microsegment. The report gives comparative analysis of the impact on the revenue depending on the ranked offer that all customers that are related to the representative customer select.

Display 15.8 *Revenue Report at Representative Customer Level*

Revenue Report - Representative Customer

Description:

Select chart type

Microsegment Name	Representative Customer ID	Offer Bundle Name	Offer Rank	Percentage Change	Existing Revenue of All Customers	Estimated Revenue of All Customers
M4	332_POSTPAID_	TextMore	1	25.00	Rs 321,150.50	Rs 240,862.8
M5	551_POSTPAID_	Business30	5	10.00	Rs 480,646.10	Rs 432,581.4
M1	61_POSTPAID_C	Golden99	4	11.00	Rs 164,413.70	Rs 146,328.1
M5	551_POSTPAID_	Silver99	2	22.00	Rs 480,646.10	Rs 374,903.9
M1	61_POSTPAID_C	Business30	5	10.00	Rs 164,413.70	Rs 147,972.3
M2	6_POSTPAID_CU	Business30	5	10.00	Rs 157,935.80	Rs 142,142.2
M3	192_POSTPAID_	TextMore	1	25.00	Rs 301,985.20	Rs 226,488.9
M4	332_POSTPAID_	TeenUnlim	3	12.00	Rs 321,150.50	Rs 282,612.4

Footnote:

Example of report data

Consider the 61_POSTPAID_CUST representative customer who belongs to the microsegment M1. If all customers that are related to the 61_POSTPAID_CUST representative customer select the best offer that is ranked fourth, then the percentage change in the revenue can be 11. However, if the customers select the best offer that is ranked fifth, then the percentage change in the revenue can be 10.

Chapter 16
Generating Workflow Reports

Organizing Workflow Reports

In order to evaluate the results of a workflow step, you can generate multiple reports at various stages of your project workflow. Based on these reports, you can also decide whether you should proceed with the next workflow step or configure the current workflow step again.

If you manage and organize your reports for each project in a structured manner, you can easily retrieve the required report. SAS Offer Optimization for Communications enables you to organize your reports by defining report categories and report groups. For each workflow step, report categories are predefined. You can define report groups for a combination of a workflow step and a report category. For example, for the Customer Representation workflow step, the following report categories can be predefined:

- Analysis reports
- Strategy reports

For the analysis reports category, you can further define a report group named cohesiveness of microsegments. For the strategy reports category, you define a report group named comparison of representative customers.

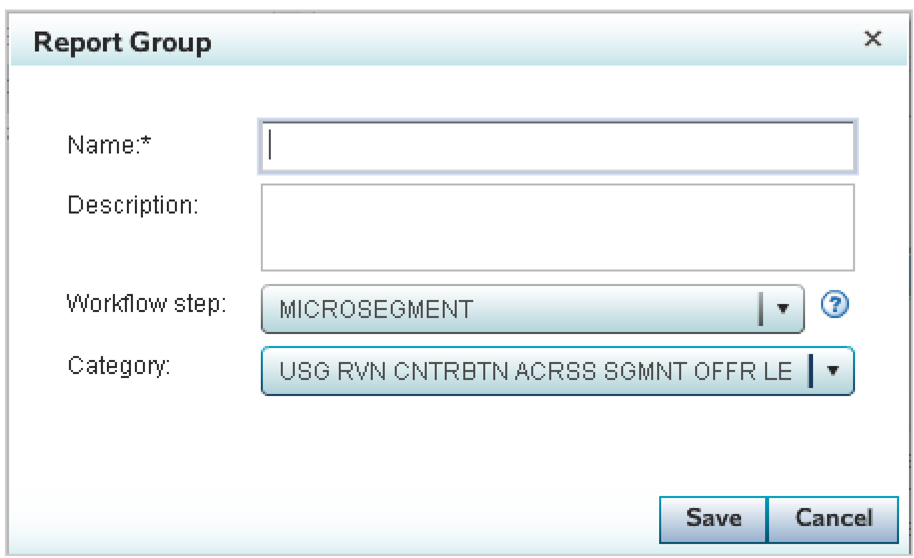
Create a Report Group

You can define multiple report groups for a combination of a project, a workflow step, and a report category. For each report group, you can further define various types of reports.

To create a report group:

1. In the **Projects** section, select the project for which you define report groups.
2. In the navigation pane, select the **Reports** tab.
3. On the toolbar, select . The Report Group window appears.

   Display 16.1 *Report Group Window*

4. Enter the following details about the report group:
   a. In the **Name** field, enter the name of the report group. This name appears in the reporting structure that is displayed in the **Report Groups** pane.
   b. In the **Description** field, enter a short description of the reports that will be categorized under this report group.
   c. From the **Workflow step** list, select the workflow step for which you are defining the report group.
   d. From the **Category** list, select the category for which you want to define the report group.
5. Click **Save**.

   TIP If you do not want to define the report group, click **Cancel** . The window closes, and you will lose the information that you have entered.

Deleting Report Structures

Overview

You can delete the entire structure that you have created for organizing your project reports. Alternatively, you can delete only a certain level of the report structure. You can delete the report structure at the following levels:

Workflow step
: deletes all the report groups from all the report categories.

Report category
: deletes the report groups that are defined for the selected category.

Report group
: deletes a particular report group.

Delete All Report Groups of a Workflow Step

To delete all reports groups of a workflow step:

1. Select the project for which you want to delete the report groups.
2. In the object details pane, select the **Reports** tab.
3. In the **Report Groups** pane, select the workflow step for which you want to delete the report group.
4. On the toolbar, click . All report groups that are defined for various report categories are deleted.

Delete All Report Groups of a Report Category

To delete all reports groups of a report category:

1. Select the project for which you want to delete the report groups.
2. In the object details pane, select the **Reports** tab.
3. In the **Report Groups** pane, select the workflow step for which you want to delete the report group.
4. Expand the list items until you see the report categories that are defined for the workflow step.
5. Select the report category from the list.
6. On the toolbar, click . All report groups that are defined for the selected report category are deleted.

Delete a Report Group

To delete a report group:

1. Select the project for which you want to delete a report group.
2. In the object details pane, select the **Reports** tab.
3. In the **Report Groups** pane, select the workflow step for which you want to delete the report group.
4. Expand the list items until you see the report categories that are defined for the workflow step.
5. Select the report category and expand the list items that are defined for the report category.
6. Select the report group that you want to delete.
7. On the toolbar, select . The report group that you have selected, is deleted.

   Note: If you have added a bookmark for this report group, it will be automatically deleted from the **Bookmarked Reports** tab.

Bookmark a Report Group

The bookmark report group feature automates the process of generating reports for each workflow step of a project. This feature automatically generates the reports that you have bookmarked when you run a workflow step in design mode or batch mode.

After you bookmark a report group, you cannot perform any of the following tasks:

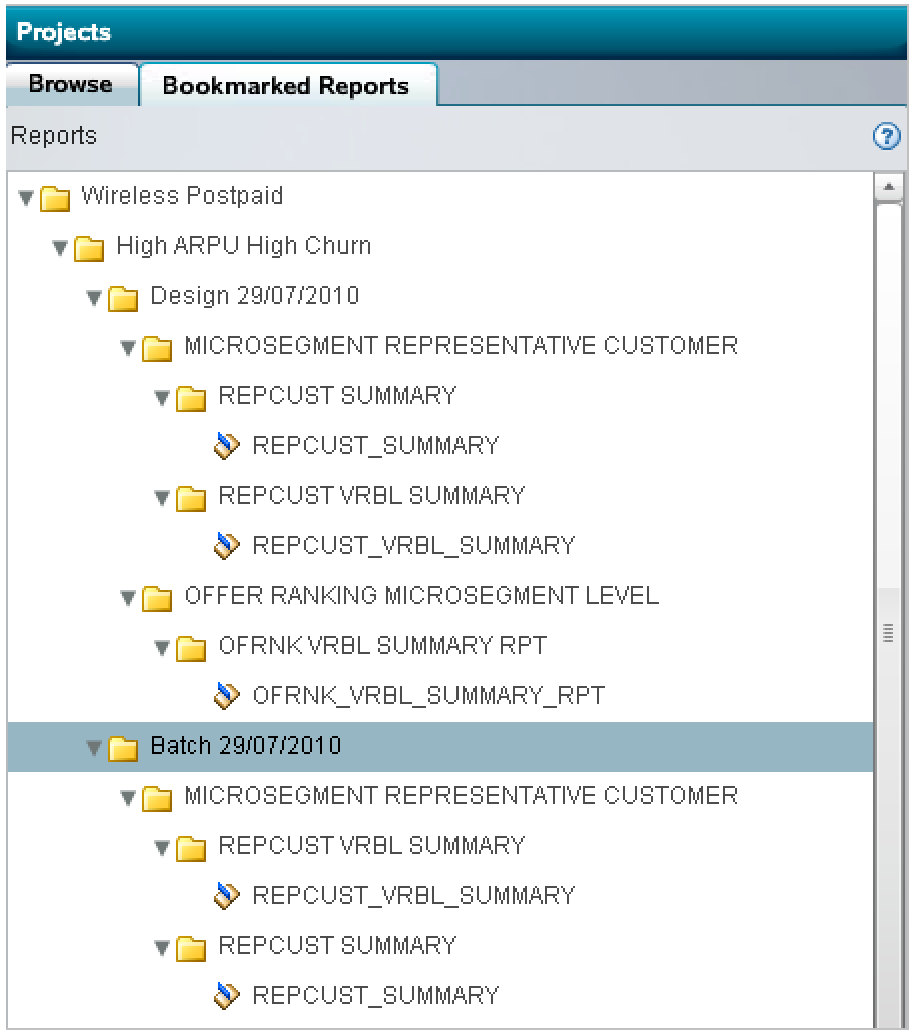
- Add a report to the report group.
- Edit a report that belongs to the report group.
- Delete a report that belongs to the report group.

To bookmark a report group:

1. In the navigation pane, from the **My Projects** list, select a project for which you want to bookmark reports.
2. In the object details pane, select the **Reports** tab.
3. From the **Reports** list, expand the items below the workflow step and report category until you see the report group that you want to bookmark.
4. Select the report group, and then on the toolbar select . The report group that you select is added to the **Bookmarked Reports** tab in the **Projects** section along with the parent report structure in the following order:
   - Business group name
   - Project name
   - Run ID of the project in batch or design mode
   - Workflow step
   - Report category
   - Report group

   .

Display 16.2 *Bookmarked Reports Structure*



Generating Workflow Reports

Overview of Report Types

For each report group, you can define multiple reports. You can represent the data in a report either graphically or in the form of a data table. SAS Offer Optimization for Communications enables you to represent data in the following two graphical formats:

- pie chart
- vertical bar chart

These reports show the information about various workflow steps for the current run of the project.

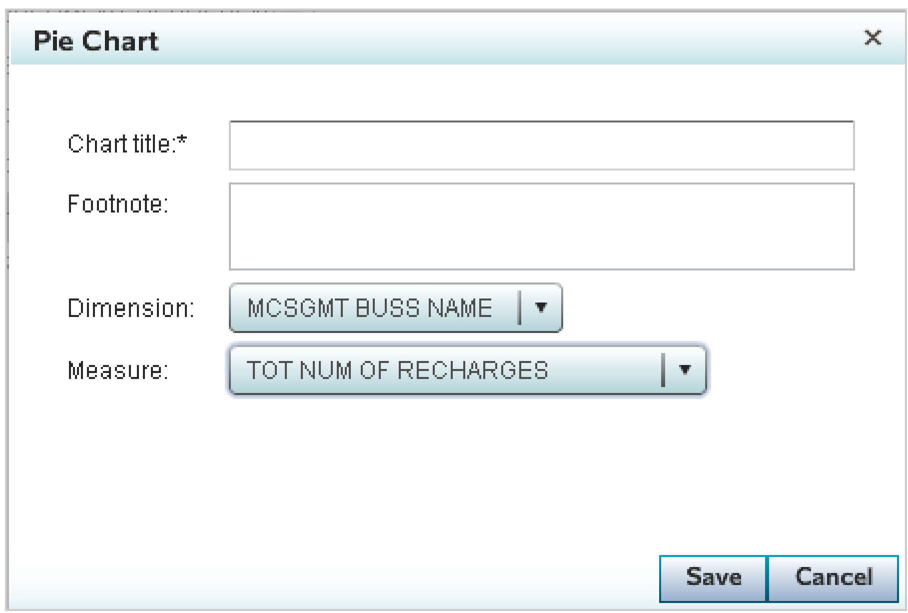
Create a Pie Chart

A pie chart displays your data in the form of a disc that is divided into slices by radial lines. Each slice represents the relative contribution of each part to the whole.

To define a pie chart:

1. Select the project for which you want to define a pie chart.
2. In the object details pane, select the **Reports** tab.
3. In the **Report Groups** pane, select the report group for which you want to define a report.
4. Expand the **Select report type** list.
5. Select  from the report type list. The Pie Chart window appears.

Display 16.3 *Pie Chart Window*



6. Enter the following details:

Title
Enter a title for the report. The title will be displayed at the top of the report.

Footnote
Enter notes that you want to appear at the bottom of the report. For example, you can enter information about the currency that is used for representing amounts.

Dimension
Select the categorical variable that will be represented using the pie chart. For example, variables such as Time, Geography, Offer Payment mode, and Customer type are dimensions.

Measure
Select the value variable that will be represented by each slice of the pie chart. For example, variables such as total usage charges, total voice call charges, and total message charges are measures.

7. Click **Save**.

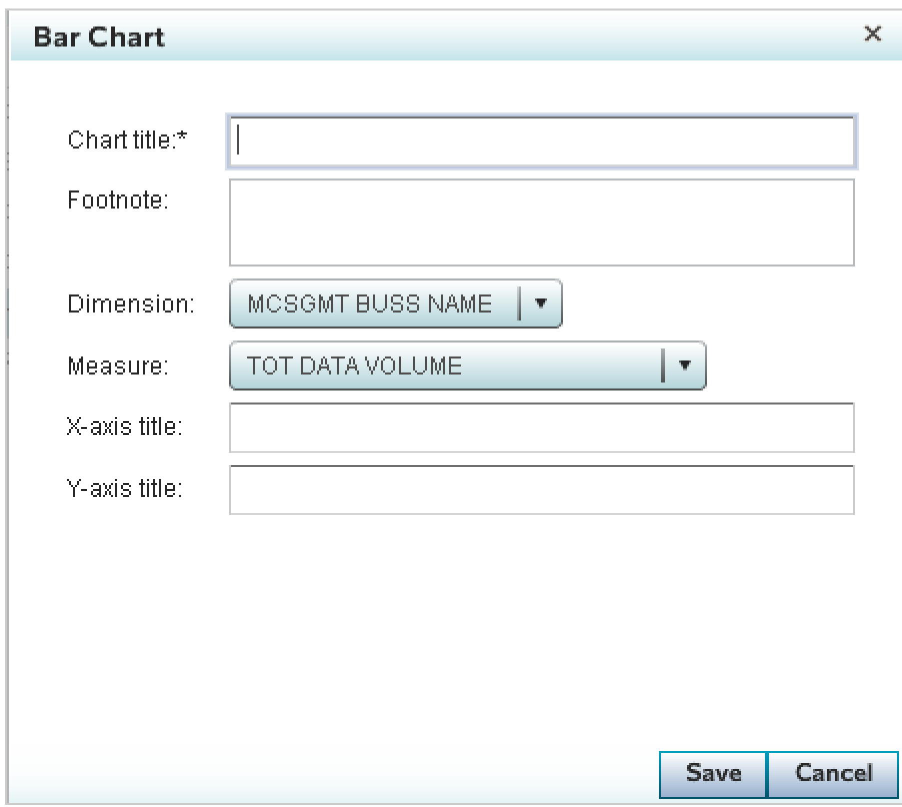
Create a Bar Chart

A bar chart represents data in the form of a grid and some vertical bars. Each column represents quantitative data.

To generate a bar chart:

1. Select the project for which you want to define a bar chart.
2. In the object details pane, select the **Reports** tab.
3. In the **Report Groups** pane, select the report group for which you want to define a report.
4. Expand the **Select report type** list.
5. Select  from the report type list. The Bar Chart window appears.

Display 16.4 *Bar Chart Window*



6. Enter the following details:

Title
Enter a title for the report. The title will be displayed at the top of the report.

Footnote
Enter notes that you want to appear at the bottom of the report. For example, you can enter information about the currency that is used for representing amounts.

Dimension
Select the variable that will be represented on the horizontal (X-axis) axis. Variables such as Time, Geography, and Customer type are examples of dimensions.

Measure
Select the variable that will be represented on the vertical (Y-axis) axis. This variable is the quantitative variable. Variables such as total usage charges, total voice call charges, and total number of churned customers are examples of measures.

X— axis title
Enter a title that you want to display for the category axis. This title will be displayed along the horizontal (X) axis.

Y— axis title
Enter a title that you want to display for the value axis. This title will be displayed along the vertical (Y) axis.

Show legend
Select the check box if you want to display the legend for the graph.

7. Click **Save**.

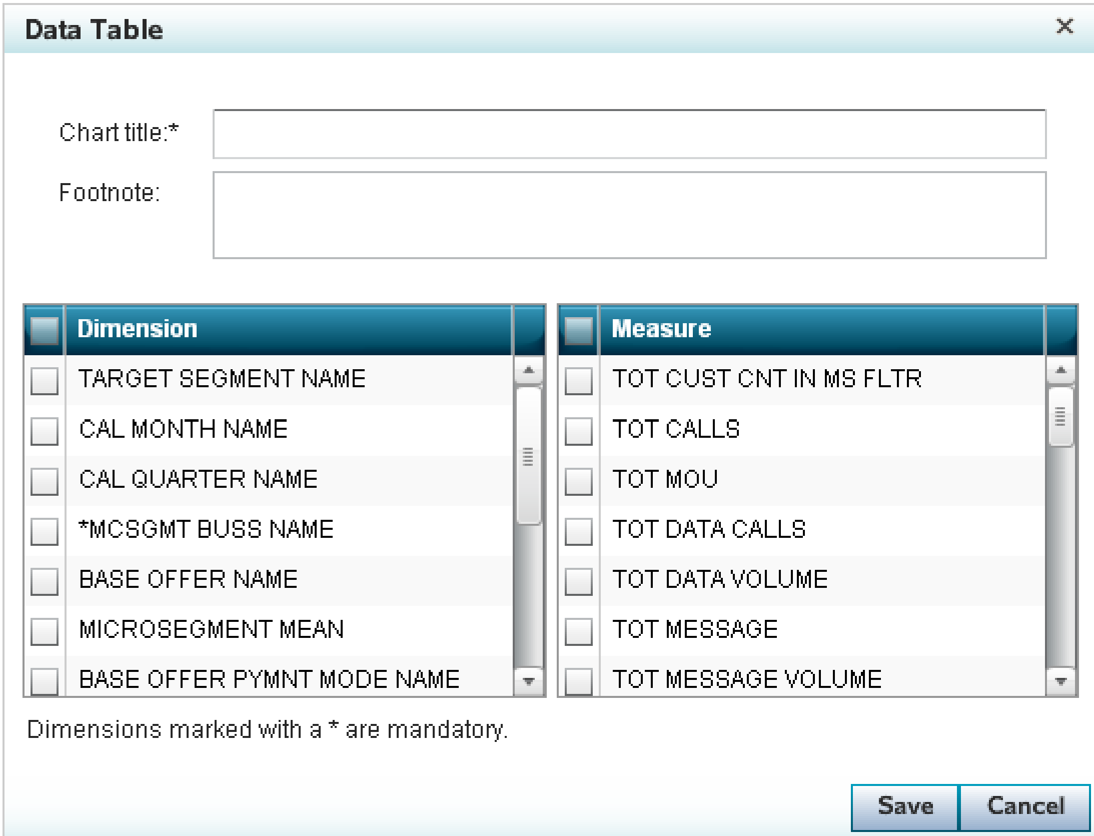
Create a Data Table

A data table displays data in the form of rows and columns.

To generate a data table:

1. Select the project for which you want to define a pie chart.
2. In the object details pane, select the **Reports** tab.
3. In the **Report Groups** pane, select the report group for which you want to define a report.
4. Expand the **Select report type** list.
5. Select  from the report type list. The Data Table window appears.

Display 16.5 *Data Table Window*



6. Enter the following details:

Title
Enter a title for the report. The title will be displayed at the top of the report.

Footnote
Enter notes that you want to appear at the bottom of the report. For example, you can enter information about the currency that is used for representing amount values.

Dimension
Select the category variables that are to be displayed in the data table. You have to select at least one mandatory variable from the list. Variables such as Time, Geography, and Customer type are examples of dimensions.

Note: When you select more than one dimension, information is displayed for each unique combination of the dimension values. For example, you select the microsegment name and the payment mode as the dimensions. If there are two microsegments (MS1 and MS2), and two payment modes (Prepaid and Postpaid) then the data table will display information for each of the following combinations.

- MS1 Prepaid
- MS1 Postpaid
- MS2 Prepaid
- MS2 Prepaid

Measure
Select the value variables that are to be displayed in the data table. Variables such as total usage charges, total voice call charges, and total number of churned customers are examples of measures.

7. Click **Save**.

Managing Workflow Reports

Overview

You can edit, delete, or export a report. You can perform these tasks using the respective options that are available for each report.

Edit a Report

You cannot edit a report if you have added a bookmark for the report group to which this report belongs.

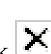
To edit a report:

1. Select the project for which you want to edit a report.
2. In the object details pane, select the **Reports** tab.
3. From the **Report Groups** list, select the report group to which the report belongs.
4. Select the report that you want to edit.
5. Click . The window for modifying the report attributes appears.
6. Make changes according to your requirements.
7. Click **Save**.

Delete a Report

You cannot delete a report if you have added a bookmark for the report group to which this report belongs.

To delete a report:

1. Select the project for which you want to edit a report.
2. In the object details pane, select the **Reports** tab.
3. From the **Report Groups** list, select the report group to which the report belongs.
4. Select the report that you want to delete.
5. Click .

Export a Report

You can export the report data to a comma-separated (.csv) file. This feature will enable you to import the report data into other applications such as Microsoft Excel and perform further analysis of the data.

To export a report:

1. Select the project for which you want to export a report.
2. In the object details pane, select the **Reports** tab.
3. From the **Report Groups** list, select the report group to which the report belongs.
4. Select the report whose data you want to export.
5. Click .
6. Select the location in which you want to save the .csv file and type a suitable filename.

Note: Similarly, you can also export data of reports that are available on the **Bookmarked Reports** tab.

Changing the Zoom Level for a Report

Reports that belong to a particular group are displayed in tiles. You can minimize, maximize, or reset the zoom level of the tiles.

For each report, the zoom levels are displayed as icons in the right corner of the tile.

Table 16.1 *Zoom Options for Reports*

Icon	Purpose
	minimizes the report tile.
	maximizes the report tile.
	resets the report tile to its original size.

Part 4

Business Reports

Chapter 17

Working with Business Reports

About Business Reports

SAS Offer Optimization for Communications provides business reports for the following subject areas:

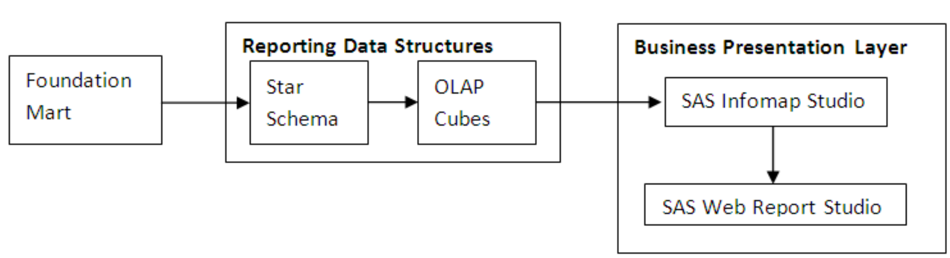
- Business groups
- Customer churn
- Customer segmentation
- Cross-sell and up-sell
- Performance of SAS Offer Optimization for Communications

For each subject area, you can view a range of prebuilt reports. These reports give detailed analysis of each subject area and identify trends, opportunities, and threats for your business. Based on this information, you can plan and implement your business strategies and make quick decisions.

Reporting Data Flow

The following diagram illustrates how data flows across various reporting components for generating and viewing reports in SAS Web Report Studio.

Figure 17.1 *Business Reporting Data Flow*



Business reporting includes the following components:

Foundation Mart
: stores data extracted from external source systems. This data is used by the reporting data structures.

Reporting Data Structures
- Star Schema
  contains dimensions such as Time, Location, Customer, and Channel and fact tables.
- OLAP Cubes
  a logical set of data that is organized and structured in a hierarchical and multidimensional arrangement.

Business Presentation Layer
- SAS Information Map Studio
  creates and maintains information maps that are metadata definitions of enterprise data. Provides a basis for querying and reporting
- SAS Web Report Studio
  enables users to publish reports from the SAS Offer Optimization for Communications data.

Data Structures for Business Reports

Here is the sequence in which data flows before you view business reports in SAS Web Report Studio.

1. Star schema
2. OLAP cubes
3. Information maps

The subsequent sections of this chapter give information about these reporting data structures.

Star Schema: Customer Bill Monthly Summary

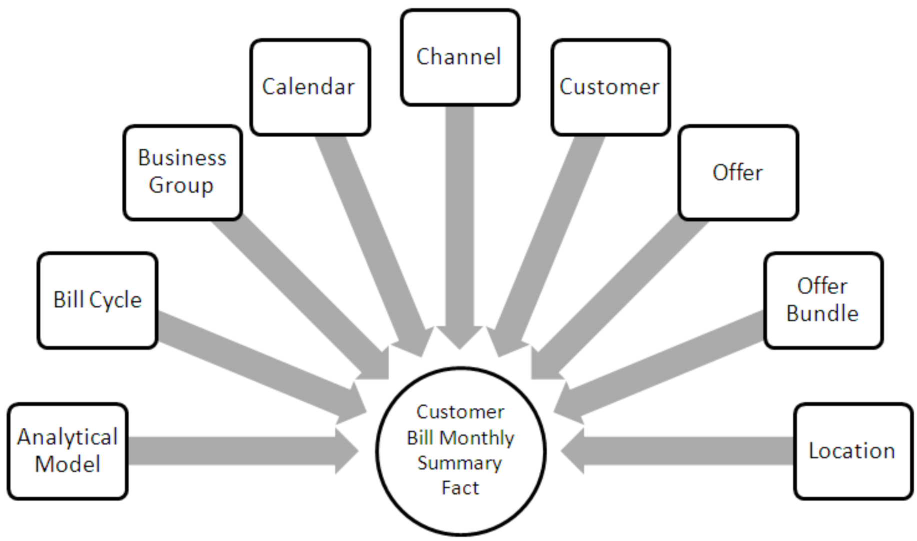
Overview

The Customer Bill Monthly Summary star schema stores information about usage charges, bill revenue, and counts of major event types such as number of voice calls and number of messages. The information is captured based on service categories and number of complaints and inquiries that are made during a certain period. The data stored in the Customer Bill Monthly star is for monthly bill cycles. Moreover, this star captures data of only postpaid customers. The Customer Bill Monthly Summary star also classifies a customer as new, acquired, existing, or churned.

Fact and Dimensions

The following diagram illustrates the fact and dimensions of the Customer Bill Monthly Summary star schema.

Figure 17.2 *Customer Bill Monthly Summary Fact*



Cube Structure: CFD_CUST_BILL_MTH_SUMMARY_CUBE

Input Table

The CUST_BILL_MTH_SUMMARY_F fact is the input table for the CFD_CUST_BILL_MTH_SUMMARY_CUBE cube.

Dimensions

The following table lists the dimensions, hierarchies, and levels of the CFD_CUST_BILL_MTH_SUMMARY_CUBE cube. For details, see “Category Variables” on page 301.

Table 17.1 *Dimensions, Hierarchies, and Levels of CFD_CUST_BILL_MTH_SUMMARY_CUBE*

Dimension	Hierarchy	Level
Offer	Offer Customer Type	OFFER_CUST_TYPE_CD
		OFFER_NM
Offer	Offer Payment Mode	OFFER_PYMNT_MODE_CD
		OFFER_NM

Dimension	Hierarchy	Level
Offer	Offer Segment	OFFER_SEGMENT_CD
		OFFER_NM
Customer Geography	Customer Geography - State	COUNTRY_CD
		REGION_CD
		STATE_CD
		CITY_CD
Customer Geography	Customer Geography - County	COUNTRY_CD
		REGION_CD
		STATE_CD
		CITY_CD
Sales Channel Base Offer	Sales Channel Base Offer	CHANNEL_TYPE_CD
		CHANNEL_NM
Business Group	Business Group	BUSINESS_GROUP_NM
Analytical Model - Segmentation	Analytical Model - Segmentation	ANALYTICAL_MODEL_NM_SEGMENTATION
Analytical Model - Churn	Analytical Model - Churn	ANALYTICAL_MODEL_NM_CHURN
Customer - Age Band	Customer - Age Band	AGE_BAND_CD
Customer - Tenure on Base Offer	Customer - Tenure on Base Offer	TENURE_ON_BASE_OFFER_IN_DAYS
Customer - Tenure on Offer Bundle	Customer - Tenure on Offer Bundle	TENURE_ON_OFFER_BUNDLE_IN_DAYS
Customer - Tenure on Network	Customer - Tenure on Network	TENURE_ON_NETWORK_IN_DAYS
ARPU Band - Gross Usage	ARPU Band - Gross Usage	GROSS_USG_ARPU
ARPU Band - Bill	ARPU Band - Bill	BILL_ARPU
Customer - Churn Band	Customer - Churn Band	CHURN_BAND_CD
Customer - Profitability Band	Customer - Profitability Band	PROFITABILITY_BAND_CD

Dimension	Hierarchy	Level
Customer - Marital status	Customer - Marital status	ND_CUST_MARITAL_STATUS_CD
Customer - Gender	Customer - Gender	IND_CUST_GENDER_CD
Customer - Ethnicity	Customer - Ethnicity	IND_CUST_ETHNICITY_CD
Customer - Occupation	Customer - Occupation	ND_CUST_STD_OCCUPATION_CD
Customer - Income Group	Customer - Income Group	IND_CUST_INCOME_RANGE_CD
Customer - Business Segment	Customer - Business Segment	IND_CUST_SEGMENT_TYPE_CD
Customer Type	Customer Type	CUST_TYPE_CD
Customer Status	Customer Status	CUST_STATUS_CD
		CUST_STATUS_CHNG_RSN_CD
Customer - Education group	Customer - Education group	IND_CUST_EDUCATION_LEVEL_CD
Offer Bundle	Offer Bundle	OFFER_BUNDLE_NM
Bill Cycle	Bill Cycle	BILL_CYCLE_NM

Measures

The following table lists the measures of the CFD_CUST_BILL_MTH_SUMMARY_CUBE cube. For details, see "Analysis Variables" on page 305.

Table 17.2 *Measures of CFD_CUST_BILL_MTH_SUMMARY_CUBE*

Name	Statistics	Description
BILL_NET_PAYBALE_AMTSUM	SUM	Sum of BILL_NET_PAYBALE_AMT
VOL_OF_MESSAGESSUM	SUM	Sum of VOL_OF_MESSAGES
VOL_OF_DATASUM	SUM	Sum of VOL_OF_DATA
VOICE_USG_ARPUAVG	AVG	Average VOICE_USG_ARPU
TOT_NUM_OF_PYMNTSUM	SUM	Sum of TOT_NUM_OF_PYMNT

Name	Statistics	Description
TOT_NUM_OF_INQUIRIESSUM	SUM	Sum of TOT_NUM_OF_INQUIRIES
TOT_NUM_OF_COMPLAINTSSUM	SUM	Sum of TOT_NUM_OF_COMPLAINTS
TOT_NUM_OF_BILLING_INQUIRIESSUM	SUM	Sum of TOT_NUM_OF_BILLING_INQUIRIES
TOT_NUM_OF_BILLING_COMPLAINTSSUM	SUM	Sum of TOT_NUM_OF_BILLING_COMPLAINTS
TOT_AMT_OF_PYMNTSUM	SUM	Sum of TOT_AMT_OF_PYMNT
TENURE_ON_OFFER_BUNDLE_IN_DAYAVG	AVG	Average TENURE_ON_OFFER_BUNDLE_IN_DAYS
TENURE_ON_NETWORK_IN_DAYSAVG	AVG	Average TENURE_ON_NETWORK_IN_DAYS
TENURE_ON_BASE_OFFER_IN_DAYSAVG	AVG	Average TENURE_ON_BASE_OFFER_IN_DAYS
REVENUE_AMT_FOR_VOICESUM	SUM	Sum of REVENUE_AMT_FOR_VOICE
REVENUE_AMT_FOR_MESSAGESSUM	SUM	Sum of REVENUE_AMT_FOR_MESSAGES
REVENUE_AMT_FOR_DATASUM	SUM	Sum of REVENUE_AMT_FOR_DATA
NUM_OF_SESSIONSSUM	SUM	Sum of NUM_OF_SESSIONS
NUM_OF_MESSAGESSUM	SUM	Sum of NUM_OF_MESSAGES
NUM_OF_CALLSSUM	SUM	Sum of NUM_OF_CALLS
NEW_CUST_NUM_INDSUM	SUM	Sum of NEW_CUST_NUM_IND
NEW_BPP_OFFER_AVAILED_NUM_INDSUM	SUM	Sum of NEW_BPP_OFFER_AVAILED_NUM_IND
MESSAGE_USG_ARPUAVG	AVG	Average MESSAGE_USG_ARPU
GROSS_USG_ARPUAVG	AVG	Average GROSS_USG_ARPU

Name	Statistics	Description
GROSS_REVENUE_AMTSUM	SUM	Sum of GROSS_REVENUE_AMT
EXISTING_CUST_NUM_INDSUM	SUM	Sum of EXISTING_CUST_NUM_IND
EXISTING_BPP_OFFER_NUM_INDSUM	SUM	Sum of EXISTING_BPP_OFFER_NUM_IND
DURATION_OF_SESSIONSSUM	SUM	Sum of DURATION_OF_SESSIONS
DURATION_OF_CALLSSUM	SUM	Sum of DURATION_OF_CALLS
DATA_USG_ARPUAVG	AVG	Average DATA_USG_ARPU
CHURNED_CUST_NUM_INDSUM	SUM	Sum of CHURNED_CUST_NUM_IND
BPP_CONTACTED_NUM_INDSUM	SUM	Sum of BPP_CONTACTED_NUM_IND
BILL_NON_USG_RCRNG_AMTSUM	SUM	Sum of BILL_NON_USG_RCRNG_AMT
BILL_NON_USG_ONE_TIME_AMTSUM	SUM	Sum of BILL_NON_USG_ONE_TIME_AMT
BILL_USG_AMTSUM	SUM	Sum of BILL_USG_AMT
BILL_DISCOUNT_AMTSUM	SUM	Sum of BILL_DISCOUNT_AMT
BILL_ARPUAVG	AVG	Average BILL_ARPU
BILL_DISCOUNT_AMTAVG	AVG	Average BILL_DISCOUNT_AMT
BILL_NON_USG_ONE_TIME_AMTAVG	AVG	Average BILL_NON_USG_ONE_TIME_AMT
BILL_NON_USG_RCRNG_AMTAVG	AVG	Average BILL_NON_USG_RCRNG_AMT
DURATION_OF_CALLSAVG	AVG	Average DURATION_OF_CALLS
DURATION_OF_SESSIONSAVG	AVG	Average DURATION_OF_SESSIONS
GROSS_REVENUE_AMTAVG	AVG	Average GROSS_REVENUE_AMT
NUM_OF_CALLSAVG	AVG	Average NUM_OF_CALLS
NUM_OF_MESSAGESAVG	AVG	Average NUM_OF_MESSAGES

Name	Statistics	Description
NUM_OF_SESSIONSAVG	AVG	Average NUM_OF_SESSIONS
REVENUE_AMT_FOR_DATA AVG	AVG	Average REVENUE_AMT_FOR_DATA
REVENUE_AMT_FOR_MESS AGESAVG	AVG	Average REVENUE_AMT_FOR_MESSAGES
REVENUE_AMT_FOR_VOIC EAVG	AVG	Average REVENUE_AMT_FOR_VOICE
TOT_AMT_OF_PYMNTAVG	AVG	Average TOT_AMT_OF_PYMNT
TOT_NUM_OF_BILLING_CO MPLAINTSAVG	AVG	Average TOT_NUM_OF_BILLING_COMPLA INTS
TOT_NUM_OF_BILLING_IN QUIRIESAVG	AVG	Average TOT_NUM_OF_BILLING_INQUIRI ES
TOT_NUM_OF_COMPLAINT SAVG	AVG	Average TOT_NUM_OF_COMPLAINTS
TOT_NUM_OF_INQUIRIESA VG	AVG	Average TOT_NUM_OF_INQUIRIES
TOT_NUM_OF_PYMNTAVG	AVG	Average TOT_NUM_OF_PYMNT
VOL_OF_DATAAVG	AVG	Average VOL_OF_DATA
VOL_OF_MESSAGESAVG	AVG	Average VOL_OF_MESSAGES
BILL_NET_PAYBALE_AMTA VG	AVG	Average BILL_NET_PAYBALE_AMT

Aggregations

Here are the member levels of the Default aggregation:

- AGE_BAND_CD
- ANALYTICAL_MODEL_NM_CHURN
- ANALYTICAL_MODEL_NM_SEGMENTATION
- BILL_ARPU BILL_CYCLE_NM
- BUSINESS_GROUP_NM
- CHANNEL_NM
- CHANNEL_TYPE_CD
- CHURN_BAND_CD CITY_CD
- COUNTRY_CD COUNTY_CD

- CUST_STATUS_CHNG_RSN_CD
- CUST_TYPE_CD
- GROSS_USG_ARPU
- IND_CUST_EDUCATION_LEVEL_CD
- IND_CUST_ETHNICITY_CD
- IND_CUST_GENDER_CD
- IND_CUST_INCOME_RANGE_CD
- IND_CUST_MARITAL_STATUS_CD
- IND_CUST_SEGMENT_TYPE_CD
- IND_CUST_STD_OCCUPATION_CD
- OFFER_BUNDLE_NM
- OFFER_CUST_TYPE_CD
- OFFER_NM
- OFFER_PYMNT_MODE_CD
- OFFER_SEGMENT_CD
- PROFITABILITY_BAND_CD
- REGION_CD
- STATE_CD
- TENURE_ON_BASE_OFFER_IN_DAYS
- TENURE_ON_NETWORK_IN_DAYS
- TENURE_ON_OFFER_BUNDLE_IN_DAYS

Derived Measures

The following table lists the formulas for the derived measures of the CFD_CUST_BILL_MTH_SUMMARY_CUBE cube.

Table 17.3 Derived Measures of CFD_CUST_BILL_MTH_SUMMARY_CUBE

Measure Name	Formula
NET_ADDTITION_CUST_COUNT	[MEASURES]. [NEW_CUST_NUM_INDSUM]- [MEASURES]. [CHURNED_CUST_NUM_INDSUM], FORMAT_STRING="BEST15."
CLOSING_CUSTOMER_COUNT_TMP	[MEASURES]. [EXISTING_CUST_NUM_INDSUM]+ [MEASURES]. [NET_ADDTITION_CUST_COUNT], FORMAT_STRING="BEST15.", SOLVE_ORDER=1

Measure Name	Formula
OPENING_CUSTOMER_COUNT	([MEASURES].[EXISTING_CUST_NUM_INDSUM],OpeningPeriod([Time].[Time].[CAL_MONTH_NM],[Time].CurrentMember)), FORMAT_STRING="BEST15.", SOLVE_ORDER=1
CLOSING_CUSTOMER_COUNT	([MEASURES].[CLOSING_CUSTOMER_COUNT_TMP],ClosingPeriod([Time].[Time].[CAL_MONTH_NM],[Time].CurrentMember)), FORMAT_STRING="BEST15.", SOLVE_ORDER=2
CLOSING_BPP_OFFER_AVAILED_CUSTOMER_TMP	[MEASURES].[EXISTING_BPP_OFFER_NUM_INDSUM]+[MEASURES].[NEW_BPP_OFFER_AVAILED_NUM_INDSUM], FORMAT_STRING="BEST15."
CLOSING_BPP_OFFER_AVAILED_CUSTOMER	([MEASURES].[CLOSING_BPP_OFFER_AVAILED_CUSTOMER_TMP],ClosingPeriod([Time].[Time].[CAL_MONTH_NM],[Time].CurrentMember)), FORMAT_STRING="BEST15.", SOLVE_ORDER=1
OPENING_BPP_OFFER_AVAILED_CUSTOMER	([MEASURES].[EXISTING_BPP_OFFER_NUM_INDSUM],OpeningPeriod([Time].[Time].[CAL_MONTH_NM],[Time].CurrentMember)), FORMAT_STRING="BEST15.", SOLVE_ORDER=1
NEW_CUSTOMER_COUNT_OVER_CONSECUTIVE_PERIOD	(([MEASURES].[NEW_CUST_NUM_INDSUM],[Time].CurrentMember) - ([MEASURES].[NEW_CUST_NUM_INDSUM],[Time].CurrentMember.PrevMember)), FORMAT_STRING="BEST15.", SOLVE_ORDER=1
NEW_CUSTOMER_COUNT_OVER_PARALLEL_PERIOD	(([MEASURES].[NEW_CUST_NUM_INDSUM],[Time].CurrentMember) - ([MEASURES].[NEW_CUST_NUM_INDSUM],ParallelPeriod())), FORMAT_STRING="BEST15.", SOLVE_ORDER=1

Measure Name	Formula
CHURNED_CUSTOMER_COUNT_OVER_CONSECUTIVE_PERIOD	(([MEASURES].[CHURNED_CUST_NUM_INDSUM],[Time].CurrentMember) - ([MEASURES].[CHURNED_CUST_NUM_INDSUM],[Time].CurrentMember.PrevMember)), FORMAT_STRING="BEST15.", SOLVE_ORDER=1
CHURNED_CUSTOMER_COUNT_OVER_PARALLEL_PERIOD	(([MEASURES].[CHURNED_CUST_NUM_INDSUM],[Time].CurrentMember) - ([MEASURES].[CHURNED_CUST_NUM_INDSUM],ParallelPeriod())), FORMAT_STRING="BEST15.", SOLVE_ORDER=1
CLOSING_CUSTOMER_COUNT_OVER_CONSECUTIVE_PERIOD	(([MEASURES].[CLOSING_CUSTOMER_COUNT],[Time].CurrentMember) - ([MEASURES].[CLOSING_CUSTOMER_COUNT],[Time].CurrentMember.PrevMember)), FORMAT_STRING="BEST15.", SOLVE_ORDER=3
CLOSING_CUSTOMER_COUNT_OVER_PARALLEL_PERIOD	(([MEASURES].[CLOSING_CUSTOMER_COUNT],[Time].CurrentMember) - ([MEASURES].[CLOSING_CUSTOMER_COUNT],ParallelPeriod())), FORMAT_STRING="BEST15.", SOLVE_ORDER=3
NEW_BPP_OFFER_AVAILED_CUSTOMER_OVER_CONSECUTIVE_PERIOD	(([MEASURES].[NEW_BPP_OFFER_AVAILED_NUM_INDSUM],[Time].CurrentMember) - ([MEASURES].[NEW_BPP_OFFER_AVAILED_NUM_INDSUM],[Time].CurrentMember.PrevMember)), FORMAT_STRING="BEST15.", SOLVE_ORDER=1
NEW_BPP_OFFER_AVAILED_CUSTOMER_OVER_PARALLEL_PERIOD	(([MEASURES].[NEW_BPP_OFFER_AVAILED_NUM_INDSUM],[Time].CurrentMember) - ([MEASURES].[NEW_BPP_OFFER_AVAILED_NUM_INDSUM],ParallelPeriod())), FORMAT_STRING="BEST15.", SOLVE_ORDER=1
GROSS_REVENUE_AMOUNT_OVER_CONSECUTIVE_PERIOD	(([MEASURES].[GROSS_REVENUE_AMTSUM],[Time].CurrentMember) - ([MEASURES].[GROSS_REVENUE_AMTSUM],[Time].CurrentMember.PrevMember)), FORMAT_STRING="BEST15.", SOLVE_ORDER=1

Measure Name	Formula
GROSS_REVENUE_AMOUNT_OVER_PARALLEL_PERIOD	(([MEASURES].[GROSS_REVENUE_AMTSUM],[Time].CurrentMember) - ([MEASURES].[GROSS_REVENUE_AMTSUM],ParallelPeriod())), FORMAT_STRING="BEST15.", SOLVE_ORDER=1

Star Schema: Customer Comparative Monthly Summary

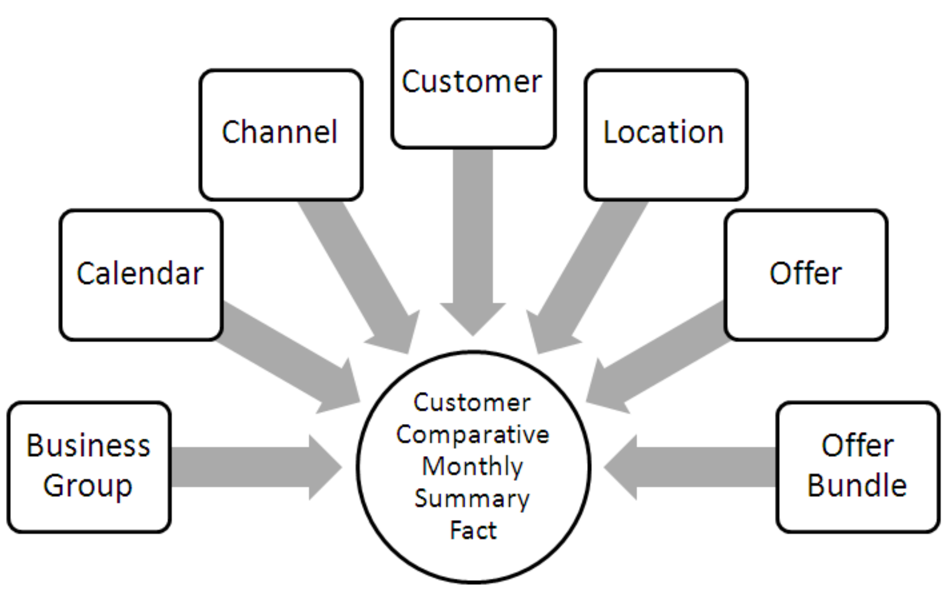
Overview

The Customer Comparative Monthly Summary star schema stores comparative information about usage charges, billing charges, and count of the major event types. The information is collected on the basis of service categories and number of complaints and inquiries that are made during a certain period. Moreover, the information is captured for customers who have chosen the best offer that is recommended by the offer optimization campaign. Therefore, the Customer Comparative Monthly Summary star helps you compare the impact on usage charges after a customer chooses the best offer.

Fact and Dimensions

The following diagram illustrates the fact and dimensions of the Customer Comparative Monthly Summary star schema.

Figure 17.3 *Customer Comparative Monthly Summary*



Cube Structure: CFD_CUST_CMPRTV_MTH_SUMMARY_CUBE

Input Table

The CUST_CMPRTV_MTH_SUMMARY_F fact is the input table for the CFD_CUST_CMPRTV_MTH_SUMMARY_CUBE cube.

Dimensions

The following table lists the dimensions, hierarchies, and levels of the CFD_CUST_CMPRTV_MTH_SUMMARY_CUBE cube. For details, see "Category Variables" on page 301.

Table 17.4 Dimensions, Hierarchies, and Levels of CFD_CUST_CMPRTV_MTH_SUMMARY_CUBE

Dimension	Hierarchy	Level	Level Description
Previous Period	Previous month	Previous month	
Current Period	Current Period	CAL_DT	
Offer-Payment Mode	Offer-Payment Mode	OFFER_PYMNT_MODE_CD	
Offer - Segment	Offer - Segment	OFFER_SEGMENT_CD	
Customer - Churn Band	Customer - Churn Band	CHURN_BAND_CD	
Customer Geography	Customer Geography - State	COUNTRY_CD	
		REGION_CD	
		STATE_CD	
		CITY_CD	
Customer Geography	Customer Geography - County	COUNTRY_CD	
		REGION_CD	
		STATE_CD	
		CITY_CD	
Business Group	Business Group	BUSINESS_GROUP_NM	

Measures

The following table lists the measures of the CFD_CUST_CMPRTV_MTH_SUMMARY_CUBE cube. For details, see “Analysis Variables” on page 305.

Table 17.5 *Measures of CFD_CUST_CMPRTV_MTH_SUMMARY_CUBE*

Name	Statistics	Description
VOL_OF_MESSAGES_PPSUM	SUM	Sum of VOL_OF_MESSAGES_PP
VOL_OF_MESSAGES_CPSUM	SUM	Sum of VOL_OF_MESSAGES_CP
VOL_OF_DATA_PPSUM	SUM	Sum of VOL_OF_DATA_PP
VOL_OF_DATA_CPSUM	SUM	Sum of VOL_OF_DATA_CP
REVENUE_AMT_FOR_VOICE_PPSUM	SUM	Sum of REVENUE_AMT_FOR_VOICE_PP
REVENUE_AMT_FOR_VOICE_CPSUM	SUM	Sum of REVENUE_AMT_FOR_VOICE_CP
REVENUE_AMT_FOR_MESSAGES_PPSUM	SUM	Sum of REVENUE_AMT_FOR_MESSAGES_PP
REVENUE_AMT_FOR_MESSAGES_CPSUM	SUM	Sum of REVENUE_AMT_FOR_MESSAGES_CP
REVENUE_AMT_FOR_DATA_PPSUM	SUM	Sum of REVENUE_AMT_FOR_DATA_PP
REVENUE_AMT_FOR_DATA_CPSUM	SUM	Sum of REVENUE_AMT_FOR_DATA_CP
NUM_OF_SESSIONS_PPSUM	SUM	Sum of NUM_OF_SESSIONS_PP
NUM_OF_SESSIONS_CPSUM	SUM	Sum of NUM_OF_SESSIONS_CP
NUM_OF_MESSAGES_PPSUM	SUM	Sum of NUM_OF_MESSAGES_PP
NUM_OF_MESSAGES_CPSUM	SUM	Sum of NUM_OF_MESSAGES_CP
NUM_OF_CALLS_PPSUM	SUM	Sum of NUM_OF_CALLS_PP
NUM_OF_CALLS_CPSUM	SUM	Sum of NUM_OF_CALLS_CP

Name	Statistics	Description
GROSS_REVENUE_AMT_PPSUM	SUM	Sum of GROSS_REVENUE_AMT_PP
GROSS_REVENUE_AMT_CPSUM	SUM	Sum of GROSS_REVENUE_AMT_CP
DURATION_OF_SESSIONS_PPSUM	SUM	Sum of DURATION_OF_SESSIONS_PP
DURATION_OF_SESSIONS_CPSUM	SUM	Sum of DURATION_OF_SESSIONS_CP
DURATION_OF_CALLS_PPSUM	SUM	Sum of DURATION_OF_CALLS_PP
DURATION_OF_CALLS_CPSUM	SUM	Sum of DURATION_OF_CALLS_CP

Aggregations

Here are the member levels of the Default aggregation:

- BUSINESS_GROUP_NM
- CAL_DT
- CHURN_BAND_CD
- CITY_CD
- COUNTRY_CD
- COUNTY_CD
- OFFER_PYMNT_MODE_CD
- PREVIOUS MONTH
- REGION_CD
- STATE_CD

Information Map

The CFD_CUST_CMPRTV_MTH_SUMMARY_INFOMAP information map is derived from the CFD_CUST_CMPRTV_MTH_SUMMARY_CUBE cube.

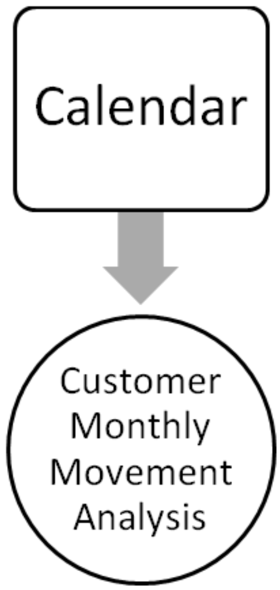
Star Schema: Customer Monthly Movement

Overview

The Customer Monthly Movement star schema stores information about customer movements. The customer movement can be across business groups or across analytical segments.

Fact and Dimensions

Figure 17.4 *Customer Monthly Movement Fact*



Cube Structure: CFD_CUST_MTH_BG_MVMNT_CUBE

Input Table

The CUST_MTH_MOVEMENT_ANALYSIS_F fact is the input table of the CFD_CUST_MTH_BG_MVMNT_CUBE cube.

Dimensions

The following table lists the dimensions, hierarchies, and levels of the CFD_CUST_MTH_BG_MVMNT_CUBE cube. For details, see "Category Variables" on page 301.

Table 17.6 *Dimensions of CFD_CUST_MTH_BG_MVMNT_CUBE*

Dimension	Hierarchy	Level
Time	Time	CAL_YEAR_NUM
		CAL_QUARTER_NM
		CAL_MONTH_NM
Business Group From	Business Group From	MOVEMENT_FROM_NM
Business Group To	Business Group To	MOVEMENT_TO_NM

Measures

The following table lists the measures of the CFD_CUST_MTH_BG_MVMNT_CUBE cube. For details, see "Analysis Variables" on page 305.

Table 17.7 Measures of CFD_CUST_MTH_BG_MVMNT_CUBE

Name	Statistics	Description
CUST_OPENING_CNTSUM	SUM	Sum of CUST_OPENING_CNT
CUST_MOVEMENT_CNTSUM	SUM	Sum of CUST_MOVEMENT_CNT
CUST_MOVEMENT_CNTAVG	AVG	Average CUST_MOVEMENT_CNT

Aggregations of CFD_CUST_MTH_BG_MVMNT_CUBE

Here are the member levels of the default aggregation:

- CAL_MONTH_NM
- CAL_QUARTER_NM
- CAL_YEAR_NUM
- MOVEMENT_FROM_NM
- MOVEMENT_TO_NM

Derived Measures

The following table lists the formulas for the derived measures of the CFD_CUST_MTH_BG_MVMNT_CUBE cube.

Table 17.8 Derived Measures of CFD_CUST_MTH_BG_MVMNT_CUBE

Measure Name	Formula
OPENING_CUSTOMER_COUNT	([MEASURES].[CUST_OPENING_CNTSUM],OpeningPeriod([Time].[Time].[CAL_MONTH_NM], [Time].CurrentMember)), FORMAT_STRING="BEST15.", SOLVE_ORDER=1
CLOSING_CUSTOMER_COUNT_TMP	[MEASURES].[CUST_OPENING_CNTSUM]-[MEASURES].[CUST_MOVEMENT_CNTSUM], FORMAT_STRING="BEST15."

Measure Name	Formula
CLOSING_CUSTOMER_COUNT	([MEASURES].[CLOSING_CUSTOMER_COUNT_TMP],ClosingPeriod([Time].[Time].[CAL_MONTH_NM], [Time].CurrentMember)), FORMAT_STRING="BEST15.", SOLVE_ORDER=1
CUSTOMER_MOVEMENT_OVER_CONSECUTIVE_PEERIOD	(([MEASURES].[CUST_MOVEMENT_CNTSUM], [Time].CurrentMember) - ([MEASURES].[CUST_MOVEMENT_CNTSUM], [Time].CurrentMember.PrevMember)), FORMAT_STRING="BEST15.", SOLVE_ORDER=1
CUSTOMER_MOVEMENT_OVER_PARALLEL_PERIOD	(([MEASURES].[CUST_MOVEMENT_CNTSUM], [Time].CurrentMember) - ([MEASURES].[CUST_MOVEMENT_CNTSUM],ParallelPeriod())), FORMAT_STRING="BEST15.", SOLVE_ORDER=1

Cube Structure: CFD_CUST_MTH_SGMT_MVMNT_CUBE

Input Table

The CUST_MTH_MOVEMENT_ANALYSIS_F fact is the input table for the cfd_cust_mth_sgmt_mvmnt_cube cube.

Dimensions

The following table lists the dimensions, hierarchies, and levels of the CFD_CUST_MTH_SGMT_MVMNT_CUBE cube. For details, see “Category Variables” on page 301.

Table 17.9 *Dimensions of CFD_CUST_MTH_SGMT_MVMNT_CUBE*

Dimension	Hierarchy	Level
Time	Time	CAL_YEAR_NUM
		CAL_QUARTER_NM
		CAL_MONTH_NM
Segment From	Segment From	MOVEMENT_FROM_NM
Segment To	Segment To	MOVEMENT_TO_NM
Segment Model	Segment Model	MOVEMENT_CATEGORY_NM

Measures

The following table lists the measures of the CFD_CUST_MTH_SGMT_MVMNT_CUBE cube. For details, see "Analysis Variables" on page 305.

Table 17.10 Measures of CFD_CUST_MTH_SGMT_MVMNT_CUBE

Name	Statistics	Description
CUST_OPENING_CNTSUM	SUM	Sum of CUST_OPENING_CNT
CUST_MOVEMENT_CNTSUM	SUM	Sum of CUST_MOVEMENT_CNT
CUST_MOVEMENT_CNTAVG	AVG	Average CUST_MOVEMENT_CNT

Aggregations

Here are the member levels of the Default aggregation.

- CAL_MONTH_NM
- CAL_QUARTER_NM
- CAL_YEAR_NUM
- MOVEMENT_CATEGORY_NM
- MOVEMENT_FROM_NM
- MOVEMENT_TO_NM

Derived Measures

The following table lists the formulas for the derived measures of the CFD_CUST_MTH_SGMT_MVMNT_CUBE cube.

Table 17.11 Derived Measures of CFD_CUST_MTH_SGMT_MVMNT_CUBE

Measure Name	Formula
OPENING_CUSTOMER_COUNT	([MEASURES].[CUST_OPENING_CNTSUM],OpeningPeriod([Time].[Time].[CAL_MONTH_NM],[Time].CurrentMember)),FORMAT_STRING="BEST15.",solveorder=1
CLOSING_CUSTOMER_COUNT_TMP	[MEASURES].[CUST_OPENING_CNTSUM]-[MEASURES].[CUST_MOVEMENT_CNTSUM],FORMAT_STRING="BEST15."

Measure Name	Formula
CLOSING_CUSTOMER_COUNT	([MEASURES].[CLOSING_CUSTOMER_COUNT_TMP],ClosingPeriod([Time].[Time].[CAL_MONTH_NM], [Time].CurrentMember)), FORMAT_STRING="BEST15.", SOLVE_ORDER=1
CUSTOMER_MOVEMENT_OVER_CONSECUTIVE_PEERIOD	(([MEASURES].[CUST_OPENING_CNTSUM], [Time].CurrentMember) - ([MEASURES].[CUST_OPENING_CNTSUM], [Time].CurrentMember.PrevMember)), FORMAT_STRING="BEST15.", SOLVE_ORDER=1
CUSTOMER_MOVEMENT_OVER_PARALLEL_PERIOD	(([MEASURES].[CUST_OPENING_CNTSUM], [Time].CurrentMember) - ([MEASURES].[CUST_OPENING_CNTSUM],ParallelPeriod())), FORMAT_STRING="BEST15.", SOLVE_ORDER=1

Information Maps

The CFD_CUST_MTH_SGMT_MVMNT_INFOMAP information map is derived from the CFD_CUST_MTH_SGMT_MVMNT_CUBE cube, and CFD_CUST_MTH_BG_MVMNT_INFOMAP is derived from the CFD_CUST_MTH_BG_MVMNT_CUBE cube.

Star Schema: Customer Monthly Summary

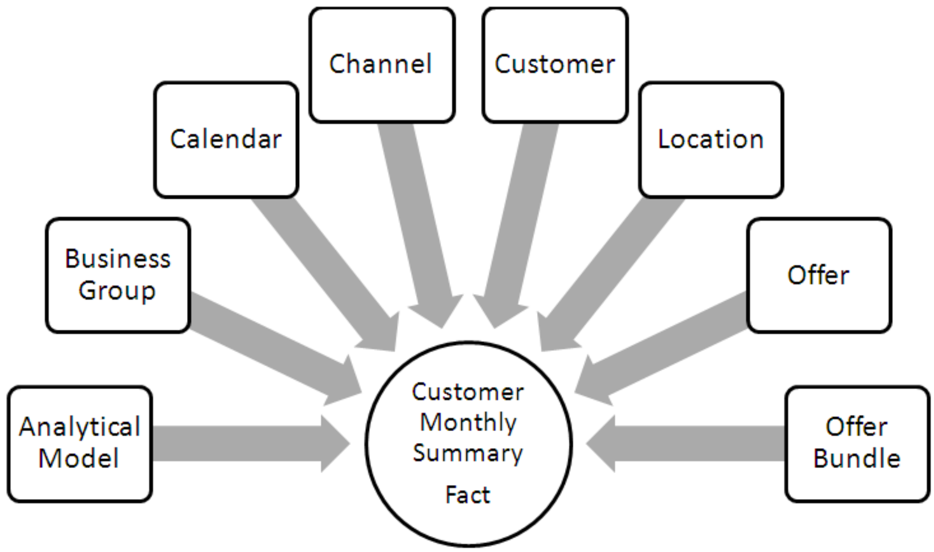
Overview

The Customer Monthly Summary star stores information about usage charges, bill revenue, and counts of major event types such as number of voice calls and number of messages. The information is captured based on service categories and number of complaints and inquiries that are made during a certain period. Moreover, information is captured on a monthly basis for prepaid and postpaid customers. The Customer Monthly Summary star also classifies a customer as new, acquired, existing, churned, or reconnected.

Fact and Dimensions

The following diagram illustrates the fact and dimensions of the Customer Monthly Summary star schema.

Figure 17.5 Customer Monthly Summary Fact



Cube Structure: CFD_CUST_MTH_SUMMARY_CUBE

Input Table

The CUST_MTH_SUMMARY_F fact is the input table of the CFD_CUST_MTH_SUMMARY_CUBE cube.

Dimensions

The following table lists the dimensions, hierarchies, and levels of the CFD_CUST_MTH_SUMMARY_CUBE cube. For details, see "Category Variables" on page 301.

Table 17.12 Dimensions, Hierarchies, and Levels of CFD_CUST_BILL_MTH_SUMMARY_CUBE

Dimension	Hierarchy	Level
Offer	Offer	OFFER_NM
Customer Geography	Customer Geography - State	COUNTRY_CD
		REGION_CD
		STATE_CD
		CITY_CD

Dimension	Hierarchy	Level
Customer Geography	Customer Geography - County	COUNTRY_CD
		REGION_CD
		STATE_CD
		CITY_CD
Time	Time	CAL_YEAR_NUM
		CAL_QUARTER_NUM
		CAL_MONTH_NM
Sales Channel Base Offer	Sales Channel Base Offer	CHANNEL_TYPE_CD
		CHANNEL_NM
Business Group	Business Group	BUSINESS_GROUP_NM
Analytical Model - Segmentation	Analytical Model - Segmentation	ANALYTICAL_MODEL_NM_SEGMENTATION
Analytical Model - Churn	Analytical Model - Churn	ANALYTICAL_MODEL_NM_CHURN
Customer - Age Band	Customer - Age Band	AGE_BAND_CD
Customer - Tenure on Base Offer	Customer - Tenure on Base Offer	TENURE_ON_BASE_OFFER_IN_DAYS
Customer - Tenure on Offer Bundle	Customer - Tenure on Offer Bundle	TENURE_ON_OFFER_BUNDLE_IN_DAYS
Customer - Tenure on Network	Customer - Tenure on Network	TENURE_ON_NETWORK_IN_DAYS
ARPU Band - Gross Usage	ARPU Band - Gross Usage	GROSS_USG_ARPU
ARPU Band - Bill	ARPU Band - Bill	BILL_ARPU
Customer - Churn Band	Customer - Churn Band	CHURN_BAND_CD
Customer - Profitability Band	Customer - Profitability Band	PROFITABILITY_BAND_CD
Customer - Marital status	Customer - Marital status	IND_CUST_MARITAL_STATUS_CD
Customer - Gender	Customer - Gender	IND_CUST_GENDER_CD
Customer - Ethnicity	Customer - Ethnicity	IND_CUST_ETHNICITY_CD

Dimension	Hierarchy	Level
Customer - Occupation	Customer - Occupation	IND_CUST_STD_OCCUPATION_CD
Customer - Income Group	Customer - Income Group	IND_CUST_INCOME_RANGE_CD
Customer - Business Segment	Customer - Business Segment	IND_CUST_SEGMENT_TYPE_CD
Customer Type	Customer Type	CUST_TYPE_CD
Customer Status	Customer Status	CUST_STATUS_CD
		CUST_STATUS_CHNG_RSN_CD
Customer - Education group	Customer - Education group	IND_CUST_EDUCATION_LEVEL_CD
Offer Bundle	Offer Bundle	OFFER_BUNDLE_NM
Offer - Customer Type	Offer - Customer Type	OFFER_CUST_TYPE_CD
Offer - Payment Mode	Offer - Payment Mode	OFFER_PYMNT_MODE_CD
Offer - Segment	Offer - Segment	OFFER_SEGMENT_CD
Customer - Behavioral Segment	Customer - Behavioral Segment	ANALYTICAL_SEGMENT_CD
Customer - BPP Campaign	Customer - BPP Campaign	CAMPAIGN_TYPE_NM
		CAMPAIGN_NM
ARPU Band - Data Usage	ARPU Band - Data Usage	DATA_USG_ARPU
ARPU Band -Message	ARPU Band -Message	MESSAGE_USG_ARPU
ARPU Band - Call Usage	ARPU Band - Call Usage	VOICE_USG_ARPU

Measures

The following table lists the measures of the CFD_CUST_MTH_SUMMARY_CUBE cube. For details, see "Analysis Variables" on page 305.

Table 17.13 Measures of CFD_CUST_MTH_SUMMARY_CUBE

Name	Statistics	Description
BILL_NET_PAYBALE_AMTSUM	SUM	Sum of BILL_NET_PAYBALE_AMT
VOL_OF_MESSAGESSUM	SUM	Sum of VOL_OF_MESSAGES
VOL_OF_DATASUM	SUM	Sum of VOL_OF_DATA
VOICE_USG_ARPUAVG	AVG	Average VOICE_USG_ARPU
TOT_NUM_OF_RECHARGESSUM	SUM	Sum of TOT_NUM_OF_RECHARGES
TOT_NUM_OF_PYMNTSUM	SUM	Sum of TOT_NUM_OF_PYMNT
TOT_NUM_OF_INQUIRIESSUM	SUM	Sum of TOT_NUM_OF_INQUIRIES
TOT_NUM_OF_COMPLAINTSSUM	SUM	Sum of TOT_NUM_OF_COMPLAINTS
TOT_NUM_OF_BILLING_INQUIRIESSUM	SUM	Sum of TOT_NUM_OF_BILLING_INQUIRIES
TOT_NUM_OF_BILLING_COMPLAINTSSUM	SUM	Sum of TOT_NUM_OF_BILLING_COMPLAINTS
TOT_AMT_OF_RECHARGESSUM	SUM	Sum of TOT_AMT_OF_RECHARGES
TOT_AMT_OF_PYMNTSUM	SUM	Sum of TOT_AMT_OF_PYMNT
TENURE_ON_OFFER_BUNDLE_IN_DAYAVG	AVG	Average TENURE_ON_OFFER_BUNDLE_IN_DAYS
TENURE_ON_NETWORK_IN_DAYSAVG	AVG	Average TENURE_ON_NETWORK_IN_DAYS
TENURE_ON_BASE_OFFER_IN_DAYSAVG	AVG	Average TENURE_ON_BASE_OFFER_IN_DAYS

Name	Statistics	Description
REVENUE_AMT_FOR_VOICESUM	SUM	Sum of REVENUE_AMT_FOR_VOICE
REVENUE_AMT_FOR_MESSAGESSUM	SUM	Sum of REVENUE_AMT_FOR_MESSAGES
REVENUE_AMT_FOR_DATASUM	SUM	Sum of REVENUE_AMT_FOR_DATA
NUM_OF_SESSIONSSUM	SUM	Sum of NUM_OF_SESSIONS
NUM_OF_MESSAGESSUM	SUM	Sum of NUM_OF_MESSAGES
NUM_OF_CALLSSUM	SUM	Sum of NUM_OF_CALLS
NEW_CUST_NUM_INDSUM	SUM	Sum of NEW_CUST_NUM_IND
NEW_BPP_OFFER_AVAILED_NUM_INDSUM	SUM	Sum of NEW_BPP_OFFER_AVAILED_NUM_IND
MESSAGE_USG_ARPUAVG	AVG	Average MESSAGE_USG_ARPU
GROSS_USG_ARPUAVG	AVG	Average GROSS_USG_ARPU
GROSS_REVENUE_AMTSUM	SUM	Sum of GROSS_REVENUE_AMT
EXISTING_CUST_NUM_INDSUM	SUM	Sum of EXISTING_CUST_NUM_IND
EXISTING_BPP_OFFER_NUM_INDSUM	SUM	Sum of EXISTING_BPP_OFFER_NUM_IND
DURATION_OF_SESSIONSSUM	SUM	Sum of DURATION_OF_SESSIONS
DURATION_OF_CALLSSUM	SUM	Sum of DURATION_OF_CALLS
DATA_USG_ARPUAVG	AVG	Average DATA_USG_ARPU

Name	Statistics	Description
CHURNED_CUST_NUM_INDSUM	SUM	Sum of CHURNED_CUST_NUM_IND
BPP_CONTACTED_NUM_INDSUM	SUM	Sum of BPP_CONTACTED_NUM_IND
BILL_NON_USG_RCRNG_AMTSUM	SUM	Sum of BILL_NON_USG_RCRNG_AMT
BILL_NON_USG_ONE_TIME_AMTSUM	SUM	Sum of BILL_NON_USG_ONE_TIME_AMT
BILL_USG_AMTSUM	SUM	Sum of BILL_USG_AMT
BILL_DISCOUNT_AMTSUM	SUM	Sum of BILL_DISCOUNT_AMT
BILL_ARPUAVG	AVG	Average BILL_ARPU
BILL_DISCOUNT_AMTAVG	AVG	Average BILL_DISCOUNT_AMT
BILL_NON_USG_ONE_TIME_AMTAVG	AVG	Average BILL_NON_USG_ONE_TIME_AMT
BILL_NON_USG_RCRNG_AMTAVG	AVG	Average BILL_NON_USG_RCRNG_AMT
DURATION_OF_CALLSAVG	AVG	Average DURATION_OF_CALLS
DURATION_OF_SESSIONSAVG	AVG	Average DURATION_OF_SESSIONS
GROSS_REVENUE_AMTAVG	AVG	Average GROSS_REVENUE_AMT
NUM_OF_CALLSAVG	AVG	Average NUM_OF_CALLS
NUM_OF_MESSAGESAVG	AVG	Average NUM_OF_MESSAGES
NUM_OF_SESSIONSAVG	AVG	Average NUM_OF_SESSIONS

Name	Statistics	Description
REVENUE_AMT_FOR_DATAAVG	AVG	Average REVENUE_AMT_FOR_DATA
REVENUE_AMT_FOR_MESSAGESAVG	AVG	Average REVENUE_AMT_FOR_MESSAGES
REVENUE_AMT_FOR_VOICEAVG	AVG	Average REVENUE_AMT_FOR_VOICE
TOT_AMT_OF_PYMNTAVG	AVG	Average TOT_AMT_OF_PYMNT
TOT_AMT_OF_RECHARGESAVG	AVG	Average TOT_AMT_OF_RECHARGES
TOT_NUM_OF_BILLING_COMPLAINTSAVG	AVG	Average TOT_NUM_OF_BILLING_COMPLAINTS
TOT_NUM_OF_BILLING_INQUIRIESAVG	AVG	Average TOT_NUM_OF_BILLING_INQUIRIES
TOT_NUM_OF_COMPLAINTSAVG	AVG	Average TOT_NUM_OF_COMPLAINTS
TOT_NUM_OF_INQUIRIESAVG	AVG	Average TOT_NUM_OF_INQUIRIES
TOT_NUM_OF_PYMNTAVG	AVG	Average TOT_NUM_OF_PYMNT
TOT_NUM_OF_RECHARGESAVG	AVG	Average TOT_NUM_OF_RECHARGES
VOL_OF_DATAAVG	AVG	Average VOL_OF_DATA
VOL_OF_MESSAGESAVG	AVG	Average VOL_OF_MESSAGES
BILL_NET_PAYBALE_AMTAVG	AVG	Average BILL_NET_PAYBALE_AMT

Aggregations

Here are the member levels for the Default aggregation.

- AGE_BAND_CD

- ANALYTICAL_MODEL_NM_CHURN
- ANALYTICAL_MODEL_NM_SEGMENTATION
- ANALYTICAL_SEGMENT_CD
- BILL_ARPU
- BUSINESS_GROUP_NM
- CAL_MONTH_NM
- CAL_QUARTER_NUM
- CAL_YEAR_NUM
- CAMPAIGN_NM
- CAMPAIGN_TYPE_NM
- CHANNEL_NM
- CHANNEL_TYPE_CD
- CHURN_BAND_CD
- CITY_CD
- COUNTRY_CD
- COUNTY_CD
- CUST_STATUS_CD
- CUST_STATUS_CHNG_RSN_CD
- CUST_TYPE_CD
- DATA_USG_ARPU
- GROSS_USG_ARPU
- IND_CUST_EDUCATION_LEVEL_CD
- IND_CUST_ETHNICITY_CD
- IND_CUST_GENDER_CD
- IND_CUST_INCOME_RANGE_CD
- IND_CUST_MARITAL_STATUS_CD
- IND_CUST_SEGMENT_TYPE_CD
- IND_CUST_STD_OCCUPATION_CD
- MESSAGE_USG_ARPU
- OFFER_BUNDLE_NM
- OFFER_CUST_TYPE_CD
- OFFER_NM
- OFFER_PYMNT_MODE_CD
- OFFER_SEGMENT_CD
- PROFITABILITY_BAND_CD
- REGION_CD
- STATE_CD

- TENURE_ON_BASE_OFFER_IN_DAYS
- TENURE_ON_NETWORK_IN_DAYS
- TENURE_ON_OFFER_BUNDLE_IN_DAYS
- VOICE_USG_ARPU

Derived Measures

The following table lists the measures and the formulas of the CFD_CUST_MTH_SUMMARY_CUBE cube.

Table 17.14 *Measures of CFD_CUST_MTH_SUMMARY_CUBE*

Measure Name	Formula
PERCENT CHURNED CUSTOMER	[MEASURES].[NEW_CUST_NUM_INDSUM]-[MEASURES].[CHURNED_CUST_NUM_INDSUM], FORMAT_STRING="BEST15."
AVG CALL DURATION PER CUSTOMER	[MEASURES].[EXISTING_CUST_NUM_INDSUM]+[MEASURES].[NET_ADDTITION_CUST_COUNT], FORMAT_STRING="BEST15.", SOLVE_ORDER=1
AVG DATA VOLUME PER CUSTOMER	([MEASURES].[EXISTING_CUST_NUM_INDSUM],OpeningPeriod([Time].[Time].[CAL_MONTH_NM], [Time].CurrentMember)), FORMAT_STRING="BEST15.", SOLVE_ORDER=1
AVG DATA SESSION DUR PER CUSTOMER	([MEASURES].[CLOSING_CUSTOMER_COUNT_TMP],ClosingPeriod([Time].[Time].[CAL_MONTH_NM], [Time].CurrentMember)), FORMAT_STRING="BEST15.", SOLVE_ORDER=2
AVG MSG VOLUME PER CUSTOMER	[MEASURES].[EXISTING_BPP_OFFER_NUM_INDSUM]+[MEASURES].[NEW_BPP_OFFER_AVAILED_NUM_INDSUM], FORMAT_STRING="BEST15."
AVG NUM OF CALLS PER CUSTOMER	([MEASURES].[CLOSING_BPP_OFFER_AVAILED_CUSTOMER_TMP],ClosingPeriod([Time].[Time].[CAL_MONTH_NM], [Time].CurrentMember)), FORMAT_STRING="BEST15.", SOLVE_ORDER=1

Measure Name	Formula
AVG NUM OF MSG PER CUSTOMER	([MEASURES].[EXISTING_BPP_OFFER_NUM_INDSUM], OpeningPeriod([Time].[Time].[CAL_MONTH_NM], [Time].CurrentMember)), FORMAT_STRING="BEST15.", SOLVE_ORDER=1
AVG NUM OF DATA SESSION PER CUST	(([MEASURES].[NEW_CUST_NUM_INDSUM], [Time].CurrentMember) - ([MEASURES].[NEW_CUST_NUM_INDSUM], [Time].CurrentMember.PrevMember)), FORMAT_STRING="BEST15.", SOLVE_ORDER=1
AVG CALL DUR PER CALL	(([MEASURES].[NEW_CUST_NUM_INDSUM], [Time].CurrentMember) - ([MEASURES].[NEW_CUST_NUM_INDSUM],ParallelPeriod())), FORMAT_STRING="BEST15.", SOLVE_ORDER=1
AVG MSG VOL PER MESSAGE	(([MEASURES].[CHURNED_CUST_NUM_INDSUM], [Time].CurrentMember) - ([MEASURES].[CHURNED_CUST_NUM_INDSUM], [Time].CurrentMember.PrevMember)), FORMAT_STRING="BEST15.", SOLVE_ORDER=1
AVG DATA VOL PER DATA SESSION	(([MEASURES].[CHURNED_CUST_NUM_INDSUM], [Time].CurrentMember) - ([MEASURES].[CHURNED_CUST_NUM_INDSUM],ParallelPeriod())), FORMAT_STRING="BEST15.", SOLVE_ORDER=1
AVG DATA DUR PER DATA SESSION	(([MEASURES].[CLOSING_CUSTOMER_COUNT], [Time].CurrentMember) - ([MEASURES].[CLOSING_CUSTOMER_COUNT], [Time].CurrentMember.PrevMember)), FORMAT_STRING="BEST15.", SOLVE_ORDER=3
GROSS USAGE CHARGE PER CUST	(([MEASURES].[CLOSING_CUSTOMER_COUNT], [Time].CurrentMember) - ([MEASURES].[CLOSING_CUSTOMER_COUNT],ParallelPeriod())), FORMAT_STRING="BEST15.", SOLVE_ORDER=3

Measure Name	Formula
BILL REV PER CUST	(([MEASURES].[NEW_BPP_OFFER_AVAILED_NUM_INDSUM],[Time].CurrentMember) - ([MEASURES].[NEW_BPP_OFFER_AVAILED_NUM_INDSUM],[Time].CurrentMember.PrevMember)), FORMAT_STRING="BEST15.", SOLVE_ORDER=1
PERCENT CALL REV OVER GROSS REV	(([MEASURES].[NEW_BPP_OFFER_AVAILED_NUM_INDSUM],[Time].CurrentMember) - ([MEASURES].[NEW_BPP_OFFER_AVAILED_NUM_INDSUM],ParallelPeriod())), FORMAT_STRING="BEST15.", SOLVE_ORDER=1
PERCENT MSG REV OVER GROSS REV	(([MEASURES].[GROSS_REVENUE_AMTSUM],[Time].CurrentMember) - ([MEASURES].[GROSS_REVENUE_AMTSUM],[Time].CurrentMember.PrevMember)), FORMAT_STRING="BEST15.", SOLVE_ORDER=1
PERCENT DATA REV OVER GROSS REV	(([MEASURES].[GROSS_REVENUE_AMTSUM],[Time].CurrentMember) - ([MEASURES].[GROSS_REVENUE_AMTSUM],ParallelPeriod())), FORMAT_STRING="BEST15.", SOLVE_ORDER=1

Information Map

The CFD_CUST_MTH_SUMMARY_INFOMAP information map is derived from the CFD_CUST_MTH_SUMMARY_CUBE cube.

Star Schema: Customer Weekly Summary

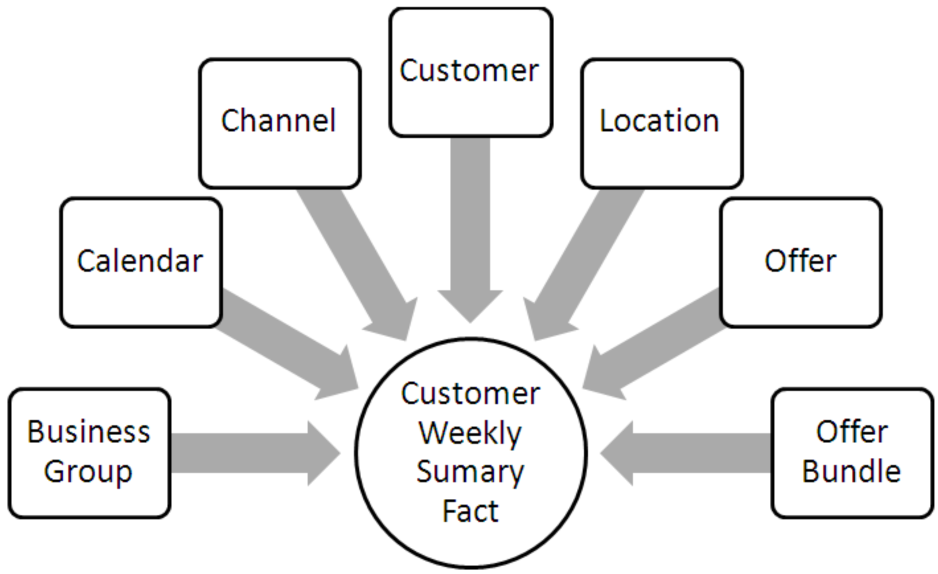
Overview

The Customer Weekly Summary star schema stores information about usage charges and counts of the major event types such as number of voice calls and number of messages. The information is captured based on service categories and number of complaints and inquiries that are made during a certain period. Moreover, the information is captured on a weekly basis and only for prepaid customers. The Customer Weekly Summary star schema also classifies a customer as new, acquired, existing, or churned.

Fact and Dimensions

The following diagram illustrates the fact and dimensions of the Customer Weekly Summary star schema.

Figure 17.6 *Customer Weekly Summary Fact*



Cube Structure: CFD_CUST_WEEKLY_SUMMARY_CUBE

Input Table

The CUST_WEEKLY_SUMMARY_F fact is the input table for the CFD_CUST_WEEKLY_SUMMARY_CUBE cube.

Dimensions

The following table lists the dimensions, hierarchies, and levels of the CFD_CUST_WEEKLY_SUMMARY_CUBE cube. For details, see "Category Variables" on page 301.

Table 17.15 *Dimensions, Hierarchies, and Levels of CFD_CUST_WEEKLY_SUMMARY_CUBE*

Dimension	Hierarchy	Level
Offer	Offer	OFFER_NM

Dimension	Hierarchy	Level
Customer Geography	Customer Geography - State	COUNTRY_CD
		REGION_CD
		STATE_CD
		CITY_CD
Customer Geography	Customer Geography - County	COUNTRY_CD
		REGION_CD
		STATE_CD
		CITY_CD
Time	Time	CAL_YEAR_NUM
		CAL_QUARTER_NUM
Sales Channel Base Offer	Sales Channel Base Offer	CHANNEL_TYPE_CD
		CHANNEL_NM
Business Group	Business Group	BUSINESS_GROUP_NM
Analytical Model - Segmentation	Analytical Model - Segmentation	ANALYTICAL_MODEL_NM_SEGMENTATION
Analytical Model - Churn	Analytical Model - Churn	ANALYTICAL_MODEL_NM_CHURN
Customer - Age Band	Customer - Age Band	AGE_BAND_CD
Customer - Tenure on Base Offer	Customer - Tenure on Base Offer	TENURE_ON_BASE_OFFER_IN_DAYS
Customer - Tenure on Offer Bundle	Customer - Tenure on Offer Bundle	TENURE_ON_OFFER_BUNDLE_IN_DAYS
Customer - Tenure on Network	Customer - Tenure on Network	TENURE_ON_NETWORK_IN_DAYS
ARPU Band - Gross Usage	ARPU Band - Gross Usage	GROSS_USG_ARPU
ARPU Band - Bill	ARPU Band - Bill	BILL_ARPU
Customer - Churn Band	Customer - Churn Band	CHURN_BAND_CD
Customer - Profitability Band	Customer - Profitability Band	PROFITABILITY_BAND_CD

Dimension	Hierarchy	Level
Customer - Marital status	Customer - Marital status	IND_CUST_MARITAL_STATUS_CD
Customer - Gender	Customer - Gender	IND_CUST_GENDER_CD
Customer - Ethnicity	Customer - Ethnicity	IND_CUST_ETHNICITY_CD
Customer - Occupation	Customer - Occupation	IND_CUST_STD_OCCUPATION_CD
Customer - Income Group	Customer - Income Group	IND_CUST_INCOME_RANGE_CD
Customer - Business Segment	Customer - Business Segment	IND_CUST_SEGMENT_TYPE_CD
Customer Type	Customer Type	CUST_TYPE_CD
Customer Status	Customer Status	CUST_STATUS_CD
		CUST_STATUS_CHNG_RSN_CD
Customer - Education group	Customer - Education group	IND_CUST_EDUCATION_LEVEL_CD
Offer Bundle	Offer Bundle	OFFER_BUNDLE_NM
Offer - Customer Type	Offer - Customer Type	OFFER_CUST_TYPE_CD
Offer - Payment Mode	Offer - Payment Mode	OFFER_PYMNT_MODE_CD
Offer - Segment	Offer - Segment	OFFER_SEGMENT_CD
Customer - Behavioral Segment	Customer - Behavioral Segment	ANALYTICAL_SEGMENT_CD
Customer - BPP Campaign	Customer - BPP Campaign	CAMPAIGN_TYPE_NM
		CAMPAIGN_NM
ARPU Band - Data Usage	ARPU Band - Data Usage	DATA_USG_ARPU
ARPU Band -Message	ARPU Band -Message	MESSAGE_USG_ARPU
ARPU Band - Call Usage	ARPU Band - Call Usage	VOICE_USG_ARPU

Measures

The following table lists the measures of the CFD_CUST_WEEKLY_SUMMARY_CUBE cube. For details, see "Analysis Variables" on page 305.

Table 17.16 Measures of CFD_CUST_WEEKLY_SUMMARY_CUBE

Name	Statistics	Description
VOL_OF_MESSAGESSUM	SUM	Sum of VOL_OF_MESSAGES
VOL_OF_DATASUM	SUM	Sum of VOL_OF_DATA
VOICE_USG_ARPUAVG	AVG	Average VOICE_USG_ARPU
TOT_NUM_OF_RECHARGESSUM	SUM	Sum of TOT_NUM_OF_RECHARGES
TOT_NUM_OF_INQUIRIESSUM	SUM	Sum of TOT_NUM_OF_INQUIRIES
TOT_NUM_OF_COMPLAINTSSUM	SUM	Sum of TOT_NUM_OF_COMPLAINTS
TOT_AMT_OF_RECHARGESSUM	SUM	Sum of TOT_AMT_OF_RECHARGES
TENURE_ON_OFFER_BUNDLE_IN_DAYAVG	AVG	Average TENURE_ON_OFFER_BUNDLE_IN_DAYS
TENURE_ON_NETWORK_IN_DAYSAVG	AVG	Average TENURE_ON_NETWORK_IN_DAYS
TENURE_ON_BASE_OFFER_IN_DAYSAVG	AVG	Average TENURE_ON_BASE_OFFER_IN_DAYS
REVENUE_AMT_FOR_VOICESUM	SUM	Sum of REVENUE_AMT_FOR_VOICE
REVENUE_AMT_FOR_MESSAGESSUM	SUM	Sum of REVENUE_AMT_FOR_MESSAGES
REVENUE_AMT_FOR_DATASUM	SUM	Sum of REVENUE_AMT_FOR_DATA

Name	Statistics	Description
NUM_OF_SESSIONSSUM	SUM	Sum of NUM_OF_SESSIONS
NUM_OF_MESSAGESSUM	SUM	Sum of NUM_OF_MESSAGES
NUM_OF_CALLSSUM	SUM	Sum of NUM_OF_CALLS
NEW_CUST_NUM_INDSUM	SUM	Sum of NEW_CUST_NUM_IND
NEW_BPP_OFFER_AVAILED_NUM_INDSUM	SUM	Sum of NEW_BPP_OFFER_AVAILED_NUM_IND
MESSAGE_USG_ARPUAVG	AVG	Average MESSAGE_USG_ARPU
GROSS_USG_ARPUAVG	AVG	Average GROSS_USG_ARPU
GROSS_REVENUE_AMTSUM	SUM	Sum of GROSS_REVENUE_AMT
EXISTING_CUST_NUM_INDSUM	SUM	Sum of EXISTING_CUST_NUM_IND
EXISTING_BPP_OFFER_NUM_INDSUM	SUM	Sum of EXISTING_BPP_OFFER_NUM_IND
DURATION_OF_SESSIONSSUM	SUM	Sum of DURATION_OF_SESSIONS
DURATION_OF_CALLSSUM	SUM	Sum of DURATION_OF_CALLS
DATA_USG_ARPUAVG	AVG	Average DATA_USG_ARPU
CHURNED_CUST_NUM_INDSUM	SUM	Sum of CHURNED_CUST_NUM_IND
BPP_CONTACTED_NUM_INDSUM	SUM	Sum of BPP_CONTACTED_NUM_IND
DURATION_OF_CALLSAVG	AVG	Average DURATION_OF_CALLS

Name	Statistics	Description
DURATION_OF_SESSIONSAVG	AVG	Average DURATION_OF_SESSIONS
GROSS_REVENUE_AMTAVG	AVG	Average GROSS_REVENUE_AMT
NUM_OF_CALLSAVG	AVG	Average NUM_OF_CALLS
NUM_OF_MESSAGESAVG	AVG	Average NUM_OF_MESSAGES
NUM_OF_SESSIONSAVG	AVG	Average NUM_OF_SESSIONS
REVENUE_AMT_FOR_DATAAVG	AVG	Average REVENUE_AMT_FOR_DATA
REVENUE_AMT_FOR_MESSAGESAVG	AVG	Average REVENUE_AMT_FOR_MESSAGES
REVENUE_AMT_FOR_VOICEAVG	AVG	Average REVENUE_AMT_FOR_VOICE
TOT_AMT_OF_RECHARGESAVG	AVG	Average TOT_AMT_OF_RECHARGES
TOT_NUM_OF_COMPLAINTSAVG	AVG	Average TOT_NUM_OF_COMPLAINTS
TOT_NUM_OF_INQUIRIESAVG	AVG	Average TOT_NUM_OF_INQUIRIES
TOT_NUM_OF_RECHARGESAVG	AVG	Average TOT_NUM_OF_RECHARGES
VOL_OF_DATAAVG	AVG	Average VOL_OF_DATA
VOL_OF_MESSAGESAVG	AVG	Average VOL_OF_MESSAGES

Aggregations

Here is the list of member levels for the default aggregation.

- AGE_BAND_CD
- ANALYTICAL_MODEL_NM_CHURN
- ANALYTICAL_MODEL_NM_SEGMENTATION

- ANALYTICAL_SEGMENT_CD
- BUSINESS_GROUP_NM
- CAL_WEEK_NUM
- CAL_YEAR_NUM
- CAMPAIGN_NM
- CAMPAIGN_TYPE_NM
- CHANNEL_NM
- CHANNEL_TYPE_CD
- CHURN_BAND_CD
- CITY_CD
- COUNTRY_CD
- COUNTY_CD
- CUST_STATUS_CD
- CUST_STATUS_CHNG_RSN_CD
- CUST_TYPE_CD
- DATA_USG_ARPU
- GROSS_USG_ARPU
- IND_CUST_EDUCATION_LEVEL_CD
- IND_CUST_ETHNICITY_CD
- IND_CUST_GENDER_CD
- IND_CUST_INCOME_RANGE_CD
- IND_CUST_MARITAL_STATUS_CD
- IND_CUST_SEGMENT_TYPE_CD
- IND_CUST_STD_OCCUPATION_CD
- MESSAGE_USG_ARPU
- OFFER_BUNDLE_NM
- OFFER_CUST_TYPE_CD
- OFFER_NM
- OFFER_PYMNT_MODE_CD
- OFFER_SEGMENT_CD
- PROFITABILITY_BAND_CD
- REGION_CD
- STATE_CD
- TENURE_ON_BASE_OFFER_IN_DAYS
- TENURE_ON_NETWORK_IN_DAYS
- TENURE_ON_OFFER_BUNDLE_IN_DAYS
- VOICE_USG_ARPU

Derived Measures

The following table lists the measures and the formulas of the CFD_CUST_WEEKLY_SUMMARY_CUBE cube.

Table 17.17 Derived Measures of CFD_CUST_WEEKLY_SUMMARY_CUBE

Measure Name	Formula
NET_ADDTITION_CUST_COUNT	[MEASURES].[NEW_CUST_NUM_INDSUM]-[MEASURES].[CHURNED_CUST_NUM_INDSUM], FORMAT_STRING="BEST15."
CLOSING_CUSTOMER_COUNT_TMP	[MEASURES].[EXISTING_CUST_NUM_INDSUM]+[MEASURES].[NET_ADDTITION_CUST_COUNT], FORMAT_STRING="BEST15.", SOLVE_ORDER=1
OPENING_CUSTOMER_COUNT	([MEASURES].[EXISTING_CUST_NUM_INDSUM],OpeningPeriod([Time].[Time].[CAL_WEEK_NUM], [Time].CurrentMember)), FORMAT_STRING="BEST15.", SOLVE_ORDER=1
CLOSING_CUSTOMER_COUNT	([MEASURES].[CLOSING_CUSTOMER_COUNT_TMP],ClosingPeriod([Time].[Time].[CAL_WEEK_NUM], [Time].CurrentMember)), FORMAT_STRING="BEST15.", SOLVE_ORDER=2
CLOSING_BPP_OFFER_AVAILED_CUSTOMER_TMP	[MEASURES].[EXISTING_BPP_OFFER_NUM_INDSUM]+[MEASURES].[NEW_BPP_OFFER_AVAILED_NUM_INDSUM], FORMAT_STRING="BEST15."
CLOSING_BPP_OFFER_AVAILED_CUSTOMER	([MEASURES].[CLOSING_BPP_OFFER_AVAILED_CUSTOMER_TMP],ClosingPeriod([Time].[Time].[CAL_WEEK_NUM], [Time].CurrentMember)), FORMAT_STRING="BEST15.", SOLVE_ORDER=1
OPENING_BPP_OFFER_AVAILED_CUSTOMER	([MEASURES].[EXISTING_BPP_OFFER_NUM_INDSUM], OpeningPeriod([Time].[Time].[CAL_WEEK_NUM], [Time].CurrentMember)), FORMAT_STRING="BEST15.", SOLVE_ORDER=1

Measure Name	Formula
NEW_CUSTOMER_COUNT_OVER_CONSECUTIVE_PERIOD	(([MEASURES].[NEW_CUST_NUM_INDSUM],[Time].CurrentMember) - ([MEASURES].[NEW_CUST_NUM_INDSUM],[Time].CurrentMember.PrevMember)), FORMAT_STRING="BEST15.", SOLVE_ORDER=1
NEW_CUSTOMER_COUNT_OVER_PARALLEL_PERIOD	(([MEASURES].[NEW_CUST_NUM_INDSUM],[Time].CurrentMember) - ([MEASURES].[NEW_CUST_NUM_INDSUM],ParallelPeriod())), FORMAT_STRING="BEST15.", SOLVE_ORDER=1
CHURNED_CUSTOMER_COUNT_OVER_CONSECUTIVE_PERIOD	(([MEASURES].[CHURNED_CUST_NUM_INDSUM],[Time].CurrentMember) - ([MEASURES].[CHURNED_CUST_NUM_INDSUM],[Time].CurrentMember.PrevMember)), FORMAT_STRING="BEST15.", SOLVE_ORDER=1
CHURNED_CUSTOMER_COUNT_OVER_PARALLEL_PERIOD	(([MEASURES].[CHURNED_CUST_NUM_INDSUM],[Time].CurrentMember) - ([MEASURES].[CHURNED_CUST_NUM_INDSUM],ParallelPeriod())), FORMAT_STRING="BEST15.", SOLVE_ORDER=1
CLOSING_CUSTOMER_COUNT_OVER_CONSECUTIVE_PERIOD	(([MEASURES].[CLOSING_CUSTOMER_COUNT],[Time].CurrentMember) - ([MEASURES].[CLOSING_CUSTOMER_COUNT],[Time].CurrentMember.PrevMember)), FORMAT_STRING="BEST15.", SOLVE_ORDER=3
CLOSING_CUSTOMER_COUNT_OVER_PARALLEL_PERIOD	(([MEASURES].[CLOSING_CUSTOMER_COUNT],[Time].CurrentMember) - ([MEASURES].[CLOSING_CUSTOMER_COUNT],ParallelPeriod())), FORMAT_STRING="BEST15.", SOLVE_ORDER=3
NEW_BPP_OFFER_AVAILED_CUSTOMER_OVER_CONSECUTIVE_PERIOD	(([MEASURES].[NEW_BPP_OFFER_AVAILED_NUM_INDSUM],[Time].CurrentMember) - ([MEASURES].[NEW_BPP_OFFER_AVAILED_NUM_INDSUM],[Time].CurrentMember.PrevMember)), FORMAT_STRING="BEST15.", SOLVE_ORDER=1

Measure Name	Formula
NEW_BPP_OFFER_AVAILED_CUSTOMER_OVER_PARALLEL_PERIOD	(([MEASURES].[NEW_BPP_OFFER_AVAILED_NUM_INDSUM],[Time].CurrentMember) - ([MEASURES].[NEW_BPP_OFFER_AVAILED_NUM_INDSUM],ParallelPeriod())), FORMAT_STRING="BEST15.", SOLVE_ORDER=1
GROSS_REVENUE_AMOUNT_OVER_CONSECUTIVE_PERIOD	(([MEASURES].[GROSS_REVENUE_AMTSUM], [Time].CurrentMember) - ([MEASURES].[GROSS_REVENUE_AMTSUM], [Time].CurrentMember.PrevMember)), FORMAT_STRING="BEST15.", SOLVE_ORDER=1
GROSS_REVENUE_AMOUNT_OVER_PARALLEL_PERIOD	(([MEASURES].[GROSS_REVENUE_AMTSUM], [Time].CurrentMember) - ([MEASURES].[GROSS_REVENUE_AMTSUM],ParallelPeriod())), FORMAT_STRING="BEST15.", SOLVE_ORDER=1
PERCENT CHURNED CUSTOMER	[MEASURES].[CHURNED_CUST_NUM_INDSUM]/ [MEASURES].[CLOSING_CUSTOMER_COUNT], FORMAT_STRING="PERCENT6.", SOLVE_ORDER=3
AVG CALL DURATION PER CUSTOMER	[MEASURES].[DURATION_OF_CALLSSUM]/ [MEASURES].[CLOSING_CUSTOMER_COUNT], FORMAT_STRING="BEST15.", SOLVE_ORDER=3
AVG DATA VOLUME PER CUSTOMER	[MEASURES].[VOL_OF_DATASUM]/ [MEASURES].[CLOSING_CUSTOMER_COUNT], FORMAT_STRING="BEST15.", SOLVE_ORDER=3
AVG DATA SESSION DUR PER CUSTOMER	[MEASURES].[DURATION_OF_SESSIONSSUM]/ [MEASURES].[CLOSING_CUSTOMER_COUNT], FORMAT_STRING="BEST15.", SOLVE_ORDER=3

Measure Name	Formula
AVG MSG VOLUME PER CUSTOMER	[MEASURES].[VOL_OF_MESSAGESSUM]/[MEASURES].[CLOSING_CUSTOMER_COUNT], FORMAT_STRING="BEST15.", SOLVE_ORDER=3
AVG NUM OF CALLS PER CUSTOMER	[MEASURES].[NUM_OF_CALLSSUM]/[MEASURES].[CLOSING_CUSTOMER_COUNT], FORMAT_STRING="BEST15.", SOLVE_ORDER=3
AVG NUM OF MSG PER CUSTOMER	[MEASURES].[NUM_OF_MESSAGESSUM]/[MEASURES].[CLOSING_CUSTOMER_COUNT], FORMAT_STRING="BEST15.", SOLVE_ORDER=3
AVG NUM OF DATA SESSION PER CUST	[MEASURES].[NUM_OF_SESSIONSSUM]/[MEASURES].[CLOSING_CUSTOMER_COUNT], FORMAT_STRING="BEST15.", SOLVE_ORDER=3
AVG CALL DUR PER CALL	[MEASURES].[DURATION_OF_CALLSSUM]/[MEASURES].[NUM_OF_CALLSAVG], FORMAT_STRING="BEST15.", SOLVE_ORDER=1
AVG MSG VOL PER MESSAGE	[MEASURES].[VOL_OF_MESSAGESSUM]/[MEASURES].[NUM_OF_MESSAGESSUM], FORMAT_STRING="BEST15.", SOLVE_ORDER=1
AVG DATA VOL PER DATA SESSION	[MEASURES].[VOL_OF_DATASUM]/[MEASURES].[NUM_OF_SESSIONSSUM], FORMAT_STRING="BEST15.", SOLVE_ORDER=1
AVG DATA DUR PER DATA SESSION	[MEASURES].[DURATION_OF_SESSIONSSUM]/[MEASURES].[NUM_OF_SESSIONSSUM], FORMAT_STRING="BEST15.", SOLVE_ORDER=1
GROSS USAGE CHARGE PER CUST	[MEASURES].[GROSS_REVENUE_AMTSUM]/[MEASURES].[CLOSING_CUSTOMER_COUNT], FORMAT_STRING="BEST15.", SOLVE_ORDER=3

Measure Name	Formula
BILL REV PER CUST	[MEASURES]. [BILL_NET_PAYBALE_AMTSUM]/ [MEASURES]. [CLOSING_CUSTOMER_COUNT], FORMAT_STRING="BEST15.", SOLVE_ORDER=3
PERCENT CALL REV OVER GROSS REV	[MEASURES]. [REVENUE_AMT_FOR_VOICESUM]/ [MEASURES]. [GROSS_REVENUE_AMTSUM], FORMAT_STRING="PERCENT6.", SOLVE_ORDER=1
PERCENT MSG REV OVER GROSS REV	[MEASURES]. [REVENUE_AMT_FOR_MESSAGESSUM]/ [MEASURES]. [GROSS_REVENUE_AMTSUM], FORMAT_STRING="PERCENT6.", SOLVE_ORDER=1
PERCENT DATA REV OVER GROSS REV	[MEASURES]. [REVENUE_AMT_FOR_DATASUM]/ [MEASURES]. [GROSS_REVENUE_AMTSUM], FORMAT_STRING="PERCENT6.", SOLVE_ORDER=1

Information Map

The CFD_CUST_WEEKLY_SUMMARY_INFOMAP is derived from the CFD_CUST_WEEKLY_SUMMARY_CUBE.

Star Schema: Customer Monthly Cross-Sell and Up-Sell

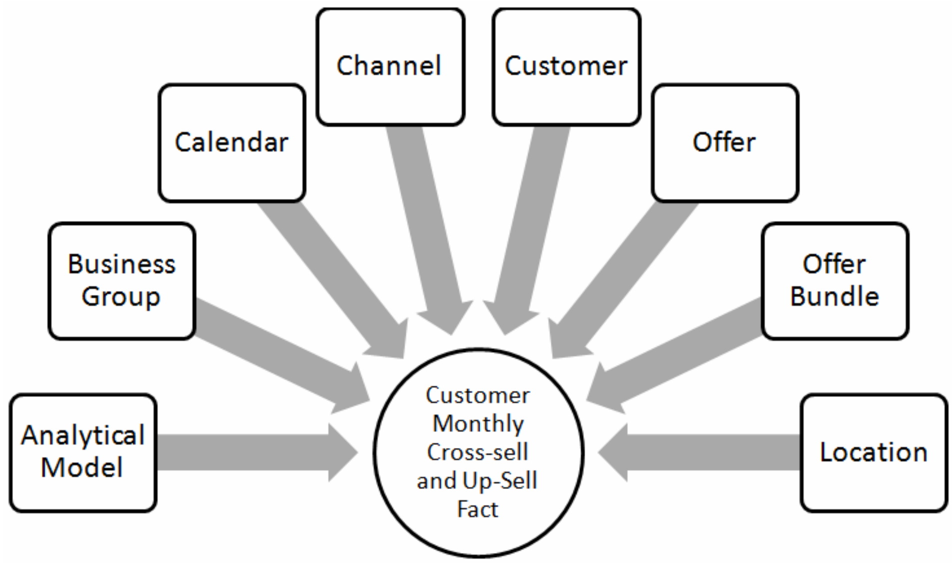
Overview

The Customer Monthly Cross-Sell and Up-Sell star schema stores information about customer-level cross-sell and up-sell scores for a particular service or an offer. The information is stored for the monthly time grain.

Fact and Dimensions

The following diagram illustrates the fact and dimensions of the Customer Monthly Cross-Sell and Up-Sell star schema.

Figure 17.7 Customer Monthly Cross-Sell and Up-Sell Fact



Cube Structure: CFD_CUST_OFFER_MTH_CSUS_CUBE

Input Table

The CUST_MTH_CSUS_F fact is the input table for the CFD_CUST_OFFER_MTH_CSUS_CUBE cube.

Dimensions

The following table lists the dimensions, hierarchies, and levels of the CFD_CUST_OFFER_MTH_CSUS_CUBE cube. For details, see "Category Variables" on page 301.

Table 17.18 Dimensions, Hierarchies, and Level of CFD_CUST_OFFER_MTH_CSUS_CUBE

Dimension	Hierarchy	Level
Offer	Offer	OFFER_NM
Customer Geography	Customer Geography - State	COUNTRY_CD
		REGION_CD
		STATE_CD
		CITY_CD
Customer Geography	Customer Geography - County	COUNTRY_CD
		COUNTY_CD
		CITY_CD

Dimension	Hierarchy	Level
Time	Time	CAL_YEAR_NUM
		CAL_QUARTER_NUM
		CAL_MONTH_NM
Sales Channel Base Offer	Sales Channel Base Offer	CHANNEL_TYPE_CD
		CHANNEL_NM
Business Group	Business Group	BUSINESS_GROUP_NM
Analytical Model - Segmentation	Analytical Model - Segmentation	ANALYTICAL_MODEL_NM_SEGMENTATION
Analytical Model - Churn	Analytical Model - Churn	ANALYTICAL_MODEL_NM_CHURN
Customer - Age Band	Customer - Age Band	AGE_BAND_CD
Customer - Tenure on Base Offer	Customer - Tenure on Base Offer	TENURE_ON_BASE_OFFER_IN_DAYS
Customer - Tenure on Offer Bundle	Customer - Tenure on Offer Bundle	TENURE_ON_OFFER_BUNDLE_IN_DAYS
Customer - Tenure on Network	Customer - Tenure on Network	TENURE_ON_NETWORK_IN_DAYS
ARPU Band - Gross Usage	ARPU Band - Gross Usage	GROSS_USG_ARPU
ARPU Band - Bill	ARPU Band - Bill	BILL_ARPU
Customer - Churn Band	Customer - Churn Band	CHURN_BAND_CD
Customer - Profitability Band	Customer - Profitability Band	PROFITABILITY_BAND_CD
Customer - Marital status	Customer - Marital status	IND_CUST_MARITAL_STATUS_CD
Customer - Gender	Customer - Gender	IND_CUST_GENDER_CD
Customer - Ethnicity	Customer - Ethnicity	IND_CUST_ETHNICITY_CD
Customer - Occupation	Customer - Occupation	IND_CUST_STD_OCCUPATION_CD
Customer - Income Group	Customer - Income Group	IND_CUST_INCOME_RANGE_CD

Dimension	Hierarchy	Level
Customer - Business Segment	Customer - Business Segment	IND_CUST_SEGMENT_TYPE_CD
Customer Type	Customer Type	CUST_TYPE_CD
Customer Status	Customer Status	CUST_STATUS_CD
		CUST_STATUS_CHNG_RSN_CD
Customer - Education group	Customer - Education group	IND_CUST_EDUCATION_LEVEL_CD
Offer Bundle	Offer Bundle	OFFER_BUNDLE_NM
Offer - Customer Type	Offer - Customer Type	OFFER_CUST_TYPE_CD
Offer - Payment Mode	Offer - Payment Mode	OFFER_PYMNT_MODE_CD
Offer - Segment	Offer - Segment	OFFER_SEGMENT_CD
Customer - Behavioral Segment	Customer - Behavioral Segment	ANALYTICAL_SEGMENT_CD
ARPU Band - Data Usage	ARPU Band - Data Usage	DATA_USG_ARPU
ARPU Band -Message	ARPU Band -Message	MESSAGE_USG_ARPU
ARPU Band - Call Usage	ARPU Band - Call Usage	VOICE_USG_ARPU
Target Offer	Target Offer	OFFER_NM_1
Propensity to Buy	Propensity to Buy	CSUS_SCORE_NUM

Measures

The following table lists the measures of the CFD_CUST_OFFER_MTH_CSUS_CUBE cube. For details, see "Analysis Variables" on page 305.

Table 17.19 *Measures of CFD_CUST_OFFER_MTH_CSUS_CUBE*

Name	Statistics	Description
CUST_SKN	N	Number of Customer
VOICE_USG_ARPUAVG	AVG	Average VOICE_USG_ARPU
TENURE_ON_OFFER_BUNDLE_IN_DAYAVG	AVG	Average TENURE_ON_OFFER_BUNDLE_IN_DAYS

Name	Statistics	Description
TENURE_ON_NETWORK_IN_DAYSAVG	AVG	Average TENURE_ON_NETWORK_IN_DAYS
TENURE_ON_BASE_OFFER_IN_DAYSAVG	AVG	Average TENURE_ON_BASE_OFFER_IN_DAYS
MESSAGE_USG_ARPUAVG	AVG	Average MESSAGE_USG_ARPU
GROSS_USG_ARPUAVG	AVG	Average GROSS_USG_ARPU
DATA_USG_ARPUAVG	AVG	Average DATA_USG_ARPU
BILL_ARPUAVG	AVG	Average BILL_ARPU
CSUS_SCORE_NUMAVG	AVG	Average CSUS_SCORE_NUM

Aggregations

Here are the member levels of the Default aggregation:

- AGE_BAND_CD
- ANALYTICAL_MODEL_NM_CHURN
- ANALYTICAL_MODEL_NM_SEGMENTATION
- ANALYTICAL_SEGMENT_CD
- BILL_ARPU
- BUSINESS_GROUP_NM
- CAL_MONTH_NM
- CAL_QUARTER_NUM
- CAL_YEAR_NUM
- CHANNEL_NM
- CHANNEL_TYPE_CD
- CHURN_BAND_CD
- CITY_CD
- COUNTRY_CD
- COUNTY_CD
- CSUS_SCORE_NUM
- CUST_STATUS_CD
- CUST_STATUS_CHNG_RSN_CD
- CUST_TYPE_CD

- DATA_USG_ARPU
- GROSS_USG_ARPU
- IND_CUST_EDUCATION_LEVEL_CD
- IND_CUST_ETHNICITY_CD
- IND_CUST_GENDER_CD
- IND_CUST_INCOME_RANGE_CD
- IND_CUST_MARITAL_STATUS_CD
- IND_CUST_SEGMENT_TYPE_CD
- IND_CUST_STD_OCCUPATION_CD
- MESSAGE_USG_ARPU
- OFFER_BUNDLE_NM
- OFFER_CUST_TYPE_CD
- OFFER_NM
- OFFER_NM_1
- OFFER_PYMNT_MODE_CD
- OFFER_SEGMENT_CD
- PROFITABILITY_BAND_CD
- REGION_CD
- STATE_CD
- TENURE_ON_BASE_OFFER_IN_DAYS
- TENURE_ON_NETWORK_IN_DAYS
- TENURE_ON_OFFER_BUNDLE_IN_DAYS
- VOICE_USG_ARPU

Cube Structure: CFD_CUST_SERVICE_MTH_CSUS_CUBE

Input Table

The CUST_MTH_CSUS_F fact is the input table for the CFD_CUST_SERVICE_MTH_CSUS_CUBE cube.

Dimensions

The following table lists the dimensions, hierarchies, and levels of the CFD_CUST_SERVICE_MTH_CSUS_CUBE cube. For details, see “Category Variables” on page 301.

Table 17.20 *Dimensions, Hierarchies, and Levels of CFD_CUST_SERVICE_MTH_CSUS_CUBE*

Dimension	Hierarchy	Level
Offer	Offer	OFFER_NM

Dimension	Hierarchy	Level
Customer Geography	Customer Geography - State	COUNTRY_CD
		REGION_CD
		STATE_CD
		CITY_CD
Customer Geography	Customer Geography - County	COUNTRY_CD
		COUNTY_CD
		CITY_CD
Time	Time	CAL_YEAR_NUM
		CAL_QUARTER_NUM
		CAL_MONTH_NM
Sales Channel Base Offer	Sales Channel Base Offer	CHANNEL_TYPE_CD
		CHANNEL_NM
Business Group	Business Group	BUSINESS_GROUP_NM
Analytical Model - Segmentation	Analytical Model - Segmentation	ANALYTICAL_MODEL_NM_SEGMENTATION
Analytical Model - Churn	Analytical Model - Churn	ANALYTICAL_MODEL_NM_CHURN
Customer - Age Band	Customer - Age Band	AGE_BAND_CD
Customer - Tenure on Base Offer	Customer - Tenure on Base Offer	TENURE_ON_BASE_OFFER_IN_DAYS
Customer - Tenure on Offer Bundle	Customer - Tenure on Offer Bundle	TENURE_ON_OFFER_BUNDLE_IN_DAYS
Customer - Tenure on Network	Customer - Tenure on Network	TENURE_ON_NETWORK_IN_DAYS
ARPU Band - Gross Usage	ARPU Band - Gross Usage	GROSS_USG_ARPU
ARPU Band - Bill	ARPU Band - Bill	BILL_ARPU
Customer - Churn Band	Customer - Churn Band	CHURN_BAND_CD
Customer - Profitability Band	Customer - Profitability Band	PROFITABILITY_BAND_CD

Dimension	Hierarchy	Level
Customer - Marital status	Customer - Marital status	IND_CUST_MARITAL_STATUS_CD
Customer - Gender	Customer - Gender	IND_CUST_GENDER_CD
Customer - Ethnicity	Customer - Ethnicity	IND_CUST_ETHNICITY_CD
Customer - Occupation	Customer - Occupation	IND_CUST_STD_OCCUPATION_CD
Customer - Income Group	Customer - Income Group	IND_CUST_INCOME_RANGE_CD
Customer - Business Segment	Customer - Business Segment	IND_CUST_SEGMENT_TYPE_CD
Customer Type	Customer Type	CUST_TYPE_CD
Customer Status	Customer Status	CUST_STATUS_CD
		CUST_STATUS_CHNG_RSN_CD
Customer - Education group	Customer - Education group	IND_CUST_EDUCATION_LEVEL_CD
Offer Bundle	Offer Bundle	OFFER_BUNDLE_NM
Offer - Customer Type	Offer - Customer Type	OFFER_CUST_TYPE_CD
Offer - Payment Mode	Offer - Payment Mode	OFFER_PYMNT_MODE_CD
Offer - Segment	Offer - Segment	OFFER_SEGMENT_CD
Customer - Behavioral Segment	Customer - Behavioral Segment	ANALYTICAL_SEGMENT_CD
ARPU Band - Data Usage	ARPU Band - Data Usage	DATA_USG_ARPU
ARPU Band -Message	ARPU Band -Message	MESSAGE_USG_ARPU
ARPU Band - Call Usage	ARPU Band - Call Usage	VOICE_USG_ARPU
Propensity to Buy	Propensity to Buy	CSUS_SCORE_NUM
Target Service	Target Service	SERVICE_NM

Measures

The following table lists the measures of the CFD_CUST_SERVICE_MTH_CSUS_CUBE cube. For details, see “Analysis Variables” on page 305.

Table 17.21 Measures of CFD_CUST_SERVICE_MTH_CSUS_CUBE

Name	Statistics	Description
CUST_SKN	N	Number of Customer
VOICE_USG_ARPUAVG	AVG	Average VOICE_USG_ARPU
TENURE_ON_OFFER_BUNDLE_IN_DAYAVG	AVG	Average TENURE_ON_OFFER_BUNDLE_IN_DAYS
TENURE_ON_NETWORK_IN_DAYSAVG	AVG	Average TENURE_ON_NETWORK_IN_DAYS
TENURE_ON_BASE_OFFER_IN_DAYSAVG	AVG	Average TENURE_ON_BASE_OFFER_IN_DAYS
MESSAGE_USG_ARPUAVG	AVG	Average MESSAGE_USG_ARPU
GROSS_USG_ARPUAVG	AVG	Average GROSS_USG_ARPU
DATA_USG_ARPUAVG	AVG	Average DATA_USG_ARPU
BILL_ARPUAVG	AVG	Average BILL_ARPU
CSUS_SCORE_NUMAVG	AVG	Average CSUS_SCORE_NUM

Aggregations

Here are the member levels of the Default aggregation:

- AGE_BAND_CD
- ANALYTICAL_MODEL_NM_CHURN
- ANALYTICAL_MODEL_NM_SEGMENTATION
- ANALYTICAL_SEGMENT_CD
- BILL_ARPU
- BUSINESS_GROUP_NM
- CAL_MONTH_NM
- CAL_QUARTER_NUM
- CAL_YEAR_NUM

- CHANNEL_NM
- CHANNEL_TYPE_CD
- CHURN_BAND_CD
- CITY_CD
- COUNTRY_CD
- COUNTY_CD
- CSUS_SCORE_NUM
- CUST_STATUS_CD
- CUST_STATUS_CHNG_RSN_CD
- CUST_TYPE_CD
- DATA_USG_ARPU
- GROSS_USG_ARPU
- IND_CUST_EDUCATION_LEVEL_CD
- IND_CUST_ETHNICITY_CD
- IND_CUST_GENDER_CD
- IND_CUST_INCOME_RANGE_CD
- IND_CUST_MARITAL_STATUS_CD
- IND_CUST_SEGMENT_TYPE_CD
- IND_CUST_STD_OCCUPATION_CD
- MESSAGE_USG_ARPU
- OFFER_BUNDLE_NM
- OFFER_CUST_TYPE_CD
- OFFER_NM
- OFFER_PYMNT_MODE_CD
- OFFER_SEGMENT_CD
- PROFITABILITY_BAND_CD
- REGION_CD
- SERVICE_NM
- STATE_CD
- TENURE_ON_BASE_OFFER_IN_DAYS
- TENURE_ON_NETWORK_IN_DAYS
- TENURE_ON_OFFER_BUNDLE_IN_DAYS
- VOICE_USG_ARPU

Star Schema: Customer Weekly Cross-Sell and Up-Sell

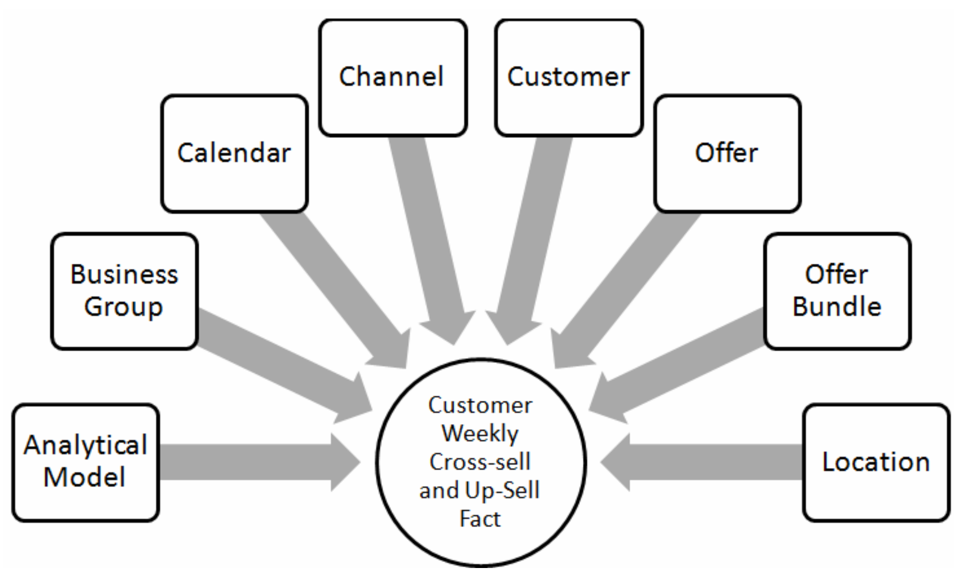
Overview

The Customer Weekly Cross-Sell and Up-Sell star schema stores information about customer-level cross-sell and up-sell scores for a particular service or an offer. The information is stored for the weekly time grain.

Fact and Dimensions

The following diagram illustrates the fact and dimensions of the Customer Weekly Cross-Sell and Up-Sell star schema.

Figure 17.8 *Customer Weekly Cross-Sell and Up-Sell Fact*



Cube Structure: CFD_CUST_OFFER_WEEKLY_CSUS_CUBE

Input Table

The CUST_WEEKLY_CSUS_F fact is the input table for the CFD_CUST_OFFER_WEEKLY_CSUS_CUBE cube.

Dimensions

The following table lists the dimensions, hierarchies, and levels of the CFD_CUST_OFFER_WEEKLY_CSUS_CUBE cube. For details, see "Category Variables" on page 301.

Table 17.22 *Dimensions, Hierarchies, and Levels of CFD_CUST_OFFER_WEEKLY_CSUS_CUBE*

Dimension	Hierarchy	Level
Offer	Offer	OFFER_NM
Customer Geography	Customer Geography - State	COUNTRY_CD
		REGION_CD
		STATE_CD
		CITY_CD
Customer Geography	Customer Geography - County	COUNTRY_CD
		COUNTY_CD
		CITY_CD
Time	YQM	Year
		Quarter
		Month
Time	YW	Year
		Week
Sales Channel Base Offer	Sales Channel Base Offer	CHANNEL_TYPE_CD
		CHANNEL_NM
Business Group	Business Group	BUSINESS_GROUP_NM
Analytical Model - Segmentation	Analytical Model - Segmentation	ANALYTICAL_MODEL_NM_SEGMENTATION
Analytical Model - Churn	Analytical Model - Churn	ANALYTICAL_MODEL_NM_CHURN
Customer - Age Band	Customer - Age Band	AGE_BAND_CD
Customer - Tenure on Base Offer	Customer - Tenure on Base Offer	TENURE_ON_BASE_OFFER_IN_DAYS
Customer - Tenure on Offer Bundle	Customer - Tenure on Offer Bundle	TENURE_ON_OFFER_BUNDLE_IN_DAYS
Customer - Tenure on Network	Customer - Tenure on Network	TENURE_ON_NETWORK_IN_DAYS
ARPU Band - Gross Usage	ARPU Band - Gross Usage	GROSS_USG_ARPU

Dimension	Hierarchy	Level
Customer - Churn Band	Customer - Churn Band	CHURN_BAND_CD
Customer - Profitability Band	Customer - Profitability Band	PROFITABILITY_BAND_CD
Customer - Marital status	Customer - Marital status	IND_CUST_MARITAL_STATUS_CD
Customer - Gender	Customer - Gender	IND_CUST_GENDER_CD
Customer - Ethnicity	Customer - Ethnicity	IND_CUST_ETHNICITY_CD
Customer - Occupation	Customer - Occupation	IND_CUST_STD_OCCUPATION_CD
Customer - Income Group	Customer - Income Group	IND_CUST_INCOME_RANGE_CD
Customer - Business Segment	Customer - Business Segment	IND_CUST_SEGMENT_TYPE_CD
Customer Type	Customer Type	CUST_TYPE_CD
Customer Status	Customer Status	CUST_STATUS_CD
		CUST_STATUS_CHNG_RSN_CD
Customer - Education group	Customer - Education group	IND_CUST_EDUCATION_LEVEL_CD
Offer Bundle	Offer Bundle	OFFER_BUNDLE_NM
Offer - Customer Type	Offer - Customer Type	OFFER_CUST_TYPE_CD
Offer - Payment Mode	Offer - Payment Mode	OFFER_PYMNT_MODE_CD
Offer - Segment	Offer - Segment	OFFER_SEGMENT_CD
Customer - Behavioral Segment	Customer - Behavioral Segment	ANALYTICAL_SEGMENT_CD
ARPU Band - Data Usage	ARPU Band - Data Usage	DATA_USG_ARPU
ARPU Band -Message	ARPU Band -Message	MESSAGE_USG_ARPU
ARPU Band - Call Usage	ARPU Band - Call Usage	VOICE_USG_ARPU
Target Offer	Target Offer	OFFER_NM_1
Propensity to Buy	Propensity to Buy	CSUS_SCORE_NUM

Measures

The following table lists the measures of the CFD_CUST_OFFER_WEEKLY_CSUS_CUBE cube. For details, see "Analysis Variables" on page 305.

Table 17.23 *Measures of CFD_CUST_OFFER_WEEKLY_CSUS_CUBE*

Name	Statistics	Description
CUST_SKN	N	Number of Customer
VOICE_USG_ARPUAVG	AVG	Average VOICE_USG_ARPU
TENURE_ON_OFFER_BUNDLE_IN_DAYAVG	AVG	Average TENURE_ON_OFFER_BUNDLE_IN_DAYS
TENURE_ON_NETWORK_IN_DAYSAVG	AVG	Average TENURE_ON_NETWORK_IN_DAYS
TENURE_ON_BASE_OFFER_IN_DAYSAVG	AVG	Average TENURE_ON_BASE_OFFER_IN_DAYS
MESSAGE_USG_ARPUAVG	AVG	Average MESSAGE_USG_ARPU
GROSS_USG_ARPUAVG	AVG	Average GROSS_USG_ARPU
DATA_USG_ARPUAVG	AVG	Average DATA_USG_ARPU
CSUS_SCORE_NUMAVG	AVG	Average CSUS_SCORE_NUM

Aggregations

Here are the member levels of the Default aggregation:

- AGE_BAND_CD
- ANALYTICAL_MODEL_NM_CHURN
- ANALYTICAL_MODEL_NM_SEGMENTATION
- ANALYTICAL_SEGMENT_CD
- BUSINESS_GROUP_NM
- CHANNEL_NM
- CHANNEL_TYPE_CD
- CHURN_BAND_CD
- CITY_CD

- COUNTRY_CD
- COUNTY_CD
- CSUS_SCORE_NUM
- CUST_STATUS_CD
- CUST_STATUS_CHNG_RSN_CD
- CUST_TYPE_CD
- DATA_USG_ARPU
- GROSS_USG_ARPU
- IND_CUST_EDUCATION_LEVEL_CD
- IND_CUST_ETHNICITY_CD
- IND_CUST_GENDER_CD
- IND_CUST_INCOME_RANGE_CD
- IND_CUST_MARITAL_STATUS_CD
- IND_CUST_SEGMENT_TYPE_CD
- IND_CUST_STD_OCCUPATION_CD
- MESSAGE_USG_ARPU
- Month
- OFFER_BUNDLE_NM
- OFFER_CUST_TYPE_CD
- OFFER_NM
- OFFER_NM_1
- OFFER_PYMNT_MODE_CD
- OFFER_SEGMENT_CD
- PROFITABILITY_BAND_CD
- Quarter
- REGION_CD
- STATE_CD
- TENURE_ON_BASE_OFFER_IN_DAYS
- TENURE_ON_NETWORK_IN_DAYS
- TENURE_ON_OFFER_BUNDLE_IN_DAYS
- VOICE_USG_ARPU
- Week
- Year

Cube Structure: CFD_CUST_SERVICE_WKLY_CSUS_CUBE

Input Table

The CUST_WEEKLY_CSUS_F fact is the input table for the CFD_CUST_SERVICE_WKLY_CSUS_CUBE cube.

Dimensions

The following table lists the dimensions, hierarchies, and levels of the CFD_CUST_SERVICE_WKLY_CSUS_CUBE cube. For details, see "Category Variables" on page 301.

Table 17.24 *Dimensions, Hierarchies, and Levels of CFD_CUST_SERVICE_WKLY_CSUS_CUBE*

Dimension	Hierarchy	Level
Offer	Offer	OFFER_NM
Customer Geography	Customer Geography - State	COUNTRY_CD
		REGION_CD
		STATE_CD
		CITY_CD
Customer Geography	Customer Geography - County	COUNTRY_CD
		COUNTY_CD
		CITY_CD
Time	YQM	Year
		Quarter
		Month
Time	YW	Year
		Week
Sales Channel Base Offer	Sales Channel Base Offer	CHANNEL_TYPE_CD
		CHANNEL_NM
Business Group	Business Group	BUSINESS_GROUP_NM
Analytical Model - Segmentation	Analytical Model - Segmentation	ANALYTICAL_MODEL_NM_SEGMENTATION

Dimension	Hierarchy	Level
Analytical Model - Churn	Analytical Model - Churn	ANALYTICAL_MODEL_NM_CHURN
Customer - Age Band	Customer - Age Band	AGE_BAND_CD
Customer - Tenure on Base Offer	Customer - Tenure on Base Offer	TENURE_ON_BASE_OFFER_IN_DAYS
Customer - Tenure on Offer Bundle	Customer - Tenure on Offer Bundle	TENURE_ON_OFFER_BUNDLE_IN_DAYS
Customer - Tenure on Network	Customer - Tenure on Network	TENURE_ON_NETWORK_IN_DAYS
ARPU Band - Gross Usage	ARPU Band - Gross Usage	GROSS_USG_ARPU
Customer - Churn Band	Customer - Churn Band	CHURN_BAND_CD
Customer - Profitability Band	Customer - Profitability Band	PROFITABILITY_BAND_CD
Customer - Marital status	Customer - Marital status	IND_CUST_MARITAL_STATUS_CD
Customer - Gender	Customer - Gender	IND_CUST_GENDER_CD
Customer - Ethnicity	Customer - Ethnicity	IND_CUST_ETHNICITY_CD
Customer - Occupation	Customer - Occupation	IND_CUST_STD_OCCUPATION_CD
Customer - Income Group	Customer - Income Group	IND_CUST_INCOME_RANGE_CD
Customer - Business Segment	Customer - Business Segment	IND_CUST_SEGMENT_TYPE_CD
Customer Type	Customer Type	CUST_TYPE_CD
Customer Status	Customer Status	CUST_STATUS_CD
		CUST_STATUS_CHNG_RSN_CD
Customer - Education group	Customer - Education group	IND_CUST_EDUCATION_LEVEL_CD
Offer Bundle	Offer Bundle	OFFER_BUNDLE_NM
Offer - Customer Type	Offer - Customer Type	OFFER_CUST_TYPE_CD

Dimension	Hierarchy	Level
Offer - Payment Mode	Offer - Payment Mode	OFFER_PYMNT_MODE_CD
Offer - Segment	Offer - Segment	OFFER_SEGMENT_CD
Customer - Behavioral Segment	Customer - Behavioral Segment	ANALYTICAL_SEGMENT_CD
ARPU Band - Data Usage	ARPU Band - Data Usage	DATA_USG_ARPU
ARPU Band -Message	ARPU Band -Message	MESSAGE_USG_ARPU
ARPU Band - Call Usage	ARPU Band - Call Usage	VOICE_USG_ARPU
Propensity to Buy	Propensity to Buy	CSUS_SCORE_NUM
Target Service	Target Service	SERVICE_NM

Measures

The following table lists the measures of the CFD_CUST_SERVICE_WKLY_CSUS_CUBE cube. For details, see "Analysis Variables" on page 305.

Table 17.25 *Measures of CFD_CUST_SERVICE_WKLY_CSUS_CUBE*

Name	Statistics	Description
CUST_SKN	N	Number of Customer
VOICE_USG_ARPUAVG	AVG	Average VOICE_USG_ARPU
TENURE_ON_OFFER_BUNDLE_IN_DAYAVG	AVG	Average TENURE_ON_OFFER_BUNDLE_IN_DAYS
TENURE_ON_NETWORK_IN_DAYSAVG	AVG	Average TENURE_ON_NETWORK_IN_DAYS
TENURE_ON_BASE_OFFER_IN_DAYSAVG	AVG	Average TENURE_ON_BASE_OFFER_IN_DAYS
MESSAGE_USG_ARPUAVG	AVG	Average MESSAGE_USG_ARPU
GROSS_USG_ARPUAVG	AVG	Average GROSS_USG_ARPU
DATA_USG_ARPUAVG	AVG	Average DATA_USG_ARPU

Name	Statistics	Description
CSUS_SCORE_NUMAVG	AVG	Average CSUS_SCORE_NUM

Aggregations

Here are the member levels of the Default aggregation:

- AGE_BAND_CD
- ANALYTICAL_MODEL_NM_CHURN
- ANALYTICAL_MODEL_NM_SEGMENTATION
- ANALYTICAL_SEGMENT_CD
- BUSINESS_GROUP_NM
- CHANNEL_NM
- CHANNEL_TYPE_CD
- CHURN_BAND_CD
- CITY_CD
- COUNTRY_CD
- COUNTY_CD
- CSUS_SCORE_NUM
- CUST_STATUS_CD
- CUST_STATUS_CHNG_RSN_CD
- CUST_TYPE_CD
- DATA_USG_ARPU
- GROSS_USG_ARPU
- IND_CUST_EDUCATION_LEVEL_CD
- IND_CUST_ETHNICITY_CD
- IND_CUST_GENDER_CD
- IND_CUST_INCOME_RANGE_CD
- IND_CUST_MARITAL_STATUS_CD
- IND_CUST_SEGMENT_TYPE_CD
- IND_CUST_STD_OCCUPATION_CD
- MESSAGE_USG_ARPU
- Month
- OFFER_BUNDLE_NM
- OFFER_CUST_TYPE_CD
- OFFER_NM
- OFFER_PYMNT_MODE_CD
- OFFER_SEGMENT_CD

- PROFITABILITY_BAND_CD
- Quarter
- REGION_CD
- SERVICE_NM
- STATE_CD
- TENURE_ON_BASE_OFFER_IN_DAYS
- TENURE_ON_NETWORK_IN_DAYS
- TENURE_ON_OFFER_BUNDLE_IN_DAYS
- VOICE_USG_ARPU
- Week
- Year

Star Schema: Subscription Monthly Cross-Sell and Up-Sell

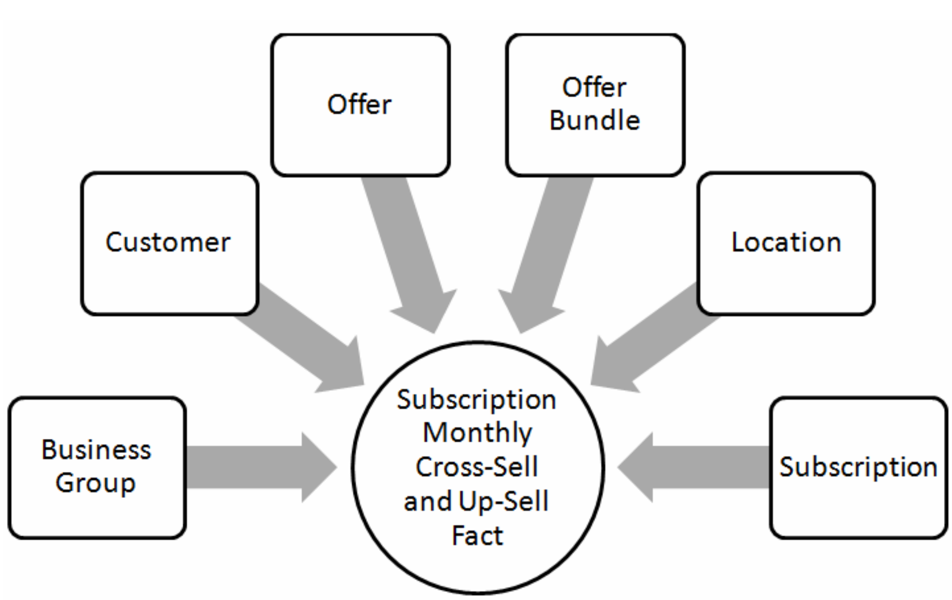
Overview

The Subscription Monthly Cross-Sell and Up-Sell star schema stores information about subscription-level cross-sell and up-sell scores for a particular service or an offer. The information is stored for the monthly time grain.

Fact and Dimensions

The following diagram illustrates the fact and dimensions of the Subscription Monthly Cross-Sell and Up-Sell star schema.

Figure 17.9 *Subscription Monthly Cross-Sell and Up-Sell Fact*



Cube Structure: CFD_SUBSCRP_OFFER_MTH_CSUS_CUBE

Input Table

The SUBSCRP_MTH_CSUS_F fact is the input table for the CFD_SUBSCRP_OFFER_MTH_CSUS_CUBE cube.

Dimensions

The following table lists the dimensions, hierarchies, and levels of the CFD_SUBSCRP_OFFER_MTH_CSUS_CUBE cube. For details, see "Category Variables" on page 301.

Table 17.26 Dimensions, Hierarchies, and Levels of CFD_SUBSCRP_OFFER_MTH_CSUS_CUBE

Dimension	Hierarchy	Levels
Offer	Offer	OFFER_NM
Customer Geography	Customer Geography - State	COUNTRY_CD
		REGION_CD
		STATE_CD
		CITY_CD
Customer Geography	Customer Geography - County	COUNTRY_CD
		COUNTY_CD
		CITY_CD
Time	Time	CAL_YEAR_NUM
		CAL_QUARTER_NUM
		CAL_MONTH_NM
Business Group	Business Group	BUSINESS_GROUP_NM
Subscription - Tenure on Network	Subscription - Tenure on Network	TENURE_ON_NETWORK_IN_DAYS
Customer - Marital status	Customer - Marital status	IND_CUST_MARITAL_STATUS_CD
Customer - Gender	Customer - Gender	IND_CUST_GENDER_CD
Customer - Ethnicity	Customer - Ethnicity	IND_CUST_ETHNICITY_CD

Dimension	Hierarchy	Levels
Customer - Occupation	Customer - Occupation	IND_CUST_STD_OCCUPATION_CD
Customer - Income Group	Customer - Income Group	IND_CUST_INCOME_RANGE_CD
Customer - Business Segment	Customer - Business Segment	IND_CUST_SEGMENT_TYPE_CD
Customer Type	Customer Type	CUST_TYPE_CD
Customer Status	Customer Status	CUST_STATUS_CD
		CUST_STATUS_CHNG_RSN_CD
Customer - Education group	Customer - Education group	IND_CUST_EDUCATION_LEVEL_CD
Offer Bundle	Offer Bundle	OFFER_BUNDLE_NM
Offer - Customer Type	Offer - Customer Type	OFFER_CUST_TYPE_CD
Offer - Payment Mode	Offer - Payment Mode	OFFER_PYMNT_MODE_CD
Offer - Segment	Offer - Segment	OFFER_SEGMENT_CD
Target Offer	Target Offer	OFFER_NM_1
Propensity to Buy	Propensity to Buy	CSUS_SCORE_NUM
Subscription Type	Subscription Type	SUBSCRP_TYPE_CD
Subscription Access Category	Subscription Access Category	SUBSCRP_ACCESS_CATEGORY_CD
Subscription Access Standard	Subscription Access Standard	SUBSCRP_ACCESS_STANDARD_CD

Measures

The following table lists the measures of the CFD_SUBSCRP_OFFER_MTH_CSUS_CUBE cube. For details, see “Analysis Variables” on page 305.

Table 17.27 Measures of CFD_SUBSCRP_OFFER_MTH_CSUS_CUBE

Name	Statistics	Description
TENURE_ON_NETWORK_IN_DAYSAVG	AVG	Average TENURE_ON_NETWORK_IN_DAYS
CSUS_SCORE_NUMAVG	AVG	Average CSUS_SCORE_NUM
SUBSCRP_SKN	N	Number of Subscription

Aggregations

Here are the member levels of the Default aggregation:

- BUSINESS_GROUP_NM
- CAL_MONTH_NM
- CAL_QUARTER_NUM
- CAL_YEAR_NUM
- CITY_CD
- COUNTRY_CD
- COUNTY_CD
- CSUS_SCORE_NUM
- CUST_STATUS_CD
- CUST_STATUS_CHNG_RSN_CD
- CUST_TYPE_CD
- IND_CUST_EDUCATION_LEVEL_CD
- IND_CUST_ETHNICITY_CD
- IND_CUST_GENDER_CD
- IND_CUST_INCOME_RANGE_CD
- IND_CUST_MARITAL_STATUS_CD
- IND_CUST_SEGMENT_TYPE_CD
- IND_CUST_STD_OCCUPATION_CD
- OFFER_BUNDLE_NM
- OFFER_CUST_TYPE_CD
- OFFER_NM
- OFFER_NM_1
- OFFER_PYMNT_MODE_CD
- OFFER_SEGMENT_CD
- REGION_CD
- STATE_CD

- SUBSCRP_ACCESS_CATEGORY_CD
- SUBSCRP_ACCESS_STANDARD_CD
- SUBSCRP_TYPE_CD
- TENURE_ON_NETWORK_IN_DAYS

Cube Structure: CFD_SUBSCRP_SRVC_MTH_CSUS_CUBE

Input Table

The SUBSCRP_MTH_CSUS_F fact is the input table for the CFD_SUBSCRP_SRVC_MTH_CSUS_CUBE cube.

Dimensions

The following table lists the dimensions, hierarchies, and levels of the CFD_SUBSCRP_SRVC_MTH_CSUS_CUBE cube. For details, see "Category Variables" on page 301.

Table 17.28 *Dimension, Hierarchy, and Level of CFD_SUBSCRP_SRVC_MTH_CSUS_CUBE*

Dimension	Hierarchy	Level
Offer	Offer	OFFER_NM
Customer Geography	Customer Geography - State	COUNTRY_CD
		REGION_CD
		STATE_CD
		CITY_CD
Customer Geography	Customer Geography - County	COUNTRY_CD
		COUNTY_CD
		CITY_CD
Time	Time	CAL_YEAR_NUM
		CAL_QUARTER_NUM
		CAL_MONTH_NM
Business Group	Business Group	BUSINESS_GROUP_NM
Subscription - Tenure on Network	Subscription - Tenure on Network	TENURE_ON_NETWORK_IN_DAYS
Customer - Marital status	Customer - Marital status	IND_CUST_MARITAL_STATUS_CD

Dimension	Hierarchy	Level
Customer - Gender	Customer - Gender	IND_CUST_GENDER_CD
Customer - Ethnicity	Customer - Ethnicity	IND_CUST_ETHNICITY_CD
Customer - Occupation	Customer - Occupation	IND_CUST_STD_OCCUPATION_CD
Customer - Income Group	Customer - Income Group	IND_CUST_INCOME_RANGE_CD
Customer - Business Segment	Customer - Business Segment	IND_CUST_SEGMENT_TYPE_CD
Customer Type	Customer Type	CUST_TYPE_CD
Customer Status	Customer Status	CUST_STATUS_CD
		CUST_STATUS_CHNG_RSN_CD
Customer - Education group	Customer - Education group	IND_CUST_EDUCATION_LEVEL_CD
Offer Bundle	Offer Bundle	OFFER_BUNDLE_NM
Offer - Customer Type	Offer - Customer Type	OFFER_CUST_TYPE_CD
Offer - Payment Mode	Offer - Payment Mode	OFFER_PYMNT_MODE_CD
Offer - Segment	Offer - Segment	OFFER_SEGMENT_CD
Propensity to Buy	Propensity to Buy	CSUS_SCORE_NUM
Subscription Type	Subscription Type	SUBSCRP_TYPE_CD
Subscription Access Category	Subscription Access Category	SUBSCRP_ACCESS_CATEGORY_CD
Subscription Access Standard	Subscription Access Standard	SUBSCRP_ACCESS_STANDARD_CD
Target Service	Target Service	SERVICE_NM

Measures

The following table lists the measures of the CFD_SUBSCRP_SRVC_MTH_CSUS_CUBE cube. For details, see "Analysis Variables" on page 305.

Table 17.29 Measures of CFD_SUBSCRP_SRVC_MTH_CSUS_CUBE

Name	Statistics	Description
TENURE_ON_NETWORK_IN_DAYSAVG	AVG	Average TENURE_ON_NETWORK_IN_DAYS
CSUS_SCORE_NUMAVG	AVG	Average CSUS_SCORE_NUM
SUBSCRP_SKN	N	Number of Subscription

Aggregations

Here are the member levels of the Default aggregation:

- BUSINESS_GROUP_NM
- CAL_MONTH_NM
- CAL_QUARTER_NUM
- CAL_YEAR_NUM
- CITY_CD
- COUNTRY_CD
- COUNTY_CD
- CSUS_SCORE_NUM
- CUST_STATUS_CD
- CUST_STATUS_CHNG_RSN_CD
- CUST_TYPE_CD
- IND_CUST_EDUCATION_LEVEL_CD
- IND_CUST_ETHNICITY_CD
- IND_CUST_GENDER_CD
- IND_CUST_INCOME_RANGE_CD
- IND_CUST_MARITAL_STATUS_CD
- IND_CUST_SEGMENT_TYPE_CD
- IND_CUST_STD_OCCUPATION_CD
- OFFER_BUNDLE_NM
- OFFER_CUST_TYPE_CD
- OFFER_NM
- OFFER_PYMNT_MODE_CD
- OFFER_SEGMENT_CD
- REGION_CD
- SERVICE_NM
- STATE_CD

- SUBSCRP_ACCESS_CATEGORY_CD
- SUBSCRP_ACCESS_STANDARD_CD
- SUBSCRP_TYPE_CD
- TENURE_ON_NETWORK_IN_DAYS

Star Schema: Subscription Weekly Cross-Sell and Up-Sell

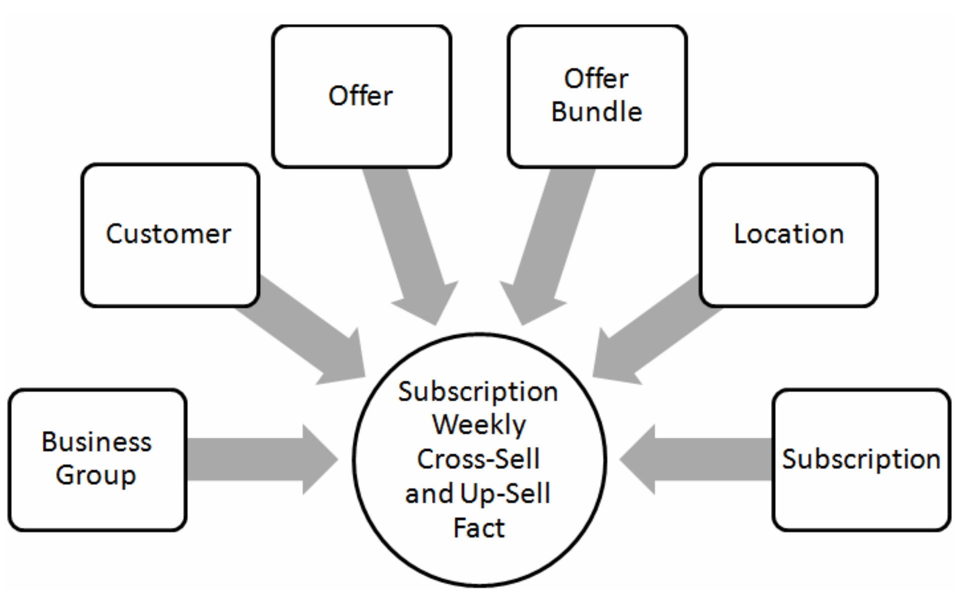
Overview

The Subscription Weekly Cross-Sell and Up-Sell star schema stores information about subscription-level cross-sell and up-sell scores for a particular service or an offer. The information is stored for the weekly time grain.

Fact and Dimensions

The following diagram illustrates the fact and dimensions of the Subscription Weekly Cross-Sell and Up-Sell star schema.

Figure 17.10 *Subscription Weekly Cross-Sell and Up-Sell Fact*



Cube Structure: CFD_SUBSCRP_OFFER_WKLY_CSUS_CUBE

Input Table

The SUBSCRP_WEEKLY_CSUS_F fact is the input table for the CFD_SUBSCRP_OFFER_WKLY_CSUS_CUBE cube.

Dimensions

The following table lists the dimensions, hierarchies, and levels of the CFD_SUBSCRP_OFFER_WKLY_CSUS_CUBE cube. For details, see "Category Variables" on page 301.

Table 17.30 Dimension, Hierarchy, and Level of CFD_SUBSCRP_OFFER_WKLY_CSUS_CUBE

Dimension	Hierarchy	Level
Offer	Offer	OFFER_NM
Customer Geography	Customer Geography - State	COUNTRY_CD
		REGION_CD
		STATE_CD
		CITY_CD
Customer Geography	Customer Geography - County	COUNTRY_CD
		COUNTY_CD
		CITY_CD
Time	YQM	Year
		Quarter
		Month
Time	YW	Year
		Week
Business Group	Business Group	BUSINESS_GROUP_NM
Subscription - Tenure on Network	Subscription - Tenure on Network	TENURE_ON_NETWORK_IN_DAYS
Customer - Marital status	Customer - Marital status	IND_CUST_MARITAL_STATUS_CD
Customer - Gender	Customer - Gender	IND_CUST_GENDER_CD
Customer - Ethnicity	Customer - Ethnicity	IND_CUST_ETHNICITY_CD
Customer - Occupation	Customer - Occupation	IND_CUST_STD_OCCUPATION_CD
Customer - Income Group	Customer - Income Group	IND_CUST_INCOME_RANGE_CD

Dimension	Hierarchy	Level
Customer - Business Segment	Customer - Business Segment	IND_CUST_SEGMENT_TYPE_CD
Customer Type	Customer Type	CUST_TYPE_CD
Customer Status	Customer Status	CUST_STATUS_CD
		CUST_STATUS_CHNG_RSN_CD
Customer - Education group	Customer - Education group	IND_CUST_EDUCATION_LEVEL_CD
Offer Bundle	Offer Bundle	OFFER_BUNDLE_NM
Offer - Customer Type	Offer - Customer Type	OFFER_CUST_TYPE_CD
Offer - Payment Mode	Offer - Payment Mode	OFFER_PYMNT_MODE_CD
Offer - Segment	Offer - Segment	OFFER_SEGMENT_CD
Target Offer	Target Offer	OFFER_NM_1
Propensity to Buy	Propensity to Buy	CSUS_SCORE_NUM
Subscription Type	Subscription Type	SUBSCRP_TYPE_CD
Subscription Access Category	Subscription Access Category	SUBSCRP_ACCESS_CATEGORY_CD
Subscription Access Standard	Subscription Access Standard	SUBSCRP_ACCESS_STANDARD_CD

Measures

The following table lists the measures of the CFD_SUBSCRP_OFFER_WKLY_CSUS_CUBE cube. For details, see "Analysis Variables" on page 305.

Table 17.31 *Measures of CFD_SUBSCRP_OFFER_WKLY_CSUS_CUBE*

Name	Statistics	Description
TENURE_ON_NETWORK_IN_DAYSAVG	AVG	Average TENURE_ON_NETWORK_IN_DAYS
CSUS_SCORE_NUMAVG	AVG	Average CSUS_SCORE_NUM
SUBSCRP_SKN	N	Number of Subscription

Aggregations

Here are the member levels of the Default aggregation:

- BUSINESS_GROUP_NM
- CITY_CD
- COUNTRY_CD
- COUNTY_CD
- CSUS_SCORE_NUM
- CUST_STATUS_CD
- CUST_STATUS_CHNG_RSN_CD
- CUST_TYPE_CD
- IND_CUST_EDUCATION_LEVEL_CD
- IND_CUST_ETHNICITY_CD
- IND_CUST_GENDER_CD
- IND_CUST_INCOME_RANGE_CD
- IND_CUST_MARITAL_STATUS_CD
- IND_CUST_SEGMENT_TYPE_CD
- IND_CUST_STD_OCCUPATION_CD
- Month
- OFFER_BUNDLE_NM
- OFFER_CUST_TYPE_CD
- OFFER_NM
- OFFER_NM_1
- OFFER_PYMNT_MODE_CD
- OFFER_SEGMENT_CD
- Quarter
- REGION_CD
- STATE_CD
- SUBSCRP_ACCESS_CATEGORY_CD
- SUBSCRP_ACCESS_STANDARD_CD
- SUBSCRP_TYPE_CD
- TENURE_ON_NETWORK_IN_DAYS
- Week
- Year

Cube Structure: CFD_SUBSCRP_SRVC_WKLY_CSUS_CUBE

Input Table

The SUBSCRP_WEEKLY_CSUS_F fact is the input table for the CFD_SUBSCRP_SRVC_WKLY_CSUS_CUBE cube.

Dimensions

The following table lists the dimensions, hierarchies, and levels of the CFD_SUBSCRP_SRVC_WKLY_CSUS_CUBE cube. For details, see "Category Variables" on page 301.

Table 17.32 *Dimensions, Hierarchy, and Level for CFD_SUBSCRP_SRVC_WKLY_CSUS_CUBE*

Dimension	Hierarchy	Level
Offer	Offer	OFFER_NM
Customer Geography	Customer Geography - State	COUNTRY_CD
		REGION_CD
		STATE_CD
		CITY_CD
Customer Geography	Customer Geography - County	COUNTRY_CD
		COUNTY_CD
		CITY_CD
Time	YQM	Year
		Quarter
		Month
Time	YW	Year
		Week
Business Group	Business Group	BUSINESS_GROUP_NM
Subscription - Tenure on Network	Subscription - Tenure on Network	TENURE_ON_NETWORK_IN_DAYS
Customer - Marital status	Customer - Marital status	IND_CUST_MARITAL_STATUS_CD
Customer - Gender	Customer - Gender	IND_CUST_GENDER_CD

Dimension	Hierarchy	Level
Customer - Ethnicity	Customer - Ethnicity	IND_CUST_ETHNICITY_CD
Customer - Occupation	Customer - Occupation	IND_CUST_STD_OCCUPATION_CD
Customer - Income Group	Customer - Income Group	IND_CUST_INCOME_RANGE_CD
Customer - Business Segment	Customer - Business Segment	IND_CUST_SEGMENT_TYPE_CD
Customer Type	Customer Type	CUST_TYPE_CD
Customer Status	Customer Status	CUST_STATUS_CD
		CUST_STATUS_CHNG_RSN_CD
Customer - Education group	Customer - Education group	IND_CUST_EDUCATION_LEVEL_CD
Offer Bundle	Offer Bundle	OFFER_BUNDLE_NM
Offer - Customer Type	Offer - Customer Type	OFFER_CUST_TYPE_CD
Offer - Payment Mode	Offer - Payment Mode	OFFER_PYMNT_MODE_CD
Offer - Segment	Offer - Segment	OFFER_SEGMENT_CD
Propensity to Buy	Propensity to Buy	CSUS_SCORE_NUM
Subscription Type	Subscription Type	SUBSCRP_TYPE_CD
Subscription Access Category	Subscription Access Category	SUBSCRP_ACCESS_CATEGORY_CD
Subscription Access Standard	Subscription Access Standard	SUBSCRP_ACCESS_STANDARD_CD
Target Service	Target Service	SERVICE_NM

Measures

The following table lists the measures of the CFD_SUBSCRP_SRVC_WKLY_CSUS_CUBE cube. For details, see “Analysis Variables” on page 305.

Table 17.33 Measures of CFD_SUBSCRP_SRVC_WKLY_CSUS_CUBE

Name	Statistics	Description
TENURE_ON_NETWORK_IN_DAYSAVG	AVG	Average TENURE_ON_NETWORK_IN_DAYS
CSUS_SCORE_NUMAVG	AVG	Average CSUS_SCORE_NUM
SUBSCRP_SKN	N	Number of Subscription

Aggregations

Here are the member levels of the Default aggregation:

- BUSINESS_GROUP_NM
- CITY_CD
- COUNTRY_CD
- COUNTY_CD
- CSUS_SCORE_NUM
- CUST_STATUS_CD
- CUST_STATUS_CHNG_RSN_CD
- CUST_TYPE_CD
- IND_CUST_EDUCATION_LEVEL_CD
- IND_CUST_ETHNICITY_CD
- IND_CUST_GENDER_CD
- IND_CUST_INCOME_RANGE_CD
- IND_CUST_MARITAL_STATUS_CD
- IND_CUST_SEGMENT_TYPE_CD
- IND_CUST_STD_OCCUPATION_CD
- Month
- OFFER_BUNDLE_NM
- OFFER_CUST_TYPE_CD
- OFFER_NM
- OFFER_PYMNT_MODE_CD
- OFFER_SEGMENT_CD
- Quarter
- REGION_CD
- SERVICE_NM
- STATE_CD
- SUBSCRP_ACCESS_CATEGORY_CD

- SUBSCRP_ACCESS_STANDARD_CD
- SUBSCRP_TYPE_CD
- TENURE_ON_NETWORK_IN_DAYS
- Week
- Year

Business Reports List

The following table lists business reports that you can view in SAS Web Report Studio. The source cube and the source information map from which the report is generated are also mentioned.

Table 17.34 *Reports, Information Map, and Cubes Matrix*

Report Group Name	Report Name	Information Map	Cube
Business Group Reports-Monthly	Business Group Customer Movement	cfd_cust_mth_bg_mvmnt_infomap	cfd_cust_mth_bg_mvmnt_cube
	Business Group Customer Distribution	cfd_cust_mth_summary_infomap	cfd_cust_mth_summary_cube
	Business Group Demographic Profile	cfd_cust_mth_summary_infomap	cfd_cust_mth_summary_cube
	Business Group Product Ownership Behavior	cfd_cust_mth_summary_infomap	cfd_cust_mth_summary_cube
	Business Group Profiling by Profitability Band	cfd_cust_mth_summary_infomap	cfd_cust_mth_summary_cube
	Business Group Tenure Analysis	cfd_cust_mth_summary_infomap	cfd_cust_mth_summary_cube
	Business Group Usage and Revenue Behavior	cfd_cust_mth_summary_infomap	cfd_cust_mth_summary_cube

Report Group Name	Report Name	Information Map	Cube
Business Group Reports-Weekly	Business Group Customer Distribution	cfd_cust_weekly_summary_infomap	cfd_cust_weekly_summary_cube
	Business Group Demographic Profile	cfd_cust_weekly_summary_infomap	cfd_cust_weekly_summary_cube
	Business Group Product Ownership Behavior	cfd_cust_weekly_summary_infomap	cfd_cust_weekly_summary_cube
	Business Group Profiling by Profitability Band	cfd_cust_weekly_summary_infomap	cfd_cust_weekly_summary_cube
	Business Group Tenure Analysis	cfd_cust_weekly_summary_infomap	cfd_cust_weekly_summary_cube
	Business Group Usage and Revenue Behavior	cfd_cust_weekly_summary_infomap	cfd_cust_weekly_summary_cube
Churn Reports-Monthly	Churn Profiling Across Customer Demographic	cfd_cust_mth_summary_infomap	cfd_cust_mth_summary_cube
	Churn Profiling Across Customers	cfd_cust_mth_summary_infomap	cfd_cust_mth_summary_cube
	Customer Status Change Analysis	cfd_cust_mth_summary_infomap	cfd_cust_mth_summary_cube
	Key Retention Analysis	cfd_cust_mth_summary_infomap	cfd_cust_mth_summary_cube
	Profiling of Potential Churners by Demographic	cfd_cust_mth_summary_infomap	cfd_cust_mth_summary_cube
	Profiling of Potential Churners by Usage Charge	cfd_cust_mth_summary_infomap	cfd_cust_mth_summary_cube
	Profiling of Potential Churners	cfd_cust_mth_summary_infomap	cfd_cust_mth_summary_cube
	Service Mix Profiling of Potential Churners	cfd_cust_mth_summary_infomap	cfd_cust_mth_summary_cube
	Usage and Revenue Profiling of Churned Customers	cfd_cust_mth_summary_infomap	cfd_cust_mth_summary_cube

Report Group Name	Report Name	Information Map	Cube
Churn Reports - Weekly	Churn Profiling Across Customer Demographics - Weekly	cfd_cust_weekly_summary_infomap	cfd_cust_weekly_summary_cube
	Churn profiling across customers - Weekly	cfd_cust_weekly_summary_infomap	cfd_cust_weekly_summary_cube
	Customer Status Change Analysis - Weekly	cfd_cust_weekly_summary_infomap	cfd_cust_weekly_summary_cube
	Key Retention Analysis - Weekly	cfd_cust_weekly_summary_infomap	cfd_cust_weekly_summary_cube
	Profiling of Potential Churners - Weekly	cfd_cust_weekly_summary_infomap	cfd_cust_weekly_summary_cube
	Profiling of Potential Churners by Demographics - Weekly	cfd_cust_weekly_summary_infomap	cfd_cust_weekly_summary_cube
	Profiling of Potential Churners by Usage Charges - Weekly	cfd_cust_weekly_summary_infomap	cfd_cust_weekly_summary_cube
	Service Mix Profiling of Potential Churners - Weekly	cfd_cust_weekly_summary_infomap	cfd_cust_weekly_summary_cube
	Usage and Revenue Profiling of Churned Customers - Weekly	cfd_cust_weekly_summary_infomap	cfd_cust_weekly_summary_cube

Report Group Name	Report Name	Information Map	Cube
Segmentation Reports Monthly	Behavioral Segment Analysis by Tenure	cfd_cust_mth_summary_infomap	cfd_cust_mth_summary_cube
	Behavioral Segment Customer Distribution	cfd_cust_mth_summary_infomap	cfd_cust_mth_summary_cube
	Behavioral Segment Demographic Profile	cfd_cust_mth_summary_infomap	cfd_cust_mth_summary_cube
	Behavioral Segment Movement	cfd_cust_mth_sgmt_mvmnt_infomap	cfd_cust_mth_sgmt_mvmnt_cube
	Behavioral Segment Product Ownership	cfd_cust_mth_summary_infomap	cfd_cust_mth_summary_cube
	Behavioral Segment Profiling by Profitability Band	cfd_cust_mth_summary_infomap	cfd_cust_mth_summary_cube
	Behavioral Segment Usage Revenue Analysis	cfd_cust_mth_summary_infomap	cfd_cust_mth_summary_cube
	Behavioral Segments across Churn Propensity Segments	cfd_cust_mth_summary_infomap	cfd_cust_mth_summary_cube

Report Group Name	Report Name	Information Map	Cube
Segmentation Reports Weekly	Behavioral Segment across Churn Propensity Segments-Weekly	cfd_cust_weekly_summary_infomap	cfd_cust_weekly_summary_cube
	Behavioral Segment Analysis by Tenure - Weekly	cfd_cust_weekly_summary_infomap	cfd_cust_weekly_summary_cube
	Behavioral Segment Customer Distribution - Weekly	cfd_cust_weekly_summary_infomap	cfd_cust_weekly_summary_cube
	Behavioral Segment Demographic Profile - Weekly	cfd_cust_weekly_summary_infomap	cfd_cust_weekly_summary_cube
	Behavioral Segment Product Ownership Behavior - Weekly	cfd_cust_weekly_summary_infomap	cfd_cust_weekly_summary_cube
	Behavioral Segment Profiling by Profitability Band - Weekly	cfd_cust_weekly_summary_infomap	cfd_cust_weekly_summary_cube
	Behavioral Segment Usage Revenue Analysis - Weekly	cfd_cust_weekly_summary_infomap	cfd_cust_weekly_summary_cube
Cross-Sell and Up-Sell Offer Reports Monthly	Offer Purchase Propensity Across ARPU Bands	cfd_cust_offer_mth_csus_informap	cfd_cust_offer_mth_csus_cube
	Offer Purchase Propensity Across ARPU Bands	cfd_cust_offer_mth_csus_informap	cfd_cust_offer_mth_csus_cube
	Offer Purchase Propensity Across ARPU Bands	cfd_cust_offer_mth_csus_informap	cfd_cust_offer_mth_csus_cube
	Offer Purchase Propensity by Demographics	cfd_cust_offer_mth_csus_informap	cfd_cust_offer_mth_csus_cube

Report Group Name	Report Name	Information Map	Cube
Cross-Sell and Up-Sell Offer Reports Weekly	Offer Purchase Propensity Across ARPU Bands	cfd_cust_offer_weekly_csus_informap	cfd_cust_offer_weekly_csus_cube
	Offer Purchase Propensity Across Segments	cfd_cust_offer_weekly_csus_informap	cfd_cust_offer_weekly_csus_cube
	Offer Purchase Propensity Across Tenure Bands	cfd_cust_offer_weekly_csus_informap	cfd_cust_offer_weekly_csus_cube
	Offer Purchase Propensity by Demographics	cfd_cust_offer_weekly_csus_informap	cfd_cust_offer_weekly_csus_cube
Cross-Sell and Up-Sell Service Reports Monthly	Service Purchase Propensity Across ARPU Bands	cfd_cust_service_mth_csus_infomap	cfd_cust_service_mth_csus_cube
	Service Purchase Propensity Across Segments	cfd_cust_service_mth_csus_infomap	cfd_cust_service_mth_csus_cube
	Service Purchase Propensity Across Tenure Bands	cfd_cust_service_mth_csus_infomap	cfd_cust_service_mth_csus_cube
	Service Purchase Propensity by Demographics	cfd_cust_service_mth_csus_infomap	cfd_cust_service_mth_csus_cube
Cross-Sell and Up-Sell Service Reports Weekly	Service Purchase Propensity Across ARPU Bands	cfd_cust_service_wkly_csus_infomap	cfd_cust_service_wkly_csus_cube
	Service Purchase Propensity Across Segments	cfd_cust_service_wkly_csus_infomap	cfd_cust_service_wkly_csus_cube
	Service Purchase Propensity Across Tenure Bands	cfd_cust_service_wkly_csus_infomap	cfd_cust_service_wkly_csus_cube
	Service Purchase Propensity by Demographics	cfd_cust_service_wkly_csus_infomap	cfd_cust_service_wkly_csus_cube
Performance Reports	Best Offer Acceptance	cfd_cust_mth_summary_infomap	cfd_cust_mth_summary_cube
	Comparative Usage and Usage Charges Analysis	cfd_cust_cmprtv_mth_summary_infomap	cfd_cust_cmprtv_mth_summary_cube

The subsequent chapters of this guide give the details about these reports.

Prerequisites

You can view business reports in SAS Web Report Studio. Before you log on to SAS Web Report Studio, make sure that the following tasks are complete:

- Install and configure a supported Web browser.
- You have the user ID and password to log on to SAS Web Report Studio.
- Import all reporting data structures into the SAS Web Report Studio environment.

Note: Contact your System Administrator if you need more details about these tasks.

View a Prebuilt Business Report

To view a prebuilt business report:

1. Log on to SAS Web Report Studio.
2. Click **Open**.
3. To view the list of predefined report categories, select the **Offer Optimization** folder.
4. To view reports of a certain category, select the report category, and then click **OK**.
5. Select the report that you want to view, and then click **Open**.

Chapter 18

Business Groups Reports

About Business Group Reports

Business group reports help you analyze customer distribution across business groups. These reports enable you to identify the business problems that are associated with each business group. Using this information, you can define projects and identify one or more target segments for each business group.

Business group reports are available for the following subject areas:

- Customer distribution
- Demographic profile
- Usage and revenue behavior
- Contribution of customers toward revenue
- Profiling by profitability band
- Tenure analysis
- Customer movement

For each subject area, reports are generated for monthly and weekly grain. However, the report that is generated for both the grains is the same.

Business Group Customer Distribution

Overview

The Business Group Customer Distribution report helps you analyze the distribution of customers across business groups. In this report, customer counts are compared across business groups on the basis of certain strategic parameters, such as geography, offer segment, customer type, and offer payment mode.

Report Sections

The Business Groups Customer Distribution report contains the following sections:

- Business groups by geography
- Business groups by offer segment and by offer payment mode
- Business groups by customer type

Variables List

Table 18.1 *Variables of Business Group Customer Distribution Report*

Category Variables	Analysis Variables
Offer — payment mode	Opening customer count

Category Variables	**Analysis Variables**
Customer type	New customer count
Time	Churned customer count
Customer geography — state	Closing customer count
Business group	Percentage of churned customer
Offer — segment	

Sample Report

Display 18.1 *Business Group Customer Distribution by Geography Weekly Report*

CAL YEAR NUM	2009				
COUNTRY NM	219_COUNTRY_NM				
	New Cust Cnt	Churned Cust Cnt	Closing Cust Cnt	% Share of Closing Cust Cnt	Percent Churned Cust
BUSINESS GROUP NM					
2_BUSINESS_GROUP_NM	63	0	151	100.00%	0%

Business Group Demographic Profile

Overview

The Business Group Demographic Profile report helps you analyze the distribution of customers across business groups on the basis of certain demographic attributes such as gender, age, and marital status. These reports give you an overview of the customer profiles that are developed across business groups.

Variables List

Table 18.2 *Variables of Business Group Demographic Profile Report*

Category Variables	**Analysis Variables**
Business group	Opening customer count
Time	New customer count
Customer geography — State	Churned customer count
Customer — Ethnicity	Closing customer count
Customer — Marital status	

Category Variables	Analysis Variables
Customer — Gender	
Customer — Occupation	
Customer — Age band	
Customer — Income group	
Customer — Education group	

Report Sections

The Business Group Demographic Profile report contains the following sections:

- Business groups customer profiling by gender
- Business groups customer profiling by age
- Business groups customer profiling by marital status
- Business groups customer profiling by income
- Business groups customer profiling by occupation

Sample Report

Display 18.2 *Business Group Demographic Profile Weekly Report*

Time > 2009
Customer Geography – State > 219_COUNTRY_NM

	CAL WEEK NUM	1											
	REGION NM	1_REGION_NM					2_REGION_NM					3_REGION_NM	
		Opening Cust Cnt	New Cust Cnt	Churned Cust Cnt	Closing Cust Cnt	Percent Churned Cust	Opening Cust Cnt	New Cust Cnt	Churned Cust Cnt	Closing Cust Cnt	Percent Churned Cust	Opening Cust Cnt	New Cust Cnt
BUSINESS GROUP NM	AGE BAND												
2_BUSINESS_GROUP_NM	2_AGE_BAND	5	1	0	6	0%	5	1	0	6	0%	11	2
	3_AGE_BAND	19	0	0	19	0%	9	2	0	11	0%	9	3
	4_AGE_BAND	8	2	0	10	0%	5	2	0	7	0%	11	1

Business Group Product Ownership Behavior Report

Overview

The Business Group Product Ownership Behavior report gives the distribution of products and services across business groups. This report also gives the revenue that each business group contributes across products and services. This report also helps you to profile customers who have purchased numerous products and services and to plan effective ways of cross-selling and up-selling for these customers.

Variables List

Table 18.3 Variables of Business Group Product Ownership Behavior Report

Category Variables	Analysis Variables
Offer — payment mode	Closing customer count
Business group	Total gross usage charges
Time	Total data usage charges
Customer geography — State	Total message usage charges
Offer — segment	Total voice usage charges
	Percentage of call charges over gross usage charges
	Percentage of message charges over gross usage charges
	Percentage of data charges over gross usage charges

Sample Report

Display 18.3 *Business Group Product Ownership Behavior Weekly Report*

	CAL YEAR NUM	2009						
	COUNTRY NM	219_COUNTRY_NM						
		Total Gross Usg Chrgs	Total Voice Usg Chrgs	Total Data Usg Chrgs	Total Msgs Usg Chrgs	Percent Msg Chrgs Over Gross Usg Chrgs	Percent Call Chrgs Over Gross Usg Chrgs	Percent Data Chrgs Over Gross Usg Chrgs
BUSINESS GROUP NM	OFFER PYMNT MODE NM							
2_BUSINESS_GROUP_NM	1_PYMNT_MODE_NM	63012816.395	28698849.498	15047840.866	19266126.031	31%	46%	24%

	CAL YEAR NUM	2009						
	COUNTRY NM	219_COUNTRY_NM						
		Total Gross Usg Chrgs	Total Voice Usg Chrgs	Total Data Usg Chrgs	Total Msgs Usg Chrgs	Percent Call Chrgs Over Gross Usg Chrgs	Percent Data Chrgs Over Gross Usg Chrgs	Percent Msg Chrgs Over Gross Usg Chrgs
BUSINESS GROUP NM	OFFER SEGMENT NM							
2_BUSINESS_GROUP_NM	1_OFFER_SEGMENT_NM	13163367.809	4962170.250	4815348.781	3385848.778	38%	37%	26%
	2_OFFER_SEGMENT_NM	11391592.007	4628051.328	3363894.520	3399646.159	41%	30%	30%
	3_OFFER_SEGMENT_NM	5821198.745	2098645.353	2062015.912	1660537.480	36%	35%	29%
	5_OFFER_SEGMENT_NM	32636657.834	17009982.567	4806581.653	10820093.614	52%	15%	33%

	CAL YEAR NUM	2009						
	COUNTRY NM	219_COUNTRY_NM						
		Total Gross Usg Chrgs	Total Voice Usg Chrgs	Total Data Usg Chrgs	Total Msgs Usg Chrgs	Percent Call Chrgs Over Gross Usg Chrgs	Percent Data Chrgs Over Gross Usg Chrgs	Percent Msg Chrgs Over Gross Usg Chrgs
BUSINESS GROUP NM	CUST TYPE NM							
2_BUSINESS_GROUP_NM	INDIVIDUAL	63012816.395	28698849.498	15047840.866	19266126.031	46%	24%	31%

Business Group Profiling by Profitability Bands

Overview

The Business Group Profiling by Profitability Bands report shows the distribution of customers within each business group across profitability bands. This report helps you analyze the profitability bands and identify profitable and unprofitable customers across business groups.

Variables List

Table 18.4 *Variables of Business Group Profiling by Profitability Bands Report*

Category Variables	Analysis Variables
Offer — Payment mode	Closing customer count
Customer — Profitability band	Churned customer count
Time	Opening customer count
Customer geography — State	New customer count
Business group	
Offer — Segment	
ARPU band — Bill	
ARPU band — Gross usage	

Report Sections

The Business Group Profiling by Profitability Bands report contains the following sections:

- Profitability of customers across business groups
- Profitability and ARPU bands across customers

Sample Report

Display 18.4 *Business Group Profiling by Profitability Bands Weekly Report*

		CAL YEAR NUM	2009	
		COUNTRY NM	219_COUNTRY_NM	
			Closing Cust Cnt	% Share of Closing Cust Cnt
BUSINESS GROUP NM	OFFER PYMNT MODE NM	PROFITABILITY BAND		
2_BUSINESS_GROUP_NM	1_PYMNT_MODE_NM	NAVL	151	100.00%
	Subtotal: 1_PYMNT_MODE_NM		**151**	**100.00%**
Subtotal: 2_BUSINESS_GROUP_NM			**151**	**100.00%**

Applied filters: None

		COUNTRY NM	219_COUNTRY_NM	
		CAL YEAR NUM	2009	
			Closing Cust Cnt	% Share of Closing Cust Cnt
BUSINESS GROUP NM	OFFER SEGMENT NM	PROFITABILITY BAND		
2_BUSINESS_GROUP_NM	1_OFFER_SEGMENT_NM	NAVL	37	100.00%
	Subtotal: 1_OFFER_SEGMENT_NM		**37**	**24.50%**
	2_OFFER_SEGMENT_NM	NAVL	33	100.00%
	Subtotal: 2_OFFER_SEGMENT_NM		**33**	**21.85%**
	3_OFFER_SEGMENT_NM	NAVL	17	100.00%
	Subtotal: 3_OFFER_SEGMENT_NM		**17**	**11.26%**
	5_OFFER_SEGMENT_NM	NAVL	64	100.00%
	Subtotal: 5_OFFER_SEGMENT_NM		**64**	**42.38%**
Subtotal: 2_BUSINESS_GROUP_NM			**151**	**100.00%**

Business Group Tenure Analysis

Overview

The Business Group Tenure Analysis report gives customer distribution within a business group on the basis of customers' tenure on the network. This report identifies business groups that have customers with high customer lifetime scores.

Variables List

Table 18.5 Variables of Business Group Tenure Analysis Report

Category Variables	Analysis Variables
Offer	Opening customer count
Offer — Payment mode	Closing customer count
Offer — Segment	Churned customer count
Time	New customer count
Customer geography — State	
Business group	
Customer — Tenure on network	
Customer — Tenure on offer bundle	
Offer bundle	
Customer — Tenure on base offer	
Base offer	

Report Sections

The Business Group Tenure Analysis report contains the following reports:

- Tenure on network for customers across business groups
- Tenure on offer bundle of customers across business groups
- Tenure on base offer of customers across business groups

Sample Report

Display 18.5 *Business Group Tenure Analysis Weekly Report*

Customer Geography – State > 219_COUNTRY_NM

		CAL YEAR NUM	2009							
		REGION NM	1_REGION_NM		2_REGION_NM		3_REGION_NM		4_REGION_NM	
			Closing Cust Cnt	% Share of Closing Cust Cnt	Closing Cust Cnt	% Share of Closing Cust Cnt	Closing Cust Cnt	% Share of Closing Cust Cnt	Closing Cust Cnt	% Share of Closing Cust Cnt
BUSINESS GROUP NM	OFFER PYMNT MODE NM	TENURE ON NETWORK BAND								
2_BUSINESS_GROUP_NM	1_PYMNT_MODE_NM	*OTHER*	35	100.00%	24	100.00%	37	100.00%	55	100.00%
	Subtotal: 1_PYMNT_MODE_NM		35	100.00%	24	100.00%	37	100.00%	55	100.00%
Subtotal: 2_BUSINESS_GROUP_NM			35	100.00%	24	100.00%	37	100.00%	55	100.00%

Applied filters: None

Customer Geography – State > 219_COUNTRY_NM

		CAL YEAR NUM	2009							
		REGION NM	1_REGION_NM		2_REGION_NM		3_REGION_NM		4_REGION_NM	
			Closing Cust Cnt	% Share of Closing Cust Cnt	Closing Cust Cnt	% Share of Closing Cust Cnt	Closing Cust Cnt	% Share of Closing Cust Cnt	Closing Cust Cnt	% Share of Closing Cust Cnt
BUSINESS GROUP NM	OFFER PYMNT MODE NM	TENURE ON NETWORK BAND								
2_BUSINESS_GROUP_NM	1_PYMNT_MODE_NM	*OTHER*	35	100.00%	24	100.00%	37	100.00%	55	100.00%
Total			35	100.00%	24	100.00%	37	100.00%	55	100.00%

Business Group Usage and Revenue Behavior

Overview

The Business Group Usage and Revenue Behavior report helps you analyze the usage and revenue patterns of customers belonging to each business group. This report highlights business groups that contain highly profitable customers.

Variables List

Table 18.6 *Variables of Business Group Usage and Revenue Behavior Report*

Category Variables	Analysis Variables
Offer — Payment mode	Closing customer count
Business group	Churned customer count
Time	Opening customer count
Customer geography — State	New customer count

Category Variables	Analysis Variables
Offer — segment	Average amount of recharges
ARPU band — Bill	Total amount of recharges
ARPU band — Gross usage	Average number of recharges
ARPU band — Call usage	Total number of recharges
ARPU band — Data usage	Total volume of messages
ARPU band — Message	Total number of sessions
	Total number of messages
	Total number of calls
	Total duration of calls
	Total volume of data
	Total bill net payable amount
	Total gross usage charges
	Total voice usage charges
	Total message usage charges
	Total data usage charges
	Average call duration per call
	Average number of calls per customer
	Average call duration per customer

Report Sections

The Business Groups Usage and Revenue Behavior report contains the following sections:

- Business groups voice calls usage analysis
- Business groups messaging usage analysis
- Business groups data usage analysis
- Business groups analysis by ARPS
- Business groups analysis by usage ARPU
- Business groups analysis by bill ARPU
- Business groups analysis by prepay recharge top-ups value

Sample Report

Display 18.6 *Business Group Usage and Revenue Behavior Weekly Report*

CAL YEAR NUM	2009						
COUNTRY NM	219_COUNTRY_NM						
	Avg Duration Of Calls	Total Duration Of Calls	Avg Num Of Calls	Total Num Of Calls	Avg Num Of Calls Per Cust	Avg Call Duration Per Cust	Avg Call Dur Per Call
BUSINESS GROUP NM							
2_BUSINESS_GROUP_NM	1157.28	524248	234	105978	702	3471.84	2240.88

Business Group Customer Movement

Overview

The Business Group Customer Movement report helps you analyze stability of business groups over a fixed period. Stability of business groups is measured by considering the movement of customers across business groups.

Variables List

Table 18.7 *Variables of Customer Movement Reports*

Category Variables	Analysis Variables
Time	Closing customer count
Business group current	Average customer movement count
Business group previous	Customer movement over consecutive periods
	Customer movement over parallel periods
	Total moved customer count

Chapter 19

Segmentation Reports

About Customer Segmentation Reports

Classifying customers according to their likely behavior and potential profitability is vital for understanding them. It is important for communications service providers to understand their customers, where high customer churn and declining brand loyalty continue to erode profit margins.

In order to combat these business challenges, communications service providers need a powerful reporting mechanism that enables them to analyze customer segments beyond their demographic profiles. The analysis can be based on other variables such as billing patterns, credit risk scores, loyalty, profitability, and customer lifetime.

SAS Offer Optimization for Communications offers a range of segmentation reports for the following subject areas:

- customer distribution across customer segments
- demographic profiles across customer segments
- usage and revenue analysis across customer segments
- product ownership behavior across customer segments
- tenure analysis across customer segments
- customer movements across customer segments
- customer profiling by profitability bands across customer segments

For each subject area, reports are generated for monthly and weekly grain. However, the report that is generated for both the grains is the same.

Behavioral Segment Customer Distribution

Overview

The Behavioral Segment Customer Distribution report shows the customer distribution across customer segments based on customer types and geographical locations.

Variables

Table 19.1 *Variables of Behavioral Segment Customer Distribution Report*

Category Variables	Analysis Variables
Analytical model — Segmentation	Opening customer count
Customer geography — State	New customer count
Customer type	Churned customer count
Time	Closing customer count

Category Variables	Analysis Variables
Customer — Behavioral segment	Percentage churned customers

Reports Sections

The Behavioral Segment Customer Distribution report contains the following sections:

- behavioral segments by geography
- behavioral segments by customer type

Sample Report

Display 19.1 *Behavioral Segment Customer Distribution Weekly Report*

CAL YEAR NUM	2009				
COUNTRY NM	219_COUNTRY_NM				
	New Cust Cnt	Churned Cust Cnt	Closing Cust Cnt	% Share of Closing Cust Cnt	Percent Churned Cust
CUST BEHAVIORAL SEGMENT					
NAVL	63	0	151	100.00%	0%

Behavioral Segment Demographic Profile Report

Overview

The Behavioral Segment Demographic Profile report shows customer distribution across customer segments based on certain demographic attributes such as age, gender, and marital status.

Variables

Table 19.2 *Variables of Behavioral Segment Demographic Profile Report*

Category Variables	Analysis Variables
Analytical model — Segmentation	Opening customer count
Time	New customer additions
Customer — Behavioral segments	Churned customer count
Customer Geography — State	Closing customer count

Category Variables	Analysis Variables
Customer — Ethnicity	
Customer — Marital Status	
Customer — Gender	
Customer — Occupation	
Customer — Age Band	
Customer — Income Group	
Customer — Education group	

Report Sections

The Behavioral Segment Demographic Profile report contains the following sections:

- behavioral segments customer profiling by gender
- behavioral segments profiling by age
- behavioral segments customer profiling by marital status
- behavioral segments customer profiling by income
- behavioral segments customer profiling by education

Sample Report

Display 19.2 *Behavioral Segment Demographic Profile Weekly Report*

CAL YEAR NUM		2009		
COUNTRY NM		219_COUNTRY_NM		
		New Cust Cnt	Churned Cust Cnt	Closing Cust Cnt
CUST BEHAVIORAL SEGMENT	IND CUST GENDER NM			
NAVL	1_GENDER_NM	54	0	116
	2_GENDER_NM	9	0	35

Behavioral Segment Analysis by Tenure Report

Overview

The Behavioral Segment Analysis by Tenure report shows customer distribution across customer segments on the basis of customer's tenure on the network. This report gives you an insight into customer loyalty across customer segments.

Variables

Table 19.3 *Variables of Behavioral Segment Analysis by Tenure Report*

Category Variables	Analysis Variables
Offer	Closing customer count
Offer — Segment	Churned customer count
Offer bundle	Opening customer count
Customer — Tenure on offer bundle	New customer count
Customer — Tenure on network	
Time	
Customer Geography — State	
Customer — Tenure on base offer	
Offer — Payment mode	
Customer — Behavioral segment	
Analytical model — Segmentation	

Report Sections

The Behavioral Segment Analysis by Tenure report contains the following sections:

- tenure on network for customers across behavioral segments
- tenure on offer bundle of customers across behavioral segments
- tenure on base offer of customers across behavioral segments

Sample Report

Display 19.3 *Behavioral Segment Analysis by Tenure Weekly Report*

		CAL YEAR NUM	2009	
		COUNTRY NM	219_COUNTRY_NM	
			Closing Cust Cnt	% Share of Closing Cust Cnt
CUST BEHAVIORAL SEGMENT	OFFER PYMNT MODE NM	TENURE ON NETWORK BAND		
NAVL	1_PYMNT_MODE_NM	*OTHER*	151	100.00%
	Subtotal: 1_PYMNT_MODE_NM		151	100.00%
Subtotal: NAVL			151	100.00%

Applied filters: None

		CAL YEAR NUM	2009	
		COUNTRY NM	219_COUNTRY_NM	
			Closing Cust Cnt	% Share of Closing Cust Cnt
CUST BEHAVIORAL SEGMENT	OFFER PYMNT MODE NM	TENURE ON NETWORK BAND		
NAVL	1_PYMNT_MODE_NM	*OTHER*	151	100.00%
Total			151	100.00%

Behavioral Segment Product Ownership Report

Overview

The Behavioral Segment Product Ownership report gives an overview of the distribution of products and services across customer segments. This report also helps you analyze contributions of customers toward usages charges across products and services.

Variables

Table 19.4 *Variables of Behavioral Segment Product Ownership Report*

Category Variables	**Analysis Variables**
Offer — Payment mode	Closing customer count

Category Variables	Analysis Variables
Offer — Segment	Total gross usage charges
Analytical model — Segmentation	Total data usage charges
Time	Total message usage charges
Customer geography — State	Total voice usage charges
Customer — Behavioral segment	Percentage of call charges over gross usage charges
	Percentage of message charges over gross usage charges
	Percentage of data charges over gross usage charges

Sample Report

Display 19.4 *Behavioral Segment Product Ownership Weekly Report*

CAL YEAR NUM		2009						
COUNTRY NM		219_COUNTRY_NM						
		Total Gross Usg Chrgs	Total Voice Usg Chrgs	Total Data Usg Chrgs	Total Msgs Usg Chrgs	Percent Msg Chrgs Over Gross Usg Chrgs	Percent Call Chrgs Over Gross Usg Chrgs	Percent Data Chrgs Over Gross Usg Chrgs
CUST BEHAVIORAL SEGMENT	OFFER PYMNT MODE NM							
NAVL	1_PYMNT_MODE_NM	63012816.395	28698849.498	15047840.866	19266126.031	31%	46%	24%

CAL YEAR NUM		2009						
COUNTRY NM		219_COUNTRY_NM						
		Total Gross Usg Chrgs	Total Voice Usg Chrgs	Total Data Usg Chrgs	Total Msgs Usg Chrgs	Percent Call Chrgs Over Gross Usg Chrgs	Percent Data Chrgs Over Gross Usg Chrgs	Percent Msg Chrgs Over Gross Usg Chrgs
CUST BEHAVIORAL SEGMENT	OFFER SEGMENT NM							
NAVL	1_OFFER_SEGMENT_NM	13163367.809	4962170.250	4815348.781	3385848.778	38%	37%	26%
	2_OFFER_SEGMENT_NM	11391592.007	4628051.328	3363894.520	3399646.159	41%	30%	30%
	3_OFFER_SEGMENT_NM	5821198.745	2098645.353	2062015.912	1660537.480	36%	35%	29%
	5_OFFER_SEGMENT_NM	32636657.834	17009982.567	4806581.653	10820093.614	52%	15%	33%

CAL YEAR NUM		2009						
COUNTRY NM		219_COUNTRY_NM						
		Total Gross Usg Chrgs	Total Voice Usg Chrgs	Total Data Usg Chrgs	Total Msgs Usg Chrgs	Percent Call Chrgs Over Gross Usg Chrgs	Percent Data Chrgs Over Gross Usg Chrgs	Percent Msg Chrgs Over Gross Usg Chrgs
CUST BEHAVIORAL SEGMENT	CUST TYPE NM							
NAVL	INDIVIDUAL	63012816.395	28698849.498	15047840.866	19266126.031	46%	24%	31%

Behavioral Segments across Churn Propensity Segments Report

Overview

The Behavioral Segments across Churn Propensity Segments report highlights segments in which customers are most likely to leave. In this report, customers within a segment are compared based on the churn propensity bands. This report gives customer distribution across customer segments based on the churn propensity scores.

Variables

Table 19.5 *Variables of Behavioral Segments across Churn Propensity Segments Report*

Category Variables	Analysis Variables
Analytical model — Churn	Opening customer count
Analytical model — Segmentation	New customer count
Customer — Churn band	Churned customer count
Time	Closing customer count
Customer geography — State	
Customer — Behavioral segment	

Sample Report

Display 19.5 *Behavioral Segments across Churn Propensity Segments Weekly Report*

			CAL YEAR NUM	2009			
			COUNTRY NM	219_COUNTRY_NM			
				New Cust Cnt	Churned Cust Cnt	Closing Cust Cnt	Percent Churned Cust
ANALYTICAL MODEL NM	CUST BEHAVIORAL SEGMENT	OFFER PYMNT MODE NM	CHURN BAND				
NAVL	NAVL	1_PYMNT_MODE_NM	NAVL	63	0	151	0%

			CAL YEAR NUM	2009			
			COUNTRY NM	219_COUNTRY_NM			
				New Cust Cnt	Churned Cust Cnt	Closing Cust Cnt	Percent Churned Cust
ANALYTICAL MODEL NM	CUST BEHAVIORAL SEGMENT	OFFER SEGMENT NM	CHURN BAND				
NAVL	NAVL	1_OFFER_SEGMENT_NM	NAVL	18	0	37	0%
		2_OFFER_SEGMENT_NM	NAVL	3	0	33	0%
		3_OFFER_SEGMENT_NM	NAVL	6	0	17	0%
		5_OFFER_SEGMENT_NM	NAVL	36	0	64	0%

Behavioral Segment Profiling by Profitability Band Report

Overview

The Behavioral Segment Profiling by Profitability Band report helps you analyze customer profitability across segments. This report helps you define customer profiles across customer segments based on profitability bands and ARPU values.

Variables

Table 19.6 *Variables of Behavioral Segment Profiling by Profitability Band Report*

Category Variables	Analysis Variables
Customer — Profitability band	Closing customer count
Time	Churned customer count
Customer Geography — State	Opening customer count
Offer — Segment	New customer count
Offer — Payment mode	
ARPU band — Bill	
ARPU band — Gross usage	
Analytical model — Segmentation	
Customer — Behavioral segment	

Report Sections

The Behavioral Segment Profiling by Profitability Band report contains the following sections:

- profitability of customers across behavioral segments
- profitability and ARPU bands of customers across behavioral segments

Sample Report

Display 19.6 *Behavioral Segment Profiling by Profitability Band Weekly Report*

		COUNTRY NM	219_COUNTRY_NM	
			Closing Cust Cnt	% Share of Closing Cust Cnt
CUST BEHAVIORAL SEGMENT	OFFER PYMNT MODE NM	PROFITABILITY BAND		
NAVL	1_PYMNT_MODE_NM	NAVL	151	100.00%
	Subtotal: 1_PYMNT_MODE_NM		**151**	**100.00%**
Subtotal: NAVL			**151**	**100.00%**

Applied filters: None

		COUNTRY NM	219_COUNTRY_NM	
		CAL YEAR NUM	2009	
			Closing Cust Cnt	% Share of Closing Cust Cnt
CUST BEHAVIORAL SEGMENT	OFFER SEGMENT NM	PROFITABILITY BAND		
NAVL	1_OFFER_SEGMENT_NM	NAVL	37	100.00%
	Subtotal: 1_OFFER_SEGMENT_NM		**37**	**24.50%**
	2_OFFER_SEGMENT_NM	NAVL	33	100.00%
	Subtotal: 2_OFFER_SEGMENT_NM		**33**	**21.85%**
	3_OFFER_SEGMENT_NM	NAVL	17	100.00%
	Subtotal: 3_OFFER_SEGMENT_NM		**17**	**11.26%**
	5_OFFER_SEGMENT_NM	NAVL	64	100.00%
	Subtotal: 5_OFFER_SEGMENT_NM		**64**	**42.38%**
Subtotal: NAVL			**151**	**100.00%**

Behavioral Segment Usage and Revenue Analysis Report

Overview

The Behavioral Segment Usage and Revenue Analysis report gives a comprehensive analysis of customer segments based on their usage and revenue patterns. This report enables you to identify the most profitable segments.

Variables

Table 19.7 Variables of Behavioral Segment Usage and Revenue Analysis Report

Category Variables	Analysis Variables
Analytical model — Segmentation	Closing customer count
Time	Churned customer count
Customer geography — State	Opening customer count
Customer — Behavioral segment	New customer count
Offer — Payment mode	Average amount of recharges
Offer — Segment	Total amount of recharges
ARPU band — Bill	Average number of recharges
ARPU band — Gross usage	Total number of recharges
	Total volume of messages
	Total number of sessions
	Total number of messages
	Total number of calls
	Total duration of calls
	Total volume of data
	Total bill net payable amount
	Total gross usage charges
	Total voice usage charges
	Total message usage charges
	Total data usage charges
	Average call duration per customer
	Average call duration per call
	Bill net payable amount per customer
	Gross usage charges per customer

Category Variables	Analysis Variables
	Average data sessions duration per customer
	Average data volume per customer
	Average data volume per data session
	Average data duration per data session

Report Sections

The Behavioral Segment Usage and Revenue Analysis report contains the following sections:

- behavioral segments voice calls usage analysis
- behavioral segments messaging usage analysis
- behavioral segments data usage analysis
- behavioral segments analysis by ARPS
- behavioral segments analysis by bill ARPU
- behavioral segments analysis by usage ARPU
- behavioral segments analysis by prepay recharge (top-ups) value

Sample Report

Display 19.7 *Behavioral Segment Usage and Revenue Analysis Weekly Report*

CAL YEAR NUM	2009						
COUNTRY NM	219_COUNTRY_NM						
	Avg Duration Of Calls	Total Duration Of Calls	Avg Num Of Calls	Total Num Of Calls	Avg Num Of Calls Per Cust	Avg Call Duration Per Cust	Avg Call Dur Per Call
CUST BEHAVIORAL SEGMENT							
NAVL	1157.28	524248	234	105978	702	3471.84	2240.88

Behavioral Segment Movement Report

Overview

The Behavioral Segment Movement report helps you evaluate the stability of customer segments. Stability of customer segments is evaluated based on customer movements across the segments.

Variables

Table 19.8 Variables of Behavioral Segment Movement Report

Category Variables	Analysis Variables
Analytical model — Segmentation	Closing customer count
Segment— Current	Average customer movement count
Segment— Previous	Customer movement over consecutive periods
Time	Customer movement over parallel periods
	Opening customer count
	Total moved customer count

Chapter 20

Churn Reports

About Churn Reports

Customer churn continues to be a major concern in the communications industry. In order to combat the churn problem, communications service providers need an effective reporting mechanism. Using these reports, they can predict churn and then design cost-effective strategies to reduce it.

SAS Offer Optimization for Communications provides a range of reports that help you analyze and predict churn. These reports quickly help you understand the variables that influence churn. This analysis further enables you to determine not only which customers are likely to leave, but also why. Churn analysis reports are available for the following subject areas:

- churn profiling
- customer status change analysis
- churn drivers
- profiling of customers with high churn propensity
- profiling of customers with high churn propensity based on usage charges
- demographic profiling of customers with high churn propensity
- usage and revenue profiling of customers with high churn propensity
- service mix profiling of customers with high churn propensity
- key retention activities

For each subject area, reports are generated for monthly and weekly grain. However, the report that is generated for both the grains is the same.

Churn Profiling across Customer Demographics

Overview

The Churn Profiling across Customer Demographics report helps you analyze churn distribution based on demographic attributes such as age, gender, occupation, and marital status. These reports help you develop demographic profiles of customers who are likely to churn.

Variables

Table 20.1 *Variables Churn Profiling across Customer Demographics Report*

Category Variables	Analysis Variables
Offer — Payment mode	Closing customer count
Time	Churned customer count
Customer geography — State	
Offer — Segment	
Customer — Age band	
Customer — Gender	
Customer — Marital status	
Customer — Occupation	
Customer — Tenure on network	
Customer — Income group	

Report Sections

The Churn Profiling across Customer Demographics report contains the following sections:

- churn analysis by gender
- churn analysis by customer age bands
- churn analysis by marital status
- churn analysis by occupation
- churn analysis by income category
- churn analysis by customer tenure on network

Churn Profiling across Customers

Overview

The Churn Profiling across Customers report gives an analysis of customers who will churn over a period of time. These reports identify churn patterns across offer payment modes and also give reasons for the churn that is predicted. These reports also provide a comparative analysis of new customers and churned customers who are acquired during the same period.

Variables

Table 20.2 *Variables of Churn Profiling across Customers Report*

Category Variables	Analysis Variables
Offer — Payment mode	Closing customer count
Customer — Churn band	Opening customer count
Offer — Segment	New customer count
Customer geography — State	Churned customer count
Time	Churned customer count over consecutive period
Sales channel — Base offer	Percentage of customer churn
	Percentage variance of churned customer count
	Churned customer count previous period

Report Sections

The Churn Profiling across Customers report contains the following sections:

- churn analysis by offer payment mode
- churn variance over previous period
- customer churn analysis by sales channel

Sample Report

Display 20.1 *Churn Profiling across Customers Weekly Report*

CAL WEEK NUM	1				2				3			
COUNTRY NM	219_COUNTRY_NM				219_COUNTRY_NM				219_COUNTRY_NM			
	Opening Cust Cnt	New Cust Cnt	Churned Cust Cnt	Closing Cust Cnt	Opening Cust Cnt	New Cust Cnt	Churned Cust Cnt	Closing Cust Cnt	Opening Cust Cnt	New Cust Cnt	Churned Cust Cnt	Closing Cust Cnt
OFFER SEGMENT NM												
1_OFFER_SEGMENT_NM	31	6	0	37	31	6	0	37	31	6	0	37
2_OFFER_SEGMENT_NM	32	1	0	33	32	1	0	33	32	1	0	33
3_OFFER_SEGMENT_NM	15	2	0	17	15	2	0	17	15	2	0	17
5_OFFER_SEGMENT_NM	52	12	0	64	52	12	0	64	52	12	0	64

Customer Status Change Analysis Report

Overview

The Customer Status Change Analysis report gives insights into the major factors influencing the customer's decision to leave. These factors are usually the reasons that customers provide to the customer touch points while disconnecting their services. For example, these reports can provide analysis of various churn drivers such as poor coverage, wrong billing, and poor customer service.

Variables

Table 20.3 *Variables of Customer Status Change Analysis Report*

Category Variables	Analysis Variables
Offer — Payment mode	Closing customer count
Customer status	Churned customer count
Customer — Churn band	Percentage of churned customer
Time	Total number of complaints
Offer — Segment	
Customer geography — State	

Report Sections

The Customer Status Change Analysis report contains the following sections:

- customer status change reason analysis
- complaints analysis by customer status change analysis
- customer type analysis

Sample Report

Display 20.2 *Customer Status Change Analysis Monthly Report*

				CAL YEAR NUM	2009		
				COUNTRY NM	219_COUNTRY_NM		
					Closing Cust Cnt	Churned Cust Cnt	Percent Churned Cust
OFFER PYMNT MODE NM	OFFER SEGMENT NM	CHURN BAND	CUST STATUS NM	CUST STATUS CHNG RSN NM			
1_PYMNT_MODE_NM	1_OFFER_SEGMENT_NM	NAVL	1_CUST_STATUS_NM	1_CUST_STATUS_CHNG_RSN_NM	4	0	.00%
				2_CUST_STATUS_CHNG_RSN_NM	7	0	.00%
				3_CUST_STATUS_CHNG_RSN_NM	6	1	17%
			2_CUST_STATUS_NM		3	1	33%
			3_CUST_STATUS_NM	1_CUST_STATUS_CHNG_RSN_NM	4	0	.00%
				2_CUST_STATUS_CHNG_RSN_NM	4	0	.00%
				3_CUST_STATUS_CHNG_RSN_NM	1	0	.00%
			4_CUST_STATUS_NM		4	2	50%
	2_OFFER_SEGMENT_NM	NAVL	1_CUST_STATUS_NM	1_CUST_STATUS_CHNG_RSN_NM	4	0	.00%
				2_CUST_STATUS_CHNG_RSN_NM	4	0	.00%
				3_CUST_STATUS_CHNG_RSN_NM	3	0	.00%
				4_CUST_STATUS_CHNG_RSN_NM	1	0	.00%
			2_CUST_STATUS_NM		10	0	.00%
			3_CUST_STATUS_NM	1_CUST_STATUS_CHNG_RSN_NM	4	0	.00%
				2_CUST_STATUS_CHNG_RSN_NM	3	0	.00%
			4_CUST_STATUS_NM		3	1	33%
	3_OFFER_SEGMENT_NM	NAVL	1_CUST_STATUS_NM	1_CUST_STATUS_CHNG_RSN_NM	3	0	.00%
				2_CUST_STATUS_CHNG_RSN_NM	1	0	.00%
				3_CUST_STATUS_CHNG_RSN_NM	1	0	.00%
			2_CUST_STATUS_NM		5	0	.00%
			3_CUST_STATUS_NM	1_CUST_STATUS_CHNG_RSN_NM	1	0	.00%
				3_CUST_STATUS_CHNG_RSN_NM	3	0	.00%
				4_CUST_STATUS_CHNG_RSN_NM	2	0	.00%
			4_CUST_STATUS_NM		1	0	.00%
	5_OFFER_SEGMENT_NM	NAVL	1_CUST_STATUS_NM	1_CUST_STATUS_CHNG_RSN_NM	7	1	14%
				2_CUST_STATUS_CHNG_RSN_NM	4	0	.00%
				3_CUST_STATUS_CHNG_RSN_NM	6	0	.00%
				4_CUST_STATUS_CHNG_RSN_NM	1	1	100%
			2_CUST_STATUS_NM		13	2	15%
			3_CUST_STATUS_NM	1_CUST_STATUS_CHNG_RSN_NM	8	0	.00%
				2_CUST_STATUS_CHNG_RSN_NM	7	0	.00%
				3_CUST_STATUS_CHNG_RSN_NM	3	1	33%
				4_CUST_STATUS_CHNG_RSN_NM	3	0	.00%
			4_CUST_STATUS_NM		7	0	.00%
2_PYMNT_MODE_NM	1_OFFER_SEGMENT_NM	NAVL	1_CUST_STATUS_NM	1_CUST_STATUS_CHNG_RSN_NM	47	0	.00%
				2_CUST_STATUS_CHNG_RSN_NM	34	0	.00%
				3_CUST_STATUS_CHNG_RSN_NM	22	0	.00%
				4_CUST_STATUS_CHNG_RSN_NM	9	0	.00%
			2_CUST_STATUS_NM		80	0	.00%
			3_CUST_STATUS_NM	1_CUST_STATUS_CHNG_RSN_NM	22	0	.00%

Key Retention Analysis

Overview

The Key Retention Analysis report highlights the customer segment that can be targeted for retention activities. This report identifies segments of highly profitable customers who are most likely to churn. Moreover, based on this report, you can target customer segments for activities related to customer retention.

Variables

Table 20.4 *Variables of Key Retention Analysis Report*

Category Variables	Analysis Variables
Offer — Payment mode	Closing customer count
Offer — Segment	Average gross usage ARPU
Customer — Churn band	Average data volume per customer
Time	Average call duration per customer
Customer geography — State	Average number of messages per customer
Customer — Tenure on network	
ARPU band — Gross usage	
Customer — Profitability band	

Report Sections

The Key Retention Analysis report contains the following sections:

- churn propensity segments analysis by customer tenure
- churn propensity segments analysis by ARPU bands
- churn propensity segments analysis by profitability bands

Sample Report

Display 20.3 *Key Retention Analysis Report*

	CAL YEAR NUM	2009		
	COUNTRY NM	219_COUNTRY_NM		
		Closing Cust Cnt	Avg Gross Usg ARPU	Percent Closing Cust Cnt
CHURN BAND	TENURE ON NETWORK BAND			
NAVL	4_TENURE_BAND_NM	.	881399.994	.
	5_TENURE_BAND_NM	11	678334.088	1.11%
	OTHER	979	50625.867	98.89%
Subtotal: NAVL		**990**	**57956.534**	**100.00%**

Applied filters: None

	CAL YEAR NUM	2009		
	COUNTRY NM	219_COUNTRY_NM		
		Closing Cust Cnt	Avg Gross Usg ARPU	Percent Closing Cust Cnt
OFFER SEGMENT NM	TENURE ON NETWORK BAND			
1_OFFER_SEGMENT_NM	4_TENURE_BAND_NM	.	799966.263	.
	5_TENURE_BAND_NM	2	511612.652	0.57%
	OTHER	351	63840.209	99.43%
Subtotal: 1_OFFER_SEGMENT_NM		**353**	**67822.627**	**100.00%**
2_OFFER_SEGMENT_NM	4_TENURE_BAND_NM	.	405186.867	.
	OTHER	238	45240.975	100.00%
Subtotal: 2_OFFER_SEGMENT_NM		**238**	**45618.673**	**100.00%**
3_OFFER_SEGMENT_NM	5_TENURE_BAND_NM	2	572614.070	0.83%
	OTHER	240	39081.040	99.17%
Subtotal: 3_OFFER_SEGMENT_NM		**242**	**42394.910**	**100.00%**
4_OFFER_SEGMENT_NM	*OTHER*	98	46810.152	100.00%
Subtotal: 4_OFFER_SEGMENT_NM		**98**	**46810.152**	**100.00%**
5_OFFER_SEGMENT_NM	4_TENURE_BAND_NM	.	1041789.605	.
	5_TENURE_BAND_NM	7	756174.504	11.86%
	OTHER	52	46550.256	88.14%
Subtotal: 5_OFFER_SEGMENT_NM		**59**	**131500.282**	**100.00%**

Profiling of Potential Churners Report

Overview

The Profiling of Potential Churners report helps you identify customers who are most likely to churn. This report shows customer distribution across churn segments for combinations of offer segment, payment mode, customer type, and industries.

Variables

Table 20.5 *Variables of Profiling of Potential Churners Report*

Category Variables	Analysis Variables
Time	Closing customer count
Offer — Segment	
Churn — Churn band	
Customer type	
Offer — Payment mode	
Business Segment	
Customer geography — State	
Customer — Occupation	

Report Sections

The Profiling of Potential Churners report contains the following sections:

- analysis by customer type
- analysis by occupation industry

Sample Report

Display 20.4 *Profiling of Potential Churners Weekly Report*

Time > 2009

CAL QUARTER NUM		1		2	
	COUNTRY NM	219_COUNTRY_NM		219_COUNTRY_NM	
		Closing Cust Cnt	Percent Closing Cust Cnt	Closing Cust Cnt	Percent Closing Cust Cnt
CUST TYPE NM	CHURN BAND				
INDIVIDUAL	NAVL	781	100.00%	781	100.00%
Subtotal: INDIVIDUAL		**781**	**100.00%**	**781**	**100.00%**
ORG	NAVL	209	100.00%	209	100.00%
Subtotal: ORG		**209**	**100.00%**	**209**	**100.00%**

Applied filters: None

Time > 2009

	CAL QUARTER NUM	1		2	
	COUNTRY NM	219_COUNTRY_NM		219_COUNTRY_NM	
		Closing Cust Cnt	Percent Closing Cust Cnt	Closing Cust Cnt	Percent Closing Cust Cnt
CUST TYPE NM	OFFER SEGMENT NM				
INDIVIDUAL	1_OFFER_SEGMENT_NM	265	33.93%	265	33.93%
	2_OFFER_SEGMENT_NM	193	24.71%	193	24.71%
	3_OFFER_SEGMENT_NM	196	25.10%	196	25.10%
	4_OFFER_SEGMENT_NM	68	8.71%	68	8.71%
	5_OFFER_SEGMENT_NM	59	7.55%	59	7.55%
Subtotal: INDIVIDUAL		**781**	**100.00%**	**781**	**100.00%**
ORG	1_OFFER_SEGMENT_NM	88	42.11%	88	42.11%
	2_OFFER_SEGMENT_NM	45	21.53%	45	21.53%
	3_OFFER_SEGMENT_NM	46	22.01%	46	22.01%
	4_OFFER_SEGMENT_NM	30	14.35%	30	14.35%
Subtotal: ORG		**209**	**100.00%**	**209**	**100.00%**

Profiling of Potential Churners by Demographics

Overview

The Profiling of Potential Churners by Demographics report gives the distribution of customer churn on the basis of demographic attributes such as age, gender, marital status, and occupation. These reports enable you to develop demographic profiles of customers who are most likely to churn.

Variables

Table 20.6 *Variables of Profiling of Potential Churners by Demographics Report*

Category Variables	Analysis Variables
Offer — Payment mode	Closing customer count
Offer — Segment	
Customer — Gender	
Customer — Age band	
Customer — Marital status	
Customer — Income group	
Customer — Churn band	
Customer geography — State	

Report Sections

The Profiling of Potential Churners by Demographics report contains the following sections:

- potential churn customers analysis by gender
- potential churn customers analysis by age
- potential churn customers analysis by marital status
- potential churn customers analysis by occupation
- potential churn customers analysis by income category

Sample Report

***Display 20.5** Profiling of Potential Churners by Demographics Weekly Report*

Time > 2009

CAL QUARTER NUM		1		2	
COUNTRY NM		219_COUNTRY_NM		219_COUNTRY_NM	
		Closing Cust Cnt	Percent Closing Cust Cnt	Closing Cust Cnt	Percent Closing Cust Cnt
IND CUST GENDER NM	CHURN BAND				
.	NAVL	210	100.00%	210	100.00%
Subtotal: .		**210**	**100.00%**	**210**	**100.00%**
1_GENDER_NM	NAVL	583	100.00%	583	100.00%
Subtotal: 1_GENDER_NM		**583**	**100.00%**	**583**	**100.00%**
2_GENDER_NM	NAVL	197	100.00%	197	100.00%
Subtotal: 2_GENDER_NM		**197**	**100.00%**	**197**	**100.00%**

Applied filters: None

Time > 2009

CAL QUARTER NUM		1		2	
COUNTRY NM		219_COUNTRY_NM		219_COUNTRY_NM	
		Closing Cust Cnt	Percent Closing Cust Cnt	Closing Cust Cnt	Percent Closing Cust Cnt
IND CUST GENDER NM	OFFER SEGMENT NM				
.	1_OFFER_SEGMENT_NM	89	42.38%	89	42.38%
	2_OFFER_SEGMENT_NM	45	21.43%	45	21.43%
	3_OFFER_SEGMENT_NM	46	21.90%	46	21.90%
	4_OFFER_SEGMENT_NM	30	14.29%	30	14.29%
Subtotal: .		**210**	**100.00%**	**210**	**100.00%**
1_GENDER_NM	1_OFFER_SEGMENT_NM	192	32.93%	192	32.93%
	2_OFFER_SEGMENT_NM	146	25.04%	146	25.04%
	3_OFFER_SEGMENT_NM	152	26.07%	152	26.07%
	4_OFFER_SEGMENT_NM	48	8.23%	48	8.23%
	5_OFFER_SEGMENT_NM	45	7.72%	45	7.72%
Subtotal: 1_GENDER_NM		**583**	**100.00%**	**583**	**100.00%**
2_GENDER_NM	1_OFFER_SEGMENT_NM	72	36.55%	72	36.55%
	2_OFFER_SEGMENT_NM	47	23.86%	47	23.86%
	3_OFFER_SEGMENT_NM	44	22.34%	44	22.34%
	4_OFFER_SEGMENT_NM	20	10.15%	20	10.15%
	5_OFFER_SEGMENT_NM	14	7.11%	14	7.11%
Subtotal: 2_GENDER_NM		**197**	**100.00%**	**197**	**100.00%**

Usage and Revenue Profiling of Churned Customer Report

Overview

The Usage and Revenue Profiling of Churned Customer report gives an analysis of the impact on revenue and usage due to the predicted customer churn. This report helps you gain insight into the loss that can be incurred on revenue and usage due to customer churn.

Variables

Table 20.7 *Variables of Usage and Revenue Profiling of Churned Customer Report*

Category Variables	Analysis Variables
Offer — Payment mode	Closing customer Count
Offer — Segment	Total number of calls
Customer status	Total number of messages
Customer — Churn band	Total number of sessions
Time	Total number of events
Customer geography — State	Average number of calls per customer
ARPU band — Gross usage	Average call duration per customer
Customer — Profitability band	Average message volume per message
Customer — Churn band	Average message volume per customer
	Total number of recharges
	Total amount of recharges
	Churned customer count
	Percentage churned customer

Report Sections

The Usage and Revenue Profiling of Churned Customer report contains the following sections:

- comparative usage analysis of churned customers

- usage analysis by call type (Voice, Messaging, Data)
- recharge (Top-ups) analysis of churned customers
- churn analysis by ARPU
- churn analysis by customer profitability

Sample Report

Display 20.6 *Usage and Revenue Profiling of Churned Customer Weekly Report*

CAL YEAR NUM	2009						
COUNTRY NM	219_COUNTRY_NM						
	Avg Duration Of Calls	Total Duration Of Calls	Avg Num Of Calls	Total Num Of Calls	Avg Num Of Calls Per Cust	Avg Call Duration Per Cust	Avg Call Dur Per Call
BUSINESS GROUP NM							
2_BUSINESS_GROUP_NM	1157.28	524248	234	105978	702	3471.84	2240.88

Service Mix Profiling of Potential Churners Report

Overview

The Service Mix Profiling of Potential Churners report gives the distribution of customer churn across products and services. This report enables you to identify the services and products for which you are losing the maximum number of potential customers.

Variables

Table 20.8 *Variables of Service Mix Profiling of Potential Churners Report*

Category Variables	Analysis Variables
Offer — Payment mode	Closing customer count
Offer — Segment	
Customer — Churn Band	
Offer Bundle	
Customer geography — State	
Time	

Sample Report

Display 20.7 *Service Mix Profiling of Potential Churners Report*

	CAL YEAR NUM	2009	
	COUNTRY NM	219_COUNTRY_NM	
		Closing Cust Cnt	Percent Closing Cust Cnt
CHURN BAND	OFFER NM		
NAVL	1_POST_BASE_OFFER_NM	320	32.32%
	2_POST_BASE_OFFER_NM	206	20.81%
	3_POST_BASE_OFFER_NM	225	22.73%
	4_POST_BASE_OFFER_NM	98	9.90%
	5_PRE_BASE_OFFER_NM	59	5.96%
	6_PRE_BASE_OFFER_NM	33	3.33%
	7_PRE_BASE_OFFER_NM	32	3.23%
	8_PRE_BASE_OFFER_NM	17	1.72%
Subtotal: NAVL		990	100.00%

Applied filters: None

	CAL YEAR NUM	2009	
	COUNTRY NM	219_COUNTRY_NM	
		Closing Cust Cnt	Percent Closing Cust Cnt
OFFER SEGMENT NM	OFFER NM		
1_OFFER_SEGMENT_NM	1_POST_BASE_OFFER_NM	320	90.65%
	6_PRE_BASE_OFFER_NM	33	9.35%
Subtotal: 1_OFFER_SEGMENT_NM		353	100.00%
2_OFFER_SEGMENT_NM	2_POST_BASE_OFFER_NM	206	86.55%
	7_PRE_BASE_OFFER_NM	32	13.45%
Subtotal: 2_OFFER_SEGMENT_NM		238	100.00%
3_OFFER_SEGMENT_NM	3_POST_BASE_OFFER_NM	225	92.98%
	8_PRE_BASE_OFFER_NM	17	7.02%
Subtotal: 3_OFFER_SEGMENT_NM		242	100.00%
4_OFFER_SEGMENT_NM	4_POST_BASE_OFFER_NM	98	100.00%
Subtotal: 4_OFFER_SEGMENT_NM		98	100.00%
5_OFFER_SEGMENT_NM	5_PRE_BASE_OFFER_NM	59	100.00%
Subtotal: 5_OFFER_SEGMENT_NM		59	100.00%

Profiling of Potential Churners by Usage Charges Report

Overview

The Profiling of Potential Churners by Usage Charges Report gives an analysis of usage and revenue across the churn bands. These reports indicate the risk that is involved in losing customers with high propensity to churn.

Variables

***Table 20.9** Variables of Profiling of Potential Churners by Usage Charges Report*

Category Variables	Analysis Variables
Offer payment mode	Segment customer count
Churn propensity segments	Total number of calls
Time hierarchy	Total duration of calls
Customer geography hierarchy	Total data volume (megabytes)
Offer segment	Total revenue
	Total active customer count
	Percentage of total MOUs, messages, and megabytes
	Percentage of total revenue

Report Sections

The Profiling of Potential Churners by Usage Charges Report contains the following sections:

- analysis by event count
- analysis by duration
- analysis by usage charges

Sample Report

***Display 20.8** Profiling of Potential Churners by Usage Charges Weekly Report*

Time > 2009

	CAL QUARTER NUM	1				2			
	COUNTRY NM	219_COUNTRY_NM				219_COUNTRY_NM			
		Closing Cust Cnt	Total Num Of Calls	Total Num Of Messages	Total Num Of Sessions	Closing Cust Cnt	Total Num Of Calls	Total Num Of Messages	Total Num Of Sessions
OFFER SEGMENT NM	CHURN BAND								
1_OFFER_SEGMENT_NM	NAVL	353	2944082	1208880	854684	353	976140	400648	283042
2_OFFER_SEGMENT_NM	NAVL	238	866402	1199695	623071	238	290239	400752	207159
3_OFFER_SEGMENT_NM	NAVL	242	850024	831069	700087	242	283252	276737	233875
4_OFFER_SEGMENT_NM	NAVL	98	484805	304856	285450	98	162709	101592	95627
5_OFFER_SEGMENT_NM	NAVL	59	241756	201742	90617	59	81317	67457	30514

Chapter 21

Cross-Sell and Up-Sell Reports

Cross-Sell and Up-Sell Reports

SAS Offer Optimization for Communications provides sample reports to analyze cross-sell and up-sell at customer level. These reports are further categorized depending on whether the cross-sell and up-sell scores are generated for the combination of customer and offer or customer and service. For each combination, samples reports are available for the following subject areas:

- purchase propensity across ARPU bands
- purchase propensity across segments
- purchase propensity across tenure bands
- purchase propensity by demographics

For each subject area, reports are generated for monthly and weekly grain. However, the report that is generated for both the grains is the same.

Note: Make sure that you view a monthly or a weekly report only for the last month or the last week respectively. If you view the reports for any other time period, the reports will not display correct customer counts.

Offer Purchase Propensity Across ARPU Bands

Overview

The Offer Purchase Propensity Across ARPU Bands report provides information about the propensity of customers to buy a certain target offer that is recommended to them. This report indicates the customer-level cross-sell and up-sell scores for the target offers across ARPU bands. The ARPU bands are defined based on bill and usage values of the customers. In addition, this report shows customer distribution and percentage share across ARPU bands and target offers based on the propensity of these customers to buy the target offers. Using this report, you can analyze the cross-sell and up-sell scores across the ARPU bands and identify the customers who have high ARPU and high purchasing propensity. You can target these customers for cross-sell and up-sell campaigns.

Variables

Table 21.1 *Variables of Offer Purchase Propensity Across ARPU Bands*

Category Variables	Analysis Variables
Target Offer	Number of Customers

Category Variables	Analysis Variables
Propensity To Buy	
ARPU Band - Bill	
ARPU Band - Gross Usage	
ARPU Band - Message Usage	
ARPU Band - Voice Usage	
ARPU Band - Data Usage	
ARPU Band - Call Usage	
Time	
Customer Geography - State	

Report Sections

The Offer Purchase Propensity Across ARPU Bands report contains the following sections:

- Bill ARPU
- Gross Usage ARPU
- Voice Usage ARPU
- Message Usage ARPU
- Data Usage ARPU

Sample Report

Display 21.1 *Offer Purchase Propensity Across ARPU Bands Report*

		COUNTRY NM	USA	
		CAL YEAR NUM	2009	
			Number Of Customer	% Share in Segment
ARPU BAND CALL	Propensity to Buy	Target Offer Name		
1_ARPU_BAND_NM	LOW	Prof1	16	100.00%
	Subtotal: LOW		**16**	**30.19%**
	OTHER	Prof1	6	100.00%
	Subtotal: *OTHER*		**6**	**11.32%**
	MEDIUM	Prof1	15	93.75%
		Teen20	1	6.25%
	Subtotal: MEDIUM		**16**	**30.19%**
	HIGH	Prof1	15	100.00%
	Subtotal: HIGH		**15**	**28.30%**
Subtotal: 1_ARPU_BAND_NM			**53**	**100.00%**
OTHER	MEDIUM	Prof1	2	100.00%
	Subtotal: MEDIUM		**2**	**100.00%**
Subtotal: *OTHER*			**2**	**100.00%**
2_ARPU_BAND_NM	LOW	Prof1	102	100.00%
	Subtotal: LOW		**102**	**29.23%**
	OTHER	Prof1	61	96.83%
		Teen20	2	3.17%
	Subtotal: *OTHER*		**63**	**18.05%**
	MEDIUM	Prof1	76	93.83%
		Teen20	5	6.17%
	Subtotal: MEDIUM		**81**	**23.21%**
	HIGH	Prof1	103	100.00%
	Subtotal: HIGH		**103**	**29.51%**
Subtotal: 2_ARPU_BAND_NM			**349**	**100.00%**

Offer Purchase Propensity by Demographics

Overview

The Offer Purchase Propensity by Demographics report provides information about the propensity of customers to buy a certain target offer that is recommended to them. This report indicates the customer-level cross-sell and up-sell scores for the target offers across demographic bands. The demographic bands are defined based on attributes such as geography, age, gender, occupation, and educational qualification. In addition, this report shows customer distribution and percentage share across demographic bands and target offers based on the propensity of these customers to buy the target services. Using this report, you can analyze the cross-sell and up-sell scores across demographic attributes and identify the customers who have high purchasing propensity. You can target these customers for cross-sell and up-sell campaigns.

Variables

Table 21.2 *Variables of Offer Purchase Propensity by Demographics*

Category Variables	Analysis Variables
Target Offer	Number of Customers
Propensity To Buy	
Time	
Customer Geography - State	
Customer - Gender	
Customer - Income Group	
Customer - Marital Status	
Customer - Occupation	
Customer - Age Band	
Customer - Education Group	

Report Sections

The Offer Purchase Propensity by Demographics report contains the following sections:

- Time and Geography
- Gender
- Income Group
- Age Band
- Education Group
- Occupation

Sample Report

Display 21.2 *Offer Purchase Propensity by Demographics Report*

CAL YEAR NUM			2009	
COUNTRY NM			USA	
			Number Of Customer	% Share in
AGE BAND	Propensity to Buy	Target Offer Name		
13–19	LOW	Prof1	16	
	Subtotal: LOW		**16**	
	OTHER	Prof1	8	
		Teen20	1	
	Subtotal: *OTHER*		**9**	
	MEDIUM	Prof1	21	
		Teen20	1	
	Subtotal: MEDIUM		**22**	
	HIGH	Prof1	17	
	Subtotal: HIGH		**17**	
Subtotal: 13–19			**64**	
20–30	LOW	Prof1	33	
	Subtotal: LOW		**33**	
	OTHER	Prof1	22	
	Subtotal: *OTHER*		**22**	
	MEDIUM	Prof1	22	
		Teen20	2	
	Subtotal: MEDIUM		**24**	
	HIGH	Prof1	35	
	Subtotal: HIGH		**35**	
Subtotal: 20–30			**114**	
31–45	LOW	Prof1	35	
	Subtotal: LOW		**35**	
	OTHER	Prof1	15	
	Subtotal: *OTHER*		**15**	
	MEDIUM	Prof1	11	
	Subtotal: MEDIUM		**11**	
	HIGH	Prof1	20	
	Subtotal: HIGH		**20**	
Subtotal: 31–45			**81**	
46–60	LOW	Prof1	12	
	Subtotal: LOW		**12**	
	OTHER	Prof1	15	
	Subtotal: *OTHER*		**15**	
	MEDIUM	Prof1	25	
		Teen20	2	
	Subtotal: MEDIUM		**27**	
	HIGH	Prof1	23	
	Subtotal: HIGH		**23**	
Subtotal: 46–60			**77**	
60–Above	LOW	Prof1	22	
	Subtotal: LOW		**22**	
	OTHER	Prof1	7	
		Teen20	1	
	Subtotal: *OTHER*		**8**	
	MEDIUM	Prof1	14	
		Teen20	1	
	Subtotal: MEDIUM		**15**	
	HIGH	Prof1	23	
	Subtotal: HIGH		**23**	
Subtotal: 60–Above			**68**	

Offer Purchase Propensity Across Segments

Overview

The Offer Purchase Propensity Across Segments report provides information about the propensity of customers to buy a certain target offer that is recommended to them. This report indicates the customer-level cross-sell and up-sell scores for the target offers across various segments. The segments are created based on the business groups of the customers, the type of customers such as individual and corporate, and the business attributes of customers. In addition, this report shows customer distribution and percentage share across segments and target offers based on the propensity of these customers to buy the target offers. Using this report, you can analyze the cross-sell and up-sell scores across segments and identify the customers who have high purchasing propensity. You can target these customers for cross-sell and up-sell campaigns.

Variables

Table 21.3 Variables of Offer Purchase Propensity Across Segments

Category Variables	Analysis Variables
Target Offer	Number of Customers
Propensity To Buy	
Business Group	
Customer - Business Segment	
Customer Type	

Report Sections

The Offer Purchase Propensity Across Segments report contains the following sections:

- Business Group
- Business Segments
- Customer Type

Sample Report

Display 21.3 *Offer Purchase Propensity Across Segments Report*

BUSINESS GROUP NM	Propensity to Buy	Target Offer Name	Number Of Customer	% Share in Segment
WirelessNorth	LOW	Prof1	64	100.00%
	Subtotal: LOW		**64**	**31.53%**
	OTHER	Prof1	32	94.12%
		Teen20	2	5.88%
	Subtotal: *OTHER*		**34**	**16.75%**
	MEDIUM	Prof1	39	86.67%
		Teen20	6	13.33%
	Subtotal: MEDIUM		**45**	**22.17%**
	HIGH	Prof1	60	100.00%
	Subtotal: HIGH		**60**	**29.56%**
Subtotal: WirelessNorth			**203**	**100.00%**
WirelessSouth	LOW	Prof1	54	100.00%
	Subtotal: LOW		**54**	**26.87%**
	OTHER	Prof1	35	100.00%
	Subtotal: *OTHER*		**35**	**17.41%**
	MEDIUM	Prof1	54	100.00%
	Subtotal: MEDIUM		**54**	**26.87%**
	HIGH	Prof1	58	100.00%
	Subtotal: HIGH		**58**	**28.86%**
Subtotal: WirelessSouth			**201**	**100.00%**

Offer Purchase Propensity Across Tenure Bands

Overview

The Offer Purchase Propensity Across Tenure Bands report provides information about the propensity of customers to buy a certain target offer that is recommended to them. This report indicates the customer-level cross-sell and up-sell scores for the target offers across tenure bands. The tenure bands are defined based on the tenure of customers on the network, base offer, or offer bundle. In addition, this report shows customer distribution and percentage share across tenure bands and target offers based on the propensity of these customers to buy the target offers. Using this report, you can analyze the cross-sell and up-sell scores across tenure bands and identify the customers who have high tenure and high purchasing propensity. You can target these customers for cross-sell and up-sell campaigns.

Variables

Table 21.4 *Variables of Offer Purchase Propensity Across Tenure Bands*

Category Variables	Analysis Variables
Time	Number of Customers
Target Offer	
Propensity to Buy	
Customer Geography - State	
Customer - Tenure on Network	
Customer - Tenure on Offer Bundle	
Customer - Tenure on Base Offer	

Report Sections

The Offer Purchase Propensity Across Tenure Bands report contains the following sections:

- Tenure on Network
- Tenure on Base Offer
- Tenure on Offer Bundle

Sample Report

Display 21.4 *Offer Purchase Propensity Across Tenure Bands Report*

CAL YEAR NUM			2009	
COUNTRY NM			USA	
			Number Of Customer	% Share in Segment
TENURE ON NETWORK BAND	Propensity to Buy	Target Offer Name		
0–3 month	LOW	Prof1	57	100.00%
	Subtotal: LOW		**57**	**28.93%**
	OTHER	Prof1	35	94.59%
		Teen20	2	5.41%
	Subtotal: *OTHER*		**37**	**18.78%**
	MEDIUM	Prof1	46	97.87%
		Teen20	1	2.13%
	Subtotal: MEDIUM		**47**	**23.86%**
	HIGH	Prof1	56	100.00%
	Subtotal: HIGH		**56**	**28.43%**
Subtotal: 0–3 month			**197**	**100.00%**
4–16 month	LOW	Prof1	61	100.00%
	Subtotal: LOW		**61**	**29.47%**
	OTHER	Prof1	32	100.00%
	Subtotal: *OTHER*		**32**	**15.46%**
	MEDIUM	Prof1	47	90.38%
		Teen20	5	9.62%
	Subtotal: MEDIUM		**52**	**25.12%**
	HIGH	Prof1	62	100.00%
	Subtotal: HIGH		**62**	**29.95%**
Subtotal: 4–16 month			**207**	**100.00%**

Service Purchase Propensity Across ARPU Bands

Overview

The Service Purchase Propensity Across ARPU Bands report provides information about the propensity of customers to buy a certain target service. This report indicates the customer-level cross-sell and up-sell scores for the target services across ARPU bands. The ARPU bands are defined based on bill and usage values of the customers. In addition, this report shows customer distribution and percentage share across ARPU bands and target services based on the propensity of these customers to buy the target services. Using this report, you can analyze the cross-sell and up-sell scores across the ARPU bands and identify the customers who have high ARPU and high purchasing propensity. You can target these customers for cross-sell and up-sell campaigns.

Variables

Table 21.5 *Variables of Service Purchase Propensity Across ARPU Bands*

Category Variables	Analysis Variables
Target Service	Number of Customers
Propensity To Buy	
ARPU Band - Bill	
ARPU Band - Gross Usage	
ARPU Band - Message Usage	
ARPU Band - Voice Usage	
ARPU Band - Data Usage	
ARPU Band - Call Usage	
Time	
Customer Geography - State	

Report Sections

The Service Purchase Propensity Across ARPU Bands report contains the following sections:

- Bill ARPU
- Gross Usage ARPU
- Voice Usage ARPU
- Message Usage ARPU
- Data Usage ARPU

Sample Report

Display 21.5 *Service Purchase Propensity Across ARPU Bands Report*

		CAL YEAR NUM	2009	
		COUNTRY NM	USA	
			Number Of Customer	% Share in Segment
BILL ARPU BAND	Propensity to Buy	Target Service		
1_ARPU_BAND_NM	LOW	1_SERVICE_NM	2	100.00%
	Subtotal: LOW		**2**	**33.33%**
	OTHER	1_SERVICE_NM	1	100.00%
	Subtotal: *OTHER*		**1**	**16.67%**
	MEDIUM	1_SERVICE_NM	1	100.00%
	Subtotal: MEDIUM		**1**	**16.67%**
	HIGH	1_SERVICE_NM	2	100.00%
	Subtotal: HIGH		**2**	**33.33%**
Subtotal: 1_ARPU_BAND_NM			**6**	**100.00%**
2_ARPU_BAND_NM	LOW	1_SERVICE_NM	82	100.00%
	Subtotal: LOW		**82**	**28.77%**
	OTHER	1_SERVICE_NM	46	95.83%
		3_SERVICE_NM	2	4.17%
	Subtotal: *OTHER*		**48**	**16.84%**
	MEDIUM	1_SERVICE_NM	66	92.96%
		3_SERVICE_NM	5	7.04%
	Subtotal: MEDIUM		**71**	**24.91%**
	HIGH	1_SERVICE_NM	84	100.00%
	Subtotal: HIGH		**84**	**29.47%**
Subtotal: 2_ARPU_BAND_NM			**285**	**100.00%**
3_ARPU_BAND_NM	LOW	1_SERVICE_NM	34	100.00%
	Subtotal: LOW		**34**	**30.09%**
	OTHER	1_SERVICE_NM	20	100.00%
	Subtotal: *OTHER*		**20**	**17.70%**
	MEDIUM	1_SERVICE_NM	26	96.30%
		3_SERVICE_NM	1	3.70%
	Subtotal: MEDIUM		**27**	**23.89%**
	HIGH	1_SERVICE_NM	32	100.00%
	Subtotal: HIGH		**32**	**28.32%**
Subtotal: 3_ARPU_BAND_NM			**113**	**100.00%**

Service Purchase Propensity by Demographics

Overview

The Service Purchase Propensity by Demographics report provides information about the propensity of customers to buy a certain target service. This report indicates the customer-level cross-sell and up-sell scores for the target services across demographic bands. The demographic bands are defined based on attributes such as geography, age, gender, occupation, and educational qualification. In addition, this report shows customer distribution and percentage share across demographic bands and target services based on the propensity of these customers to buy the target services. Using this report, you can analyze the cross-sell and up-sell scores across demographic attributes and identify the customers who have high purchasing propensity. You can target these customers for cross-sell and up-sell campaigns.

Variables

Table 21.6 *Variables of Service Purchase Propensity by Demographics*

Category Variables	Analysis Variables
Target Service	Number of Customers
Propensity To Buy	
Time	
Customer Geography - State	
Customer - Gender	
Customer - Income Group	
Customer - Marital Status	
Customer - Occupation	
Customer - Age Band	
Customer - Education Group	

Report Sections

The Service Purchase Propensity by Demographics report contains the following sections:

- Time and Geography
- Gender
- Income Group
- Age Band
- Education Group
- Occupation

Sample Report

Display 21.6 *Service Purchase Propensity by Demographics Report*

		CAL YEAR NUM	2009	
		COUNTRY NM	USA	
			Number Of Customer	% Share in Segment
AGE BAND	Propensity to Buy	Target Service		
13–19	LOW	1_SERVICE_NM	16	100.00%
	Subtotal: LOW		**16**	**25.00%**
	OTHER	1_SERVICE_NM	8	88.89%
		3_SERVICE_NM	1	11.11%
	Subtotal: *OTHER*		**9**	**14.06%**
	MEDIUM	1_SERVICE_NM	21	95.45%
		3_SERVICE_NM	1	4.55%
	Subtotal: MEDIUM		**22**	**34.38%**
	HIGH	1_SERVICE_NM	17	100.00%
	Subtotal: HIGH		**17**	**26.56%**
Subtotal: 13–19			**64**	**100.00%**
20–30	LOW	1_SERVICE_NM	33	100.00%
	Subtotal: LOW		**33**	**28.95%**
	OTHER	1_SERVICE_NM	22	100.00%
	Subtotal: *OTHER*		**22**	**19.30%**
	MEDIUM	1_SERVICE_NM	22	91.67%
		3_SERVICE_NM	2	8.33%
	Subtotal: MEDIUM		**24**	**21.05%**
	HIGH	1_SERVICE_NM	35	100.00%
	Subtotal: HIGH		**35**	**30.70%**
Subtotal: 20–30			**114**	**100.00%**
31–45	LOW	1_SERVICE_NM	35	100.00%
	Subtotal: LOW		**35**	**43.21%**
	OTHER	1_SERVICE_NM	15	100.00%
	Subtotal: *OTHER*		**15**	**18.52%**
	MEDIUM	1_SERVICE_NM	11	100.00%
	Subtotal: MEDIUM		**11**	**13.58%**
	HIGH	1_SERVICE_NM	20	100.00%
	Subtotal: HIGH		**20**	**24.69%**
46–60	LOW	1_SERVICE_NM	12	100.00%
	Subtotal: LOW		**12**	**15.58%**
	OTHER	1_SERVICE_NM	15	100.00%
	Subtotal: *OTHER*		**15**	**19.48%**
	MEDIUM	1_SERVICE_NM	25	92.59%
		3_SERVICE_NM	2	7.41%
	Subtotal: MEDIUM		**27**	**35.06%**
	HIGH	1_SERVICE_NM	23	100.00%
	Subtotal: HIGH		**23**	**29.87%**
Subtotal: 46–60			**77**	**100.00%**

Service Purchase Propensity Across Segments

Overview

The Service Purchase Propensity Across Segments report provides information about the propensity of customers to buy a certain target service. This report indicates the customer-level cross-sell and up-sell scores for the target services across various segments. The segments are created based on the business groups of the customers, the type of customers such as individual and corporate, and the business attributes of customers. In addition, this report shows customer distribution and percentage share across segments and target services based on the propensity of these customers to buy the target services. Using this report, you can analyze the cross-sell and up-sell scores across segments and identify the customers who have high purchasing propensity. You can target these customers for cross-sell and up-sell campaigns.

Variables

Table 21.7 *Variables of Service Purchase Propensity Across Segments*

Category Variables	Analysis Variables
Target Service	Number of Customers
Propensity To Buy	
Business Group	
Customer - Business Segment	
Customer Type	

Report Sections

The Service Purchase Propensity Across Segments report contains the following sections:

- Business Group
- Business Segment
- Customer Type

Sample Report

Display 21.7 *Service Purchase Propensity Across Segments Report*

			Number Of Customer	% Share in Segment
BUSINESS GROUP NM	Propensity to Buy	Target Service		
WirelessNorth	LOW	1_SERVICE_NM	64	100.00%
	Subtotal: LOW		**64**	**31.53%**
	OTHER	1_SERVICE_NM	32	94.12%
		3_SERVICE_NM	2	5.88%
	Subtotal: *OTHER*		**34**	**16.75%**
	MEDIUM	1_SERVICE_NM	39	86.67%
		3_SERVICE_NM	6	13.33%
	Subtotal: MEDIUM		**45**	**22.17%**
	HIGH	1_SERVICE_NM	60	100.00%
	Subtotal: HIGH		**60**	**29.56%**
Subtotal: WirelessNorth			**203**	**100.00%**
WirelessSouth	LOW	1_SERVICE_NM	54	100.00%
	Subtotal: LOW		**54**	**26.87%**
	OTHER	1_SERVICE_NM	35	100.00%
	Subtotal: *OTHER*		**35**	**17.41%**
	MEDIUM	1_SERVICE_NM	54	100.00%
	Subtotal: MEDIUM		**54**	**26.87%**
	HIGH	1_SERVICE_NM	58	100.00%
	Subtotal: HIGH		**58**	**28.86%**
Subtotal: WirelessSouth			**201**	**100.00%**

Service Purchase Propensity Across Tenure Bands

Overview

The Service Purchase Propensity Across Tenure Bands report provides information about the propensity of customers to buy a certain target service. This report indicates the customer-level cross-sell and up-sell scores for the target services across tenure bands. The tenure bands are defined based on the tenure of customers on the network, base offer, or offer bundle. In addition, this report shows customer distribution and percentage share across tenure bands and target services based on the propensity of these customers to buy the target services. Using this report, you can analyze the cross-sell and up-sell scores across tenure bands and identify the customers who have high tenure and high purchasing propensity. You can target these customers for cross-sell and up-sell campaigns.

Variables

Table 21.8 Variables of Service Purchase Propensity Across Tenure Bands

Category Variables	Analysis Variables
Time	Number of Customers
Target Service	
Propensity to Buy	
Customer Geography - State	
Customer - Tenure on Network	
Customer - Tenure on Offer Bundle	
Customer - Tenure on Base Offer	

Report Sections

The Service Purchase Propensity Across Tenure Bands report contains the following sections:

- Tenure on Network
- Tenure on Base Offer
- Tenure on Offer Bundle

Sample Report

Display 21.8 *Service Purchase Propensity Across Tenure Bands Report*

		CAL YEAR NUM	2009	
		COUNTRY NM	USA	
			Number Of Customer	% Share in Segment
TENURE ON NETWORK BAND	Propensity to Buy	Target Service		
0–3 month	LOW	1_SERVICE_NM	57	100.00%
	Subtotal: LOW		**57**	**28.93%**
	OTHER	1_SERVICE_NM	35	94.59%
		3_SERVICE_NM	2	5.41%
	Subtotal: *OTHER*		**37**	**18.78%**
	MEDIUM	1_SERVICE_NM	46	97.87%
		3_SERVICE_NM	1	2.13%
	Subtotal: MEDIUM		**47**	**23.86%**
	HIGH	1_SERVICE_NM	56	100.00%
	Subtotal: HIGH		**56**	**28.43%**
Subtotal: 0–3 month			**197**	**100.00%**
4–16 month	LOW	1_SERVICE_NM	61	100.00%
	Subtotal: LOW		**61**	**29.47%**
	OTHER	1_SERVICE_NM	32	100.00%
	Subtotal: *OTHER*		**32**	**15.46%**
	MEDIUM	1_SERVICE_NM	47	90.38%
		3_SERVICE_NM	5	9.62%
	Subtotal: MEDIUM		**52**	**25.12%**
	HIGH	1_SERVICE_NM	62	100.00%
	Subtotal: HIGH		**62**	**29.95%**
Subtotal: 4–16 month			**207**	**100.00%**

Chapter 22
Performance Reports

About Performance Reports

Performance reports provide information about the acceptance rate of SAS Offer Optimization for Communications. These reports give a comparison of usage analysis of customers before and after they have accepted one of the best offers recommended by SAS Offer Optimization for Communications.

Best Offer Acceptance Report

Overview

The Best Offer Acceptance report provides information about the acceptance rate of customers found with SAS Offer Optimization for Communications. This report gives a comparative analysis of total number of customers who availed themselves of the best offers and the number of customers who accepted one of the best offers.

Variables

Table 22.1 Variables of Best Offer Acceptance Report

Category Variables	Analysis Variables
Business group	OOC contacted customer count
Offer — Segment	Closing OOC availed customer count
Offer — Payment mode	Opening OOC availed customer count
Customer — OOC campaign	New OOC availed customer count
Time	Best offer acceptance
Customer — Churn band	
Customer geography — State	

Report Sections

The Best Offer Acceptance report contains the following sections:

- best offer acceptance
- best offer acceptance by churn

Sample Report

Display 22.1 *Best Offer Acceptance Report*

BUSINESS GROUP NM	OFFER SEGMENT NM	OFFER PYMNT MODE NM	CAMPAIGN TYPE	CAMPAIGN NM	BPP Contacted Cust Cnt	Closing BPP Availed Cust Cnt	Best Offer Acceptance
1_BUSINESS_GROUP_NM	1_OFFER_SEGMENT_NM	2_PYMNT_MODE_NM	NAVL	UNKNOWN	0	.	.
			OUTBOUND	5_CAMPAIGN	0	.	.
	2_OFFER_SEGMENT_NM	2_PYMNT_MODE_NM	NAVL	UNKNOWN	0	.	.
	3_OFFER_SEGMENT_NM	2_PYMNT_MODE_NM	INBOUND		0	.	.
			NAVL	UNKNOWN	0	.	.
	4_OFFER_SEGMENT_NM	2_PYMNT_MODE_NM	NAVL	UNKNOWN	0	.	.
2_BUSINESS_GROUP_NM	1_OFFER_SEGMENT_NM	1_PYMNT_MODE_NM	NAVL	UNKNOWN	0	0	.
		2_PYMNT_MODE_NM	NAVL	UNKNOWN	0	.	.
			OUTBOUND	5_CAMPAIGN	0	.	.
	2_OFFER_SEGMENT_NM	1_PYMNT_MODE_NM	NAVL	UNKNOWN	0	0	.
		2_PYMNT_MODE_NM	NAVL	UNKNOWN	0	.	.
	3_OFFER_SEGMENT_NM	1_PYMNT_MODE_NM	NAVL	UNKNOWN	0	0	.
		2_PYMNT_MODE_NM	INBOUND		0	.	.
			NAVL	UNKNOWN	0	.	.
	4_OFFER_SEGMENT_NM	2_PYMNT_MODE_NM	NAVL	UNKNOWN	0	.	.
	5_OFFER_SEGMENT_NM	1_PYMNT_MODE_NM	NAVL	UNKNOWN	0	0	.
3_BUSINESS_GROUP_NM	1_OFFER_SEGMENT_NM	2_PYMNT_MODE_NM	NAVL	UNKNOWN	0	.	.
	2_OFFER_SEGMENT_NM	2_PYMNT_MODE_NM	NAVL	UNKNOWN	0	.	.
	3_OFFER_SEGMENT_NM	2_PYMNT_MODE_NM	NAVL	UNKNOWN	0	.	.
	4_OFFER_SEGMENT_NM	2_PYMNT_MODE_NM	NAVL	UNKNOWN	0	.	.
4_BUSINESS_GROUP_NM	1_OFFER_SEGMENT_NM	2_PYMNT_MODE_NM	NAVL	UNKNOWN	0	0	.
			OUTBOUND	5_CAMPAIGN	0	1	.
	2_OFFER_SEGMENT_NM	2_PYMNT_MODE_NM	NAVL	UNKNOWN	2	0	0.00%
	3_OFFER_SEGMENT_NM	2_PYMNT_MODE_NM	INBOUND		0	1	.
			NAVL	UNKNOWN	0	0	.
	4_OFFER_SEGMENT_NM	2_PYMNT_MODE_NM	NAVL	UNKNOWN	0	0	.

Comparative Usage and Usage Charges Analysis Report

Overview

These reports give a comparison of usage analysis of customers before and after they have accepted one of the best offers as recommended by SAS Offer Optimization for Communications.

Variables

Table 22.2 *Variables of Comparative Usage and Usage Charges Analysis Report*

Category Variables	Analysis Variables
Business group	Total duration of calls for current period
Offer — Segment	Total duration of calls for previous period
Offer — Payment mode	Total number of calls for current period
Customer geography — State	Total number of calls for previous period

Category Variables	Analysis Variables
Current Period	Total voice charges for current period
Previous Period	Total voice charges for previous period
Customer — Churn band	Total duration of sessions for current period
	Total duration of sessions for previous period
	Total number of sessions for current period
	Total number of sessions for previous period
	Total volume of data for current period
	Total volume of data for previous period
	Total data usage charges for current period
	Total data usage charges for previous period
	Total volume of messages for current period
	Total volume of messages for previous period
	Total message charges for current period
	Total message charges for previous period

Report Sections

The Comparative Usage and Usage Charges Analysis report contains the following sections:

- voice usage comparison
- data usage comparison
- message usage comparison
- total usage charges comparison

Sample Report

Display 22.2 *Comparative Usage and Usage Charges Analysis Report*

				PREVIOUS MONTH	January 2009			
				COUNTRY NM	219_COUNTRY_NM			
					Total Num Of Messages Cp	Total Num Of Messages Pp	Total Vol Of Messages Cp	Total Vol Of Messages Pp
CURRENT MONTH	BUSINESS GROUP NM	OFFER PYMNT MODE NM	OFFER SEGMENT NM	CHURN BAND				
March 2009	2_BUSINESS_GROUP_NM	2_PYMNT_MODE_NM	1_OFFER_SEGMENT_NM	NAVL	17343	17325	17343	17325
			2_OFFER_SEGMENT_NM	NAVL	4070	4015	4070	4015
			3_OFFER_SEGMENT_NM	NAVL	3493	3695	3493	3695
			4_OFFER_SEGMENT_NM	NAVL	2492	2285	2492	2285

				CURRENT MONTH	March 2009	
				COUNTRY NM	219_COUNTRY_NM	
					Total Messages Usg Chrgs Pp	Total Messages Usg Chrgs Cp
PREVIOUS MONTH	BUSINESS GROUP NM	OFFER PYMNT MODE NM	OFFER SEGMENT NM	CHURN BAND		
January 2009	2_BUSINESS_GROUP_NM	2_PYMNT_MODE_NM	1_OFFER_SEGMENT_NM	NAVL	2613858.070	2792239.813
			2_OFFER_SEGMENT_NM	NAVL	452876.057	577401.728
			3_OFFER_SEGMENT_NM	NAVL	185872.661	172223.394
			4_OFFER_SEGMENT_NM	NAVL	425743.765	580683.402

Part 5

Appendixes

Appendix 1
Eligibility Combination Matrix

Overview

Eligibility criteria are the rules that you can enforce on customers for availing themselves of offers that exist in the product catalog. However, you can decide whether you want to configure the eligibility rules. Eligibility criteria are defined based on customer attributes.

Procedure for Defining Eligibility Criteria

The process of defining eligibility criteria includes the following steps:

1. Identify customer attributes that impact eligibility rules.
2. Capture unique values of each attribute.
3. Define a unique combination of attribute values.
4. Assign a unique ID for each combination. This combination is called an eligibility rule.
5. Associate each customer with an eligibility rule and assign the corresponding eligibility ID to a customer.
6. Consider only those customers who have an eligibility combination ID.

Example: Eligibility Combination Matrix

For defining eligibility criteria, you can consider the following customer attributes:

- region
- customer type
- education level

You can then list the possible values that each attribute can have. For example, the region attribute can have four values, namely, East, West, North, and South. The customer type can be individual, corporate, or SME (small and medium size enterprise).

Each unique combination of attribute values is assigned an eligibility ID, and an eligibility combination matrix can be defined.

Each customer is associated with an eligibility ID.

Impact of Eligibility Criteria on Business Groups

The eligibility matrix is defined before you create business groups. Therefore, depending on the selection criteria that are defined, a business group can contain customers with only specific eligibility IDs.

Impact of Eligibility Criteria on Microsegment Representation

You can consider eligibility criteria when you configure the microsegment representation workflow step. If eligibility criteria are considered, then a representative customer is drawn from each eligibility band of a microsegment.

Impact of Eligibility Criteria on Customer Offer Ranking

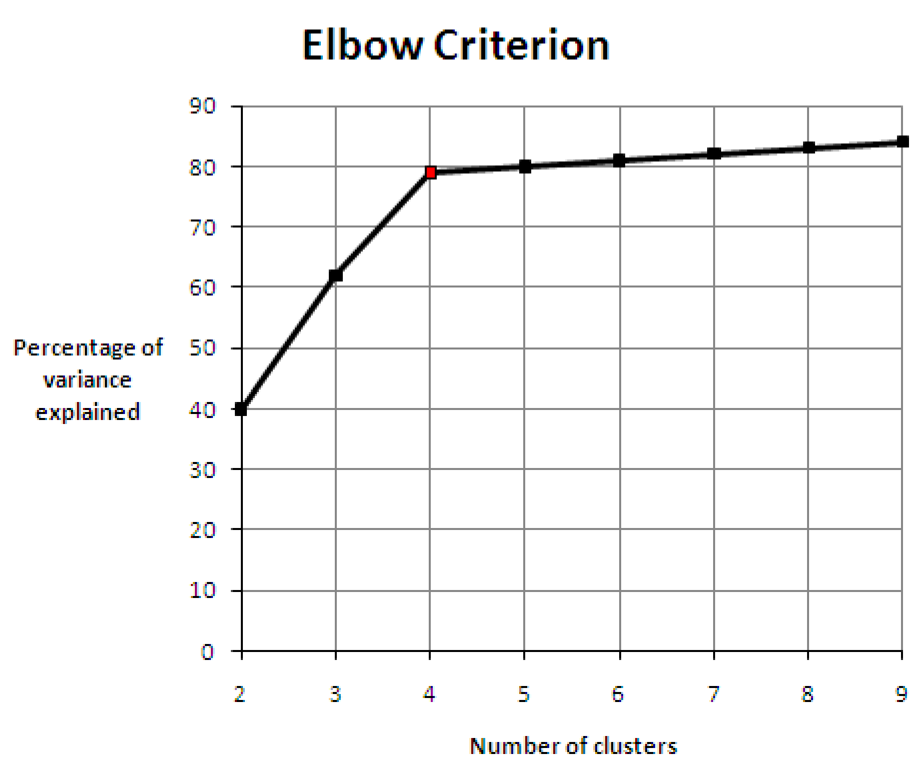
If eligibility criteria are considered in the microsegment representation workflow step, then it automatically applies to the customer offer ranking workflow step. While deriving offers for each customer of a microsegment, the best offers are produced for the representative customer of a certain eligibility band. These offers are then assigned to the other customers who belong to that eligibility band.

Appendix 2
Clustering Parameters

Elbow Criterion

The elbow criterion states that the number of clusters to be created should be such that adding another cluster does not provide any additional information. To understand this rule further, plot a graph of the percentage of variance that is explained by the clusters against the number of clusters. The graph indicates that the first few clusters add significant information. That is, these clusters explain a lot of variance. However, at a certain point, the marginal gain generated by adding new clusters will drop, producing an angle (an "elbow") on the graph. To establish this angle (point), you need to define some threshold on the marginal gain. In other words, you need to define the elbow criterion threshold.

Figure A2.1 *Elbow Criterion*



Convergence Criterion

The clustering procedure runs in iterations. After each iteration of the clustering procedure, the cluster centroids are updated. Iterations stop when the relative change in the cluster centroids is less than or equal to the convergence criterion. For complete convergence, it is recommended that you should enter the minimum value for this parameter. However, complete convergence also depends on the number of iterations of the clustering procedure. In order to achieve complete convergence, the number of iterations of the clustering procedure should be set to a large value.

Appendix 3
Reporting Variables

Category Variables

Table A3.1 *Category Variables Used in Business Reports*

Variable Name	Variable Description
Analytical Model - Churn	the statistical model that is designed to address the customer churn problem. You can create and register this model using SAS Enterprise Miner.
Analytical Model - Segmentation	the statistical model that is designed to define customer segments based on certain behavioral attributes. You can create and register this model using SAS Enterprise Miner.
ARPU Band - Bill	bill revenue generated by each customer, which the communications service providers use to analyze customer behavior. For example, ARPU bands for this variable can be defined as 0–25, 26–50, and so on.
ARPU Band - Call Usage	voice call charges generated by each customer, which the communications service providers use to analyze customer behavior. For example, ARPU bands for this variable can be defined as 0–25, 26–50, and so on.
ARPU Band - Data Usage	data usage charges generated by each customer, which the communications service providers use to analyze customer behavior. For example, ARPU bands for this variable can be defined as 0–25, 26–50, and so on.
ARPU Band - Message	message usage charges generated by each customer, which the communications service providers uses to analyze customer behavior. For example, ARPU bands for this variable can be defined as 0–25, 26–50, and so on.

Variable Name	Variable Description
ARPU Band - Gross Usage	revenue generated by each customer for all types of usage, which the communications service providers use to analyze customer behavior. For example, ARPU bands for this variable can be defined as 0–25, 26–50, and so on.
Business Group	customer groups defined based on strategic business parameters such as offer payment mode, offer segment, customer type, and geography. Each group is assigned a unique ID. You define business groups by using the SAS Offer Optimization for Communications interface.
Customer - Education Group	customer groups created based on the education qualifications of customers. For example, customer groups can be created as undergraduates, graduates, and post-graduates.
Customer - Age Band	customer groups created to consider a customer's age in years. For example, age groups can be defined as 6–17, 18–25, 26–35, and so on.
Customer - Business Segment	customer groups created by running an analytical process. Customers within a particular group have similar attributes.
Customer - Behavioral Segment	customer groups created by running an analytical process. Customers of a particular group have similar behavioral patterns.
Customer - BPP Campaign	a campaign initiated to recommend best offers to customers.
Customer - Churn Band	customer groups defined based on analytical scores that are generated for the Propensity to Churn variable. For example, a customer can belong to any of the following churn propensity segments: • very low: 0 to <=0.2 • low: 0.2 to <=0.4 • medium: 0.4 to <=0.6 • high: 0.6 to <=0.8 • very high: 0.8 to <=1
Customer - Ethnicity	customer groups created based on different communities. For example, ethnicity in the US can be Hispanic, non-Hispanic, and so on.
Customer - Gender	gender of the customer.

Variable Name	Variable Description
Customer - Income Group	customer groups defined based on the monthly income of customers.
Customer - Marital Status	marital status of the customer.
Customer - Occupation	the work profile of the customer.
Customer - Profitability Band	bands that are created based on the current and the projected revenue generated for a customer. Communications service providers categorize their customers in these bands. For example, the bands can be defined in the form of ranges or certain codes.
Customer - Tenure On Base Offer	a period for which customers keep their subscriptions on the same base offer. This period is generally in months. Communications service providers categorize their customers based on the bands for tenure on base offer in order to analyze customer behavior. For example, bands for tenure on base offer can be defined as 0–3 months, 4–6 months, and so on.
Customer Geography	the geographical area in which a customer resides. The hierarchy of geography can be defined in the order of Country, State, County, City, and ZIP code.
Customer Status	the current status of the customer on various external systems such as Billing, Switch, and Customer Care. For example, subscription status can be Active, Suspended, or Permanently disconnected.
Customer Type	classification of customers based on their subscription type. For example, subscriptions held under a personal name are of the Individual type. Subscriptions that are held by an organization are of the Internal Organization or External Organization type.
Customer - Tenure On Network	the period generally in months for which a customer is active on the network. Tenure on network can be expressed as a banded value. For example, the banded value can be 6/9/12/15/18/21/24 months.

Variable Name	Variable Description
Customer - Tenure On Offer Bundle	a period for which customers keep their subscription on the same offer bundle. This period is generally in months. Communications service providers categorize their customers based on the bands for tenure on offer bundle in order to analyze customer behavior. For example, bands for tenure on offer bundle can be defined as 0–3 months, 4–6 months, and so on.
Offer Bundle	the final combination of base plans, add-ons, discounts, and equipment.
Offer	base offer to which a customer is subscribed.
Offer - Payment Mode	the mode of payment of the customer. For example, payment modes can be postpaid and prepaid.
Offer - Customer Type	customer groups defined based on certain strategic parameters or according to various standards followed in the marketplace. For example, customer types can be defined as Individual, SME, SOHO, Corporate, and so on.
Offer - Segment	the segment to which an offer belongs. For examples, offer segments can be defined as CDMA offers and GSM offers.
Propensity to Buy	customer groups defined based on the cross-sell and up-sell scores that are generated for the Propensity to Buy variable. For example, a customer can belong to any of the following propensity to buy segments: • low: 0 to <=0.4 • medium: 0.4 to <=0.6 • high: 0.6 to <=1
Sales Channel Base Offer	the channel, which acquires the subscription and sells products and services that are offered by a communications service provider. There can be multiple types of sales channels. For example, channels that a communications service provider owns include Direct Sales, Corporate or Major Accounts, Company-owned Retail Outlets, Telemarketing, and Web. Third-party sales channels include dealers, retailers, franchisers, resellers, and virtual network operators.
Target Offer	the offer that the communications service provider selects for cross-sell and up-sell

Variable Name	Variable Description
Target Service	the service that the communications service provider selects for cross-sell and up-sell
Time	the period that is considered in the report. For example, a report can be generated for a certain year, quarter, or month.

Analysis Variables

Table A3.2 *Usage Variables Used in Business Reports*

Variable Name	Variable Description
Avg Call Duration Per Call	average duration of a voice call per call that is calculated for a certain dimension such as Behavioral Segment, Time, and Geography. Generally, the unit for this variable is minutes. However, it might change depending on the unit defined in the physical data model.
Avg Call Duration Per Cust	average duration of a voice call that is calculated for each customer of a certain dimension such as Behavioral Segment, Time, and Geography. Generally, the unit for this variable is minutes. However, it might change depending on the unit defined in the physical data model.
Avg Data Duration Per Data Session	average duration of a data session per data session that is calculated for a certain dimension such as Behavioral Segment, Time, and Geography. Generally, the unit for this variable is minutes. However, it might change depending on the unit defined in the physical data model.
Avg Data Sessions Dur Per Cust	average duration of a data session that is calculated for each customer of a certain dimension such as Behavioral Segment, Time, and Geography. Generally, the unit for this variable is minutes. However, it might change depending on the unit defined in the physical data model.
Avg Data Vol Per Cust	average volume of a data session that is calculated for each customer of a certain dimension such as Behavioral Segment, Time, and Geography. Generally, the unit for this variable is megabytes. However, it might change depending on the unit defined in the physical data model.

Variable Name	**Variable Description**
Avg Data Vol Per Data Session	average duration of a data session that is calculated for each customer of a certain dimension such as Behavioral Segment, Time, and Geography. Generally, the unit for this variable is minutes. However, it might change depending on the unit defined in the physical data model.
Avg Duration Of Calls	average duration of a customer's voice call that is calculated for a certain dimension such as Behavioral Segment, Time, and Geography. Generally, the unit for this variable is minutes. However, it might change depending on the unit defined in the physical data model.
Avg Duration Of Sessions	average duration of a data session that is calculated for a dimension such as Behavioral Segment, Time, and Geography. Generally, the unit for this variable is minutes. However, it might change depending on the unit defined in the physical data model.
Avg Msg Vol Per Cust	average message volume of each customer that is calculated for a certain dimension such as Behavioral Segment, Time, and Geography. Generally, the unit for this variable is megabytes. However, it might change depending on the unit defined in the physical data model.
Avg Msg Vol Per Msg	average message volume per message that is considered for a certain dimension such as Behavioral Segment, Time, and Geography. Generally, the unit for this variable is megabytes. However, it might change depending on the unit defined in the physical data model.
Avg Num Of Calls	average number of voice calls that is considered for a certain dimension such as Behavioral Segment, Time, and Geography.
Avg Num Of Calls Per Cust	average number of voice calls that is calculated for each customer of a certain dimension such as Behavioral Segment, Time, and Geography.
Avg Num Of Data Sessions Per Cust	average number of data sessions that is calculated for each customer of a certain dimension such as Behavioral Segment, Time, and Geography.
Avg Num Of Messages	average number of messages that is calculated for a certain dimension such as Behavioral Segment, Time, and Geography.

Variable Name	Variable Description
Avg Num Of Msg Per Cust	average number of messages that is calculated for a certain dimension such as Behavioral Segment, Time, and Geography.
Avg Num Of Sessions	average number of data sessions that is calculated for a certain dimension such as Behavioral Segment, Time, and Geography.
Avg Vol Of Data	average volume of data that is calculated for a certain dimension such as Behavioral Segment, Time, and Geography. Generally, the unit for this variable is megabytes. However, it might change depending on the unit defined in the physical data model.
Avg Vol Of Messages	average volume of messages that is calculated for a certain dimension such as Behavioral Segment, Time, and Geography. Generally, the unit for this variable is megabytes. However, it might change depending on the unit defined in the physical data model.
Total Duration Of Calls	total duration of voice calls that is calculated for a certain dimension such as Behavioral Segment, Time, and Geography. Generally, the unit for this variable is minutes. However, it might change depending on the unit defined in the physical data model.
Total Duration Of Sessions	total duration of data sessions that is calculated for a certain dimension such as Behavioral Segment, Time, and Geography. Generally, the unit for this variable is minutes. However, it might change depending on the unit defined in the physical data model.
Total Num Of Calls	total number of voice calls that is calculated for a certain dimension such as Behavioral Segment, Time, and Geography.
Total Num Of Messages	total number of messages that is calculated for a certain dimension such as Behavioral Segment, Time, and Geography.
Total Num Of Sessions	total number of data sessions that is calculated for a certain dimension such as Time, Geography, and Behavioral Segment.
Total Vol Of Data	total volume of data that is calculated for a certain dimension such as Behavioral Segment, Time, and Geography. Generally, the unit for this variable is megabytes. However, it might change depending on the unit defined in the physical data model.

Variable Name	Variable Description
Total Vol Of Messages	total volume of messages that is calculated for a certain dimension such as Behavioral Segment, Time, and Geography. Generally, the unit for this variable is megabytes. However, it might change depending on the unit defined in the physical data model.

Table A3.3 *Customer Counts Variables Used in BI Reports*

Best Offer Penetration	percentage of customers who accepted the best offer recommended by SAS Offer Optimization for Communications. The value for this variable is calculated by considering the ratio of customers who availed themselves of best price plans to closing customers count.
BPP Acceptance Rate	percentage of customers who accepted the best offer recommended by SAS Offer Optimization for Communications. The value for this variable is calculated based on the ratio of customers who availed themselves of best price plans to customers who were contacted to offer best price plans.
BPP Contacted Cust Cnt	number of customers that is calculated for a certain dimension such as Behavioral Segment, Time, and Geography that were contacted to offer best price plans.
Churned Cust Cnt	number of churned customers that is calculated for a certain dimension such as Behavioral Segment, Time, and Geography.
Churned Cust Cnt Over Consec Period	number of churned customers that is calculated for a certain dimension such as Behavioral Segment and Geography for consecutive periods.
Churned Cust Cnt Over Parallel Period	number of churned customers that is calculated for a certain dimension such as Behavioral Segment and Geography for parallel period.
Closing BPP Availed Cust Cnt	number of customers that is calculated for a certain dimension such as Behavioral Segment and Geography who availed themselves of the best offer at the end of a certain period. Period can be month, quarter, or year depending on the time hierarchy.

Closing Cust Cnt	number of customers that is calculated for a certain dimension such as Behavioral Segment and Geography at the end of a certain period. Period can be month, quarter, or year depending on the time hierarchy.
Closing Cust Cnt Over Consec Period	number of customers that is calculated for a certain dimension such as Behavioral Segment and Geography for consecutive periods.
Closing Cust Cnt Over Parallel Period	number of customers that is calculated for a certain dimension such as Behavioral Segment and Geography for parallel periods.
Net Cust Addition	number of net customers that is calculated for a certain dimension such as Behavioral Segment and Geography that are added in a certain period. This variable is calculated by subtracting the number of churned customers from the number of new customers.
New BPP Availed Cust Cnt	number of customers that is calculated for a certain dimension such as Behavioral Segment and Geography who availed themselves of the best offer throughout a certain period. Period can be month, quarter, or year depending on the time hierarchy.
New BPP Availed Cust Cnt Over Consec Period	number of customers that is calculated for a certain dimension such as Behavioral Segment and Geography who availed themselves of the best offer for consecutive periods.
New BPP Availed Cust Cnt Over Parallel Period	number of customers that is calculated for a certain dimension such as Behavioral Segment and Geography who availed themselves of the best offer for a parallel period.
New Cust Cnt	number of new customers that is added throughout a certain period for a certain dimension such as Behavioral Segment and Geography. Period can be month, quarter, or year depending on the time hierarchy.
New Cust Cnt Over Consec Period	number of new customers that is added for a certain dimension such as Behavioral Segment and Geography for consecutive periods.
New Cust Cnt Over Parallel Period	number of new customers that is added for a certain dimension such as Behavioral Segment and Geography for a parallel period.
Opening BPP Availed Cust Cnt	number of new customers that is added for a certain dimension such as Behavioral Segment and Geography who availed themselves of the best offer at the start of the period. Period can be month, quarter, or year depending on the time hierarchy.

Opening Cust Cnt	number of customers that are available for a certain dimension such as Behavioral Segment and Geography at the start of a certain period. Period can be month, quarter, or year depending on the time hierarchy.
Percent Churned Cust	percentage of churned customers that is calculated for a certain dimension such as Behavioral Segment and Geography.

Table A3.4 *Charges and Discounts Variables Used in BI Reports*

Variable Name	Variable Description
% Gross Usage Chrgs Contribution of BG	gross usage charges contribution by business group.
%Gross Usage Chrg Contribution of Cust Type	gross usage charges contribution by customer type.
%Gross Usage Chrg Contribution of Offer Payment Mode	gross usage charges contribution by offer payment mode.
%Gross Usage Chrg Contribution of Offer Segment	gross usage charges contribution by offer segment.
%Gross Usage Chrg Contribution of Business Segment	gross usage charges contribution by business segment.
% Bill Revenue Contribution of BG	contribution to the total bill revenue by business group.
% Bill Revenue Contribution of Cust Type	contribution to the total bill revenue by customer type.
% Bill Revenue Contribution of Offer Segment	contribution to the total bill revenue by offer segment.
% Bill Revenue Contribution of Business Segment	contribution to the total bill revenue by business segment.
Avg Bill Disc Amt	average amount of discount given on the bill amount that is calculated for a certain dimension such as Behavioral Segment, Time, and Geography. Currency for the amount is defined in the physical data model.
Avg Bill Net Payable Amt	average payable bill amount that is calculated for a certain dimension such as Behavioral Segment, Time, and Geography. Currency for the amount is defined in the physical data model.

Variable Name	Variable Description
Avg Bill Non Usg One Time Amt	average amount of non-usage and one-time charges that is calculated for a certain dimension such as Behavioral Segment, Time, and Geography. Currency for the amount is defined in the physical data model. Mostly, these include charges such as installation charges.
Avg Bill Non Usg Rcrng Amt	average amount of non-usage and recurring charges that is calculated for a certain dimension such as Behavioral Segment, Time, and Geography. Currency for the amount is defined in the physical data model. Mostly, these charges include charges such as insurance charges and service charges.
Avg Data Usg Chrgs	average amount of data usage charges that is calculated for a dimension such as Behavioral Segment, Time, and Geography. Currency for the amount is defined in the physical data model.
Avg Gross Usg Chrgs	average amount of usage charges that is calculated for a dimension such as Behavioral Segment, Time, and Geography. Currency for the amount is defined in the physical data model.
Avg Msgs Usg Chrgs	average amount of message usage charges that is calculated for a dimension such as Behavioral Segment, Time, and Geography. Currency for the amount is defined in the physical data model.
Avg Voice Usg Chrgs	average amount of voice usage charges that is calculated for a dimension such as Behavioral Segment, Time, and Geography. Currency for the amount is defined in the physical data model.
Bill Net Payable Amt Per Cust	total payable bill amount that is calculated for each customer of a certain dimension such as Behavioral Segment, Time, and Geography. Currency for the amount is defined in the physical data model.
Gross Usg Chrgs Over Consec Period	total amount of usage charges that is calculated for each customer of a certain dimension such as Behavioral Segment, Time, and Geography for consecutive periods. Currency for the amount is defined in the physical data model.

Variable Name	Variable Description
Gross Usg Chrgs Over Parallel Period	total amount of usage charges per customer for a certain dimension such as Behavioral Segment, Time, and Geography for parallel periods. Currency for the amount is defined in the physical data model.
Gross Usg Chrgs Per Cust	total amount of usage charges per customer for a certain dimension such as Behavioral Segment, Time, and Geography. Currency for the amount is defined in the physical data model.
Percent Call Chrgs Over Gross Usg Chrgs	percentage contribution of voice call usage charges to the gross usage charge amount that is calculated for a certain dimension such as Behavioral Segment, Time, and Geography.
Percent Data Chrgs Over Gross Usg Chrgs	percentage contribution of data usage charges to the gross usage charge amount that is calculated for a certain dimension such as Behavioral Segment, Time, and Geography.
Percent Msg Chrgs Over Gross Usg Chrgs	percentage contribution of message usage charges to the gross usage charge amount that is calculated for a certain dimension such as Behavioral Segment, Time, and Geography.
Total Bill Disc Amt	total amount of discount that is given on the bill amount for a certain dimension such as Behavioral Segment, Time, and Geography. Currency for the amount is defined in the physical data model.
Total Bill Net Payable Amt	total payable bill amount that is calculated for a dimension such as Behavioral Segment, Time, and Geography. Currency for the amount is defined in the physical data model.
Total Bill Non Usg One Time Amt	total amount of non-usage and one-time charges that is calculated for a certain dimension such as Behavioral Segment, Time, and Geography. Mostly, these include charges such as installation charges. Currency for the amount is defined in the physical data model.
Total Bill Non Usg Rcrng Amt	total amount of non-usage recurring charges that is calculated for a certain dimension such as Behavioral Segment, Time, and Geography. Mostly these include charges such as insurance charges and service charges. Currency for the amount is defined in the physical data model.

Variable Name	Variable Description
Total Bill Usg Amt	total amount of usage charges for the bill that is calculated for a certain dimension such as Behavioral Segment, Time, and Geography. Usually these include charges such as voice usage charges. Currency for the amount is defined in the physical data model.
Total Data Usg Chrgs	total amount of data usage charges that is calculated for a certain dimension such as Behavioral Segment, Time, and Geography. Currency for the amount is defined in the physical data model.
Total Gross Usg Chrgs	total amount of usage charges that is calculated for a certain dimension such as Behavioral Segment, Time, and Geography. Currency for the amount is defined in the physical data model.
Total Msgs Usg Chrgs	total amount of message usage charges that is calculated for a certain dimension such as Behavioral Segment, Time, and Geography. Currency for the amount is defined in the physical data model.
Total Voice Usg Chrgs	total amount of voice usage charges that is calculated for a certain dimension such as Behavioral Segment, Time, and Geography. Currency for the amount is defined in the physical data model.

Table A3.5 *ARPU Variables Used in BI Reports*

Variable Name	Variable Description
Avg Bill ARPU	average ARPU on the bill amount that is calculated for a certain dimension such as Behavioral Segment, Time, and Geography. Currency for the amount is defined in the physical data model.
Avg Data Usg ARPU	average ARPU on the total voice usage charges that is calculated for a certain dimension such as Behavioral Segment, Time, and Geography. Currency for the amount is defined in the physical data model.
Avg Gross Usg ARPU	average ARPU on the total usage charges that is calculated for a certain dimension such as Behavioral Segment, Time, and Geography. Currency for the amount is defined in the physical data model.

Variable Name	Variable Description
Avg Message Usg ARPU	average ARPU on the total message usage charges that is calculated for a certain dimension such as Behavioral Segment, Time, and Geography. Currency for the amount is defined in the physical data model.
Avg Voice Usg ARPU	average ARPU on the total data usage charges that is calculated for a certain dimension such as Behavioral Segment, Time, and Geography. Currency for the amount is defined in the physical data model.

Table A3.6 *Interactions Variables Used in BI Reports*

Variable Name	Variable Description
% Share of billing Interactions	percentage of billing interactions out of all interactions.
Avg Num Of Billing Complaints	average number of billing complaints that are launched for a certain dimension such as Behavioral Segment, Time, and Geography.
Avg Num Of Billing Inquiries	average number of billing inquiries that are received for a certain dimension such as Behavioral Segment, Time, and Geography.
Avg Num Of Complaints	average number of complaints that are launched for a certain dimension such as Behavioral Segment, Time, and Geography.
Avg Num Of Inquiries	average number of inquiries that are received for a certain dimension such as Behavioral Segment, Time, and Geography.
Total Num Of Billing Complaints	total number of billing complaints that are launched for a certain dimension such as Behavioral Segment, Time, and Geography.
Total Num Of Billing Inquiries	total number of billing inquiries that are received for a certain dimension such as Behavioral Segment, Time, and Geography.
Total Num Of Complaints	total number of complaints that are launched for a certain dimension such as Behavioral Segment, Time, and Geography.
Total Num Of Inquiries	total number of inquiries that are received for a certain dimension such as Behavioral Segment, Time, and Geography.

Table A3.7 *Payments and Recharges Variables Used in BI Reports*

Variable Name	Variable Description
% Recharge Amt Contribution of BG	contribution to the total recharge amount by business group.
% Recharge Amt Contribution of Cust Type	contribution to the total recharge amount by customer type.
% Recharge Amt Contribution of Offer Segment	contribution to the total recharge amount by offer segment.
% Recharge Amt Contribution of Business Segment	contribution to the total recharge amount by business segment.
Avg Amt Of Pymnt	average amount of payment made by the customer for a certain dimension such as Behavioral Segment, Time, and Geography.
Avg Amt Of Recharges	average amount of recharges made by the customer for a certain dimension such as Behavioral Segment, Time, and Geography.
Avg Num Of Pymnt	average number of payments made by the customer for a certain dimension such as Behavioral Segment, Time, and Geography.
Avg Num Of Recharges	average number of recharges made by the customer for a certain dimension such as Behavioral Segment, Time, and Geography.
Customer count	number of active customer counts for a certain dimension such as Behavioral Segment, Time, and Geography.
Total Amt Of Pymnt	total amount of payment made by the customer for a certain dimension such as Behavioral Segment, Time, and Geography.
Total Amt Of Recharges	total amount of recharges made by the customer for a certain dimension such as Behavioral Segment, Time, and Geography.
Total Num Of Pymnt	total number of payments made by the customer for a certain dimension such as Behavioral Segment, Time, and Geography.
Total Num Of Recharges	total number of recharges made by the customer for certain dimension such as. Behavioral Segment, Time, and Geography.

Table A3.8 *Tenure Variables Used in BI Reports*

Variable Name	Variable Description
Avg Tenure On Base Offer In Days	average number of days a customer stays on the base offer for a certain dimension such as Behavioral Segment, Time, and Geography.
Avg Tenure On Network In Days	average number of days a customer stays on the network for a certain dimension such as Behavioral Segment, Time, and Geography.
Avg Tenure On Offer Bundle In Days	average number of days a customer stays on the offer bundle for a certain dimension such as Behavioral Segment, Time, and Geography.

Glossary

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aggregation
a summary of detail data that is stored with or referred to by a cube.

analysis variable
a numeric variable that is used to calculate statistics or to display values. Usually an analysis variable contains quantitative or continuous values, but this is not required.

business group
a subset of the customer base that is derived as a result of high-level business segmentation based on relatively static business attributes such as offer segment (wireless, land-line), offer payment mode (prepaid, postpaid), customer type, and customer's geographical area.

business rule
a statement that defines or constrains some aspect of the business. Business rules describe the operations, definitions, and constraints that apply to an organization in achieving its goals.

category variable
a classification variable with a finite number of distinct (discrete) values. These variables are typically used to split data into subsets. For example, in a bar chart, each unique value is displayed as a bar on a DISCRETE axis. In another example, the variable payment mode can have two values, prepaid and postpaid. Customers can be classified based on this variable as prepaid customers and postpaid customers.

child level
the level of information added below the primary node of a hierarchical list.

child node
a node of a hierarchical list that originates from a single node at a previous level.

cluster
a subset of a target segment that is derived based on certain analytical algorithms in order to ensure homogeneity of usage and revenue patterns within the group.

clustering
a common technique for statistical data analysis. Clustering is the assignment of a set of observations into subsets (called clusters) so that observations in the same cluster are similar in some sense. For example, in the communications domain, customers with high usage and high churn scores can belong to the same cluster.

cube

See OLAP cube.

dimension

a group of closely related hierarchies. Hierarchies within a dimension typically represent different groupings of information that pertains to a single concept. For example, a Time dimension might consist of two hierarchies: (!) Year, Month, and Date, and (2) Year, Week, and Day.

eligibility rule

a mechanism that is used for assessing customers who are availing themselves of offers. These rules are applicable only for the offers that are available in the product catalog. Eligibility rules are defined based on customer-level attributes such as age, customer type, region, and educational level. Each such combination of unique attributes is assigned a unique ID.

fact

a single piece of factual information in a data table. For example, a fact can be an employee name, a customer's phone number, or a sales amount. It can also be a derived value such as the percentage by which total revenues increased or decreased from one year to the next.

foundation mart

a data mart that stores data extracted from external source systems. Data is structured as a star schema and is used by analytical base tables (ABTs) and the offer optimization data mart.

hierarchical list

a user interface element that helps to select values by organizing variables into parent-child relationships, typically where a parent member represents the consolidation of its children. A hierarchical list progresses from top to bottom.

information map

a collection of data items and filters that provides a user-friendly view of a data source. When you use an information map to query data for business needs, you do not have to understand the structure of the underlying data source or know how to program in a query language.

measure

a classification of data items. The values of measure data items are aggregated (unless otherwise specified) and can be used in computations or analytical expressions.

microsegment

a cluster that is associated with a business description.

OLAP

See online analytical processing.

OLAP cube

a logical set of data that is organized and structured in a hierarchical, multidimensional arrangement to enable quick analysis of data. A cube includes measures, and it can have numerous dimensions and levels of data.

online analytical processing
a software technology that enables users to dynamically analyze data that is stored in multidimensional database tables (cubes).

parent node
a node of a hierarchical list from which one or more nodes originate.

primary node
the topmost single node of a hierarchical list.

profiling
the process of adding a business description for each cluster in the workflow diagram.

project
the named collection of activities and reports to implement a business strategy for addressing a business pain. For example, a project can be created for reducing churn of highly profitable customers in the North region.

ranking
the process of ordering observations according to values of particular variables.

representative customer
a customer that is derived from each microsegment such that the usage and revenue pattern of this customer represent the entire microsegment. The number of representative customers that is drawn from a microsegment depends on the underlying statistical method.

star schema
tables in a database in which a single fact table is connected to multiple dimension tables. This is visually represented in a star pattern. SAS OLAP cubes can be created from a star schema.

target segment
a subset of the business group that is derived based on certain variables such as demographics, tenure, and churn score.

workflow
the sequence of activities that is to be performed for each project.

workflow diagram
a diagram that indicates the order in which activities of a project are to be performed.

workflow step
each individual activity of a project that is depicted in a workflow diagram.

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Your Turn

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