



Infor Omni-Channel Campaign Management Quick Implementation Guide

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About this Guide

This *Infor Campaign Management Quick Implementation Guide* is designed to help novice implementers get started with Infor Campaign Management. Novice implementers can learn Marketing by using and implementing the sample data mart shipped with the product, which includes:

- An overview of the product architecture
- Information on data mart design and creation
- An explanation of how extraction works
- Step-by-step procedures for creating Rows and Columns web pages, reporting and analysis, lists, and campaigns

Infor Campaign Management

Infor Campaign Management are based on a modern architecture that provides scalability to billions of records to handle large enterprise requirements. It delivers the high performance necessary to scale up to thousands of users while delivering fast, interactive response times.

The Infor Campaign Management multi-tier architecture employs an ultra-thin web browser client, a middle-tier application server implemented in Java, and an underlying industry-standard relational database server. This architecture enables Infor Campaign Management to integrate customer data from a wide variety of sources to provide a comprehensive view of customers and their behavior.

These sources include:

- Touchpoint systems
- ERP/operational applications
- E-commerce web logs
- Legacy systems
- Data warehouses
- Data marts
- Third party data sources

The keystones of the Infor Campaign Management architecture include the following major themes:

- Integrated and comprehensive technology stack. Infor Campaign Management applications are built on an integrated platform that provides an end-to-end technology stack. This stack provides these capabilities:
 - data integration
 - data management
 - advanced analysis (including OLAP, data mining and list analytics)
 - campaign planning and design
 - campaign execution

The entire platform is seamlessly integrated via rich, common metadata, enabling unparalleled productivity and simplicity in implementation as well as use.

- Easy to use, web-based architecture.

Infor Campaign Management thin web browser client is easy for business users to learn, easy for implementers to deploy, and scalable to large numbers of users.

- Designed for rapid and incremental deployment.

Infor Campaign Management is explicitly designed to enable rapid initial implementation and to quickly respond to changing business needs. Adaptive growth is a direct consequence of the investment in rich, common metadata that spans the system from data integration, to data mart construction and management, all the way up to the design of end-user interfaces.

- Architected for high performance and enterprise scalability.

Infor Campaign Management achieves high performance and massive scalability without the use of any proprietary or esoteric technologies. (These are typically hard to manage and often result in increased cost of ownership.) Instead, it runs entirely on industry standard technologies:

- relational database management systems (RDBMS) from IBM, Microsoft and Oracle
- Java
- Microsoft and Netscape browsers
- ODBC and JDBC data access technologies

Infor Campaign Management includes a scalable data mart, an integrated metadata repository, an extensible data extraction infrastructure, powerful data transformation technologies, a scalable application server, high-performance analytic components that deliver ROLAP, data mining and list analysis capabilities, a complete campaign management system, an execution engine for e-mail marketing, and an engine for Infor Interaction Advisor (Real-Time).

The only external software components required are a relational database engine, a web server, and a web browser.

Localized versions of Infor Campaign Management software support data mart applications in which the entire web-based interface appears in a supported local language. A localized data mart can contain data values in any one of the currently supported languages, locales, and code sets.

Infor Campaign Management Product Documentation

The Infor Campaign Management product documentation includes four manuals and two online help systems. Each of these manuals is updated whenever needed. Most are updated for each maintenance release, but occasionally one or two does not need an update, and thus bear an earlier version number. If you are not sure whether or not you have all the correct documentation for the release your company purchased, contact Infor Customer Support.

Installation Guide

The *Infor Campaign Management Installation Guide* is intended for database administrators who install, configure, and maintain the Infor Campaign Management. The Guide is designed to be used in conjunction with our product release notes, plus the appropriate installation and configuration manuals for your existing hardware and software. Depending on the database server platform you select, these manuals can be:

DB2 on AIX	Quick Beginnings: DB2 for UNIX and DB2 Administration Guide, Volumes 1 through 3. Or, the Installation Guide and the Performance Management Guide for AIX.
Oracle	<p>The appropriate installation guide for Oracle on your operating system. Or, the installation guide for your operating system if that operating system is not pre installed.</p> <p>The instructions for configuring kernel resources such as Net Configuration Assistant, or Oracle9i Reference.</p>
SQL Server	SQL Server Administration Guide, or the appropriate administration guide for your Windows version.
All platforms	The installation and configuration instructions for your RAID disk-management equipment and software.

Note: Please follow the configuration recommendations that are suggested in this guide. If specific instructions do not appear for a particular configuration step or option, default values are acceptable.

Data Mart Implementation Guide

The *Infor Campaign Management Data Mart Implementation Guide* provides in-depth technical information on how to configure and populate the data mart used by all Infor Campaign Management applications, including Infor Interaction Advisor applications.

Topic Implementation Guide

Formerly titled Configuring Applications , the *Infor Campaign Management Topic Implementation Guide* is intended for implementers and Professional Services personnel who creates the applications that run on an Infor Campaign Management EpiCenter. The guide summarizes Infor Campaign Management functionality, architecture, and administration, and provides in-depth technical information on how to configure the Infor Campaign Management topics required for campaign management and analysis.

Viewing Release Notes and Manuals Online

You can view our product documentation and Release Notes on any machine that has Acrobat Reader running.

When you install documentation on Windows, the installation wizard adds shortcuts to the Windows Start menu for easy viewing access. Documentation is installed in a directory that matches the current version number. The directory default location is the following:

```
<Infor Campaign Management installation directory >\ConfigFiles\Docs\<locale>
```

Some additional EM documentation and templates are located in the following default location:

```
<Infor Campaign Management installation directory>\Email Marketing\docs
```

- 1 Navigate to **Start > Programs > Infor > 10.0.0 > Documentation > Infor Infor Campaign Management> locale<**.
- 2 Choose Documentation.

Installing Documentation on a Unix Host

- 1 Copy `Supplemental_Files_<locale>_7200_unix.tar` to a local directory.
- 2 Navigate to that directory and enter the following commands to unpack the PDF files (substituting the appropriate two-letter abbreviation for <locale >):

```
tar -xvf Supplemental_Files_<locale>_7100_unix.tar
gunzip Supplemental_<locale>tar.gz
tar -xvf Supplemental_<locale>.tar
```

Viewing Release Notes and Manuals Online

You can view the product documentation and Release Notes on any machine that has Acrobat Reader running.

When installing documentation on Windows, the installation wizard adds shortcuts to the Windows **Start** menu for easy viewing access. Documentation is installed in a directory that matches the current version number. The directory default location is: C:\Program Files\Infor\Infor_Campaign_Management\ConfigFiles\Docs\<locale>.

Some additional Infor Email Marketing documentation and templates are located in: C:\Program Files\Infor\Infor_Campaign_Management\EM\docs.

For example, to view the installed documentation for Marketing, you can usually navigate to **Start > Programs > Infor > 10 > Documentation > Infor Campaign Management > > <locale>**(depending upon where Marketing is installed)

Choose either **Documentation** or **Release Notes**.

Printing This Document

Best print quality is achieved by printing this document with a PostScript driver. Other drivers may not reproduce screen shots accurately.

Contacting Customer Support

You may contact the Infor Customer Support center by submitting your incident through the web 24x7 at <http://www.inforxtreme.com>, or by placing a call during our scheduled business hours. For a complete listing of our support centers with web addresses and phone numbers, access our support site at <http://www.inforxtreme.com>.

This chapter provides an introduction to Infor Omni-Channel Campaign Management Platform product architecture and outlines the major steps involved in the implementation process.

Note: Do not copy and paste scripts, commands or code from this document. Line breaks and some other characters picked up when you copy from the PDF can cause errors in the pasted text.

Infor Campaign Management Platform

The Infor Campaign Management Platform provides a highly customizable, reliable, and robust framework for delivering a variety of enterprise-wide, customer-focused applications to users throughout an organization.

The Infor Campaign Management Platform applications enable you to use a web-based interface to review, analyze, and act on data that is collected throughout an enterprise. The data that you choose to make available to users is extracted (copied) from a variety of source systems and placed in an EpiCenter data mart. The thin-client interface runs on standard web browsers, requires no applets or plug-ins, and operates in a variety of supported languages and locales. Infor Campaign Management Platform applications provide you with the following capabilities:

- On-line analytical processing (OLAP)
- Data mining
- List management
- Campaign management

The applications are deployed through the Infor Campaign Management Server, an application server that allows the applications to work together in tightly integrated fashion. Depending on the source systems from which data is extracted, Infor Campaign Management Platform applications can be applied to such diverse areas as the following:

- Sales reporting and analysis
- E-commerce management
- Supply-chain management
- Demographic analysis

The Infor Campaign Management Server treats individual application components as building blocks for creating sophisticated solutions to complex business problems. Navigation paths, called topics, link applications together in coordinated sequences and allow them to share data. Infor provides a number of prepackaged templates for topics that you can customize to meet the exact needs of your business.

System Architecture

The main components of the Infor Campaign Management Platform include the EpiCenter data mart, source systems, the Admin Manager, the Infor Campaign Management Server, EpiChannel, and related utilities. For information on each component hardware and software requirements and installation instructions, see the *Infor Campaign Management Installation Guide*.

Infor Campaign Management Platform Back End

The Infor Campaign Management Platform back end consists of the EpiCenter data mart, source systems, Admin Manager, EpiChannel, and related utilities.

EpiCenter Data Mart

The backbone of Infor Campaign Management Platform is the EpiCenter data mart. The EpiCenter data mart contains data that is extracted from source databases. The data is stored in a format that is optimized for reporting and analysis. You can use the EpiCenter data mart to collect data from a wide variety of data sources, including any data source with which you can establish an Open Database Connectivity (ODBC) connection. Typical source systems from which you can extract data include:

- On-line transaction processing (OLTP) systems
- On-line demographic databases
- Web logs
- Web-site traffic-analysis tools

The EpiCenter data mart resides on recognized, industry-standard relational database servers. See the *Infor Campaign Management Installation Guide* for a list of supported database servers. The data mart also includes extensions for list management and campaign analysis.

EpiCenter

An EpiCenter is an EpiMeta database with its associated internal links to EpiMart, and EpiOp databases.

EpiMeta

The EpiMeta database contains metadata. The metadata defines:

- Schema for the data mart.
- Extraction jobs that periodically update the fact and dimension tables of the data mart.
- Semantic rules by which updated data is merged into data mart tables.
- Scheduling information for extraction jobs and other periodic tasks.
- Set of accelerator tables and indexes to maintain.
- Specifications for each of the measures, attributes, filters, and web pages that you configure.
- Topics by which web pages are linked.
- User and security information.
- Reports that users have saved.

EpiMart

The EpiMart database contains all the data that has been extracted from the source systems. Users can select from the data and presentation elements that a web page displays to construct queries that read and report on data that resides in this database. The EpiMart includes:

- Standard data mart fact and dimension tables.
- Accelerators that improve response times for user queries, including indexes, aggregate tables, and integer maps for character columns.

EpiOp

The EpiOp database contains

- Campaign history tables, which act as a secondary source system for campaign analysis.
- Lists, which include the results of previously executed queries.
- Extraction, Scheduler, and user query logs.

To facilitate building of EpiCenters, Infor provides the Admin Manager application. You use Admin Manager to define the data mart structure, manage data extraction, and configure the front end applications.

Infor Campaign Management Platform Metadata

All of the control information for the data mart is stored in a single metadata repository, the EpiMeta database. This database uses a relational model that includes numerous tables and referential integrity constraints. The use of a single metadata repository ensures that all components of the system receive notice of a change simultaneously.

Because the EpiMeta database defines the structure of the data mart and the Infor Campaign Management Platform applications that operate on that data, Admin Manager includes export/import commands that allow you to back up metadata, or to transfer subsets of metadata between data marts.

In traditional client/server application environments, changes to the schema of a database table can adversely affect programs that operate on that table. The goal of the Infor Campaign Management Platform adaptive architecture is to allow on-the-fly changes to the data mart schema while preserving the proper operation of Infor Campaign Management Platform applications.

For example, the semantic instances that apply business rules to extracted data are SQL programs that must be changed in response to schema changes. References to tables and columns are parameterized within these instances so that EpiChannel can update them at execution with current schema information. Infor Campaign Management Platform applications and other system components also refer to current metadata for information about the schema of the data mart, the configuration of applications, and the structure of topics.

Source Systems

Source systems contain the raw data from which information is extracted and incorporated into the data mart. Source data can be extracted from any number of data sources.

Admin Manager

Admin Manager is a Windows 2003/2008 graphical utility that enables you to build and maintain the EpiCenter data mart and the Infor Campaign Management Platform applications that the data mart supports.

All development activities associated with building an Infor Campaign Management Platform are done through the Admin Manager folders. Admin Manager uses a tree structure and provides the following folders with sub-branches under each folder.

Table 1: Admin Manager Folders

Folder Name	Purpose
Configuration	User configurable settings, transaction types, measure units, strings, and EpiMart state information
Schema	Define all elements of EpiCenter star schema
Extraction	Specify extraction steps, extraction jobs, and semantic transformations to build and update the data mart
Measures	Define measures and configure presentation objects that allow measures to appear in a web page

Folder Name	Purpose
Presentation	Define attributes and attribute layouts, create filters, web pages, and topics (the user interface that is presented to the user)
Security/Storage	Define global security and storage options
Solutions	Pre-defined web presentations

EpiChannel

EpiChannel is the Infor Campaign Management Platform's fully integrated, graphical, and high performance extract-transform-load (ETL) technology. Epichannel extracts data from source databases, copies it into the data mart, and restructures it as your data mart specifications require.

EpiChannel can utilize either a single-phase or a two-phase ETL process.

- Single-phase "streaming" extractions can move bulk data directly from source systems into the data mart, without staging in intermediate tables.
- Alternatively, the two-phase process allows for more complex ETL operations that require comparison to existing values in the data mart.
- Phase one extracts data from source systems, performs record level transformations, and populates Infor Campaign Management Platform staging tables.
- Phase two extracts data from the staging tables, and uses built-in metadata driven semantic transformation templates to prepare the data into an analysis-ready form while intelligently loading or merging it into the data mart. This separation of source-specific data transformations from analysis-specific business logic transformations provides significant benefits such as minimizing the impact on operational source systems, easy integration with third party ETL and cleansing tools, and faster implementation.

The EpiChannel utility initiates extraction jobs that do these:

- Pull data from individual source systems into staging tables.
- Apply semantic transformations to ensure that data is updated in a manner that is consistent with your business rules.
- Incorporate the data into your data mart.
- Build accelerators such as aggregate tables and indexes, which are used to improve the response time for reports, as well as integer maps and fact clusters, which are used to construct lists and campaigns.

EpiChannel also allows you to call third-party programs, such as data-cleansing tools and other utilities, as part of your extraction process. For more information on EpiChannel, see chapter 13, "Running Jobs with EpiChannel," in the *Infor Campaign Management Data Mart Implementation Guide*.

Scheduler Service

The Infor Campaign Management Platform includes a built-in Scheduler that can be used to run extraction jobs, generate campaigns, and refresh reports on a scheduled basis. The Scheduler runs either as a Windows service or as a Unix daemon process, or even from the command line (enabling integration with other applications or custom code). For more information on the Scheduler, see chapter 12, “The Scheduler,” in the *Infor Campaign Management Data Mart Implementation Guide*.

Infor Campaign Management Platform Front End

The Infor Campaign Management Platform front end consists of the Infor Campaign Management Server, web server, web browser, and web-based applications (Infor Campaign Management Platform application components). The front end enables users to perform sophisticated data analyses using a simple web-browser interface.

At the front end, each user opens a web page on any computer that supports a Java Script-enabled browser and then follows a sequence of pre-configured links to reach a desired application. For example, the user completes a form that specifies the contents of a report and then clicks a button to initiate a query. The type of query that is issued, and the analytical calculations that the Infor Campaign Management Server performs on the results, depend on the application (web page) from which the query originates.

Infor Campaign Management Server

The Infor Campaign Management Server is a robust middle-tier application server that supports Infor Campaign Management Platform applications and connects the applications to the data mart. It runs as a J2EE application within an IBM WebSphere or a BEA Web Logic application server. The server enables users to interact with the data mart through the web-based user interface.

The Infor Campaign Management Server is a J2EE application that manages user connections and database queries in a multi-threaded fashion. It is implemented as a collection of Java classes that run inside a Java Virtual Machine (JVM). The JVM that runs the Infor Campaign Management Server can be invoked as Windows 2003 service.

The Infor Campaign Management Server performs these functions:

- Accepts the requests that each user enters through the web page for an application.
- Constructs an optimized query for each request that takes advantage of available accelerators, and cached results from previous queries. Forwards each query to the database server.
- Instantiates appropriate Java classes to perform application-specific calculations.
- Caches the results of each query.
- Formats the results of each query for web-based display.
- Forwards the formatted results to the web browser.

Infor Campaign Management Platform Applications

Infor Campaign Management Platform Applications run on any computer that provides Internet Explorer or Netscape Navigator. Consult the *Infor Campaign Management 10.0.1 Platform Support Matrix* (available from www.inforxtreme.com) for supported browser versions. These front-end application components enable database query and analysis. The application components connect to the data mart through the Infor Campaign Management Server.

Infor Campaign Management Platform application components can be presented individually or as complete user solutions. They are designed to be simple to use, with no training required. All application components are exposed through an ultra-thin web browser client - they use HTML and Java Script only, and do not require the use of slow-to-download and platform-dependent Java applets, Active-X applets, or plug-ins. This allows users anytime, anywhere access, with good performance over even low-bandwidth links including dialup analog connections.

A user interacts with the Infor Campaign Management Platform by means of web pages, which provide the user interface for an application. These web pages can be configured easily and managed by the administrator without requiring any knowledge of HTML or an HTML editor. The Infor Campaign Management Platform includes a complete development environment for web site navigation. Web pages are grouped into related sets of activities using topics. A topic consists of a set of web pages and the links you create between those pages. Links allow you to create structured or unstructured navigation between web pages. You can guide users through the steps and tools appropriate to a specific problem. Web pages can be configured so that nothing is more than a click away. This makes the Infor Campaign Management Platform applications very intuitive to use by all types of users.

The Infor Campaign Management Platform supports the following web-based applications. These applications allow users to gather and analyze data, and take action based on that data.

Table 2: Infor Campaign Management Platform Applications

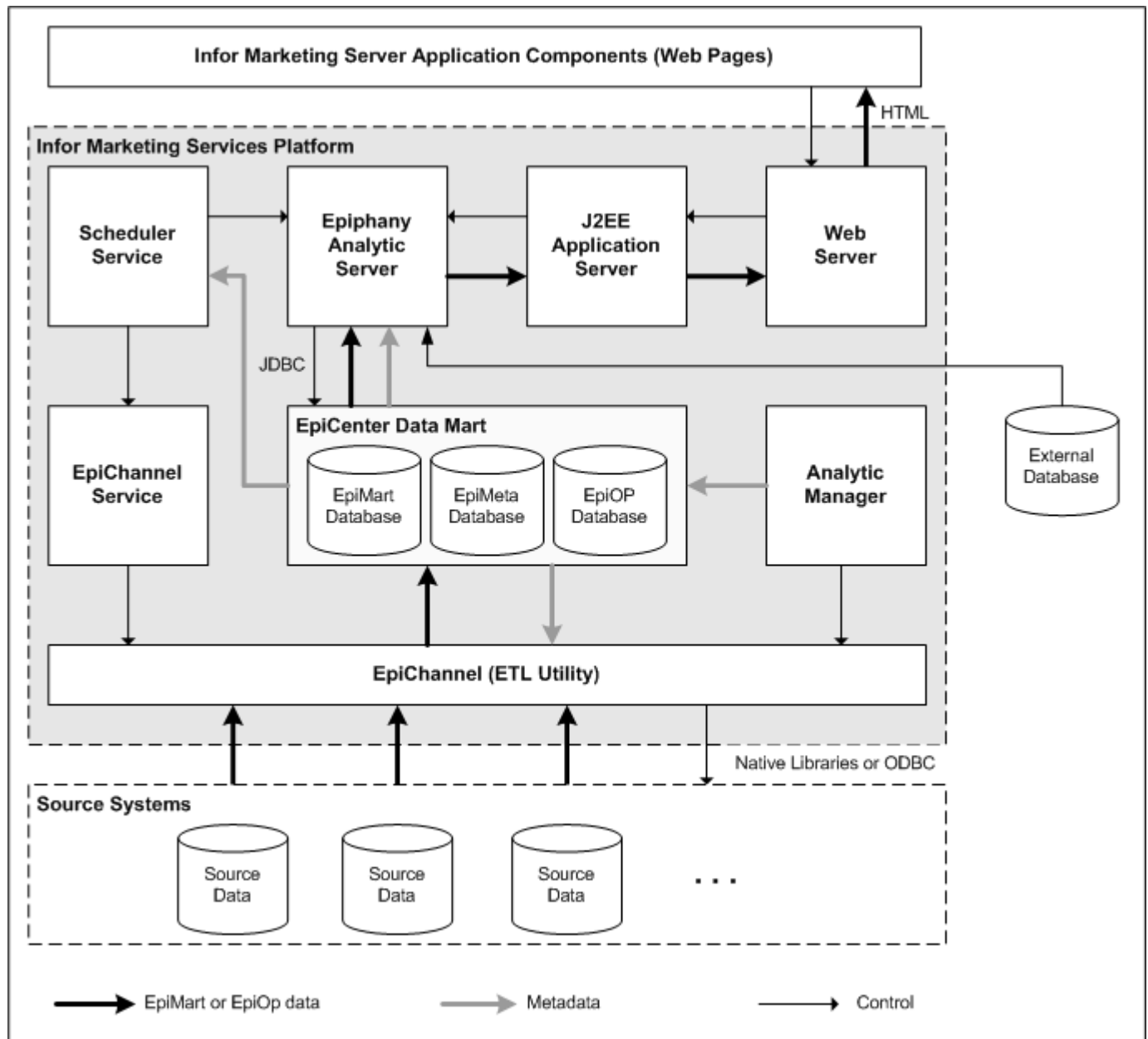
Alert	This application allows users to define alert messages and conditional triggers that activate display of those messages on an Executive Dashboard web page. Alert triggers can also control the display of other dashboard components.
Basic and Advanced Rows and Columns	This OLAP application displays selected data in tabular format and allows users to drill down to increasing degrees of specificity.
Bayes Classifier	This data-mining application creates statistical models that users can use to classify data.
Community Clusters	This data-mining application identifies groupings with common characteristics.
Cumulative Projections	This application projects cumulative results for a current time period based on previous time periods and current results so far.
Campaign Communication Strategies	This application defines reusable communications that can be applied across multiple campaigns.

Campaigns	This application creates lists and campaigns that are directed toward individuals or members of groups.
Dashboard	This application allows users to display summary charts and tables, conditional alerts, hypertext links, and plain-text messages. Users with wireless personal data assistant (PDA) devices can peruse the dashboard components that those devices support.
High/Low Clusters	This data-mining application identifies particularly high or low values.
Influences	This data-mining application identifies predictive relationships.
Lifecycles	This application projects the life cycle for a new product based on information about previous similar products.
Modeling	This data-mining application identifies predictive relationships for use in creating scored lists.
Profiling	This OLAP application illustrates comparisons by selecting appropriate charts, such as pie charts, bar charts, histograms, and others.
Report Gallery	This application allows users to browse among saved reports, lists, and campaigns. Users can also store links to web pages that reside outside the Infor Campaign Management Platform application.
Scoring	This data-mining application ranks list members according to a scoring model.
Trends	This application identifies trends and projects future values accordingly.

When a user interacts with the Infor Campaign Management Platform through a web page and makes a request, the web browser passes the user's request to the web server. The web server routes the request to the Infor Campaign Management Server. The Infor Campaign Management Server optimizes the query by selecting appropriate aggregate tables and indexes, then passes the optimized query to the EpiCenter data mart over a JDBC connection. When the data mart returns the result over that same connection, the Infor Campaign Management Server instantiates the appropriate application-specific Java classes to perform analytical calculations, and then formats the finished results for presentation in HTML format. The Infor Campaign Management Server then forwards these formatted results to the requester's web browser for display.

"Figure 1: Infor Campaign Management Platform Architecture" on page 22 provides a high-level graphical representation of the Infor Campaign Management Platform components.

Figure 1: Infor Campaign Management Platform Architecture



Infor Campaign Management Platform Implementation Overview

The major steps involved in an Infor Campaign Management Platform implementation process are described in "figure 2-2" on page 24.

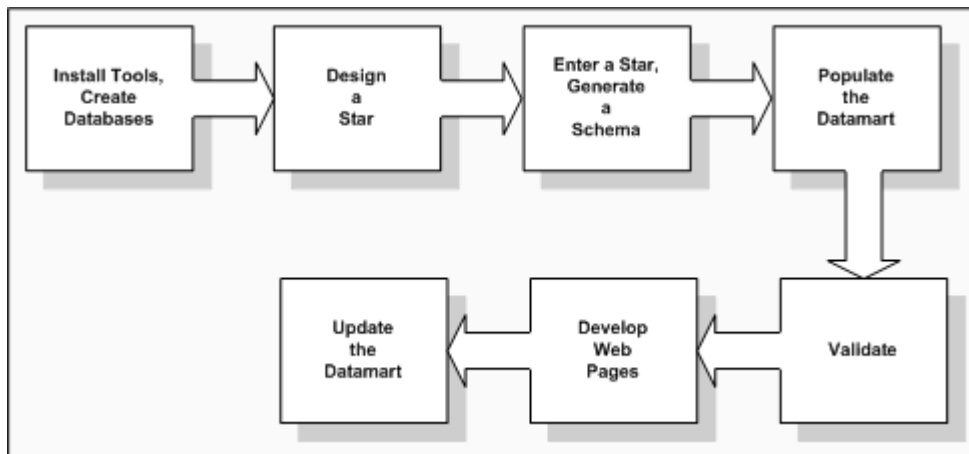


Figure 2: Implementation Process Overview

The procedures that constitute each phase of the implementation process are described in "figure 2-3" on page 25.

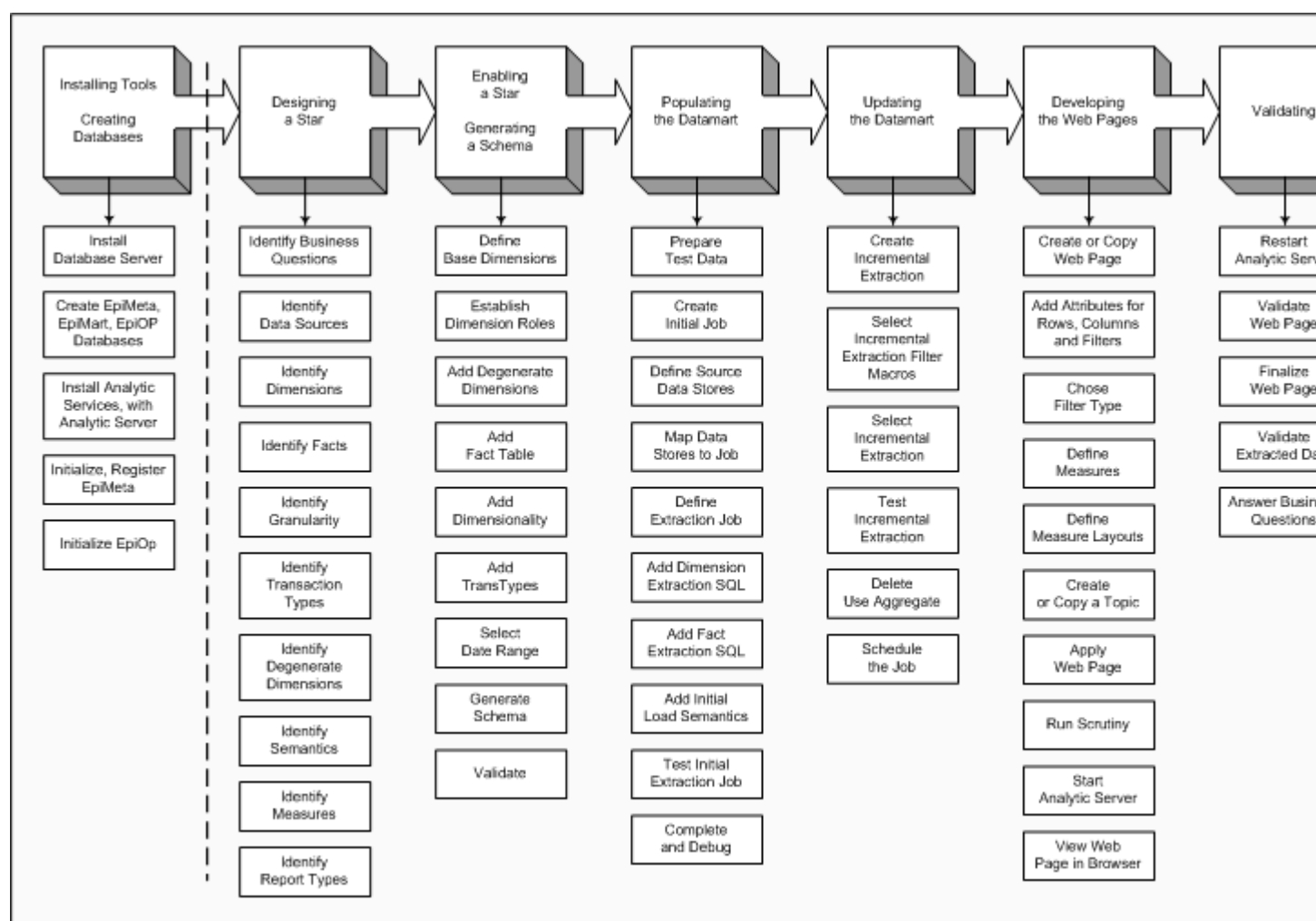


Figure 3: Implementation Process Procedures

The procedures that you follow to implement the Infor Campaign Management Platform are described in the following chapters:

- "Introduction" on page 9 provides a description of the Infor Campaign Management Services platform and its architecture.
- "Designing a Data Mart" on page 27 provides an overview of data mart design, the EpiCenter database schema, building a star schema, and the sample data mart.
- "Creating a Data Mart" on page 37 describes how to create databases for the EpiCenter, initialize the data mart, and generate a star schema. To create a data mart, you can use data from your own source systems or from a sample data mart. The procedures contained in this book use examples from the sample data mart (described in "Appendix A, "The Sample Data Mart"" on page 151).
- "Populating a Data Mart" on page 51 describes the extraction process (defining the data stores, defining the extraction job, and running the extraction job).
- "Creating a Simple Web Page" on page 81 describes how to create a simple Rows and Columns web page to browse the data mart and display reports in tabular form.

- "Creating a Rows and Columns Web Page" on page 93 describes how to create a full-featured Rows and Columns web page.
- "Analyzing and Reporting Data" on page 107 describes how to use a simple Rows and Columns web page to create other web pages such as Profiling, High/Low clusters, Trends, Lifecycles, Cumulative Projections, Influences, and Community Clusters. These web pages are commonly used for Reporting and Analysis.
- "Creating Lists and Campaigns" on page 123 describes how to create web pages for List and Campaign Management, update the data mart for list management, and complete a basic Campaign Management topic.
- "Building Aggregates" on page 143 provides an overview of aggregates and describes how to define and build aggregates.
- "Appendix A, "The Sample Data Mart"" on page 151 contains the application setup, attribute layouts, measures, web pages and database tables that define the sample data mart used in this guide.

This chapter provides an introduction to data mart design, the EpiCenter database schema, building a star schema, and the sample data mart.

Data Mart Design

Designing a data mart involves determining the structure and scope of the data mart, specifying the level of detail to track, and developing some sample queries.

The structure of the business data you model is important because it provides the focus, direction, and purpose of your data mart. For users, you model business data in terms of Facts and Dimensions. Facts are measurable events or quantities, such as the dollar amount of a transaction or a count of web-site hits. Dimensions are descriptive information about facts, such as the names, dates, and locations in which a transaction occurs.

You have to make decisions regarding the data you want to include in the data mart. This involves determining what kinds of questions users prefer to ask the data mart and what data is required to answer the questions.

You also have to make decisions regarding the level of detail you want to track (granularity). This involves answering questions about the level of tracking. For example, do you need to track data at the level of a state, a city, or perhaps a specific store within the city?

For focus and to aid in proof of concept, work with your users and develop a few sample queries. Such queries help you define what the data mart model is able to report. It is also important to test whether the facts and dimensions that you have selected can answer the core business questions.

EpiCenter

An EpiCenter is an EpiMeta database with its associated internal links to EpiMart and EpiOp databases. The EpiMeta database contains metadata tables. These tables store the schema for EpiMart tables and configuration data for the EpiCenter application component. The EpiMart tables contain the actual

data mart tables (fact, dimension, and staging tables). It is where the extracted, organized data, such as customer, product, and order records is kept. The EpiOp database contains EpiCenter-generated data, such as campaign data, query logs, extraction logs, and saved lists.

To facilitate building of EpiCenters, Infor Campaign Management provides the Admin Manager application. Admin Manager enables you to define the schema for the EpiMart tables, define the extraction process, set system security, configure web pages, and instantiate user navigation paths for topics from pre-defined Infor Campaign Management solution templates.

EpiCenter Database Schema

A database schema is a structure for organizing data into tables. The EpiCenter schema allows users to access information rapidly, in a form that allows them to understand and take appropriate action. The schema allows users to generate reports, charts, lists, and campaigns. Each data mart requires its own schema or table layout, which depends on the data that you choose to include.

The EpiCenter database schema is based on the dimensional data-warehouse model. A data warehouse transforms raw data from your organization's source system databases into a format that is optimized for query and analysis. Although the data in a source database is generally organized to facilitate the rapid processing of large numbers of individual transactions, the data in a data warehouse is organized so that it can be quickly sorted by any measure that the business uses.

For more information on the dimensional data-warehouse model, see *The Data Warehouse Toolkit*, by Ralph Kimball.

An EpiCenter data mart implements a dimensional data warehouse that is organized in the form of a star schema. A basic star schema is shown in "figure 3-1 on page 3-4" on page 28.

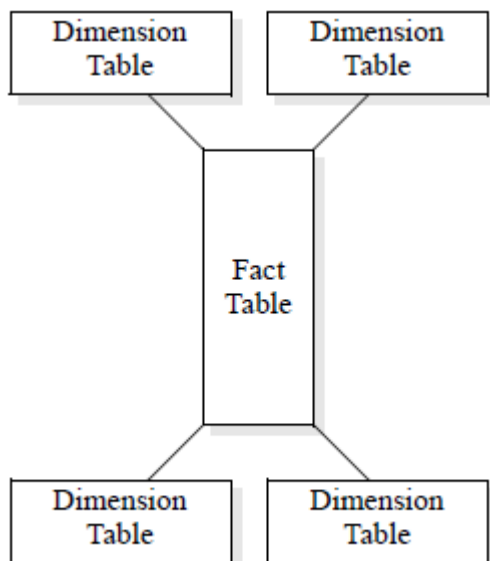


Figure 4: A Basic Star Schema

At the center of a standard star schema is a fact table that contains quantitative data. Radiating outward from the fact table like the points of a star are a number of dimension tables.

Dimension tables contain attribute data, such as the names of customers and territories. Each dimension table contains descriptive information about a particular aspect of a fact or facts. For example, one dimension table can contain information about the location of a store where a transaction takes place. That same store can account for hundreds or thousands of transactions. Another dimension table can contain information about customers, each of whom can have engaged in transactions at several different stores.

Fact tables are often “long and thin;” that is, they have many rows and few columns. Dimension tables, however, are often “short and fat,” with few rows and many columns. The fact table is connected or joined to each of the dimension tables, but the dimension tables are connected only to the fact table.

This schema differs from that of many conventional relational databases, where many tables are interjoined.

An EpiCenter enables you to create a star schema with multiple fact tables, each of which is connected to a subset of the available dimensions. A sample star schema is shown below:

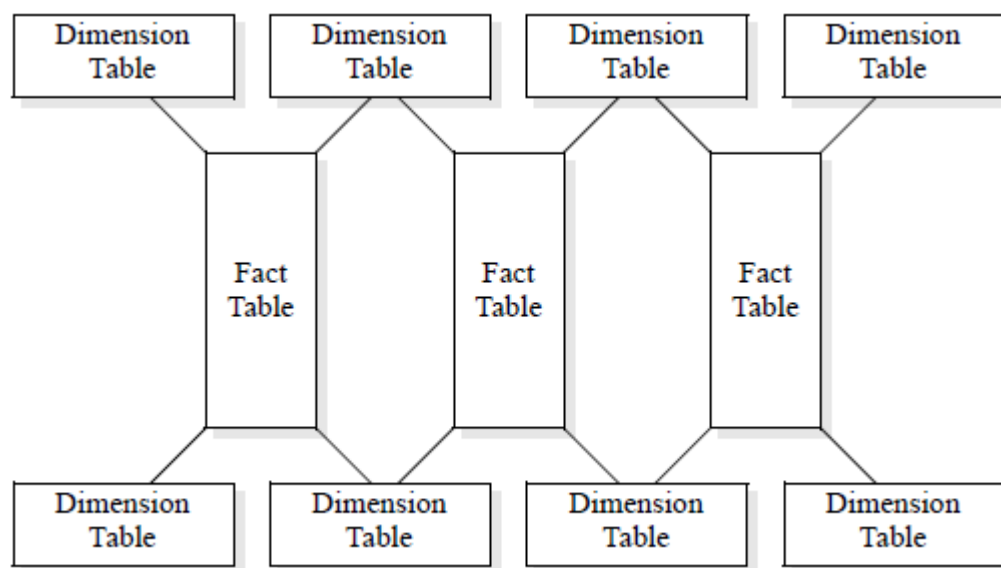


Figure 5: An EpiCenter Star Schema

The facts in an EpiCenter data mart are organized into one or more fact tables. Dimension tables can be shared by multiple fact tables.

EpiMart Database

The EpiMart database includes fact, dimension, and staging tables. The fact and dimension tables contain the actual data mart data. Staging tables are the first entry point of raw data from the source systems into the EpiMart database. Each staging table serves as an interim stop for data that is to be stored in EpiMart database tables.

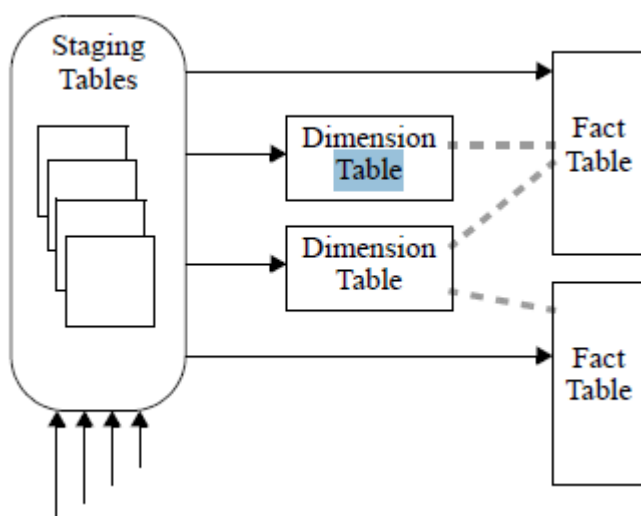


Figure 6: EpiMart Database Tables

Fact tables contain records of discrete business facts, such as orders, shipments, or mailings. Each row in the fact table contains the actual fact values, as well as references (by means of foreign keys) to the dimension values that correspond to that fact.

For example, a fact in a sales table can be a customer's purchase of some quantity of a single item. Fact quantities are such things as number of units purchased and unit price. The dimension values corresponding to the fact are such things as customer, product purchased, and date of purchase.

A typical fact table row, with fields for the fact values and for the foreign keys to the dimension tables, is shown in "figure 3-4" on page 30.

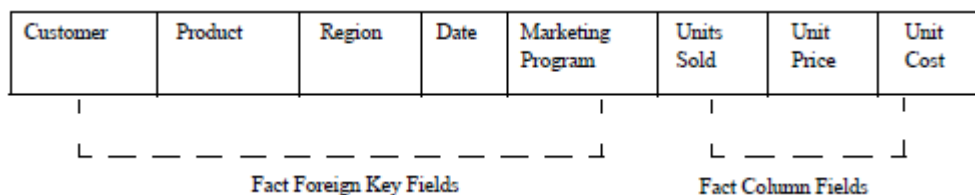


Figure 7: A Fact Table Row

Dimensions are the aspects by which the data is available for analysis, such as customer or product. A dimension row contains a single dimension key, along with the attributes of that dimension element. The dimension key is the key that is used as a foreign key in the fact table. Dimensions often have large numbers of attributes. A typical dimension table row is shown in "figure 3-5" on page 31.

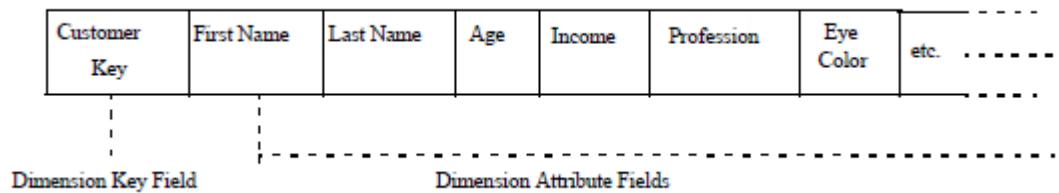


Figure 8: A Dimension-Table Row

The fact and dimension tables discussed so far can be arranged in a star schema. In this star, you can perform calculations on fact table quantities based on dimension-attribute values.

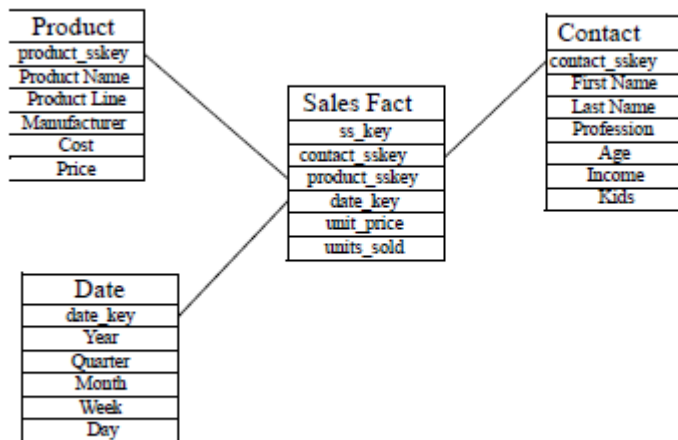


Figure 9: A Simple Star-Schema

For example, you may be interested in the effect of age and income on the purchasing patterns of customers in the western region. You can then do a simple query that generates a table of unit purchases per customer (a calculation on facts) in the western region (a dimension-attribute value), with the results arranged by age and income groups (that is, arranged by dimension-attribute values).

Building the Star Schema

The star schema is the blueprint for building an EpiCenter data mart. It defines all of the fields in the dimension and fact tables. Before you initialize your data mart, you have to define the appropriate facts and dimensions for your data mart and sketch the star schema.

Defining Dimensions

Dimensions provide the framework around which you perform measurements and analyses on the business data in the data mart. Dimensions typically include such things as time, transaction type, stores, vendors, customers, geography, accounts, and product.

Dimensions do not contain normalized data. In fact, it is often preferable to have denormalized data in the dimensions to speed up response time for user queries. Proper extraction ensures that any redundant data in a denormalized dimension remains consistent.

Time and **Transaction Type** are standard dimensions in EpiCenter data marts. The **Date** dimension allows facts to be measured over various time periods. For example, you require a Date dimension to know which customers purchased a particular product during the month of February.

The **Transtype** (Transaction Type) dimension specifies a “slice” of a fact table. For example, the revenue generated from a customer purchase can be logged with a different transaction type from the refund generated from a customer return. Transtypes can be set up to handle all possible types of transactions within the business-data model.

Defining Facts and Measures

Facts are individual data points within the data mart. A useful rule of thumb for finding facts is to look at quantitative data. Facts are usually quantifiable things, such as “Dollar Amount Sold,” “Units Sold,” or “Customer Count.”

Facts must be collected at a granular level. That is, a row in the fact table must refer to at most one element of any given dimension. For example, you can have a source database that records purchases by product category. You may want to record these purchases in a fact table that is connected to a product dimension. If your product dimension has a row for every specific product, then this source database does not give you data at a granular level.

Quantitative facts can be additive, nonadditive, or semiadditive:

- Additive facts can be added across every dimension. For example, in a fact table of sales transactions, it is possible to add up dollar sales by contact, product, date, and so on.
- Nonadditive facts cannot be added across any dimension. For example, if a sales fact table has a column for percentage discount, it would make no sense to add these percentages between transactions.
- Semiadditive facts can only be added across some dimensions. For example, a sales table can include a count of parking validations given out with a purchase. A single purchase can be split into multiple transaction records, one for each product purchased. This split makes the fact semiadditive. You can add these fact values along the product dimension, which allows you to find out how many parking validations are given out with purchases of some specific widget. However, you cannot add these fact values along the contact dimension. A single parking validation given to an individual can be recorded in multiple transaction records. If you try to add up all of the parking validations given to an individual, then any validation that appears in multiple transaction records must incorrectly be counted more than once.

Measures are computations performed on facts, and it is these computations that return the type of information that a user looks for in a report. These computations of measures have to be handled carefully in the case of nonadditive and semiadditive facts. Since additive facts are the easiest to manage, Infor Campaign Management recommends you arrange your fact table so that many facts are additive.

Sample Data Mart Design

The sample database contains sales and marketing information for a fictitious company. The fictitious corporate data is typical of the kind of data that you can have for a small company. The tables contain detailed information on customers, products, and manufacturers, as well as data about orders and sales calls.

For a list of the tables and columns in the sample database, see "Appendix A, "The Sample Data Mart"" on page 151. Perform some SQL queries on the database to find out more about its structure and the data that it contains.

The sample database is provided as an Excel file (`SampleSrc.xls`), in the `ConfigFiles\Resources` subdirectory of the Infor Campaign Management Services installation image (CD-ROM or download). If you want to use the sample database as the source from which to create a sample data mart, you have to copy the file to your hard disk, and then load it into your SQL Server or Oracle database.

The following procedure is an example of loading the sample database in SQL Server 2005.

Note: If you encounter any problems with this procedure or it does not seem applicable to your version of SQL Server, refer to the SQL Server documentation that came with your application.

Note: To load the sample database in Oracle, refer to the Oracle documentation.

Loading the Sample Database in SQL Server 2005

In SQL Server Enterprise Manager, expand the directory tree to show the database server icon

- 1 In SQL Server Enterprise Manager, expand the directory tree to show the database server icon. .
- 2 To create a database, expand the directory tree till you see the **Databases** folder.
- 3 Right-click the **Databases** folder and select **New Database**. The Database Properties dialog box appears. Ensure that **Automatically Grow File** is checked by default.
- 4 Enter the name **sample_source_db** and click **OK** to define the database.
- 5 Expand the **Databases** folder. The `sample_source_db` appears.
- 6 Right-click and from the **All Tasks** menu, select **Import Data**. SQL Server starts the DTS Import Wizard and the DTS Import/Export Wizard dialog box appears.
- 7 Click **Next**. The Choose a Data Source screen appears.
- 8 Select **Microsoft Excel 97-2000** as the **Source Type**.

- 9 In the **File Name** list box, enter the path of the sample database file that you just installed. If necessary, click the ... button and navigate directly to the file.
- 10 Click **Next**. The Choose a Destination Screen appears.
- 11 Ensure that your database server and the `sample_source_db` database are selected, and click **Next**. The Specify Table Copy or Query screen appears.
- 12 Select **Copy Table(s) From the Source Database** and click **Next**. The Select Source Tables screen appears.
- 13 Check the check boxes next to all tables whose names do not end with \$.
- 14 Click **Next**. The Save, Schedule, or Replicate Package screen appears.
- 15 Check **Run Immediately** and uncheck all other check boxes.
- 16 Click **Next**. The Completing the DTS Wizard screen appears.
- 17 Click **Finish** to start loading the sample database. The Transferring Data progress dialog box appears. When the sample database is completely loaded, a confirmation message appears.
- 18 Click **OK** and then **Done** to exit the DTS Wizard.

Facts in the Sample Data Mart

In the sample data mart, the candidates for facts are orders and marketing sales data. Orders and shipments (in both unit and dollar quantities) exhibit all of the qualities you expect from fact table entries, so you can construct a fact table with rows for individual orders.

The sample data mart includes data for marketing sales calls and responses (in `response_table`). These are also quantifiable, but there is no clear way to include them in a fact table with the sales data. One possible solution is to build a separate EpiCenter for the marketing data. Building separate EpiCenters is not an entirely satisfactory solution because this arrangement makes it difficult to ask questions that involve both kinds of facts. A better solution is to create two fact tables, one for sales facts and one for marketing facts, within a single star. This multi-table solution is implemented in the sample data mart.

Dimensions in the Sample Data Mart

After you have specified your fact tables, decide how to arrange the remaining data of interest into dimension tables. Infor Omni-Channel Campaign Management recommends that you not create a separate dimension for each source-database table. For example, the source data contains separate tables for product and product line. Since the product line is just an aspect of the specific product, include it as part of the product dimension.

Decisions about what data to combine into dimensions are dependent on the nature of your business and the types of queries that users make. For example, the sample data mart includes manufacturer information in the product dimension. A different company can have dealings with a manufacturer in the roles of both supplier and customer. In such a situation, that company's users may want to make

queries that combine customer and supplier data from these manufacturers. In that case, you can create a separate dimension for the manufacturer.

In addition to the product dimension, the sample data mart also contains dimensions for contacts, households, marketing programs, and sales representatives. Again, these decisions are made based on the nature of this fictitious business. A multi-level marketing company can, for example, have a single dimension that combined customers and sales representatives.

The sample data mart contains the `Quick_Count` dimension. This dimension enables you to do a query of something by “nothing” (that is, without breaking out a report by a second dimension). It is a dimension with a single value that is shared by every row in the fact table, so when a query is made by that value, every row in the fact table is returned. Such a dimension can be useful in Rows and Columns web pages, where a user can choose a specific attribute for the rows and nothing for the columns.

The sample data mart also contains a degenerate dimension called Sales Order Number. A degenerate dimension contains only a single column. Normally, a dimension is represented as an actual data mart table. A degenerate dimension, however, is represented as an additional text column in the fact table.

Sample Data Mart Star Schema

The fact tables and dimensions discussed in relation to the sample data mart result in the following star schema.

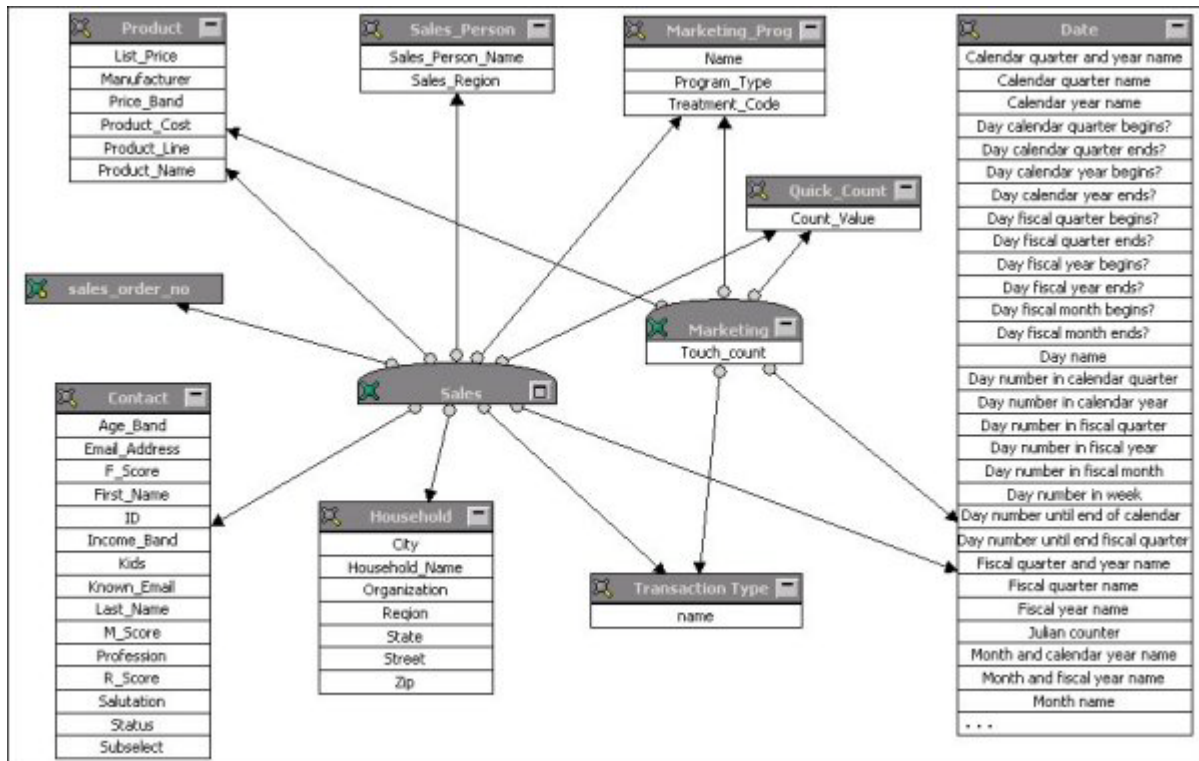


Figure 10: The Sample Star Schema

The process of implementing this star schema is described in Chapters 5 through 10.

This chapter describes how to create EpiCenter databases, initialize the data mart, and generate a star schema. To create a simple data mart, you can use data from your own source systems or from the sample data mart described in "Appendix A, "The Sample Data Mart."" on page 151 The procedures described in this book use examples from the sample data mart.

Creating EpiCenter Databases

The EpiCenter consists of three databases; one for the metadata (EpiMeta), one for the data mart data (EpiMart), and one for the operations data (EpiOp). Infor Campaign Management recommends that you give the databases names that end with meta, mart, and op (for example, sample_meta, sample_mart, and sample_op).

Note: Before you create the databases, install your database server and Admin Manager software. For installation instructions, see the *Infor Campaign Management Installation Guide*.

Creating Databases in SQL Server 2005

Note: If you have a different version of SQL Server, refer to the SQL Server documentation. To create databases in Oracle or DB2, refer to that company's documentation.

- 1 Open SQL Server Enterprise Manager.
Start > Programs > Microsoft SQL Server > Enterprise Manager.
- 2 Expand the directory tree to show the database server icon.
- 3 Double click the database server icon to expand the directory tree.
The Databases folder appears.
- 4 Right-click the **Databases** folder and select **New Database**. The Database Properties dialog box appears. Under **File Properties**, the **Automatically Grow File** is checked by default.
- 5 Enter the name `sample_meta` and click **OK** to define the database.
- 6 Expand the databases folder. The database icons appear in the right frame of the Console Root window.

- 7 Double-click the icon for your newly created database. The database_name Properties dialog box appears.
- 8 Select the **Data Files** tab and verify that the **Automatically grow file** box is checked.
- 9 Select the **Transaction log** tab and again verify that the **Automatically grow file** box is checked.
- 10 Select the **Options** tab. Do the following:
 - a Choose the **Simple** model under **Recovery**.
 - b Check the following boxes:
 - **Auto create statistics**
 - **Auto update statistics**
 - **Torn page detection**
- 11 Click **OK**.
- 12 Repeat steps 4 through 11 to create two more databases and name them `sample_mart` and `sample_op`.

Initializing the Data Mart

After you create the databases, you must initialize the data mart. This is a two-step process:

- First, you must register the database server, if it is not already registered.
- Secondly, you must build the EpiCenter.

Registering the Server Start Admin Manager

- 1 Start Admin Manager.
Start > Programs > Infor > 10.0.0 > Infor Campaign Management > Infor Campaign Management > Admin Manager.
- 2 Right-click the **Servers** folder and select **Register Server**. The Server Properties dialog box opens.
- 3 Select the **Server Type** and enter the name of the database server.
- 4 Select an **Authentication** mode. Use the same mode that your database server is set up to use.
 - If you are using Windows Integrated Security, Select the **Windows Authentication** radio button.
 - If you are using SQL Server Authentication mode, Select the **Use the following SQL Server login** radio button, and specify the appropriate user name and password.
- 5 Click **OK**. If Infor Campaign Management displays the Select EpiCenter dialog box, click **Cancel**.
Note: If you receive a message indicating that the server is already registered, click **Cancel** in the Server Properties dialog box. You do not have to re-register a server that has already been registered with an administrator account.

When your database server is registered, Infor Campaign Management adds an icon with the name of the server, under the Servers folder.

Building the EpiCenter

- 1 Expand the **Servers** folder and select the icon for your new database.
- 2 From the Menu bar, Select **EpiCenter > Initialize EpiCenter**.
The Initialize EpiCenter dialog box appears.
- 3 Select the appropriate database for your metadata from the **Epimeta** list box.
- 4 In the **Initialization configuration** drop-down, select **New Epimeta**.
- 5 In the **Initialization locale** drop-down, select **en-English**.
- 6 Click **Build**. Infor Campaign Management begins the process of initializing the EpiCenter.
The initializing takes several minutes. When this process is complete, a confirmation message appears.
- 7 Click **Close**. The new icons appear in Admin Manager main window. If you do not see these new icons, expand the folder that is named for your EpiMeta database.
Each of these icons represents a folder. See "Table 1: Admin Manager Folders" on page 18 for a description of these folders.

Generating a Star Schema

The star schema is the blueprint for building an EpiCenter because it defines all the fields in the dimension and fact tables. You create a star schema by doing the following:

- "Creating Base Dimension Tables" on page 40
- "Creating Dimension Roles" on page 43
- "Defining Degenerate Dimensions" on page 44
- "Creating Fact Tables" on page 45
- "Defining Relations" on page 46
- "Initializing EpiOp" on page 47
- "Generating the Schema" on page 47

You define the star schema using the Admin Manager Schema folder. When you expand the Schema folder, the icons for the subfolders appear.

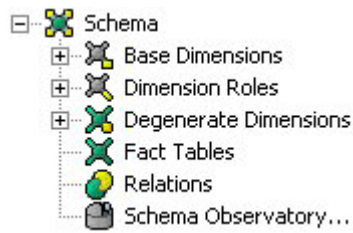


Figure 11: Admin Manager Schema Folder

Each of the icons represents a subfolder that contains elements of the star schema.

Table 3: Star Schema Elements

Element (Folder)	Description
Base Dimensions	Hold the dimension tables in the EpiCenter.
Dimension Roles	Hold the mappings from base dimensions to fact tables.
Degenerate Dimensions	Contain fact table text fields that do not map to a base dimension.
Fact Tables	Hold EpiCenter transaction data.
Relations	Hold relationships between dimensions.
Schema Observatory	Provides a visual representation of EpiCenter schema.

In defining the star schema through the Admin Manager interface, you follow the order of the subfolders listed under the Schema folder.

Creating Base Dimension Tables

Base dimension tables are physical dimension tables that define the axes along which you can slice and dice your data. Base dimensions are global objects that can be used throughout the EpiCenter.

Base Dimension

Actions Help

General Options Agg Instructions Built Aggs Queries Object Properties Usage

A base dimension table consists of information for elements such as product, customer, or company that is referenced in fact data.

Name: Short ID:

Developer label: Current Letter: x

Label:

SS Key type: VARCHAR_50

Key type: INT

Description:

Dimension columns:

Name	Dev Label	Physical T...	Description	Indexed for fast sea
*				<input type="checkbox"/>

New Edit Delete Duplicate Undo

Help OK Cancel Apply

Figure 12: Admin Manager Base Dimension Dialog Box

Adding a Base Dimension

See "Appendix A, "The Sample Data Mart,"" on page 151 for details of dimensions in the sample data mart. Especially, see "figure A-3 on page A-3" on page 152 through "figure A-10 on page A-8" on page 159.

- 1 In Admin Manager, navigate to the Schema folder and select the Base Dimensions subfolder.
- 2 Right-click **Base Dimensions** and select **New Base Dimension**.
The Base Dimension dialog box is displayed.

3 Enter the name and description of a base dimension. For the sample data mart, enter the name **Product**.

4 Select an **SSKey Type**.

The `sskey` type is a key that uniquely identifies each member of the dimension. The `sskey` type is always a string value, and it must be long enough to hold any possible key. The default value of `VARCHAR_50` is sufficient for most base dimensions in the sample data mart.

5 Select **Int** for key type.

Note: INT refers to integers and VARCHAR refers to alphanumeric values. For more information, see appendix C, "Data Type Values," in the Infor Omni-Channel Campaign Management Data Mart Implementation Guide.

6 Select the **Options** tab, and ensure that all four options under **Extraction** are unchecked:

- **This dimension is unmapped**
- **This dimension is non-versioned**
- **Allow dimension fusion/fission**
- **Allow EpiChannel to map SSKeys to keys in memory**

(See Appendix A, "figure A-3 on page A-3" on page 152, for the settings for the rest of the base dimensions in the sample data mart).

7 Click **Apply**.

8 Select the **General** tab again. Create each of the following columns using the information from appendix A ("figure A-8 on page A-6" on page 157) if using the sample data mart:

- List_Price
- Manufacturer
- Price_Band
- Product_Cost
- Product_Line
- Product_Name

To create a column:

- a Click the **New** icon under **Dimension column**.
- b Enter the column name and a description.
- c Select the appropriate **Physical Type** from the list box.
- d Set the indexing and mapping options as specified in appendix A.
- e Set the **Unknown Value** default value as specified in appendix A.
- f Click **OK** to define the column. The column names appears in the **Dimension column** list.

9 Click **OK** to complete creating the dimension table and close the Base Dimension dialog box.

10 Repeat Steps 2 on page 41 through 9 on page 42 to create additional dimensions. If using the sample data mart, add the following dimensions:

- Contact
- Household

- Marketing_Prog
- Product
- Quick_Count
- Sales_Person

See "Appendix A, "The Sample Data Mart,"" on page 151 for details.

Creating Dimension Roles

Dimension roles specify the role that base dimensions can play for fact tables. A base dimension must have at least one associated dimension role to be used in a fact table. A base dimension can also have more than one associated dimension role.

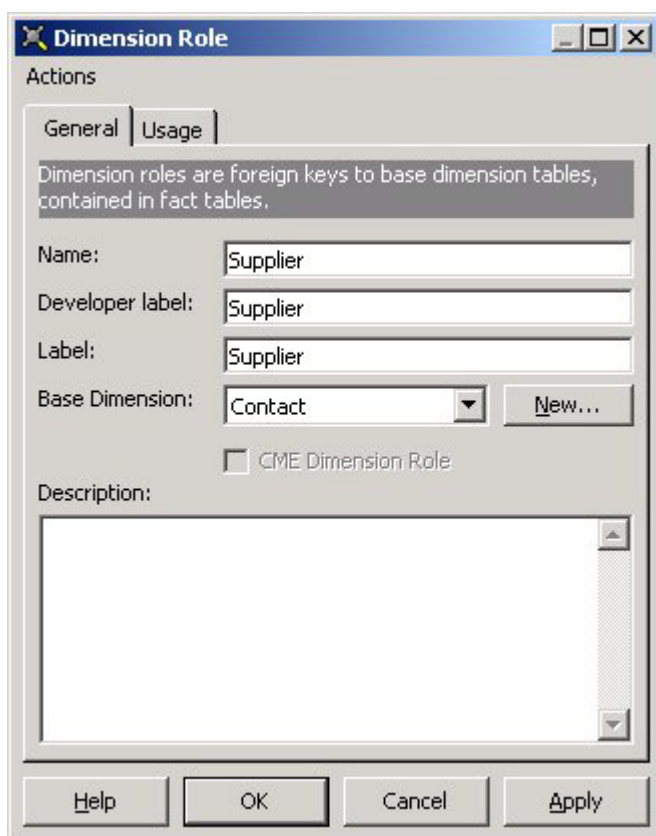


Figure 13: Admin Manager Dimension Role Dialog Box

For example, if there is significant overlap between suppliers and customers, you can have a single base dimension for both. You can then define separate supplier and customer dimension roles, both of which refer to the same dimension. This configuration allows a single fact table entry to refer to two elements of the dimension, once in the role of supplier and once in the role of customer.

Note: Admin Manager automatically creates a dimension role of the same name for each base dimension.

Creating a Dimension Role

- 1 In Admin Manager, navigate to the Schema folder and select the Dimension Roles subfolder.
- 2 Right-click **Dimension Roles** and select **New Dimension Role**.
The Dimension Role dialog box is displayed with the default Campaign dimension role.
- 3 Select the **Base Dimension** for this dimension role. (Do this first, as this action resets the dimension role name).
- 4 Enter a name for the dimension role.
- 5 Enter a description.
- 6 Click **OK** to create the dimension role.

Defining Degenerate Dimensions

Degenerate dimensions are single column dimensions that are physically stored in fact tables. You must create the degenerate dimension first before you can add it to a fact table.

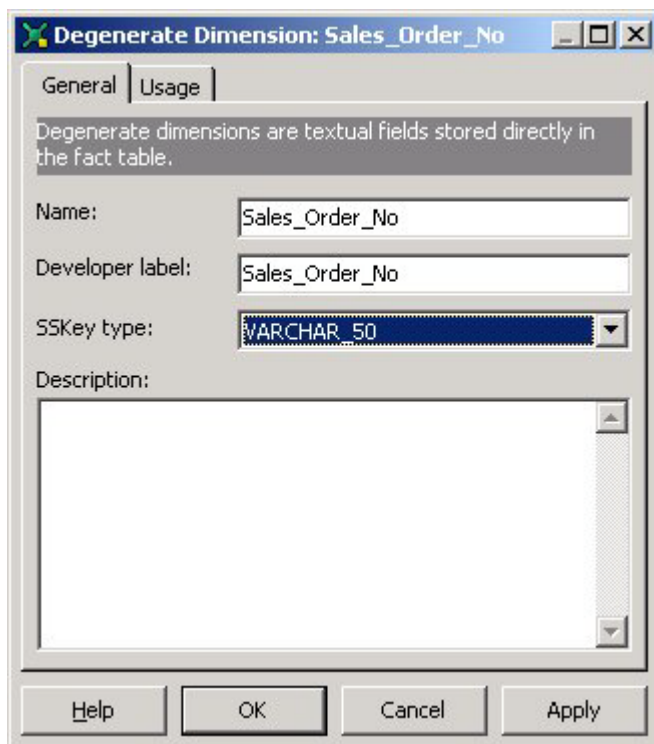


Figure 14: Admin Manager Degenerate Dimension Dialog Box

Defining a Degenerate Dimensions

- 1 In Admin Manager, navigate to the Schema folder and select the Degenerate Dimension subfolder.
- 2 Right-click **Degenerate Dimension** and select **New Degenerate Dimension**.

The Degenerate Dimension dialog box is displayed.

- 3 Enter a name and description for the degenerate dimension. The sample data mart has a single degenerate dimension called `sales_order_no`.
- 4 Select an **SSKey Type** . (The default value of `VARCHAR_50` is acceptable for `sales_order_no`).
- 5 Click **OK** to define the degenerate dimension.
- 6 Repeat Steps 2-5 to define other degenerate dimensions. The sample data mart has no other degenerate dimensions.

Creating Fact Tables

Fact tables are physical database tables that hold numeric data, degenerate dimensions and dimension-role foreign keys. When you create a fact table, you create a new base table, specify any dimension roles that the fact table will reference (including degenerate dimensions), and create at least one cluster.

Creating a Fact Table

- 1 In Admin Manager, navigate to the Schema folder and select the Facts subfolder.
- 2 Right-click **Facts** and select **New Fact**. The Fact Table dialog box appears with the **General** tab active.
- 3 Enter the fact table name and description. For the sample data mart, enter the name **Sales**.
- 4 Click **New** to add fact columns to the fact table.

The Fact Column dialog box is displayed. Fact columns specify the types of numeric entries in your fact table.

 - a Under **Fact Columns** , enter the column name and the physical type of the data it holds. For the sample data mart, see Appendix A, "Fact Tables" on page 161.
 - b Click **OK** to finish and add the column to the fact table.
 - c Add additional fact columns are required.
- 5 Add a second fact table called `Marketing`, and a third called `Household_Contact` (for use in Lists and Campaigns). See "Fact Tables" on page 161, "Fact Tables" on page 161.

Specifying Dimension Roles

Dimension roles tie a dimension to a fact table. In a star schema, the fact table is in the center of the star and dimensions and degenerate dimensions radiate out from the center.

- 1 In the Fact Table dialog box, click the **Dimensionality** tab.
- 2 Click the **Add icon** in the top pane.

The Choose Dimension Role dialog box is displayed.

- 3 Select the dimension roles that you want to add to the fact table. For the sample data mart, see "Appendix A, "The Sample Data Mart,"" on page 161, "Fact Tables" on page 161.

Note: If you want to select several dimension roles at the same time, hold down the Ctrl key.

Note: You can add or remove dimension roles from a fact table without rebuilding the fact table.

- 4 Click **OK** to add the dimension roles.

The names of the dimension roles appear in the upper pane of the Fact Table dialog box.

- 5 Add any degenerate dimensions that the fact table uses. To add degenerate dimensions, click **Add** and then select the appropriate degenerate dimensions from the dialog box. If you are using the sample data mart, add `sales_order_no`.

Note: Adding a degenerate dimension automatically creates an index on that dimension. In many cases, this index is not needed or desired. To delete it, select the Indexes tab, select the index and click Delete.

Defining Relations

A relation defines a relationship that exists between two list-producing base dimensions. For example, if you have a dimension that specifies information about customers, and a different dimension that specifies demographic information about households, then you can define a relation that links the two dimensions together so that a user can make an inquiry of the form:

"Give me the names of all customers who live in Albuquerque, New Mexico in a certain zip code."

You can define any of the following relationships between dimensions in the Admin Manager:

- 'Dimension A' has a one-to-one relationship with 'Dimension B'
- 'Dimension A' has a one-to-many relationship with 'Dimension B'
- 'Dimension A' has a many-to-one relationship with 'Dimension B'
- 'Dimension A' has a many-to-many relationship with 'Dimension B'

For a discussion of the differences between these relationship types, see chapter 3, "EpiCenter Schema Design," in the *Infor Campaign Management Data Mart Implementation Guide*.

Note: In working in the Relation dialog box, you can only select base dimensions that have the list-producing option set in the Options tab - Demographics (Lists and Campaigns).

Creating a Relationship

The sample data mart does not implement relationships in order to reduce complexity.

- 1 In Admin Manager, under the Schema folder, double-click Relations to open the Relation dialog box.
- 2 Enter **HH_Contacts** as the name of this relationship. See "Appendix A, "The Sample Data Mart,"" on page 161, "Relations" on page 167.
- 3 Select the relationship type. For the sample data mart, select **Explicit**.

- 4 Select `Household_Contact` as the fact table.
- 5 Select `Contact` for the first dimension role and `Household` as the second dimension role.
- 6 Select the uniqueness constraint on the relationship. For the sample data mart, select the third (many-to-one) radio button to read 'Contact' has a many-to-one relationship with 'Household'.
- 7 Navigate to the **Cardinality** tab.
- 8 Enter the following labels:

Household: At least one	Enter "At least one Household."
Dimension: At least one	Enter "At least one Contact."

- 9 Click **OK** to create the relationship and close this dialog box.

Initializing EpiOp

The EpiOp database stores data that is generated by the Infor Omni-Channel Campaign Management application. When you create a fresh EpiCenter, you have to initialize the EpiOp database. After you initialize the EpiOp database, you do not have to initialize it again.

Initializing the EpiOp Database

- 1 In Admin Manager, from the **Tools > EpiOp...** menu, select **Initialize EpiOp**.
The Initializing EpiOp for <database name> dialog box opens.
- 2 Check **Trial Run** and click **Go** to perform a trial run of the EpiOp initialization.
- 3 If the trial run is completed successfully, uncheck **Trial Run**. Click **Go** to initialize the EpiOp database.
The run results are displayed.
- 4 After the initialization is successfully completed, click **Close**.
When you create an EpiCenter, you have to initialize the EpiOp database. Initialization changes an empty database into an EpiCenter.

Generating the Schema

Generating the star schema creates the physical tables within the database with space for the fields or columns that you define. Generating the schema also creates the key fields that define the joins between tables. This way, the dimension tables are attached to the fact tables to create the star schema that you defined in "Designing a Data Mart" on page 27 .

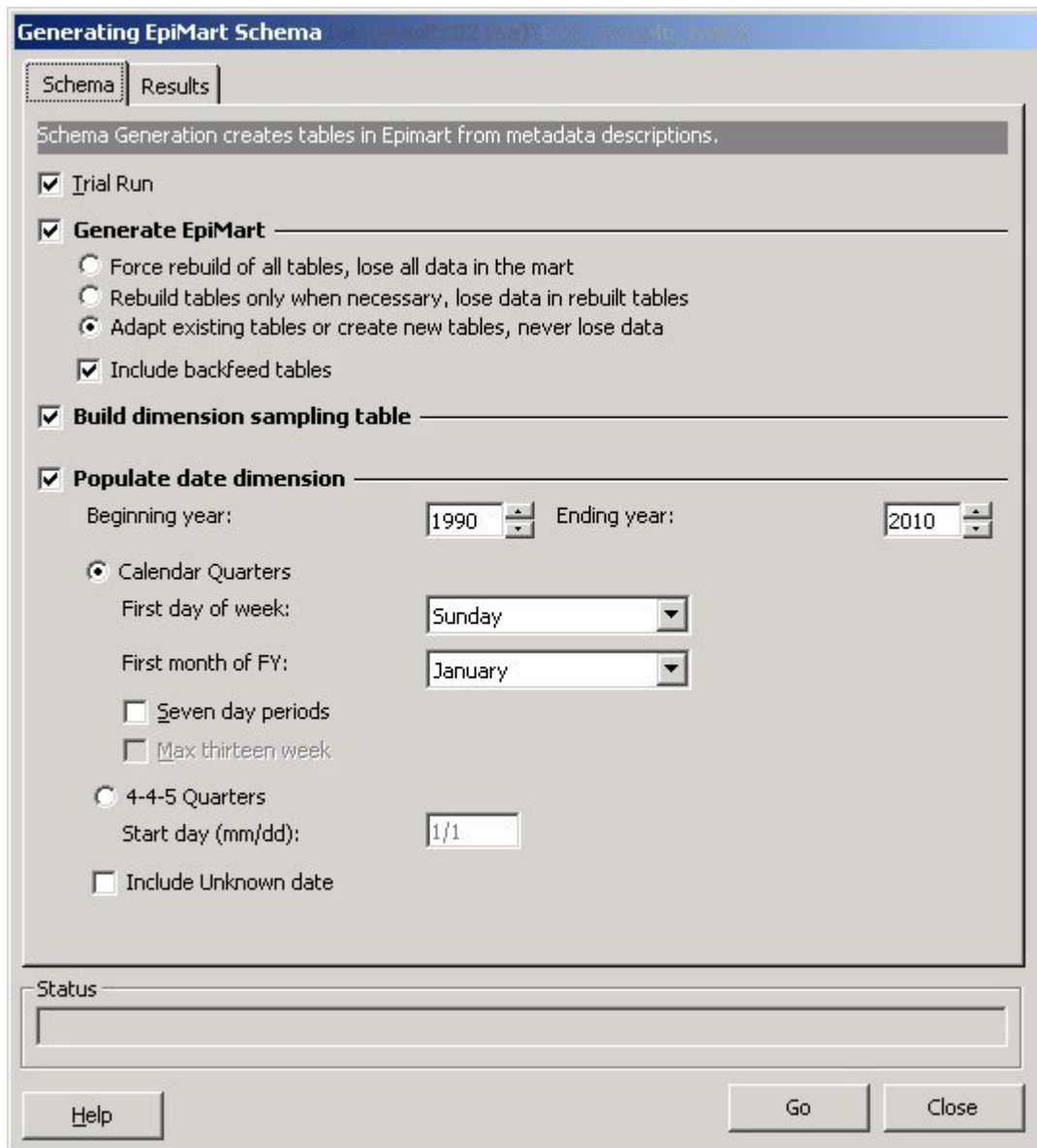


Figure 15: Generate Schema Dialog Box

Generating the Schema

- 1 In Admin Manager, do one of the following:
 - a Select the icon for your database. Right-click and select **Generate Schema**.
 - b From the **EpiCenter** menu, select **Generate Schema**.The Schema Generation dialog box is displayed.
- 2 Verify that **Generate EpiMart** is checked, and select **Rebuild Tables Only When Necessary**.
- 3 Check **Trial Run**, and click **Go** to start the trial run. Generate Schema popup console window opens and displays details of the schema generation process. The **Trial Run** option tests your schema,

but makes no changes. A trial run allows you to check your specifications for consistency, and gives you information on what changes will be made in your EpiCenter if you continue with the actual schema generation.

- 4 When the trial run is completed, the Generate Schema popup console window displays the details of the changes that will be made, or explanations of any problems that have been encountered. Select the **Results** tab to view information about the Date dimension. If you encounter problems, see "Debugging Schema Generation Failure" on page 49.
- 5 Return to the **Schema** tab and uncheck **Trial Run**. Ensure **EpiMart Generation** is still checked and **Rebuild Tables Only When Necessary** is selected.
 - If you are building a new data mart or completely rebuilding an existing data mart (discarding all data previously in the data mart), you can select **Force Rebuild of All Tables**. This drops all existing EpiMart tables and recreates them using the parameters or values that you have specified.
 - If you are making changes to an existing data mart that already contains data, the **Adapt Existing Tables or Create New Tables** option is safer than the **Rebuild Tables Only When Necessary** option, but it may not be sufficient for all changes that you have made to your schema
- 6 Check **Include Backfeed Tables**.
- 7 If you are using the List Manager, check **Build Sampling Table**.
- 8 Check **Populate Date Dimension**, and enter appropriate time and date values for the desired range of dates. Enter the range of years covered by your database, as well as the details of your fiscal year calendar.

For the sample data mart, use 1994-1997 with calendar quarters, weeks starting on Monday, and the fiscal year starting in January.
- 9 Check **Include Unknown Date**.
- 10 Click **GO** to generate the schema. When schema generation is completed, the Generate Schema popup console window displays the details of the changes that are made, or explanations of any problems that are encountered. Select the **Results** tab to view information about the Date dimension. If you encounter problems, see "Debugging Schema Generation Failure" on page 49.
- 11 Click **Close**.

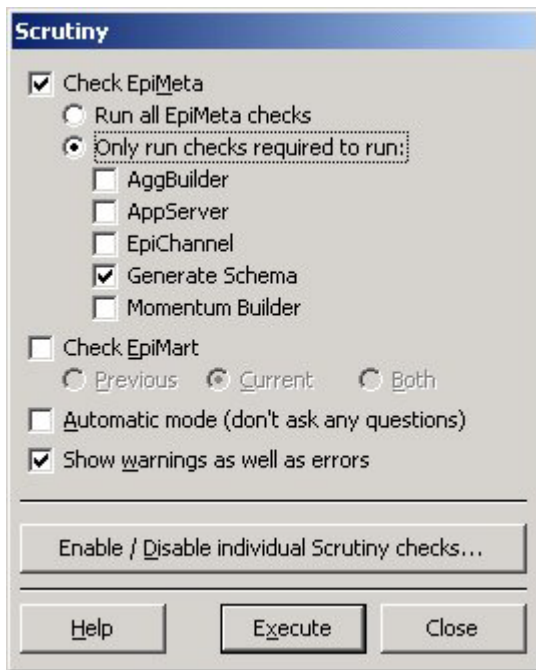
Debugging Schema Generation Failure

If schema generation fails, Generate Schema displays information relating to the failure in the popup console window. Select the **Results** tab to view information about the Date dimension. If this information is not sufficient for you to debug the failure properly, try the following.

- 1 Within Admin Manager, select **Run Scrutiny...** from the **EpiCenter** menu.

The Scrutiny dialog box opens.

Figure 16: Scrutiny Dialog Box



- 2 Select the **Check EpiMeta** checkbox.
- 3 Select **Only run checks required to run:**, then select **Generate Schema**.
- 4 Click **Execute** . A MS Dos window opens that displays the results of the selected Scrutiny checks.
- 5 Use this information to debug the schema generation failure.

This chapter describes extraction , the process of copying data from source databases into the EpiCenter data mart. The extraction process consists of defining the data stores, defining the extraction job, and running the extraction job.

Note: Do not copy and paste scripts, commands or code from this document. Line breaks and some other characters picked up when you copy from the PDF can cause errors in the pasted text.

Defining Source System Data Stores

Data stores are databases that are available for Admin Manager. Admin Manager has four pre-defined data stores. To view these data stores, in Admin Manager navigate to the Extraction folder and expand the Data Stores folder. The expanded folder reveals the following pre-defined data stores:

EpiMart	Stores the data extracted from the source system.
EpiMeta	Stores the metadata.
EpiOp	Stores backfeed tables, saved lists, user query logs and EpiChannel logs.

You have to create additional data stores for any other input databases that you use. For the sample data mart, create a single input data store for the sample input database.

Creating a New Data Store

- 1 In Admin Manager, navigate to the Extraction folder, and select the Data Stores subfolder.
- 2 Right-click and select **New Data Store** . The Data Store dialog box appears.
- 3 Enter a name and description. For the sample data mart, enter **Sample_Source**.
- 4 Select the appropriate data **Store Type**: SQL Server, Oracle, DB2, and so on.
- 5 Under **Allow Use As**, check **Input Data Store** and uncheck **Output Data Store** to create the new data store input-only.

- 6 Select the **Properties** tab.
- 7 Enter the server name and database name. The name of the sample source database is **sample_source_db**.
- 8 Select an **Authentication** mode. Use the same mode that your database server is set up to use.
 - If you are using Windows Integrated Security, select the Windows Authentication radio button.
 - If you are using SQL Server Authentication mode, select the **Use the following SQL Server login** radio button, and specify the appropriate user name and password.
- 9 Click **Apply** to save your work.
- 10 Click **Actions** on the top menu and select **Import Tables** . The Import External Table Definition dialog box opens.
- 11 Highlight the tables to be used in populating the data mart, and click the **Move Selected** right arrow. The list of selected tables appears in the right pane. If you are working with a large list of source tables, you can search for them using wild cards in the **Search for Table/View Name** field.
- 12 Click **Next** to import table definitions. A progress bar displays information about the import process. After the process finishes, definitions for the first table display in the grid editor.
- 13 Uncheck the **Use** checkbox to exclude unneeded columns from the SQL builder used to create extraction SQL.
- 14 Click **Next** and repeat the process, cycling through all the imported table definitions.
- 15 Click **Finish** to complete the import process.
- 16 Click **Close** to close the dialog window. The **Data Store Table** tab now displays a list of the imported table definitions.
- 17 Click **OK** to close the Data Store dialog. The icon for the newly created data store appears under the Data Stores subfolder.

Creating the Initial Data Extraction Job

An extraction job is a sequence of extraction steps applied to a set of data stores. To define a job, you do the following:

- 1 Create the job.
- 2 Create any necessary extraction steps.
- 3 Create global and local extraction groups or job steps.
- 4 Assign extraction steps to groups.
- 5 Assign data stores to job steps.

When you expand the Extraction folder, the Jobs subfolder, and then the Templates subfolder, these predefined (default) jobs are displayed:

- Backfeed7 BackfeedRolloff7
- Campaign7
- Default7

- FactRolloff7

These jobs can be used as starting points for many extraction jobs. For the sample data mart, you can create a new extraction job called Extractorama.

Creating a New Extraction Job

- 1 In Admin Manager, navigate to the Extraction folder and then select the Jobs subfolder.
- 2 Open the **Templates** sub-folder and select the **Default7.0** template.
- 3 Right-click and select **Duplicate**.
- 4 Enter a name. For the sample data mart, enter **Extractorama**.
- 5 Enter a description for the job (optional).
- 6 Ensure that the **Check databases**, **Check tables**, and **Enabled** check boxes are checked. The **Check databases** and **Check tables** direct the EpiChannel utility to ensure all referenced databases and tables are accessible before proceeding with the job.
- 7 Click **OK** to define the job using the Default7.0 template. The icon for the new extraction job appears. The label for the icon shows Extractorama (Default7.0) to indicate that it is based on that template.
- 8 Move the job icon (drag and drop it) into the Jobs folder.

Defining the Extraction Job Steps

Extraction steps move data into the data mart. Extraction steps can be grouped into extraction groups. Extraction groups can contain other extraction groups and individual extraction steps.

Extraction groups are one of these types:

- Global
These groups—and any other groups or steps that they contain—are reusable objects located in the Object Gallery in the left-hand pane of the Extraction Steps dialog box.
- Local
These groups—and any other groups or steps that they contain—define the actual extraction process. You create these groups (and subgroups and steps) in the right-hand pane of the Extraction Steps dialog box.

An extraction job consists of a sequence of job steps, each of which can be a local job group, a global group, or an individual extraction step.

Extracting Dimension Data

You define extraction steps for dimensions and facts. This section describes how to define extraction steps for dimensions. For information on extraction steps for facts, refer to "Extracting Fact Data" on page 61.

Extraction steps for dimensions involves:

- "Grouping the Dimension Extraction Steps" on page 54
- "Adding a Truncation Step" on page 55
- "Adding a Dimension Extraction Command" on page 55
- "Adding a Dimension Semantic" on page 59

Grouping the Dimension Extraction Steps

Global extraction steps and global groups are created and modified under the Job dialog box, **Extraction Steps** tab, but exist independently of any job, and can be reused for various jobs. Local groups, on the other hand, are specific to an individual job; can only be used for that particular job.

Creating Dimension Groups and Subgroups

- 1 Open the **Extractor** job.
The Job dialog box is displayed.
- 2 Click the **Extraction Steps** tab. The Object Gallery is on the right of the Job dialog box.
The available extraction steps and groups appear in the Object Gallery.
- 3 Right-click **All Extraction Steps** and from the **New** menu, select **Group**.
The Group dialog box appears.
- 4 Enter a name. For the sample data mart, enter **Get Dimension Data**.
- 5 In the **On Error** list box, select **AutoRepeat**.
- 6 Click **OK** to define the group. The group now appears under **All Extraction Steps**. You can use this group as a container to hold the all the dimension extraction steps.
- 7 Create another global extraction group within the group you defined previously:
 - a Right-click the folder for the group you just defined. For the sample data mart, this group is called **Get Dimension Data**.
 - b From the **New** submenu, select **Group**.
The Group dialog box is displayed.
 - c Enter a name. For the sample data mart, enter **Household Extract**. In the **On Error** list box, select **AutoRepeat**.
 - d Click **OK** to define the group.
The new group now appears under the **Get Dimension Data** group.

Adding a Truncation Step

Typically, the staging table for a fact or dimension is truncated (that is, all data in the table is deleted) before the table is populated with newly extracted data. This allows for the extraction restart ability. You create truncation steps for all fact and dimension tables that you define.

Note: See “Configuring Extraction Steps for Restartability” in chapter 9 of the *Infor Campaign Management Data Mart Implementation Guide* for details.

Creating a Truncation Step

- 1 Right-click the Household Extract group that you defined. From the **New** menu, select **Truncation**. The Truncation dialog box opens.
- 2 Select the kind of table to be truncated (**Dimension**, **Fact**, **External Table**) by choosing the table name from the appropriate drop-down list. For the sample data mart, select **Household**.
- 3 Select **AutoRepeat from the On Error** list box.
- 4 Click **OK** to define the step. The step appears under the **Household Extract** group.

Adding a Dimension Extraction Command

The next step in moving data from the source database into the data mart is to move it into staging tables using SQL queries. Staging tables are tables for new data for your facts and dimensions that contain the keys that you specified when you defined your star schema.

Note: Infor Campaign Management uses staging tables during extraction. These staging tables are created when you initialize the EpiCenter.

Admin Manager provides the Extraction Wizard, a graphical tool for defining extraction commands. For instructions on using the Extraction Wizard, see “Using the Graphical Extraction-Command Builder” in chapter 9 of the *Infor Campaign Management Data Mart Implementation Guide*.

You can also use a SQL statement to define an extraction command. Admin Manager provides SQL code templates for staging tables and external tables. Customize the templates based on the structure of your source system. The sample data mart procedures use SQL coding by hand.

Formulating SQL Queries

When you formulate SQL queries, Infor recommends these guidelines:

- The SQL code must be vendor independent.
Infor provides a large collection of macros to facilitate the writing of vendor-independent SQL.
- The data must not contain null values.
Replace all null values with values that do not appear in your data. The string 'UNKNOWN' is generally used for this purpose for string values. This replacement can be done with the `$$NVL` macro.

Note: For a discussion of the `$$NVL`, `$$COLUMN_FILTER` and `$$DATE_FILTER` macros and other macros, refer to the *Infor Campaign Management Data Mart Implementation Guide*, Appendix A, and the Admin Manager online help

- Use `SELECT DISTINCT` when you write your SQL code to avoid duplicate dimension values.
- The sample data mart extraction commands extract all rows from the source database. If you are doing regular extractions from a source database, extract only values that have changed since the last extraction. Infor Campaign Management provides several macros, such as `$$COLUMN_FILTER` and `$$DATE_FILTER`, that make this process easy.

In addition to the fields that you have defined for the dimension, every dimension table also includes the following additional special fields:

<code>TableName_ sskey</code>	The source-system key is a unique identifier for an element of a dimension. The key is used to associate a record with future changes to that record. (<code>TableName</code> is the name of the table—for example, the <code>Household</code> table has a <code>Household_sskey</code> field).
<code>date_modified</code>	Indicates the date when the dimension value is updated.

Adding an Extraction Command to an Extraction Group

- 1 Open the Job dialog box for your new extraction job (for the sample data mart, open the `Extractorama` job), and click the **Extraction Steps** tab.
- 2 Expand the **All Extraction Steps** folder and right-click the extraction group you created (for the sample data mart, this is `Household Extract`). From the **New** submenu, select **Extraction Command**. Admin Manager displays the Extraction Wizard.
You can use the Extraction Wizard to create the extraction command or you can use the standard dialog box interface. For instructions on using the Extraction Wizard, see “Using the Graphical Extraction-Command Builder” in chapter 9 of the *Infor Campaign Management Data Mart Implementation Guide*.
- 3 For the sample data mart, click **Create Extraction Command with Editor**.
The standard interface appears. The instructions that follow are tailored specifically to the dialog box interface with the **Write SQL by hand** radio button selected.
- 4 Click **Create Extraction Command with Editor**.
The standard interface appears.
- 5 Enter a name for the extraction step. For the sample data mart, enter **Get Household Data**.
Note: For a description on an alternate way to create the Get Household Data extraction step, see “Defining an Extraction Command using the Extraction Wizard” on page 69.
- 6 Select **Populates dimension table**. Select the dimension that you want to populate from the **Output table** list box. For the sample data mart, select **Household**.
- 7 Select the **Write SQL by hand** radio button.

8 Select the **Advanced** tab. In the **On Error** list box, select **inherit**.

9 Select the **SQL Statement** tab and do one of the following:

Use the provided SQL code samples (if using the sample data mart):

- a Copy and paste the “Get Household” section from sql extraction code.doc into the SQL pane. (Do not include the title).

The SQL code for the sample data mart is provided in the sql extraction code.doc file located in the Resources subdirectory of the Infor Campaign Management installation image (CD-ROM or download) and in "Appendix A, “The Sample Data Mart”" on page 151.

- b Go to step 10 on page 58.

Create the SQL code using the provided template:

- a Click **Template** to fill the SQL pane with a template for your SQL code

The SQL templates are based on the structures of the destination tables, derived from the schema you defined. If you change the schema and regenerate it, the template is altered accordingly. In this case, update the SQL statement in the SQL pane before extracting.

The template lists each column in the dimension. Preceding each column name is the term <YOUR EXPRESSION>. Replace <YOUR EXPRESSION> with an expression that selects the appropriate values.

In the template, the <YOUR EXPRESSION> term is placed inside an expression that uses the \$\$ NVL macro to replace all null entries with the 'UNKNOWN' string.

Each line ends with a comment that gives the physical type of the column.

- b Enter an expression for the source system key to replace the <YOUR EXPRESSION> term that precedes `dimension_name_sskey` (where `dimension_name` must be replaced by the name of the dimension). Each element in the dimension must have a unique source system key. To convert a numeric key to character format, use the \$\$_TOCHAR macro.

For the sample data mart, use the **Household_ID** field of the source database table **Household_table** for the **Household_sskey** field.

- c Enter expressions for the remaining fields. If you are using the sample data mart, enter the appropriate expressions to get the following SQL code:

```
SELECT DISTINCT
H.Household_id Household_sskey,
$$TO_EPIDATE[$$DBNOW] date_modified,
$$NVL[ H.Household_name ~,~ 'UNKNOWN' ]
Household_Name,
$$NVL[ H.Company_name ~,~ 'UNKNOWN' ] Organization,
$$NVL[ H.Street ~,~ 'UNKNOWN' ] Street,
$$NVL[ H.City ~,~ 'UNKNOWN' ] City,
$$NVL[ H.Zip ~,~ 'UNKNOWN' ] Zip,
$$NVL[ H.State ~,~ 'UNKNOWN' ] State,
$$NVL[ R.Region_Name ~,~ 'UNKNOWN' ] Region
FROM
household_table H,
Geographic_Region R
```

```
WHERE  
H.Geographic_region_id = R.Geographic_Region_Id
```

Note the following definitions:

TableName_sskey	Unique identifier for an element of a dimension. The key is used to associate a record with future changes to that record. (TableName is the name of the table—for example, the <code>Household</code> table has a Household_sskey field).
date_modified	Indicates the date when the dimension value is updated.

10 To see how the macros are translated into code for your server platform, select the appropriate server platform from the list box next to **View Translation**. Click **View Translation**. Infor Campaign Management displays the SQL Statement Check dialog box with the correct platform-specific translation.

11 Click **Check SQL** to check your SQL code for syntactic correctness, then, **OK** to close the dialog box.

Note: If you receive an error, Click **View Translation** to see the SQL code and macros translated into standard SQL code. You can copy this code to the clipboard and debug it in the source database using standard tools. For example, if SQL Server is the source database, use the SQL Server Query Analyzer to determine the coding problem.

12 Click **OK** in the Extraction Command dialog box to complete the new extraction step. The extraction step now appears under the appropriate group in the Object Gallery.

13 Define extraction steps for the remaining dimensions. If you are using the sample data mart, create separate global groups to contain each of the extraction command steps and its accompanying truncation step. Put all of the groups in the Get Dimension Data group. For the **On Error** value, select **inherit** for the SQL steps, and select **AutoRepeat** for the other steps and groups.

The Get Dimension Data group contains the following subgroups and extraction steps:

- Contact Extract
 - Truncation: Contact
 - Extraction: Get Contact Data
- Household Extract
 - Truncation: Household
 - Extraction: Get Household Data
- Marketing Program
 - Truncation: Marketing Program
 - Extraction: Get Marketing Program Data
- Product Extract

- Truncation: Product
- Extraction: Get Product Data
- Quick Count Data
 - Truncation: Quick Count
 - Extraction: Get Quick Count Data
- Sales Person Extract
 - Truncation: Sales Person
 - Extraction: Get Sales Person Data

Adding a Dimension Semantic

After defining extractors to populate the staging tables, you define the extraction steps that merge the data into your data mart. Semantics are pre-written standard rules for managing the merging of dimension and fact table data.

At this point, you have not yet populated your data mart with data, so merging essentially consists of copying in the data from the staging tables. However, when you merge data into an existing data mart that already contains data, you must do the following:

- Relate the new data to existing data.
- Assign artificial keys where needed.
- Compensate for referential-integrity errors.
- Convert amounts reported as balances to incremental (transactional) amounts.
- Track items through a pipeline of stages.
- Construct aggregates.
- Merge recent and historical data.

Infor Campaign Management extraction performs the above processes automatically depending on the semantics specified in the extractors. Infor Campaign Management provides semantics for a wide range of business data models and you can select the correct semantic type for your data. For a description of the available semantic types, see chapter 8, “Semantics,” in the *Infor Campaign Management Data Mart Implementation Guide*.

For all dimension semantics, any staging table row with a new `sskey` (that is, a row with an `sskey` that is not currently in any dimension table row) is appended to the dimension table. If an `sskey` appears more than once in the staging table, only the last row containing that `sskey` is merged into the dimension table. Each semantic differs in how it handles this merging.

The available semantic types for dimensions include:

Latest Dimension Value	If a row in the staging table has the same <code>sskey</code> as a row in the data mart, the values in the staging table row replace those currently in the data mart.
------------------------	--

First Dimension Value	If a row in the staging table has the same <code>sskey</code> as a row in the data mart, then that row of the staging table is discarded.
Slowly Changing Dimensions	If a row in the staging table has the same <code>sskey</code> as a row in the data mart but has different values in other columns, then that row of the staging table is appended to the data mart table.
Initial Load Dimension	The entire dimension table is reloaded from the staging table, without regard to the current contents of the dimension table.

Note: For information on semantics, refer to “Built-In Dimension Semantic Types” in chapter 8 of the *Infor Campaign Management Data Mart Implementation Guide*.

Defining Dimension Semantics

- 1 Open the new extraction job. For the sample data mart, open the `Extratorama` job.
The Job dialog box appears.
- 2 Click the **Extraction Steps** tab.
- 3 Right-click **All Extraction Steps**, and select **Group** from the **New** submenu.
The Group dialog box is displayed.
- 4 Enter a name for a new group for dimension semantics. For the sample data mart, enter **Dimension Semantics**. In the **On Error** list box, select **AutoRepeat**.
- 5 Click **OK** to define the new group. The new group appears under the All Extraction Steps group.
- 6 Right-click your new group and from the **New** submenu, select **Semantic Instance**.
The Semantic Instance dialog box appears.
- 7 In the References section, select **Dimension Table**.
- 8 Select a dimension table from the drop-down list. For the sample data mart, select **Household**.
- 9 Select an appropriate semantic type from the **Semantic Type** list box. For the Household table in the sample data mart, select **Slowly Changing Dimensions**.
The source data for the sample data mart will not be updated, so your choice here will not have a noticeable effect. However, if you are planning to merge updated data into the Household dimension at some later time, then **Slowly Changing Dimensions** is an appropriate choice.
- 10 In the **On Error** list box, select **Auto Repeat**.
- 11 Set the **Debug level** to **default**.
- 12 Click **OK** to define the semantic instance.
- 13 Repeat Steps 6-11 to define semantics for other dimensions for which you have created SQL extraction steps. For the sample data mart, set all dimension semantics to the **Slowly Changing Dimensions** semantic type.

Extracting Fact Data

You perform the same types of extraction steps for facts as you do for dimensions. For facts, you define:

- Global groups
- Truncation steps
- Extraction command steps
- Semantics

Grouping the Fact Extraction Steps

The procedure for setting up extraction steps and groups for facts is similar to the procedure used for dimensions.

Defining Global Extraction Steps and Groups for Facts

- 1 Right-click the **Extractorama** extraction job, and select **edit**.
The Job dialog box appears.
- 2 Click the **Extraction Steps** tab.
- 3 Right-click **All Extraction Steps** and from the **New** menu, select **Group**.
The Group dialog box appears.
- 4 Enter a name for a new global group for facts. For the sample data mart, enter **Get Fact Data**.
- 5 In the **On Error** list box, select **AutoRepeat**.
- 6 Click **OK**. The new global group appears under the All Extraction Steps folder.
- 7 For the sample data mart, create two subgroups under this new group:
 - Marketing Extract
 - Sales ExtractSelect AutoRepeat group in the **On Error** list box for each one.

Adding a Truncation Step

As with dimensions, for facts it is necessary to create a truncation step to accompany each extraction command step that you define, to allow for the extraction restart ability.

For more information on restartability, see *Configuring Extraction Steps for Restartability* in chapter 9 of the *Infor Campaign Management Data Mart Implementation Guide*.

Creating Truncation Steps for Facts

- 1 Right-click the Sales Extract group and from the **New** menu, select **Truncation Step**.

The Truncate dialog box appears.

- 2 Select the kind of table to be truncated (**Dimension, Fact, External Table**). For the sample data mart, select **Fact**.
- 3 Select the name of the table to be truncated. For the sample data mart, select **Sales**.
- 4 Select **AutoRepeat from the On Error** list box.
- 5 Click **OK** to define the step.
The step appears under the Sales group.
- 6 Repeat steps 1 through 5, but create a truncation step underneath the Marketing Extract group.

Adding a Fact Extraction Command

In addition to the extractors for dimensions, you also create extractors for facts. Fact tables have several special fields:

<code>ss_key</code>	<p>The source-system key for the fact tables. Each fact contains an <code>ss_key</code> that uniquely identifies that fact. It is used to associate a record with future changes to that record.</p> <p>The <code>ss_key</code> has the same role in a fact table that <code>TableName __sskey</code> has in a dimension table.</p>
<code>date_key</code>	<p>The date key. This key indicates the date of the fact.</p>
<code>Transtype_key</code>	<p>The transaction type key. This is used to apply different aggregation math to different records. The transaction types that are used for the sample data mart are BOOKED (20000) and SHIPPED (20001).</p> <p>The Admin Manager Configuration dialog box contains a list of available transaction types under the Transaction Types tab (Configuration folder). You can also use this tab to define new transtypes.</p>
<code>Process_key</code>	<p>The process key. This key identifies whether a fact is transactional (value of 1) or state-like (value of 2).</p>
<code>DimRoleName__sskey</code>	<p>The source-system foreign key to a base dimension. There should be an <code>ss_key</code> in the fact table for every dimension role.</p> <p>A fact must have a value for every dimension role in its dimensionality. If there is no actual value for some dimension role, use the 'UNKNOWN' string.</p>
<code>degenerate_key</code>	<p>The key for degenerate dimensions, where degenerate is the name of the degenerate dimension.</p>

A single fact table generally contains several transaction types. The source data for different types of transactions may be structured differently, so it is often convenient to create a separate extraction step for each transaction type.

Creating an Extraction Command Step for a Fact Table

- 1 Right-click the new Sales Extract group you created and select **Extraction Command** from the **New** submenu.

Admin Manager displays the Extraction Wizard.

You can use the Extraction Wizard to create the extraction command or you can use the standard dialog box interface. For instructions on using the Extraction Wizard, see “Using the Graphical Extraction-Command Builder” in chapter 9 of the *Infor Campaign Management Data Mart Implementation Guide*.

- 2 For the sample data mart, click **Create Extraction Command with Editor**. The standard interface appears. The instructions that follow are tailored specifically to the dialog box interface with the **Write SQL by hand** radio button selected.
- 3 Enter a name for the extraction step. For the sample data mart, enter **Get Booked Orders**.
- 4 Select **Populates fact table** and select a fact table to populate. For the sample data mart, specify the Sales table.
- 5 Select **Write SQL by Hand**.
- 6 Select the **Advanced** tab. In the **On Error** list box, select **Inherit**.
- 7 Select the **SQL Statement** tab and do one of the following:

Use the provided SQL code samples (if using the sample data mart):

- a Copy and paste the section “Get Booked Orders” into the SQL pane. (Do not include the title).
SQL code for the sample data mart is provided in the sql extraction code.doc file located in the Resources subdirectory of the Infor Campaign Management installation image (CD-ROM or download) and Appendix A.
- b Go to step 8 on page 64.

Create the SQL code using the provided template:

- a Click **Template** to fill the SQL pane with a template for your SQL code.

The SQL templates are based on the structures of the destination tables, derived from the schema you defined. If you change the schema and regenerate it, the template will be altered accordingly. In such a case, update the SQL statement in the SQL pane before extracting.

- b Enter SQL for the fact. For the sample data mart, use:

```
SELECT  
  
SO.Sales_Order_Id $$CAT '-' $$CAT OI.Order_Item_Id  
ss_key,  
  
$$TO_EPIDATE[SO.Booked_Date] date_key,  
1 transtype_key,
```

```
1 process_key,
$$NVL[ C.Household_Id ~,~ 'UNKNOWN' ]
Household_sskey,
$$NVL[ C.Contact_Id ~,~ 'UNKNOWN' ] Contact_sskey,
$$NVL[ SO.Marketing_program_id~,~'UNKNOWN']
Marketing_Prog_sskey,
$$NVL[ OI.Product_Id ~,~ 'UNKNOWN' ] Product_sskey,
'1' Quick_Count_sskey,
$$NVL[ SO.Sales_Order_Id ~,~ 'UNKNOWN' ]
sales_order_no_key,
$$NVL[ SO.Sales_Person_Id ~,~ 'UNKNOWN']
Sales_Person_sskey,
$$NVL[ P.Product_Cost_PC ~,~ 0 ] Cost,
$$NVL[ P.List_Price_PC ~,~ 0 ] List,
$$NVL[ OI.Number_of_Units ~,~ 0 ] Qty,
$$NVL[P.List_Price_PC*(1 - SO.Discount) *
OI.Number_of_Units ~,~ 0] Revenue,
$$NVL[ P.List_Price_PC * (1 - SO.Discount) ~,~ 0 ]
Sales_Price_Per_Unit,
$$NVL[ SO.web_visits ~,~ 0 ] Web_Visits
FROM
sales_orders SO,
Order_items OI,
contact_table C,
Product_table P
WHERE
SO.Sales_Order_Id = OI.Sales_Order_Id AND
SO.Contact_Id = C.Contact_Id AND
OI.Product_Id = P.Product_Id
```

Here transtype_key is set to 1, since this is a booked order, and process_key is set to 1, since this is a transactional entry.

- 8 Click **View Translation** to see how the macros are translated. Click **OK** to close the dialog box.
- 9 Click **OK** in the Extraction Command dialog box to finish defining the extraction step.
- 10 Define the remaining fact extraction steps, if any. The SQL extraction code for the fact tables of the sample data mart can be found in "Appendix A, "This appendix shows the Infor Campaign Management screens that you use to configure specific details for the sample data mart."" on page 151.

The completed Get Facts extraction group in the sample data mart has the following steps:

- Sales Extract
 - Truncation: Sales Stage
 - Extraction: Get Booked Orders
 - Extraction: Get Shipped Orders
- Marketing Extract
 - Get Mailings
 - Get Responses

Adding a Fact Semantic

Fact semantics operate on two different types of facts. Transactional facts indicate some discrete event such as a purchase or a sales call; their `process_key` value equals 1. State-like facts describe the current state of some business quantity; their `process_key` value is 2.

The available semantic types for facts include:

Transactional	Transactional facts with new <code>sskeys</code> are added to the fact table. Transactional facts with <code>sskeys</code> that are already in the fact table are added only if they have a newer date. State-like facts are ignored.
Transactional/State-Like	Transactional facts are treated as in the Transactional semantic type. State-like facts with new <code>sskeys</code> are added to the fact table. State-like facts with <code>sskeys</code> that are already in the fact table are merged into the fact table using an adjustment record. This adjustment record contains the difference between the values of the two states.
Transactional/State-Like/Force Close	This semantic is like the Transactional/State-Like semantic, except that all open bookings must be found in the staging table. Any open booking (that is, any entry with <code>transtype_key</code> between 1 and 99) that is in the fact table but not in the staging table is automatically closed.
Pipelined	This semantic is used for tracking facts as they move through several life cycle phases. It is generally used with custom <code>transtype</code> values that indicate these phases.
Initial Load Fact	The entire fact table is re-loaded from the staging table, without regard to the current contents of the fact table.
Reload Date Fact	This semantic is used to re-load all facts that occurred after the earliest date in the staging table.
Count Unjoined	This semantic informs you of the number of rows that are transformed by an outer join. No actual updates are performed.
First / Last Fact	This semantic keeps track of the first and last fact values for an <code>sskey</code> . Only the first and last occurrence of a fact is recorded in the fact table.

Defining Fact Semantics

- 1 Double-click and open the `Extractorama` extraction job. In the Job dialog box, click the **Extraction Steps** tab.

- 2 Right-click **All Extraction Steps**, and from the **New** menu, select **Group** to add a new group for fact semantics. For the sample data mart, enter the name **Fact Semantics**. In the **On Error** list box, select **AutoRepeat**. Click **OK** to define the new group.
- 3 Right-click your new group and from the **New** menu, select **Semantic Instance**.
The Semantic Instance dialog box appears.
- 4 In the References section, select **Fact Table**.
- 5 Select a fact table from the drop-down list. For the sample data mart, select **Sales**.
- 6 Select an appropriate semantic type from the **Semantic Type** list box. For the sample data mart, use **Transactional**.
- 7 In the **On Error** list box, select **AutoRepeat**.
- 8 Set the **Debug level** to **default**.
- 9 Click **OK** to define the semantic instance.
- 10 Repeat steps 3 through 9 to define additional fact semantics. If using the sample data mart, create fact semantic for **Marketing** as well.

Recording the Extraction Date

The `last_extract_date` external table records the date of the most recent extraction. The use of this table is optional but Infor Omni-Channel Campaign Management recommends its use. To enter the extraction date, you have to create another extraction command step. You do not have to create a truncation step for this extraction command step; a truncation step is provided.

Creating Extraction Command Step

- 1 Double-click and open the `Extractorama` extraction job.
The Job dialog box opens.
- 2 Click the **Extraction Steps** tab.
- 3 Expand the All Extraction Steps folder.
- 4 Expand the Infor Campaign Management Extraction Steps for Customization folder, then the MaxDate subfolder.
- 5 Select the `MaxDateReplaceAll` extraction group and right-click. From the **New** submenu, select **Extraction Command**.
Infor Campaign Management displays the Extraction Wizard.
- 6 For the sample data mart, click **Create Extraction Command with Editor**.
The standard interface appears. The instructions that follow are tailored specifically to the dialog box interface with the **Write SQL by hand** radio button selected.
- 7 Enter a name. For the sample data mart, enter **Get Extraction Time**.
- 8 Select **Populates an external table**.
- 9 From the list box, select `last_extract_date`.

10 Select **Write SQL by Hand**.

11 Select the **Advanced** tab. In the **On Error** list box, select **Inherit**.

12 Click the **SQL Statement** tab.

13 Enter the SQL code for the extraction date. You can copy the SQL code provided in sql extraction code.doc file located in the Resources subdirectory of the Infor Campaign Management installation image (CD-ROM or download).

This SQL is the code that extracts the maximum date from a table (the name of the table can be recorded in the **tbl_name** field), or it can be code that simply records the current date. For the sample data mart, the current date is sufficient.

```
SELECT
$$TO_EPIDATE[$$DBNOW] max_date,
'UNKNOWN' tbl_name
$$NO_FROM_LIST
```

This data is not from a table, so use the `$$NO_FROM_LIST` macro for platform independence.

14 Click **OK**. The new extraction step is added to the `MaxDateReplaceAll` group.

15 Ensure that the new extraction step appears after the `Truncation: last_extract_date` step.

16 Click **OK**.

Defining Local Extraction Groups

The extraction steps in the Object Gallery of the Job dialog box are available for use in any job. A job consists of a sequence of local job steps, each of which can be a local job group or an extraction step. An extraction step can take the form of a global extraction group.

In order to use the extraction groups that you have defined in a job, you define local extraction groups and assign extraction steps to them.

Assigning Extraction Steps

1 Open the Job dialog box for your new extraction job, and click the **Extraction Steps** tab. The left pane lists all steps in the job. The root job step is the name of your extraction job. For the sample data mart, this is `Extractorama`.

If using the sample data mart, you need to remove several default steps from the list and replace them with the job steps that you created.

2 Select the following two groups in the left-hand pane and delete them from the `Extractorama` extraction job (but not the list of objects) by using the **Remove** button:

- Dimension Extraction / Semantics

- Fact Extraction / Semantics

You can use your own job steps for these two functions.

3 Create a local Data Extraction group to hold your custom data extraction steps:

- a Right-click on the root-level job step and select **New Group**.
Infor Campaign Management displays the Local Extraction Group dialog box.
- b Enter a name and description for the job step. For the sample data mart, enter **Extract Data**.
- c Click **OK** to define the job step. Data Extraction now appears as the last step in the root-level job step, after the extraction group that you added previously.
- d Add extraction steps to the new local extraction group by dragging them from the object gallery and dropping them onto that group. For the sample data mart, add the **Get Fact Data** and **Get Dimension Data** groups, in that order.

Note: If you are using neither streaming extraction, nor memory-mapped dimensions, then you must place fact extraction steps before dimension extracting steps in order to ensure consistency. The reason for this order is that the source database can change during extraction. If dimensions are extracted before facts, a new dimension element and a new fact that refers to that element arrives between dimension and fact extraction. The data mart then has a fact table entry that refers to a non-existent dimension element.

Note: If you are using streaming extraction or memory-mapped dimensions, see chapter 6, “Database Extraction Overview” in the *Infor Campaign Management Data Mart Implementation Guide* for information on proper extraction order. The sample data mart does not use streaming extraction or memory-mapped dimensions.

- e Expand the local extraction group and verify that the extraction groups are added in the correct order. If a step is in the wrong location, you can move the step by selecting it and clicking the **Up** or **Down** button.
- 4** Create a local Run Semantics group to hold semantics, using a similar procedure as in step 3. For the sample data mart, add the Dimension Semantics and Fact Semantics extraction groups, in that order, to the Run Semantics group.

Note: Run dimension semantics before fact semantics. The reason for this order is that fact table rows have foreign keys for dimension table rows, so the dimension table rows need to be merged into the data mart before any fact table rows that refer to them are merged.

5 Click **OK**.

Using the Extraction Wizard for Defining Extraction Commands

Admin Manager also provides the Extraction Wizard, a graphical tool for defining extraction commands. For instructions on using the Extraction Wizard, see “Using the Graphical Extraction-Command Builder” in chapter 9 of the *Infor Campaign Management Data Mart Implementation Guide*.

Importing External Tables

Before you use the graphical extraction command builder, you have to import the source tables into your datamart as external tables. Importing source-system tables as external tables makes the tables available to the graphical extraction command builder, it does not import any of the data in the tables.

If you did not do this step as part of the procedure for "Creating a New Data Store" on page 51, then perform the following procedure now.

Importing Source Tables as External Tables

- 1 In Admin Manager, navigate to the Extraction folder. Right-click and select **Import External Table** to start the Import External Tables wizard.
- 2 In the Import External Table Definition screen, select the data store which contains the required import table definitions. For the sample datamart, use the `Sample_Source` data store. Click **Next**.
- 3 On the second screen, select the tables that you want to import. Use the arrow buttons to move selected tables from the Tables/Views From Source System pane to the Tables/Views Selected as External Tables pane. Use the double arrow buttons to move all displayed tables and views. For the sample datamart, move all tables to the Tables/Views Selected as External Tables pane. Click **Next**.
- 4 On the third screen, you can edit the definitions of the external tables. For the sample datamart, you do not have to change the definitions. Click **Next**.
- 5 On the fourth screen, you can review a summary of the definitions that to be added to metadata. Click **Finish** to add these definitions.

Defining an Extraction Command using the Extraction Wizard

- 1 Double-click and open your job. For the sample data mart, this is the `Extractorama` job. The Job dialog box appears.
- 2 Click the **Extraction Steps** tab.
- 3 In the Object Gallery, expand the All Extraction Steps folder. For the sample data mart, expand the Household Extract group and delete the Get Household Data extraction step. (The following steps describe how to replace it with a new one).
- 4 Select the extraction group to which you want to add a new extraction command (for the sample datamart, this is Household Extract). Right-click, and from the **New** menu, select **Extraction Command**. Admin Manager displays the Extraction Wizard.
- 5 Click **Next**.
- 6 Select a type of table to populate. For the sample datamart, select **Populate a dimension table**. Click **Next**.
- 7 Select the destination table to populate. For the sample datamart, select **Household**. Click **Next**.
- 8 Select the data store from which you populate this table. For the sample datamart, select `Sample_Source`. Click **Next**.

- 9 Select the source-system tables that you want to use to populate the selected EpiCenter datamart table. All external tables in the selected data store are available. For the sample datamart, select `household_table` and `Geographic_Region`. Click **Next**.
- 10 Enter a name for the extraction command. For the sample datamart, enter the name **Get Household Data**. Click **Next**.
- 11 The Extraction Wizard displays a summary of the extraction command for your review.
Select the checkbox **Open this Extraction Command in the Extraction Command dialog**. This directs the Extraction Wizard to return to the Extraction Command dialog box, and you can edit your extraction command further.
- 12 Click **Finish** to define the extraction command.

Defining Data Flows

When you use the Extraction Wizard to define extraction steps, Admin Manager defines some of the data flow and joins based on column names and foreign keys in the selected source-system tables. You must define the remaining data flows and joins.

The **Data Flow** tab of the Extraction Command dialog box enables you to configure how data is copied from source-system tables to the destination tables. Arrows illustrate how data is copied from source-table columns to destination columns.

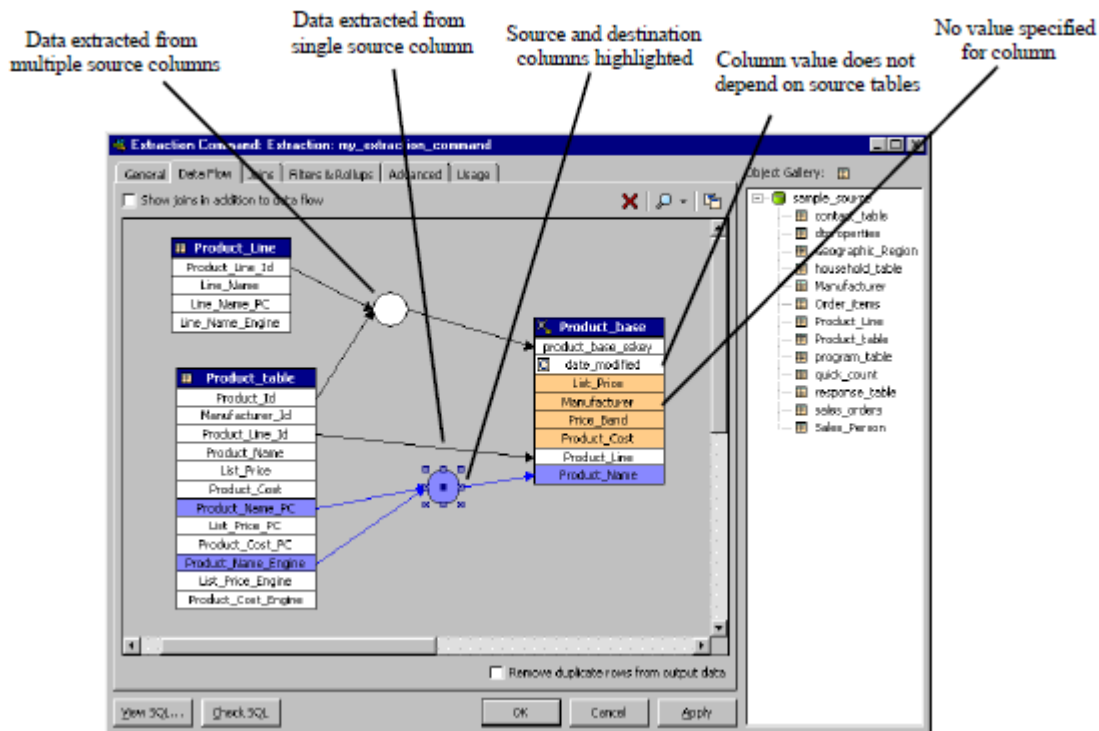


Figure 17: Extraction Command Dialog Box: Data Flow Tab

Specifying a New Data Flow

- 1 In the Extraction Command dialog box, select the **Data Flow** tab. Select the name of a source-table column. For the sample datamart, select `Household_id` .
When you select a column in this way, the column is highlighted and a dot appears in the middle.
- 2 Click on the dot in the middle of the column and drag to the desired column of the destination table. For the sample datamart, drag to the `household_sskey` column.
When you do this, an arrow appears from the source to the destination. To delete a data flow, right-click the arrow and select **Delete**.
If you created an ID destination column, select the `Household_id` source column and map a data flow to the ID destination column.
- 3 Specify any additional data flows needed. For the sample datamart, map the `Company_name` column to the `Organization` column and the `Geographic_region_id` column to the `Region` column.

Defining a Constant Value or Date Field

To define a destination column value that does not depend on your source data (such as a constant or the current date):

- 1 Double-click the destination column. For the sample datamart, double-click **date_modified**. Admin Manager displays the SQL Expression Builder dialog box. (See "figure 5-2" on page 72).
- 2 You can use the upper left pane to add columns to the expression and the upper right pane to add vendor-independent or vendor-specific functions to the expression. The expression `$$TO_EPIDATE [$$DBNOW]` must already be entered in the Write SQL Expression pane for the `date_modified` column. For the sample datamart, you do not have to modify this expression.

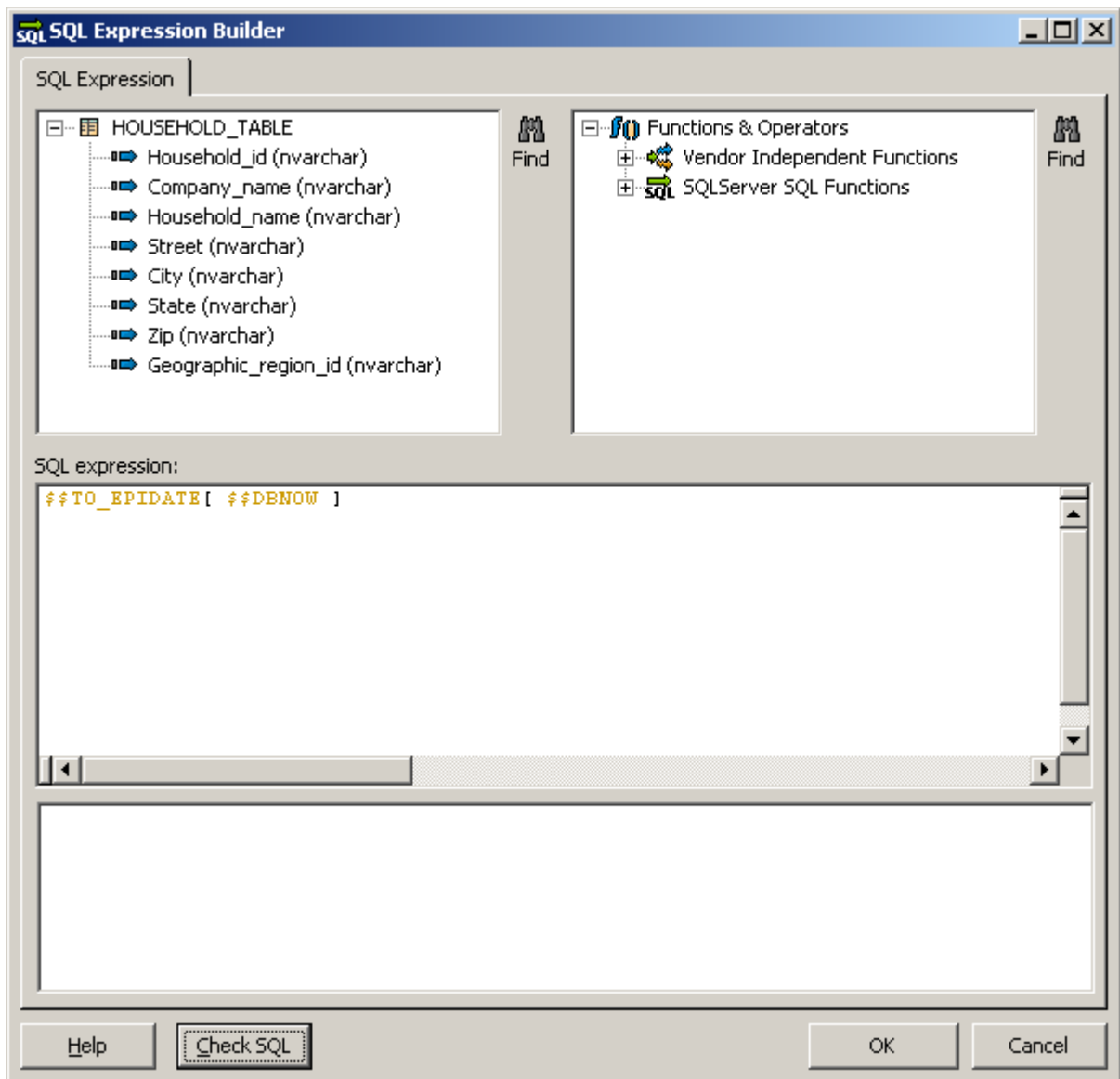


Figure 18: SQL Expression Builder Dialog box

- 3 Click **Check SQL** to verify that the SQL expression is correct. Infor Campaign Management displays the Expression check window.

Note: In order to ensure correctness, SQL syntax is verified using the source database engine. Therefore, you must be connected to the source data store in order to check the syntax of your extraction command.

- 4 Click **OK** to close the Expression check window, and click **OK** to close the SQL Expression Builder dialog box. Admin Manager displays the letter C in the `date_modified` column.
- 5 Check **Remove Duplicate Rows from Output Data**. This removes duplicate rows from your output data by performing a SELECT DISTINCT operation.
- 6 Select the **Advanced** tab. In the **On error** list box, select **Inherit**.

- 7 Click **OK** to finish defining the extraction command.

Defining Joins

The **Joins** tab of the Extraction Command dialog box (see "figure 5-3" on page 74) allows you to configure how source-system tables are related when extracting data. A dashed line between two source-table columns indicates that the values in these columns must be equal.

Defining a Join

- 1 Open the Extraction Command dialog box for the extraction command for which you define a join. For the sample datamart, this is Get Household Data. Select the **Joins** tab. Admin Manager displays the source tables that are selected for the extraction command.

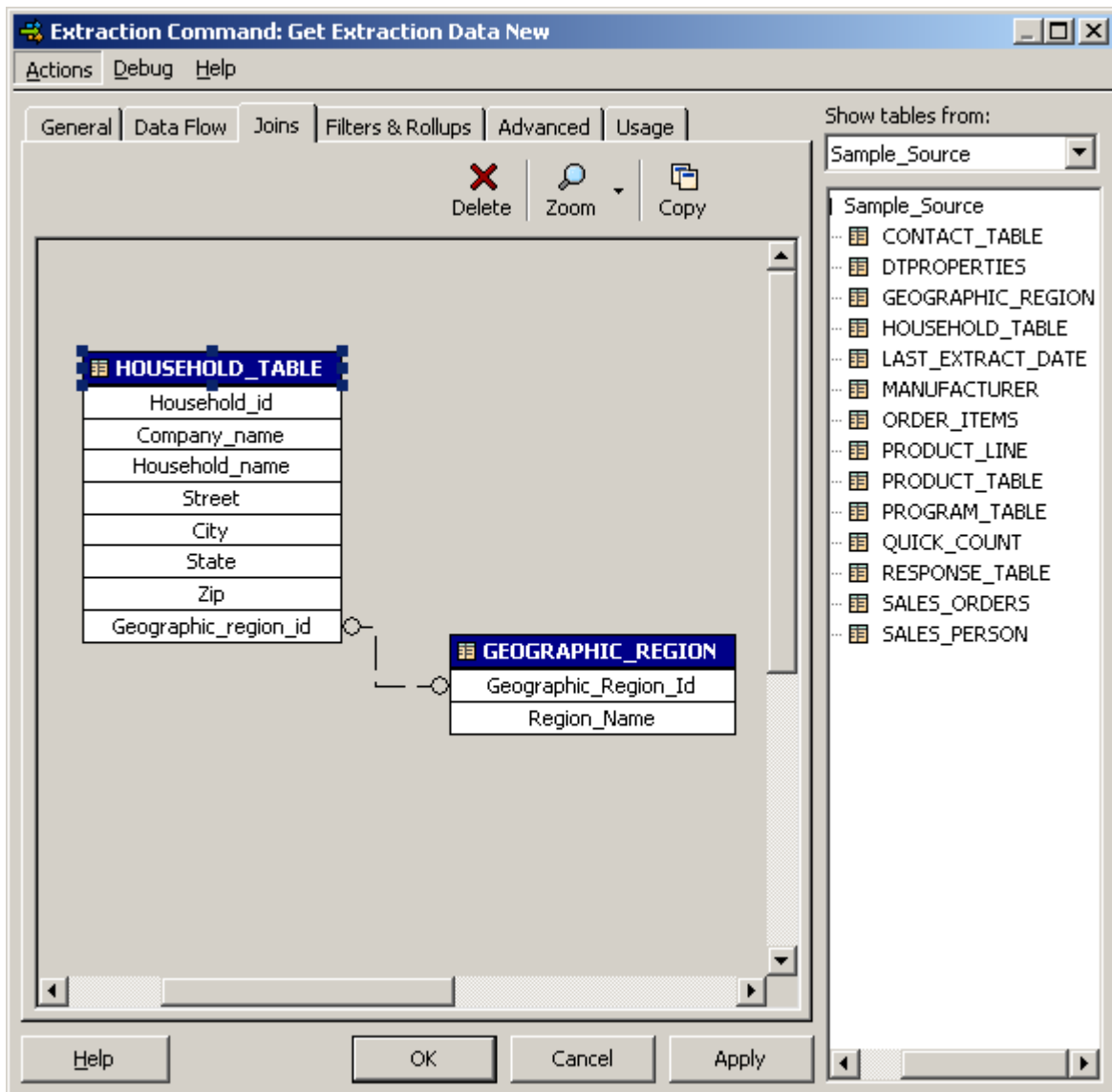


Figure 19: Extraction Command Dialog Box: Joins Tab

- 2 To create a join between two columns, select one of the columns, click on the dot in the middle of the column and drag to the second column. Admin Manager displays a dashed line between the two columns. For the sample datamart, a join must already be defined between the `Geographic_Region_Id` column of the `Geographic_Region` table and the `Geographic_region_id` column of the `household_table` table. If it does not, then create it.
- 3 Select **View SQL** from the **Debug** menu to view the SQL code. Admin Manager displays the SQL Statement check window. Verify that the SQL statement is correct, and click **OK** to close the SQL Statement check window.

Defining Filters and Rollups

The **Filters & Rollups** tab of the Extraction Command dialog box allows you to set criteria that limit the data that is extracted from the source system and roll up results along selected columns.

To add a new filter or rollup, Click the **New** button next to the appropriate pane in the **Filters & Rollups** tab and then use the SQL Expression Builder to construct an appropriate expression. For the sample datamart, you do not have to add filters or rollups to the `Get Household Data` extraction command.

Assigning Data Stores

You now have to specify the databases that are used by the job. You specify these databases by assigning data stores to the job's data store roles. Each job step has its own collection of data store roles. If a job step does not have data stores assigned to some of these roles, then it makes use of the data stores assigned to those roles in its parent job step. The root-level job step must have data stores assigned to all data store roles.

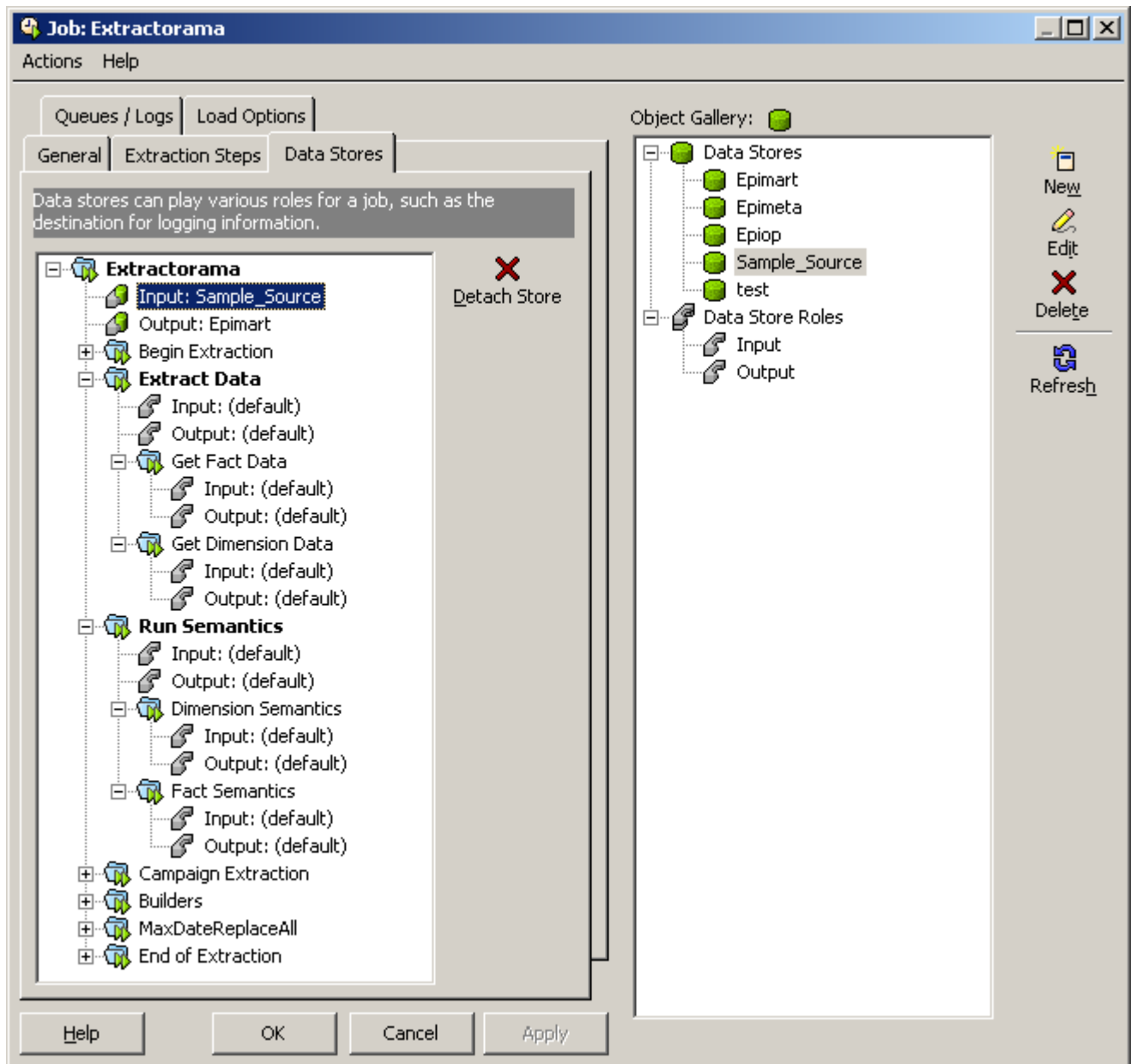


Figure 20: The Data Stores Tab of the Job Dialog Box with Data Stores Assigned

Assigning Data Stores to Data Store Roles

- 1 Open the Job dialog box for the `Extractorama` job, and click the **Data Stores** tab. Here you can view all available data stores and data store roles in the right pane and data store role assignments for this job in the left pane. The **Data Stores** tab with several of the extraction steps and extraction groups expanded appears as follows.

- 2 Drag an **Input Data Store** icon from the Object Gallery to the **Input Data Store Role** icon under the root-level job step. For the sample datamart, drag the **Sample_Source** icon to the **Input** icon just below the name `Extractorama` in the left pane.
Admin Manager now displays the **Data Store** icon attached to the **Data Store Role** icon. (To detach a data store, right-click the icon and select **detach**).
- 3 Add the **Output Data Store** to the root-level Output Data Store Role. In a simple extraction job, the output is usually the EpiMart data store. For the sample datamart, drag the **EpiMart** icon to the Output Data Store Role.
- 4 If you are not using the sample datamart, add further data stores to other Extraction Steps, as needed. For the sample datamart, the root-level data stores are sufficient.
- 5 Click **OK** to finish defining the job.

Running the Extraction Job

Perform the following procedure to run an extraction job.

Running the Extraction Job

- 1 In Admin Manager, select the `Extractorama` extraction job.
- 2 Right-click and select **Execute**.
The Execute Job dialog box appears.
- 3 Uncheck **Log to the database**, if it is checked. As this information is written to text-file logs, there is no particular need to store it in the database. Doing so can cause the database to grow quite large over time.
- 4 Check **Trial Run**, and click **Execute**, to do a practice job execution run. Infor Campaign Management tests the process, but makes no changes at this time.
When you click **Execute**, a console window appears which provides details of job progress. It also displays detailed error messages if any errors are encountered. If errors are reported, refer to "Troubleshooting a Failed Extraction Job" on page 78. In particular, be sure to correct any errors marked **Fatal Exceptions**.
- 5 After correcting all errors, again right-click your extraction job and select **Execute** to re-display the Execute Job dialog box.
- 6 Uncheck **Trial Run**, and click **Execute**. The Infor Campaign Management epichannel utility runs the job.
The console window appears again, and you can see all of the extraction steps that are being taken.
- 7 If the job again ends with a return code of 0, you have successfully populated your EpiMart.
Note: To give users access to the data in your data mart, you have to create a web page. To create a web page, refer to "Creating a Simple Web Page." on page 81

Troubleshooting a Failed Extraction Job

If your extraction job fails to complete successfully, refer to the general troubleshooting strategies in this section. For detailed troubleshooting instructions, see chapter 14, “Infor Campaign Management Services Utilities,” and appendix G, “Job Validation Checks,” in the *Infor Campaign Management Data Mart Implementation Guide*.

Run Scrutiny

Scrutiny is a debugging utility that checks the metadata for consistency and suggests solutions for any problems that it finds. When Scrutiny finds errors, it describes the nature of the error and offers suggestions on how to correct the errors using Admin Manager. In some cases, Scrutiny also offers to correct the error for you.

Infor recommends that you follow the recommendation of fixing the problem yourself rather than having Scrutiny correct it for you. Ensure that you read the descriptions carefully before applying a Scrutiny fix. For additional information about the Scrutiny utility, see “The Scrutiny Debugging Tool” in chapter 14 of the *Infor Campaign Management Data Mart Implementation Guide*.

After making the corrections that Scrutiny indicates, regenerate the schema. See “Generating the Schema” on page 47. If you change the schema and regenerate it, ensure that you update your SQL statements. After making any necessary corrections, run Scrutiny again to ensure that there are no remaining metadata errors.

Examine the Extraction Logs

If your EpiCenter fails the Scrutiny checks, then you look at the extraction log files. EpiChannel generates detailed logs for every extraction job. The console output for a failed extraction log ends with a line like the following:

```
*****Fatal Exception @ 11/7/00 5:59:03 PM*****
```

A detailed description of the error follows this line.

The log files for the most recent extraction job can be found in the Latest directory of the log directory that you specify when you initialize your EpiCenter. This directory contains a file called epiChannel_summary.log, which contains the console output for that job.

The following messages are samples that you may find in the log file:

```
Expected column "my_column" is missing from the extraction statement. Ensure that your extraction statement selects data for all columns in the * table you are attempting to populate.
```

This message indicates that the failed extraction step did not assign values to some column in one of the tables of your star schema. The error message indicates the destination column and the failed extraction step. Check the SQL code or data flow for the failed extraction step.

Ensure that you have assigned values to all columns that are shown in the template or the graphical extraction command builder. If you are writing SQL code by hand, ensure that all column names are spelled correctly. For the sample data mart, ensure that your SQL code matches that in "Appendix A, "The Sample Data Mart"" on page 151.

A database error was encountered while attempting to execute the extraction sql.

This message most commonly indicates a SQL syntax error in the extraction code. The message is followed by additional details about the database error. In the case of a syntax error, the possible location of the error is indicated with the message "Incorrect syntax near...". Check the SQL code in the failed extraction step. If the extraction step uses macros, click the **Show Translation** button in the SQL Statement dialog box to see the translation. Ensure that the translation is syntactically correct for the target database system. You can find more detailed logs in the file `epiChannel_detailed.log`, which can be found in the same directory as the `epiChannel_summary.log` file. After you make the corrections, run the extraction job again.

This chapter describes how to create a web page using a simple Rows and Columns format. You will use the Rows and Columns web page to browse the data mart and display reports in tabular form. The web page provides easy access to data, simple navigation, drill-down reports, graphing, and filtering.

You create a simple Rows and Columns web page by doing the following:

- "Creating Attributes" on page 81
- "Creating Attribute Layouts" on page 82
- "Creating Fact Terms" on page 83
- "Creating Measures" on page 83
- "Creating Measure Layouts" on page 84
- "Defining the Initial Web Page" on page 85
- "Creating a New Topic" on page 86
- "Adding Users to Web Pages" on page 88
- "Running Scrutiny on Metadata" on page 89

Creating Attributes

Attributes define how dimension-table columns are used in web pages. A Rows and Columns web page allows you to display the value of a measure based on two dimension-column values. These two values are chosen from lists that you define when you set up the web page. For example, you can display sales figures in a table with the customer's income in the columns and the customer's age in the rows. Income and age are both attributes of the customer dimension.

Creating an Attribute

- 1 In Admin Manager, expand the Presentation folder and select the Attributes subfolder.
- 2 Right-click Attributes, and select **New Attribute**. The Attribute dialog box appears.

- 3 In the Dimensionality gallery, expand the folder for the dimension role from which you want to select an attribute. For the sample data mart, expand the Date dimension role.
- 4 Select the dimension column for which you want to create an attribute. For the sample data mart, select Calendar year name.
- 5 Based on your selection, the **Name**, **Developer Label**, and **Label** fields fill in automatically.
- 6 If desired, make any other changes you want to these fields. Change the default name to something more descriptive such as **Year** . When you change the attribute name, the other fields are also updated.
- 7 In the **Filter Type** list box, select the **Text Box** filter type.
Attributes can be configured as filters that you can apply to the data. When you use an attribute to only select a dimension column, the filter type is ignored. For more information on filters, refer to "Creating a Rows and Columns Web Page." on page 93
- 8 Click **OK**.
- 9 Repeat steps 2-8 to add additional attributes. Set the **Filter Type** value of all of the attributes you create to, **Text Box**.

Creating Attribute Layouts

Attribute layouts enable you to package attributes that are used together. You can use an attribute layout in any portion of a web page that calls for an attribute. The use of attribute layouts is optional.

Creating an Attribute Layout

- 1 In Admin Manager, navigate to the Presentation folder and select the Attribute Layouts subfolder.
- 2 Right-click and select **New Attribute Layout**.
The Attribute Layout dialog box is displayed.
- 3 In the **Name** text box, enter a name for the attribute layout. For the sample data mart, enter **Product & Marketing**.
- 4 Click the **New Category** button that appears to the right of the **Attributes** field. For the sample data mart, enter another category called **Product**.
- 5 Create a second category and name it **Marketing**.
- 6 To add an attribute to the attribute layout, drag the attribute from the Object Gallery pane and drop it on the category in which it must appear.
For the sample data mart, add all of the **Product** attributes from the **Product** dimension role to the **Product** category. Add the **Marketing Program** attribute to the **Marketing** category.
Note: Use the **Up** and **Down** buttons to move an attribute up or down within a category, or move an entire category up or down with respect to other categories.
- 7 Click **OK**.

- 8 Follow steps 2-7 to create Contact, Date, Household, and Sales attribute layouts. For the completed layouts, see "Appendix , "The Sample Data Mart"" on page 151, "figure A-3 on page 3" on page 152 through "figure A-37 on page 32" on page 192.

Creating Fact Terms

You use fact terms as building blocks in a measure. Therefore, you must create the fact term before you can use it in a measure.

Note: You must create a topic and enable it before you can create a fact term. See "Creating a New Topic" on page 86 for details.

Defining a Fact Term

- 1 In Admin Manager, expand the Measures folder.
- 2 Right-click the Fact Term folder and select **New Fact Term**.
The Fact Term dialog box is displayed.
- 3 Enter a value in the **Name** field. For the sample data mart, enter **Touch_Count**.
The **Label** and **Developer Label** fields fill automatically.
- 4 Accept the default values for **Fact table** and **Nav node**, if using the sample data mart.
- 5 Expand the Fact Columns (Marketing) folder in the Object Gallery and double-click **Touch_count**.
This action inserts the selected fact column into the **Fact term definition** field.
- 6 Verify that the text field underneath the fact term definition indicates that the fact term is correct.
- 7 Click **OK** to close the dialog box and create the `Touch_Count` fact term.

Creating Measures

Measures display information from fact tables in your web page. A measure is an operation (such as a sum) performed along a column of a fact table. For example, you can define a measure for **number of mailings**. This measure adds up the `Touch_count` booked columns of the chosen rows of the fact table.

Note: You must create a topic and enable it before you can create a measure. See "Creating a New Topic" on page 86 for details.

Creating a Measure

- 1 In Admin Manager, expand the Measures folder.
- 2 Right-click the Measures subfolder and select **New Measure**.
The Measure dialog box is displayed.
- 3 Enter a name and description for the new measure. For the sample data mart, enter the name **NumMailings**. This measure starts with a measure that counts the number of mailings sent.
- 4 Specify the units to be measured. For the NumMailings measure, mailings are sent in discrete units, therefore, select **UNITS**.
- 5 Accept the defaults for **File/folder** and **Nav node**, if using the sample data mart.
- 6 Expand the Operations node in the Object Gallery.
- 7 Select an **Operator**. For the sample data mart, select (double-click) **SUM**. This action inserts a measure template in the **Measure definition** field.
- 8 Double-click **FactTerm** in the measure definition and the Object Gallery displays the appropriate fact term(s). Select **Touch_count**.
- 9 Double-click **Transtype** in the measure definition and select **Booked**. The sample data mart has mailings recorded as **BOOKED** transactions and responses recorded as **SHIPPED** transactions. The **NumMailings** measure counts mailings sent, therefore, select the **BOOKED** transaction type.
- 10 Delete the optional text in the measure definition, making sure not to delete the closing parenthesis.
- 11 Verify that the text underneath the measure definition indicates that the measure definition is valid.
- 12 Click **OK**.
- 13 For the sample data mart, define another measure called **NumResponses**. Use the NumMailings values except for transtype. Set the transtype to **SHIPPED**.

Creating Measure Layouts

Attributes specify how information is classified when the information is displayed on a web page. The actual information displayed on the web page is calculated by a measure. A measure layout associates a measure with the web page.

Defining a Measure Layout

- 1 In Admin Manager, expand the Measures folder and select the Measure Layouts subfolder.
- 2 Right-click **Measure Layouts** and select **New Measure Layout**.
The Measure Layout dialog box is displayed.
- 3 In the **Name** field, enter a name for the measure layout. For the sample data mart, enter the name **Marketing Layout**.

- 4 Select the Show labels checkbox to display the measure layout labels in the Admin Manager web pages.
- 5 Click the **New Item** icon.
The Measure Layout Column Item dialog box is displayed.
- 6 Enter a label for the measure column element. For the sample data mart, enter the label **Number of Mailings**.
- 7 Click **OK** to add the element to the measure columns list.
- 8 Select the name of the measure column element that you defined.
- 9 In the **Measure** list box, select a corresponding measure for that column element. For the sample data mart, select the NumMailings measure.
- 10 Click **Apply**. The specified measure is assigned to the selected measure column element.
- 11 Repeat this process for other measures that you defined. In the sample data mart, assign the Num Responses measure to a measure column element called **Number of Responses**.
- 12 Select the **Preview** tab in the Measure Layout dialog box to see how this measure layout is displayed on a web page.
- 13 Click **OK** close the dialog box and create the measure layout.

Defining the Initial Web Page

After you create attributes, attribute layouts, measures and measure layouts, define the initial web page.

Defining the Initial Web Page

- 1 In Admin Manager, expand the Presentation folder and select the Web Pages subfolder.
- 2 Right-click **Web Pages** and select **New Web Page**.
The Web Page dialog box is displayed.
- 3 Enter a name for the web page. The first web page in the sample data mart allows you to analyze marketing reports. Therefore, enter the name **Marketing Reports**.
- 4 In the **Web Page Type** list box, select **Basic Rows & Columns**.
- 5 Click the **Attributes** tab. The attributes that are available for use in the web page are displayed in the Object Gallery. To view only the available attribute layouts, select the **Only show attribute layouts** check box.
- 6 Select **Rows** at the top of the left pane and add all attributes that you want to make available for display in the rows of the web page results screen. For the sample data mart, select all the attribute layouts that you created.

You add an attribute or attribute layout by selecting it in the Object Gallery and dragging it into the left pane. When you add an attribute or attribute layout, the attribute appears under the **Default** icon in the left pane.

- 7 Select **Columns** at the top of the left pane and add all the attribute layouts that you added for **Rows**. Also, add the single attribute **Nothing** to the left-hand pane.
- 8 To add the measure layout that you created to the web page:
 - a In the Web Page dialog box, click the **Measure Layout** tab.
 - b Drag a measure layout from the Object Gallery on the right to the Measure Layouts pane on the left. For the sample data mart, use the **Marketing Layout** that you created.
- 9 Click **OK**.

The Web Page dialog box closes

Creating a New Topic

Topics enable you to group web pages into categories that make sense to users. Topics also provide navigation paths between web pages. For example, the sample data mart has Sales Analysis and Marketing Analysis topics. Only web pages that belong to a topic are accessible to users. Therefore, to use a web page that you create, you have to create a topic.

Creating a New Topic

- 1 In Admin Manager, expand the Presentation folder and select the Topics subfolder.
- 2 Right-click the **Topics** icon and select **New Topic**.

The Topic dialog box is displayed.
- 3 In the **Name** field, enter a name for the topic. For the sample data mart, enter the name **Marketing Analysis**. When you enter the name, the **Label** field is filled in automatically. You can modify the label.
- 4 In the **Template topic** field, use the list to select the Interaction Advisor Template topic. This template specifies the basic navigation structure of the topic that you create.
- 5 Click **Apply** to create the topic.
- 6 Select the **Navigation Nodes** tab to view and configure topic navigation. In this view you can see all of the navigation nodes in the topic. Use the scroll bars to view the nodes.

A navigation node is a potential destination that a user can visit. If an actual destination (a web page) has been assigned to a node, that destination is shown in the Web Page Contents column. Some nodes already have destinations assigned to them.

 - To add a node, see "Adding Nodes to a Topic" on page 87 below for details.
 - To edit a node, select the name of the node, right-click, and select **Edit** or click the **Edit** icon.

- 7 For the sample data mart, verify that the **Web Page** column for both **Rows & Columns** nodes displays Marketing Reports.
- 8 Click **OK**.
The Marketing Analysis topic dialog box closes.

Adding Nodes to a Topic

- 1 In Admin Manager, expand the Presentation folder and select the Topics subfolder.
- 2 Select a topic from the topic list in the right-hand pane. For the sample data mart, select Marketing Analysis. (Double-click the topic name to open it).
- 3 Navigate to the **Navigation Nodes** tab. For the sample data mart, you must add these two new nodes and link them to the Marketing Reports web page:
 - FactTerm
 - Measure
- 4 Click **New** to open the Topic: Marketing Analysis: Navigation Node dialog box.
- 5 In the **General** tab, do the following:
 - a Enter a name for the new node. For the sample data mart, enter **FactTerm**.
This action automatically fills in the **Developer Label** and **Label** fields.
 - b Select Fact Term for **Node Type**.
 - c Under **Bind to a single web page**, select a web page and click **Apply**. For the sample data mart, select **Marketing Reports**.
- 6 In the **Links** tab, do the following:
 - a Click **New** and enter a name for this link in the Navigation Links dialog box. For the sample data mart, enter **FactTerm**.
 - b Select a value for **Behavior**. For the sample data mart, choose **Carry state, display**.
 - c Select a value for **Link Category**. For the sample data mart, choose **Get insight via**.
 - d Accept the defaults for the rest of the fields.
 - e Click **OK** to close the Navigation Links dialog box.
The newly created link is displayed in the **Links** field.
- 7 Click **OK** to close the Navigation Links dialog box.
- 8 Repeat steps 4 through 7, setting both the node name and the node type to Measure.
- 9 Verify that Marketing Reports shows in the Web Page column for both the **FactTerm** node and the **Measure** node.
- 10 Click **Apply**.

Binding Web Pages

If you make any changes to a topic's navigation nodes, then you need to re-bind the nodes to web pages.

- 1 In the topic that you just modified, navigate to the **General** tab.
- 2 Click **Rebind**.
- 3 Select **All Nodes** and click **OK**.

Adding Users to Web Pages

By default, users do not have access to a web page. Therefore, you have to add at least one user with access privileges.

Adding Users to a Web Page

- 1 In Admin Manager, navigate to the Security/Storage folder and select the Users subfolder.
- 2 Right-click and select **New User**.
The User dialog box appears.
- 3 In the **User Name** field, enter the user name.
- 4 In the **Full Name** field, enter the full name of the user.
- 5 Edit user **Preferences** as required. For the sample data mart, you do not have to modify the preferences.
- 6 Click the **Membership** tab to assign the user to a group. Click **Add**.
The Group dialog box appears.
- 7 Select the name of a group. Use the pre-defined Administrators group for the sample data mart. You have to set up additional groups if users without administrator privileges will access the data mart.
- 8 Click **OK**.
- 9 Click the **Access** tab in the User dialog box.
- 10 Click **Add Node**.
The Choose: Navigation Node dialog box appears. This dialog box lists all available topic nodes.
- 11 Click **Select All**.
- 12 Click **OK** to give the user access to those nodes.
- 13 Click **OK** to finish setup for the user.

Running Scrutiny on Metadata

Scrutiny is a tool that checks metadata for consistency. Inconsistencies in your metadata can prevent the Infor Campaign Management Server from starting. The Infor Campaign Management Server must be running for you to view your web page.

Note: For more information on the Scrutiny utility, see “The Scrutiny Debugging Tool” in chapter 14 of the *Infor Campaign Management Data Mart Implementation Guide*.

Running Scrutiny

- 1 In Admin Manager, from the EpiCenter menu, select **Run Scrutiny**.
The Scrutiny dialog box appears.
- 2 Ensure that **Check EpiMeta** is checked and **Check EpiMart** is not checked.
- 3 Select **Show Warnings as Well as Errors** check box.
- 4 Click **Execute** to run Scrutiny on your metadata. As Scrutiny runs, a console window opens and displays the Scrutiny checks.
 - When you receive the prompt `Press Enter to Continue`, press **Enter**. This ensures that Scrutiny runs the complete set of tests.
 - When Scrutiny finds errors, it describes the nature of the error and offers suggestions on how you can correct the errors using Admin Manager. Scrutiny also offers to correct the error for you. Since the sample data mart is not yet complete, you may get messages from Scrutiny about inaccessible nodes, missing default reports, and queryability. You can ignore these messages for the time being.

You may also receive messages about other types of errors. Admin Manager recommends that you follow the recommendation of fixing the problem yourself rather than having Scrutiny correct it for you. Be sure to read the descriptions carefully before applying a Scrutiny fix. Press **N** for No to decline Scrutiny’s offer to correct the error for you.
 - Continue with the responses until Scrutiny finishes running and the location of the log file is displayed in the console window.
- 5 Regenerate the schema after making the corrections that Scrutiny indicates. For instructions, refer to “Generating the Schema” on page 47. If you regenerate the schema, you also have to run extraction again. Refer to “Populating a Data Mart.” on page 51 After making the necessary corrections, run Scrutiny again to ensure that there are no errors associated with your metadata.

Starting the Infor Campaign Management Server

The Infor Campaign Management Server manages communications between the database server and the web server. When a user enters a request for data with one of Infor Campaign Management’s web-based applications running in a web browser, the web server communicates that request to the

Infor Campaign Management Server. The Infor Campaign Management Server then processes the request and issues an appropriate query to the database server. When the database server returns the results for that query, the Infor Campaign Management Server renders them in an appropriate format for that application and passes them to the web server. The web server then transmits the updated web page to the user's web browser for display.

Starting the Infor Campaign Management Server Manually

- 1 Navigate to the Services dialog box:

Start > Programs > Administrative Tools > Services.

The Services window opens listing the Windows services available on this machine.

- 2 Select the name of your EpiCenter instance from the list of services.

Note: Notice that it has a blank entry under **Status** and “**Manual**” under **Startup**.

- 3 Click the **Start** icon to start the Infor Campaign Management Server.

Windows displays the Service Control panel with a message indicating that the service is attempting to start.

- 4 After a short wait, the Service Control dialog box disappears, and the `Status` column for your EpiCenter instance displays `Started`. In some cases, Windows can generate an error message regarding the service timing out. This is a Windows issue, and you may safely ignore it.

Note: If there are errors in your data mart, you may get a dialog box saying that the service cannot be started because of an internal Windows 2003 error. If you see this dialog box, review the logs to see what went wrong. The default installation places the Infor Campaign Management Server log files in the following directory for Infor Campaign Management Services 7.2 and an instance name of 7200_1211:

```
C:\Program Files\Infor\application\Web\instance \Infor Campaign Management\logs
```

For example:

```
C:\Program Files\Infor\Infor Campaign Management\7.2.0\Web\7200_1211\Infor Campaign Management\logs
```

Viewing the Web Page

Once you create the web page, refresh the Infor Campaign Management Server, and run Scrutiny, you can view the web page.

Viewing the Web Page

- 1 Start your Infor Campaign Management Server.
- 2 Start your web browser and point it to your EpiCenter instance. In the default setup, the URL takes the following form:

WebLogic default Web site:

```
http://<server host>:<webserver_port>/weblogic<instance_name>/AP<instance_name>/ap
```

WebSphere default Web site:

```
http://<server host>:<webserver_port>/websphere/<instance_name>
```

Replace `<server host>` with the full name of your server host and `<instance_name>` with the name of your EpiCenter instance. For example, if the name of your server name is `myserver02` and the name of your instance is `65_1211`, the WebLogic URL is:

```
http://myserver02/weblogic65_1211/AP65_1211/ap
```

The URL takes you to the login screen.

- 3 Enter the login and password for an authorized user. An authorized user is some one who is given permission to access the web page in Admin Manager.
- 4 Click **Enter Infor Campaign Management** to go to the home page. The home page lists all available topics. For the sample data mart, the available topic is Marketing Analysis.
- 5 Click the name of your new topic to go to the starting page for the topic. In the sample data mart, the available topic is Marketing Analysis.
- 6 If you have created an Infor Interaction Advisor topic, the default starting page is a path selector page. This page lists all available report types, but only those report types for which you have created web pages have active links.
- 7 Click the link for the web page that you created. In the sample data mart, click on the **Rows & Columns** link.
- 8 Perform some sample queries on your EpiCenter. To access the online help system, use the Help link on the upper side of the browser window.

Note: Do not copy and paste scripts, commands or code from this document. Line breaks and some other characters picked up when you copy from the PDF can cause errors in the pasted text.

This chapter describes how to create a full-featured Rows and Columns web page. Once you create a full-featured Rows and Columns web page, you can use it to create other web pages such as Profiling, High/Low clusters, Trends, Lifecycles, Cumulative Projections, Influences, and Community Clusters. These web pages are commonly used for reporting and Analysis.

You will create a full-featured Rows and Columns web page called Sales Report by doing the following:

- "Creating More Fact Terms" on page 93
- "Creating Additional Measures" on page 94
- "Creating New Measure Layouts" on page 95
- "Adding Attribute Filters" on page 97
- "Creating a New Web Page" on page 102
- "Configuring a New Topic and Adding Security" on page 102
- "Adding a Default Saved Report" on page 103

Creating More Fact Terms

Before you can create a new web page, you need to create several new Fact Terms to use in the measures that must be incorporated into the new web page such as:

- Revenue
- Qty

Refer to ""Creating Fact Terms" on page 4" on page 83 for details of creating new fact terms. See "Appendix A, "The Sample Data Mart,"" on page 169 "Fact Terms" on page 169 for the dialog box settings.

Creating Additional Measures

A full-featured Rows and Columns web page can use measures that you have already defined or additional measures. Measures can also include operations (such as addition or subtraction) on measure terms. For the sample data mart, you need to create these new measures:

- Revenue_Booked
- Revenue_Shipped
- Revenue_Backlog
- Units_Booked
- Units_Shipped
- Units_Backlog

The next section, "Backlog Measure" on page 94, describes how to define the backlog measures. For the dialog box settings for the other measures, See "Appendix A, "The Sample Data Mart"" on page 151, "Measures" on page 172 for details.

Backlog Measure

The revenue backlog is the difference between booked and shipped revenue. A backlog measure computes how values are accumulated over time, rather than for the current time period. For example, for a monthly calculation of revenue backlog, you compute the difference between all booked revenue through that month and all shipped revenue through that month and not just the difference between that month's booked and shipped revenue.

Defining an Additional Measure that Calculates the Difference of Backlogs

- 1 In Admin Manager, expand the Measures folder and select the Measure subfolder.
- 2 Right-click and select **New Measure**.
The Measure dialog box appears.
- 3 Enter the name and description. For the sample data mart, enter the name **Revenue_Backlog**.
- 4 For **Units**, select **CURRENCY_US**
- 5 Define a measure term for the first backlog by using the following values:
 - Operator: SUM
 - Fact Term: Revenue
 - Transaction Type: BOOKED
 - Backlog Type: End

Note: BEGIN calculates the backlog as of the beginning of the time period and END calculates the backlog as of the end of the time period.

- 6 Type a minus sign (-) underneath the line holding the first sum.

7 Add a second measure term underneath the minus sign by using the following values:

- Operator: SUM
- Fact Term: Revenue
- Transaction Type: SHIPPED
- Backlog Type: End

8 Press **Enter**.

9 Click **OK**.

10 Repeat steps 2 - 9 to create the `Units_Backlog` measure. See "Appendix A, "The Sample Data Mart"" on page 151, "Measures" on page 172.

For additional information on calculations used to define complex measures, see the *Topic Implementation Guide*.

Creating New Measure Layouts

After creating these new measures, you must create these new measure layouts:

- Revenue Layout - See "Appendix A, "The Sample Data Mart"" on page 151, "Measure Layouts" on page 180, for details.
- Sales Layout - See the following section, "Defining Complex Measure Layouts" on page 95.

Defining Complex Measure Layouts

You can configure a Rows and Columns web page with multiple columns of check boxes for measures. When you configure a web page in this way, you associate a separate measure with each combination of boxes that can be chosen from the columns.

For the sample data mart, you can have one column with Units and Revenue and another column with Booked, Shipped, and Backlog. You can then, for example, check Units and Revenue in the first column and Backlog in the second column. The resulting report would then show both Unit Backlog and Revenue Backlog with respect to the selected attributes.



Figure 21: Multi-Column Check Boxes on a Rows and Columns Web Page

To use multi-column measure check boxes on a web page, you create a multi-column measure layout .

Creating a Multi-Column Measure Layout

- 1 In Admin Manager, expand the Measures folder and select the Measure Layouts subfolder.
- 2 Right-click and select **New Measure Layout**.
The Measure Layout dialog box is displayed.
- 3 Enter a name for the new measure layout. For the sample data mart, enter the name **Sales Layout**.
- 4 Select the **Show labels** checkbox to display the measure layout labels in the Infor Campaign Management web pages.
- 5 Click the **New Item** icon.
The Measure Layout Column Item dialog box is displayed.
- 6 Enter a label for the measure column element. For the sample data mart, enter **Revenue**.
- 7 Click **OK**.
The Measure Layout Column Item dialog box closes.
- 8 Repeat steps 5 to 7 to add another item called **Units** .
- 9 Click the **New Column** icon to add a new column.
The Measure Layout dialog box opens. The dialog box shows a dummy label value as a placeholder for the first element you will add to the new column.
- 10 Change the dummy Label value of `element_1` to a label value of your choice. For the sample data mart, enter **Booked**.
- 11 Click **OK**. The new item is added to the second column. The Measure Layout dialog box now shows two columns. The first column contains two elements, **Revenue** and **Units**. The second column shows one element, **Booked**.
- 12 Click the **New Item** icon to add additional elements for the `Booked` column. For the sample data mart, add **Shipped** and **Backlog**.
- 13 To assign a measure to a combination of items, click an element in the first column, shift-click an element in the second column, and then select a measure from the **Measure** list box.
For the sample data mart do the following:
 - a Click **Revenue** in the first column.
 - b Shift-click **Booked** in the second column.
 - c Assign the defined measure using the **Measure** drop-down list box in the lower left corner of the dialog box.
- 14 Repeat Step 12 for all possible combinations of items in the two columns.
- 15 Click **OK** to complete creating a multi-column measure layout.

Adding Attribute Filters

Filters allow you to select certain criteria and then generate reports for data that matches the criteria. For example, you may be interested in data for customers in certain age groups or at certain companies. When you add an attribute to a web page in a filter role, you can filter by that attribute values.

An attribute can be configured to present different filter interfaces. By default, attributes are configured to present a text box filter. A text box filter allows a user to select rows that have values in a given column matching what the user has typed into a text field.

This section describes how to configure attributes to present these types of filter interfaces:

- Static list box filter
- Dynamic list box filter
- Check box filter
- Multi-column check box filter
- Radio button filter

Adding a Static List Box Filter

A list box filter allows you to select from a pre-determined list of values for a dimension column. You can enter in the list of values directly, or use SQL to add values drawn directly from the data mart. Values added through the following procedure do not change unless you regenerate the list.

Creating a List Box Filter

- 1 In Admin Manager, navigate to the Presentation folder and select the Attributes subfolder.
- 2 Open one of the attributes. For the sample data mart, open the Sales Rep attribute.
The Attribute dialog box appears.
- 3 In the Attribute dialog box, under the **General** tab, set the **Filter Type** to **Listbox**.
- 4 Select a **Listbox Height**. For the sample data mart, keep the default value.
- 5 Click the **Filter Elements** tab.
- 6 You can enter the values by hand, or you can use a SQL statement to fill in the values. To enter a value by hand, type a label and value under **Elements** and click **Apply** . For the sample database, fill in the values with a SQL statement. To fill in values with an SQL statement, do the following:
 - a Click **Fill From Query**.
The Fill From Query dialog box appears.
 - b Click **Template**. The Choose Dimension Columns to Query From dialog box displays the dimension columns for the query. For the sample data mart, leave the **Sales_Person.Sales_Person_Name** check box checked and click **OK**.

A template SQL statement appears based on the dimension column that you selected. For the sample data mart, the following template appears:

```
SELECT
sp.Sales_Person_Name label,
sp.Sales_Person_Name value
FROM
Sales_Person_0$$CURR[Sales_Person~,~Dimension] sp
WHERE
sp.Sales_Person_Name IS NOT NULL
GROUP BY
sp.Sales_Person_Name
```

- c Modify any necessary changes to the query. For the sample data mart, no changes are required.
- d Click **Test** to see the results of the query.
- e Click **OK**.

The results of your query appear in the Filter dialog box under **Elements**.

- 7 Click **OK** to define the filter.
- 8 Repeat these steps to create additional list box filters. See Also, "Attributes and Filters table," on page A-26" on page 182 for a list of the attributes that use list box filters in the sample data mart.

Note: You can select a group for listboxes, even though groups are not allowed. However, you receive an error when attempting to refresh or start the Infor Campaign Management Server or run Scrutiny.

Adding a Dynamic List Box Filter

You can use a dynamic list box filter to give users a choice of values that are dynamically generated from the current contents of the data mart.

Creating a Dynamic List Box Filter

- 1 In Admin Manager, navigate to the Presentation folder and select the Attributes subfolder.
- 2 Open the attribute for which you want to create a dynamic list box filter. For the sample data mart, open the **Buyer's Company** attribute.
The Attribute dialog box appears.
- 3 Set the **Filter Type** to **Dynamic Listbox**.
- 4 Select a **Listbox Height**. For the sample data mart, accept the default value.
- 5 Click **Edit SQL Query**.

- 6 Click **Template** in the Fill From Query dialog box. The Choose Dimension Columns to Query From dialog box appears. Select the dimension columns for the query. For the sample data mart, leave the **Household.Organization** check box checked and click **OK**.

The following template appears:

```
SELECT DISTINCT
hou.Organization label,
hou.Organization value
FROM
Household_0$$$CURR[Household~,~Dimension] hou
WHERE
hou.Organization IS NOT NULL
GROUP BY
hou.Organization
```

- 7 Modify and test the SQL code. No changes are necessary for the sample data mart.
- 8 Click **OK**.
- 9 To preview the filter values that are generated from current data mart data, click the **Filter Elements** tab and click **Show Query Results**. Note that the actual values displayed may change as the data in the data mart changes.
- 10 Click **OK** to define the filter.

Adding a Check Box Filter

A check box filter allows you to select any combination of values from a pre-determined set by checking the corresponding check boxes.

Creating a Check Box Filter

- 1 In Admin Manager, navigate to the Presentation folder and select the Attributes subfolder.
- 2 Open one of the attributes. For the sample data mart, open the **Product Line** attribute. The Attribute dialog box appears.
- 3 Under the **General** tab of the Attribute dialog box, set the **Filter Type** to **Check Boxes**.
- 4 Select the number of columns. For the sample data mart, use one column.
- 5 Click the **Filter Elements** tab.
- 6 Under **Filter Group**, select the **Groups** check box.
- 7 Click **Fill from Query**.
The Fill From Query dialog box appears.
- 8 Click **Template**. The Choose Dimension Columns to Query From dialog box appears. In this dialog box, you select dimension columns for the query. For the sample data mart, ensure that the `Product.Product_Line` check box is checked.

9 Click OK.

For the sample data mart, this template is displayed:

```
SELECT
  'All' group_label,
  pro.Product_Line label,
  pro.Product_Line value
FROM
  Product_0$$CURR[Product~,~Dimension] pro
WHERE
  pro.Product_Line IS NOT NULL
GROUP BY
  pro.Product_Line
```

10 Modify and test the SQL code. No changes are required for the sample data mart.

11 Click **OK** to create a filter group called All, with the elements chosen by the query.

12 Click **OK** to define the filter.

13 Repeat these steps to create additional list box filters. See "Attributes and Filters table," on page A-26" on page 182 for a list of the attributes that use check box filters in the sample data mart.

Adding a Multi-column Check Box Filter

You can use groups to create more sophisticated multi-column check box filters . For the sample data mart, create a check box filter for **Year and Quarter** that has a separate row for each year.

Creating a Multi-Column Check Box Filter

1 In Admin Manager, navigate to the Presentation folder and select the Attributes subfolder.

2 Open the **Year and Quarter** attribute.

The Attribute dialog box appears.

3 If you have not created this attribute, create a new attribute called **Year and Quarter** with `Date . Calendar Quarter` and `Year` dimension column. To create an attribute, refer to "Creating Attributes" on page 81.

4 Set the **Filter Type** to **Check Boxes**.

5 Select the number of columns. Set the number of columns to 4, so that there is one column for each quarter.

6 Click the **Filter Elements** tab.

7 Select the **Groups** check box next to the **Fill From Query** button.

8 Click **Fill from Query**.

The Fill from Query dialog box opens.

9 Click **Template.**

The Choose Dimension Columns to Query From dialog box lists all columns for query. For the sample data mart, select the **Date.cq_and_cy_name** check box and click **OK**. Modify the standard template to read:

```
SELECT
dat.cy_name group_name,
dat.cq_and_cy_name label,
dat.cq_and_cy_name value
FROM
Date_0 dat
WHERE
dat.cq_and_cy_name IS NOT NULL
GROUP BY
dat.cy_name, dat.cq_and_cy_name, fq_name
ORDER BY
fq_name
```

This query creates a filter group for each year that has an element for each quarter of the year sorted into the proper order.

- 10 Click **Test** to test the SQL code and click **OK**.** When you click **OK**, several groups appear in the `Filter Group` column. When you click a group name, the corresponding elements appear in the `Elements` column.
- 11 If you have to change an element, select it in the `Elements` column, modify the **Label** and **Value** fields, and click the **Update** button.**
- 12 Click **OK** to define the filter.**
- 13 Repeat these steps to create additional multi-column check box filters for the other time dimension attributes.** See the ""Attributes and Filters table," on page A-26" on page 182 for a list of the dimension columns.

Adding a Radio Button Filter

In a radio button filter, only one of the elements can be selected at a time. To create a radio-button filter, follow the steps described for creating a check box filter, except for Step 3. Under Step 3, select the **Radio Buttons** filter type.

The sample data mart does not have any radio button filters.

Adding Additional Filters

For the sample data mart, define the filters described in the ""Attributes and Filters table," on page A-26" on page 182.

Creating a New Web Page

For the sample data mart, create a new Rows and Columns web page and name it Sales Reports. Follow the instructions under "Defining the Initial Web Page" on page 85 to create the new web page, and the instructions in the "Configuring the Rows and Columns Web Page" on page 102 to add the attribute and measure layouts.

Configuring the Rows and Columns Web Page

- 1 Double-click the web page that you created. For the sample data mart, open the Sales Reports web page.
The Web Page dialog box appears.
- 2 Click the **Attributes** tab and add attributes and attribute layouts for the Columns and Rows, as you did with the first web page you created. For the sample data mart, add all of the attribute layouts shown in "figure A-42 on page A-37" on page 197 for the rows, columns and filters.
- 3 Click the **Measure Layout** tab.
- 4 Drag the new measure layout from the Object Gallery to the Measure Layouts pane. For the sample data mart, use the **Sales Layout**.
- 5 Click **OK** to complete defining the web page.

Configuring a New Topic and Adding Security

Configuring a New Topic

- 1 Create a new Infor Enterprise Insight topic by following the instructions listed under "Creating a New Topic" on page 86. For the sample data mart, name the new topic Sales Analysis.
- 2 Open the Topic.
The Topic dialog box appears.
- 3 Click the **Navigation Nodes** tab and assign the new web page to the **Rows & Columns – Basic**, **Rows & Columns – Advanced**, and **Rows & Columns – Add Dimensions** nodes.
- 4 Set access permissions for the topic nodes by doing the following:
 - a Select the nodes to which you want to grant access. For the sample data mart, select all nodes in the topic.
 - b Click **Add Access**.
The Choose Access for Users and Groups dialog box is displayed.
 - c Select the groups or users to whom you want to grant access to the selected nodes.

d Click **OK**.

5 Click **OK** in the Topic Dialog box to finish defining the topic.

Run Scrutiny

After creating the new topic and linking it to the Sales Reports web page, run Scrutiny to verify that there are no unresolved problems. Follow the instructions in "Running Scrutiny" on page 89 in "Creating a Simple Web Page" on page 81.

Adding a Default Saved Report

When a user goes to a navigation node, all options should have default values selected. In order to configure these defaults, you create a default saved report .

Creating a Default Saved Report

- 1 Navigate to the node in your web browser. For the sample data mart, this is the Rows and Columns page of the Sales Analysis topic.
- 2 Select default values on the web page. For the sample data mart, select different attributes from the **Rows** and **Columns** list boxes and one item from each column under **Measures**.
- 3 Select **File** from the report toolbar, and select **Options**.
The Standard Options popup window is displayed.
- 4 Select options as appropriate. If desired, click **Advanced Options** and select additional options.
- 5 Click **OK**.
The popup window closes.
- 6 Select **File** from the report toolbar again, and select **File Save As**.
The Save to Report Gallery window appears.
- 7 Click the Folders link at the top of the window to go to the top level of the folder hierarchy.
- 8 Click the Public folder.
- 9 Click the Defaults folder to go to the Defaults subfolder of the Public folder.
- 10 Enter a name for the saved report. For the sample data mart, call it Sales Reports Default.
- 11 Click **Save** to save the report.

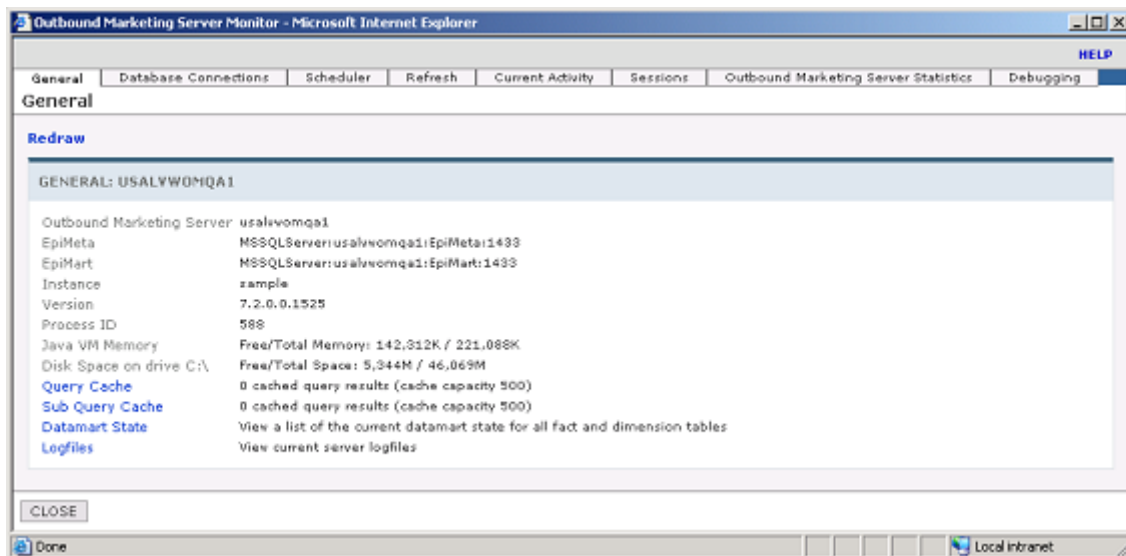
Refreshing the Infor Campaign Management Server

Before you use the new web page, you have to refresh the Infor Campaign Management Server. You can refresh the Infor Campaign Management Server using the web-based monitoring interface.

Refreshing the Infor Campaign Management Server using the Web-Based Monitoring

- 1 Log in to the Infor Campaign Management system as a user who belongs to the Administrators group.
- 2 Click **Tools** on the report toolbar.
- 3 Select **Monitor**.

The Infor Campaign Management Server Monitor page is displayed.



- 4 Select the **Refresh** tab.
- 5 Select the Click here to refresh this Infor Campaign Management Server link.
A confirmation dialog box is displayed.
- 6 Click **OK**. If the Infor Campaign Management Server successfully refreshes, the confirmation message Infor Campaign Management Server was refreshed is displayed.

Note: If you see the message Failed to refresh Infor Campaign Management Server, check the log to determine the reason. The default installation places the Infor Campaign Management Server log files in this directory:

C:\Program Files\Infor\Infor Campaign Management\10.0.0\<instance>\Web\AP\logs

Replace instance with the name under which you have installed your Infor Campaign Management instance.

Viewing Web Pages

Viewing Web Pages

- 1 Log in using the procedure described in "Viewing the Web Page" on page 91. The home page now shows the new topic that you created. Go to the Rows and Columns web page of the new topic
- 2 Click the **Filters** button on the web page.
- 3 Select **File** from the report toolbar, and select **Options**. View the options that are available. You can configure options such as chart types and number of rows displayed. For more information on configuration options, refer to the online help.

This chapter describes how to create web pages and topics for analysis and reporting . Analysis and reporting applications typically use topics that derive from the Interaction Advisor template topic. This topic provides navigation nodes (locations) and links for a number of web page types that provide access to sophisticated analytical tools.

This chapter describes how to create these web pages:

- "Profiling" on page 107
- "High/Low Clusters" on page 110
- "Trends" on page 112
- "Lifecycles" on page 114
- "Cumulative Projections" on page 117

You can create the above analytic web pages by copying the completed Rows and Columns web page and making some minor changes. Therefore, before you begin working on the above web pages, ensure that you complete all the procedures associated with Rows and Columns web page. For more information on how to create Rows and Columns web pages, refer to "Creating a Rows and Columns Web Page." on page 93

Profiling

You use a Profiling web page to generate graphical profiles of the data mart data and compare these profiles between groups.

The web page allows you to generate charts that graphically profile various aspects of the business. The web page also provides a visual display of the variables of the business, which enables you to compare the profiles of different groups. With this web page, you can do a kind of visual data mining in order to identify patterns in the data. You can also compare profiles of two subsets of the data by producing a profile for one group and then defining another group for comparison.

For the sample data mart, the Profiling web page appears as follows.

CREATE MINI-PROFILES.

ATTRIBUTES

Available attributes

Contact

Buyer's Age Band

Buyer's Income Band

Buyer's No. of Children

Buyer's Profession

Highlight attribute(s) and click button to add or remove

ADD >>

<< REMOVE

Attributes in list

Buyer's Age Band

Select attribute and click arrow to reorder

MEASURES

☐ Revenue

☐ Units

☐ Booked

☐ Shipped

☐ Backlog

Figure 22: A Profiling Web Page

Both profiles use the same color for comparable values so that patterns or discrepancies can be easily identified. The rows of the comparison report are sorted so that the groups that show the biggest difference between the columns are at the top. Profiling web pages are also useful for a quick data-quality assessment. With the sample data mart web page, you can generate the following report.

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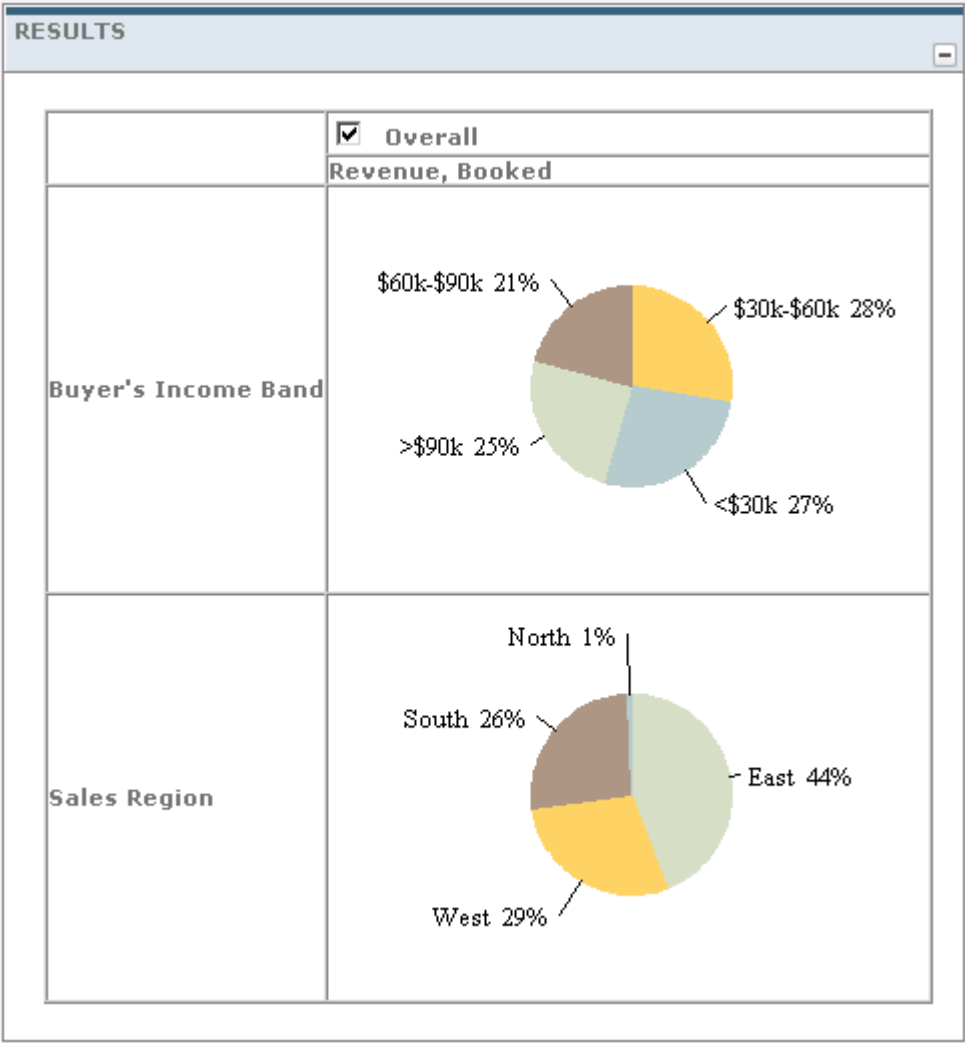


Figure 23: A Profiling Report

Creating a Profiling Web Page

To create a Profiling web page, begin with the Rows and Columns web page created in "Creating a Rows and Columns Web Page" on page 93.

Creating a Profiling web page

- 1 In Admin Manager, expand the Presentation folder and select the Web Pages subfolder.
- 2 Select the Rows and Columns web page you created. For the sample data mart, select the Sales Reports web page. Right-click, and select **Duplicate**.
The Duplicate Web Page dialog box appears.

- 3 Enter a name for the new web page. For the sample data mart, enter the name **Sales Profiling**.
- 4 Click **OK** to create the duplicate web page.
The new web page is displayed under **Web Pages** in the Presentation folder.
- 5 Double-click and open the new Sales Profiling web page.
The Web Page dialog box is displayed.
- 6 Select **Profiling** from the **Web Page Type** list.
A confirmation dialog box is displayed.
- 7 Click **Yes**.
- 8 Click the **Attributes** and **Measure Layout** tabs to check that all the data is copied to the new web page. Check both **Attributes** and **Filters** in the **Attributes** tab.
- 9 Make any necessary changes to the web page. You do not have to modify the Sales Profiling web page in the sample data mart.
- 10 Click **OK**.
When you create a web page, you have to assign the web page to the appropriate topic node.

Assigning a Web Page to a Topic Node

- 1 Open the topic you created in "Creating a Rows and Columns Web Page." on page 93 For the sample data mart, open the Sales Analysis topic.
- 2 Click the **Navigation Nodes** tab.
- 3 Select the Profiling row under **Nav Nodes**.
- 4 Click the **Edit** icon.
The Topic:Sales Analysis:Navigation Node:Profiling dialog box appears.
- 5 Under **Bind to a single web page**, select a web page and click **Apply**. For the sample data mart, select **Sales Profiling**.
- 6 If necessary, use the **Add Permissions (Users and Groups)** button to grant access to this node.
- 7 Click **OK** to complete editing the topic.
- 8 Refresh the Infor Campaign Management Server. For more information, see "Refreshing the Infor Campaign Management Server" on page 104.
- 9 Create a default saved report for this navigation node. See "Adding a Default Saved Report" on page 103.
- 10 View the web page.

High/Low Clusters

The High/Low Clusters web page allows you to quickly scan the data to spot high and low values. The web page provides a quick review of the data by finding the highest and lowest values based on one

or more attributes. With this web page, you can find data that differs from the rest, either by being lower or by being higher.

For the sample data mart, the High/Low Clusters web page appears as follows.

FIND CLUSTERS OF HIGHS AND LOWS.

COMPARISON METHOD -

☐ Use another **filter** as a benchmark. (1998 vs 1997)
☐ Use another **measurement** as a benchmark. (revenue vs expenses)
☒ Use a statistical **expected value** as a benchmark.
☐ Use **no benchmark**, and just sort the data based on the actual values.

ATTRIBUTES -

Available attributes

Sales
Sales Order Number
Sales Region
Sales Rep

Highlight attribute(s)
and click button to
add or remove

ADD >>

<< REMOVE

Attributes in list

Buyer's Income Band
Sales Region

▲
Select
attribute
and click
arrow to
reorder
▼

MEASURES -

☒ Revenue

☐ Units

☒ Booked

☐ Shipped

☐ Backlog

Figure 24: A High/Low Clusters web page

The web page generates the following report.

Figure 25: A High/Low Clusters Report

The configuration for the High/Low Clusters web page is similar to that of the Profiling web page.

Creating a High/Low Clusters Web Page

- 1 In Admin Manager, expand the Presentation folder and select the Web Pages subfolder.
- 2 Select the Profiling web page you created. For the sample data mart, select the Sales Profiling web page. Right-click, and select **Duplicate**.
The Duplicate Web Page dialog box appears.
- 3 Enter the name **Sales Highs and Lows**.
- 4 Open the new web page and change the **Web Page Type** to **High/Low Clusters**.
- 5 Verify that all attributes, filters, and measure layouts have been copied correctly.
- 6 Click **OK**.
- 7 Open your topic and click the **Navigation Nodes** tab. For the sample data mart, open the Sales Analysis topic.
- 8 Select the Highs & Lows row under **Nav Nodes**.
- 9 Click the **Edit** icon.
The Topic:Sales Analysis:Navigation Node:Highs & Lows dialog box appears.
- 10 Under **Bind to a single web page**, select a web page and click **Apply**. For the sample data mart, select **Sales Highs and Lows**.
- 11 Click **OK**.
- 12 Refresh the Infor Campaign Management Server. For more information, see "Refreshing the Infor Campaign Management Server" on page 104.
- 13 Create a default saved report for this navigation node. For more information, see "Adding Default Saved Report" on page 103.
- 14 View the web page.

Trends

The Trends web page allows you to extrapolate data into the future. This is done by fitting a curve to the current data and extending the curve into the future with one of the following predictive techniques:

- Straight line (simple linear regression)
- Constant percent growth (linear regression on the logarithm of the data)
- n-period moving average

For the sample data mart, the Trends web page appears as follows.

Figure 26: A Trends Web Page

The web page allows you to generate the following report.

RESULT TABLE					
Using the Constant % Growth trends method					
Revenue, Booked (Top 10 rows/Top 10 columns)					
		Year			
Sales Region		<input type="checkbox"/> 1994	<input type="checkbox"/> 1995	<input type="checkbox"/> 1996	<input type="checkbox"/> 1997
<input type="checkbox"/>	North		\$ 390K	\$ 184K	\$ 220K
<input type="checkbox"/>	South	\$ 5,869K	\$ 8,955K	\$ 8,515K	\$ 7,622K
<input type="checkbox"/>	West	\$ 4,741K	\$ 10,130K	\$ 8,584K	\$ 10,213K
<input type="checkbox"/>	East	\$ 9,647K	\$ 14,745K	\$ 13,141K	\$ 14,171K
<input type="checkbox"/> Select All Rows <input type="checkbox"/> Select All Columns					

Figure 27: A Trends Report

To create a Trends web page, you duplicate a full-featured Rows and Columns web page and modify the attribute configuration. A Trends web page displays time periods in the columns, so you need to ensure that there are only date-type attributes that can be selected for the columns.

Creating a Trends Web Page

- 1 In Admin Manager, expand the Presentation folder and select the Web Pages subfolder.
- 2 Select the Rows and Columns web page you created. Right-click, and select **Duplicate**. For the sample data mart, select the Sales Reports web page.
The Duplicate Web Page dialog box appears.
- 3 Enter a name for the new web page. For the sample data mart, enter the name **Sales Trends**.
- 4 Double-click the web page to open the page. In the Web Page dialog box, change the **Web Page Type** to **Trends**.
- 5 Click the **Attributes** tab.
- 6 Select **Columns** and remove all non-date related attributes and attribute layouts using the **Delete** icon.
- 7 Remove the **Date** dimension attributes, or the **Date** attribute layout, from the **Row** attribute role and **Filters**.
- 8 Click **OK** in the Web Page dialog box to save the changes.
- 9 Open your topic and bind the new web page to the **Trends – Basic** navigation node (using the **Edit** icon).

- 10** Click **OK**.
- 11** Refresh the Infor Campaign Management Server. See "Refreshing the Infor Campaign Management Server" on page 104.
- 12** Create a default saved report for this navigation node. See "Adding Default Saved Report" on page 103.
- 13** View the web page.

Lifecycles

The Lifecycles web page allows you to predict the performance of new business entities based on the past performance of related entities. The web page also allows you to look at data from the product life cycle viewpoint. You can look at a product relative to some point in time (for example, the time since a product was introduced or the time since a customer was acquired) or use an older product to predict the life cycle of a new one. For the sample data mart, the Lifecycles web page appears as follows.

PROJECT OR ANALYZE RELATIVE LIFECYCLES.

ROWS

Product

Product Line

Product Name

Product Price Band

COLUMNS

Date

Year

Year and Month

Year and Quarter

MEASURES

☐ Revenue

☒ Units

☒ Booked

☐ Shipped

☐ Backlog

Figure 28: A Lifecycles Web Page

The Life Cycles web page creates the following report.

RESULT TABLE						
Units, Booked			Top 10 rows/Top 10 columns			
Product Line	Beginning	Year				
		1	2	3	4	
<input type="checkbox"/> Desktops	1994 ▼	1,934	3,135	2,728	3,101	
<input type="checkbox"/> Display Devices	1995 ▼	673	407	475	<i>437</i> <i>540</i> <i>644</i>	
<input type="checkbox"/> Notebooks	1994 ▼	1,708	2,850	1,957	2,366	
<input type="checkbox"/> Refurbished	1994 ▼	933	1,780	1,522	2,008	
<input type="checkbox"/> Servers	1994 ▼	791	1,481	1,628	1,829	
<input type="checkbox"/> Software	1994 ▼	1,726	2,395	2,263	2,492	
<input type="checkbox"/> Storage Devices	1994 ▼	1,728	2,129	2,638	2,510	
<input type="checkbox"/> Support	1994 ▼	1,070	2,489	1,606	1,992	
<input type="checkbox"/> Workstations	1994 ▼	1,454	2,608	2,255	2,303	

☐ Select All Rows Displayed Predicted values are shown in *italics*.

Warning: The row(s) Desktops, Notebooks, Refurbished, Servers, Software, Storage Devices, Support and Workstations may have data in previous time periods which are not shown.

Figure 29: A Lifecycles Report

Lifecycles tracks things across time. Therefore, the web page setup is similar to that for Trends.

Creating a Lifecycles Web Page

- 1 Duplicate the Trends web page. For the sample data mart, duplicate the Sales Trends web page and enter the name **Sales Lifecycles** for the new web page.
- 2 Open the Sales Lifecycles web page.
The Web Page dialog box appears.
- 3 Change the **Web Page Type** to **Lifecycles**.
- 4 Verify that all attributes, filters, and measure layouts have been copied correctly. As with the Trends web page, the **Column** attribute role should have only *date* attributes assigned to it.
- 5 Click **OK**.
- 6 Open the topic. In the Topic dialog box, assign the new web page to the **Trends – Lifecycles** (using the **Edit** icon).
- 7 Click **OK**.
- 8 Refresh the Infor Campaign Management Server. See "Refreshing the Infor Campaign Management Server" on page 104.

- 9 Create a default saved report for this navigation node. See "Adding Default Saved Report" on page 103.
- 10 View the web page.

Cumulative Projections

The Cumulative Projections web page enables you to predict the remainder of the current quarter (or other time period) based on past performance data. The web page allows you to answer questions such as, "If this quarter looks like previous quarters, how is it likely to end?" Projections are based on ratios between periods within past quarters. Prediction for future periods in the current quarter are found by multiplying these ratios by results from the quarter so far. Three sets of predictions are computed:

- **Min** is based on the lowest ratio of any past quarter.
- **Ave** is based on the average of the ratios for past quarters.
- **Max** is based on the highest ratio of any past quarter.

For the sample data mart, the Cumulative Projections web page appears as follows.

PROJECT THROUGH END OF PERIOD.

ROWS

Default Category
Year and Quarter

COLUMNS

Default Category
Nothing
Days remaining in Quarter
Weeks remaining in Quarter

MEASURES

☒ Revenue ☒ Booked
☒ Units ☐ Shipped
☐ Backlog

Figure 30: A Cumulative Projections Web Page

The web page creates the following Cumulative Projections report:

RESULT TABLE												
Booked (Top 10 rows/Top 10 columns)												
Year and Quarter	Weeks remaining in Quarter											
	10		9		8		7		6		5	
	Revenue	Units	Revenue	Units	Revenue	Units	Revenue	Units	Revenue	Units	Revenue	Units
<input type="checkbox"/> Q4 1994	\$ 2,267K	1,089	\$ 3,591K	1,886	\$ 5,777K	3,008	\$ 7,272K	3,982	\$ 8,744K	4,663	\$ 10,565K	
<input type="checkbox"/> Q2 1997	\$ 1,374K	669	\$ 2,502K	1,316	\$ 3,788K	2,182	\$ 5,238K	3,105	\$ 7,539K	4,333	\$ 8,967K	
<input type="checkbox"/> Q1 1995	\$ 1,295K	658	\$ 2,405K	1,285	\$ 3,604K	1,929	\$ 4,049K	2,182	\$ 5,169K	2,772	\$ 5,810K	
<input type="checkbox"/> Q1 1997	\$ 527K	254	\$ 1,506K	862	\$ 1,967K	1,259	\$ 3,002K	1,886	\$ 3,489K	2,210	\$ 4,196K	
<input type="checkbox"/> Q4 1996	\$ 559K	323	\$ 1,376K	722	\$ 2,057K	1,101	\$ 2,720K	1,544	\$ 3,118K	1,748	\$ 3,745K	
<input type="checkbox"/> Q3 1996	\$ 346K	256	\$ 926K	539	\$ 1,551K	783	\$ 2,101K	1,008	\$ 2,725K	1,335	\$ 3,823K	
<input type="checkbox"/> Q4 1995	\$ 402K	217	\$ 1,052K	579	\$ 1,688K	964	\$ 2,526K	1,354	\$ 2,692K	1,494	\$ 3,119K	
<input type="checkbox"/> Q2 1996	\$ 802K	345	\$ 1,526K	778	\$ 1,707K	903	\$ 1,931K	1,063	\$ 3,136K	1,553	\$ 3,782K	
<input type="checkbox"/> Q3 1995	\$ 573K	386	\$ 997K	669	\$ 1,758K	1,118	\$ 2,100K	1,289	\$ 2,610K	1,551	\$ 3,353K	
<input type="checkbox"/> Q2 1995	\$ 634K	444	\$ 1,252K	784	\$ 2,349K	1,331	\$ 2,640K	1,591	\$ 2,828K	1,804	\$ 3,268K	
<input type="checkbox"/> Q3 1997	\$ 739K	308	\$ 1,013K	706	\$ 1,564K	1,066	\$ 1,828K	1,240	\$ 1,917K	1,395	\$ 2,185K	
<input type="checkbox"/> Q1 1996	\$ 618K	388	\$ 1,200K	718	\$ 1,632K	998	\$ 1,908K	1,241	\$ 2,338K	1,493	\$ 2,702K	
<input type="checkbox"/> Q3 1994	\$ 0K	0	\$ 0K	0	\$ 0K	0	\$ 0K	0	\$ 0K	0	\$ 139K	
<input type="checkbox"/> Select All Rows												
<input type="checkbox"/> Select All Columns												

Figure 31: A Cumulative Projections Report

The Cumulative Projections web page is set up slightly differently from the web pages discussed so far. This web page gives information about a time period (such as a quarter) from the point of view of a smaller time interval (such as a week). The results from this web page are displayed with the time period of interest in the rows, and with intervals remaining in the time period in the columns. For example, you might have **Quarters** in the rows and **Weeks Remaining in Quarter** in the columns.

You begin by creating new attributes for remaining time intervals.

Creating New Time Attributes

- 1 In Admin Manager, expand the Presentation folder and select the Attributes folder.
- 2 Right-click and select **New Attribute**.
- 3 Enter a name for the attribute. For the sample data mart, enter the name **Weeks Remaining in Quarter**.

- 4 For the Dimension Column, select an attribute from the date dimension. Select one of the attributes named `interval_number_til_end_timeperiod`. For the sample data mart, select **Weeks number until end of calendar quarter**. The attribute is not used for filtering. So, set the **Filter Type** to **Text Box**.
- 5 Click **OK** to complete defining the attribute.
- 6 Define other applicable attributes. For the sample data mart, create an attribute called **Days Remaining in Quarter** with dimension column **Day number until end of calendar quarter**.

Creating a Cumulative Projections Web Page

- 1 Duplicate the full-featured Rows and Columns web page. For the sample data mart, duplicate the Sales Reports web page and enter the name **Sales Projections** for the new web page.
- 2 Open the new web page.
The Web Page dialog box opens.
- 3 Change the **Web Page Type** to **Cumulative Projections**.
- 4 Click the **Attributes** tab, select **Rows**, and remove all attributes except the attribute for the time period of interest.
For the sample data mart, remove all attributes except **Year and Quarter**. If you created the attribute layouts, remove the `date` attribute layout, and add the **Year and Quarter** attribute to **Rows**.
- 5 Click **Columns** and remove all attributes.
- 6 Add Attributes that express time intervals remaining in the time period of interest for the column attribute role. For the sample data mart, add the **Weeks Remaining in Quarter** and **Days Remaining in Quarter** attributes that you created.
- 7 Verify that filters and measure roles are copied correctly.
- 8 Click **OK** to save the changes.
- 9 Open your topic and assign the new web page to the **Trends – Projections** and **Trends – Projections – Add Dimensions** nodes.
- 10 Click **OK** to save the changes.
- 11 Refresh the Infor Campaign Management Server. See "Refreshing the Infor Campaign Management Server" on page 104.
- 12 Create a default saved report for this navigation node. See "Adding Default Saved Report" on page 103.
- 13 View the web page.

Completing Topic Definitions

After you have completed the Sales Analysis topic for the sample data mart, complete the definition of the Marketing Analysis topic. Add filters to the Marketing Reports web page and then create all of the additional web pages described in this chapter. You can create the Marketing Analysis web pages by

modifying copies of the web pages that you created for the Sales Analysis topic. Make the following modifications to copies of the Sales Analysis web pages:

- From each web page, remove all attributes that refer to the `Sales_Person` dimension role, `sales` attribute layout, or all attributes that refer to the `Sales_Person` dimension role and the `Sales_Person` degenerate dimension.
- From each web page, remove the **Sales Layout** measure layout from each web page and add the **Marketing Layout** measure layout. This is not applicable to Influences or Community Clusters web pages.

When you complete these web pages, assign them to the appropriate nodes of the Marketing Analysis topic and grant node-access permissions to at least one user. Create default saved reports for the nodes in the topic. Refresh the Infor Campaign Management Server and try the completed topic.

This chapter describes how to create Lists and Campaigns, update the data mart for list management, and complete a Campaign Management topic.

The Contact and Household Campaign web pages enable you to view the data mart from the perspective of demographic dimensions, that is, the dimensions that you assign to the `Contact` and `Household` dimension roles. Depending on how you configure them, campaign web pages can provide either list-management or campaign-management capabilities:

- List management enables you to generate lists that contain members who have records in one of these demographic dimensions.
- Campaign management enables you to generate campaigns that target members of those demographic dimensions.

Note: Do not copy and paste scripts, commands or code from this document. Line breaks and some other characters picked up when you copy from the PDF can cause errors in the pasted text.

Working with Lists and Campaigns

When you create a web page for list management, users see a List Manager web page. Users can use this web page to generate lists by choosing filters and specifying selection criteria. You can then use the members of these lists as targets in a campaign. In the sample data mart, create a Household Campaigns web page for lists and then assign that web page to a **Household List Manager** navigation node.

The preliminary List Manager web page appears as follows.

SPECIFY LIST AND GET COUNT HOUSEHOLD

Your security privileges allow you to get a list of:

Household

restrict the list further

Use acquisition list

prune the list to a maximum size

☒ Total Counts Only

☐ Waterfall Counts (possibly slower)

Get Counts

View/Download List

Direct Mail Campaign

Figure 32: A List-Management Web Page

The List Manager web page provides the means to configure filters to restrict the list to contacts that meet certain criteria. This configuration is done using the Create New Filter screen.

[HELP](#)

Create New Filter

You are setting a filter on Household.
Which kind of filter do you want to set?

☒

 Household

☐

 Attributes and transactions involving Contact in Household.

☐

 No one

☐

 No more than one

☐

 Exaxtly one

☐

 Contact

☐

 Everyone

(You can get the effect of setting multiple types by cascading filters in the main window.)

Next

CANCEL

Figure 33: The Create New Filter Screen

The Create New Filter screen enables you to filter on:

- Contact attributes such as buyer's age or income band, or buyer's profession
- Household attributes such as buyer's city or state
- Fact table measurements for contacts (such as purchases made or revenue generated; this requires a Transaction Filter).

Once the filters are configured, they are listed on the List Manager web page as follows.

SPECIFY LIST AND GET COUNT HOUSEHOLD

Your security privileges allow you to get a list of:

Household

Use acquisition list

restrict the list further

Edit | Delete | Action | Layout

No more than one Customer Purchased

Product Line: UNKNOWN

Edit | Delete | Action | Layout

No more than one

Buyer's Age Band: UNKNO

include others in the list

restrict the list further

Edit | Delete | Action | Layout

Buyer's State: UNKNOWN

include others in the list

restrict the list further

prune the list to a maximum size

☒ Total Counts Only

☐ Waterfall Counts (possibly slower)

Get Counts

View/Download List

Direct Mail Campaign

Figure 34: A List-Management Web Page with Filters Defined

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You can then generate a list of filtered data which can be used in a campaign, exported, or used in other web pages.

List members as of Monday, August 17, 2009 4:16:22 PM					
#	Customer C_NAME	Customer C ACCTBAL	Customer C MKTSEGMENT	Customer C Acquireddate - Month and Fy Name	Nation N NAME
1	Customer#000000011	-272	BUILDING	Jan 1994	UNITED KINGDOM
2	Customer#000000112	2,953	FURNITURE	Jan 1995	ROMANIA
3	Customer#000000119	3,930	FURNITURE	Dec 1996	GERMANY
4	Customer#000001078	71	MACHINERY	Jan 1996	ROMANIA
5	Customer#000001079	2,136	AUTOMOBILE	Dec 1996	ROMANIA
6	Customer#000001088	2,099	BUILDING	Jan 1996	RUSSIA
7	Customer#000001105	9,491	FURNITURE	Jan 1993	RUSSIA
8	Customer#000001123	9,786	MACHINERY	Jan 1996	MOZAMBIQUE
9	Customer#000001177	9,282	FURNITURE	Jan 1995	KENYA
10	Customer#000001243	6,271	MACHINERY	Jan 1996	KENYA

Figure 35: A List Generated by the List Manager

You create web pages for campaign management by doing the following:

- "Creating List Transaction Filters" on page 126
- "Creating List Transaction Filter Filters" on page 127
- "Creating a Campaign Web Page" on page 128

Creating List Transaction Filters

Transaction filters enable you to create lists based on fact table values. Transaction filters can be used to either filter by dimension attributes or fact table measurements.

Filtering by dimension attributes

When you filter by dimension attributes, the members of the generated list have a fact table entry with the dimension attribute values that the user has chosen. For example, you can filter a list of customers by product purchased. The user of the web page specifies a product, and the transaction filter then restricts the list to those customers who have a fact table entry for a purchase of that product.

Filtering by fact table measurements

When you filter by fact table measurements, the members of the generated list have fact table measure values within a range that you specify. For example, you can filter a list of customers by revenue

generated by specifying a range of values, and the transaction filter then restricts the list to those customers who have generated revenue within that range.

Defining List Transaction Filters

- 1 In Admin Manager, expand the Presentation folder and select the Transaction Filters subfolder.
- 2 Right-click and select **New Transaction Filter**.
The Transaction Filter dialog box is displayed.
- 3 Enter a name and description for the transaction filter. For the sample data mart, enter the name **Customer Purchased**. Change the **Negative Label** to **Customer Has Not Purchased**.
- 4 Select a **Dimension Role**. Depending on whether you are filtering lists of individual contacts or households, select either **contact** or **household**. For the sample data mart, select **contact**.
- 5 Select the Fact Table that contains the transactions that you are using for filtering. For the sample data mart, select the Sales fact table.
- 6 Select a **Transaction Type** or **Transaction Type Set**. Select the transaction types that you are using for filtering in the selected fact table. For the sample data mart, select a **Transaction Type** of **BOOKED**.
- 7 Click **OK**.
- 8 Repeat step 2 on page 127 through step 7 on page 127 to create a second transaction filter named Household Purchased, making the appropriate substitutions.

Creating List Transaction Filter Filters

After you define a transaction filter, you add a Transaction Filter Filter . A Transaction Filter Filter enables you to specify which of the transactions are to be used for filtering; that is, the transactions in the transaction filter (Booked Sales for the sample data mart) are themselves filtered. You can do this second level of filtering either on an attribute or a measure.

Filtering on an attribute

If filtering based on an attribute, then only transactions that involve the selected attribute are considered. For example, if **Product Line** is used for filtering, only transactions that involve the product lines selected by the user are considered.

Filtering on a measure

If filtering is based on a measure, then only transactions that result in certain measure values are considered. For example, if **Revenue Booked** is used for filtering, then only transactions that involve contacts or households who have booked revenue within a range selected by the user are considered.

Defining List Transaction Filter Filters

- 1 Open the Customer Purchased transaction filter that you created in the previous section.
The Transaction Filter dialog box appears.
- 2 Click the **Transaction Filter Filters** tab.
- 3 Select an attribute to use for filtering by dragging it from the upper pane of the Object Gallery to the Transaction Filter Filters pane on the left. For the sample data mart, drag the **Product Line** attribute to the Transaction Filter Filters pane.
- 4 Select a measure to use for filtering by dragging it from the lower pane of the Object Gallery to the Transaction Filter Filters pane on the left. For the sample data mart, drag the `Revenue_Booked` measure to the Transaction Filter Filters pane.
- 5 Click **OK**.
- 6 Repeat these steps for Household Purchased.

Setting Up an Infor Campaign Management Topic

This section describes how to set up a Infor Campaign Management topic. You configure a topic for campaigns by doing the following:

- "Creating a Campaign Web Page" on page 128
- "Creating a Campaign Management Topic" on page 129
- "Configuring Campaign Nodes" on page 130
- "Configuring the Analytic Nodes" on page 131
- "Configuring External Links" on page 131

Creating a Campaign Web Page

You can configure a web page for campaign management by creating either a Contact Campaigns web page for lists and assigning it to a **Contact Campaigns** navigation node or creating a Household Campaigns web page and assigning it to a **Household Campaigns** navigation node.

When you configure a web page for campaigns, users see a Campaign Manager web page. They can use this web page to generate campaigns by creating campaign segments and cells, selecting or creating output formats, saving the campaign information in the Report Gallery, and scheduling a date or set of recurrences on which the campaign is to run.

The Household Campaigns and Contact Campaigns web pages enable users to view the data mart from the demographic dimensions perspective .

Creating a Campaign Web Page

- 1 In Admin Manager, expand the Presentation folder and select the Web Pages subfolder.
- 2 Right-click and select **New Web Page**.
The Web Page dialog box appears.
- 3 Enter a name and description for the web page. For the sample data mart, enter **Campaigns and Lists**.
- 4 Select **Campaign** for the **Web Page Type**.
- 5 Click the **Dimensionality** tab.
- 6 Drag the **Contact** and **Household** base dimensions from the Object Gallery into the left-hand pane.
- 7 Click the **Attributes** tab.
- 8 Select the following categories from the left-hand drop-down list and add the listed attributes.

Note: These attributes are not used when the web page appears on a List Manager navigation node, but they are required for Campaign Manager nodes.

Attributes	Select the Contact and Household layout attributes for the sample data mart. You can filter lists by any of the attributes that you add here.
Filter	Select the Contact and Household layout attributes for the sample data mart.
Preview Filters	Select all buyer demographic attributes (city, state, zip, profession and company for the sample data mart). When you generate a list, you can select the attributes values displayed in list pre-views. You can select any of the attributes that you add here.
Required Campaign Attributes	Add Campaign Code, Campaign ID and Campaign Label.
Required Cell Attributes	Add Cell Label, Cell Size and Cell Communication Code.

- 9 Click the **Transaction Filters** tab.
- 10 Add transaction filters by dragging them from the Object Gallery to the Transaction Filters pane on the left. For the sample data mart, add the **Customer Purchased** and **Household Purchased** transaction filter.
- 11 Click **OK**.

Creating a Campaign Management Topic

After you create a new Campaign web page, create a corresponding Campaign Management topic.

Note: List Manager and Campaign Manager web pages are included in the Campaign Management template topic.

Creating a Campaign Management Topic

- 1 In Admin Manager, expand the Presentation folder and select the Topics subfolder.
- 2 Right-click the **Topics** icon and select **New Topic**.
The Topic dialog box appears.
- 3 Enter a name for the topic. For the sample data mart, enter the name **Sales Campaigns**.
- 4 Select **Campaign Management Template**.
- 5 Click **Apply**.
- 6 Click the **Navigation Nodes** tab.
- 7 Assign your new Campaigns and Lists web page to the **List – Specify** and **List – Preview** nodes.
- 8 Select all of the navigation nodes and grant access to at least one user (See "Configuring a New Topic and Adding Security" on page 102).
- 9 Click **OK** to save your changes.

Configuring Campaign Nodes

You can use the web pages that you created earlier for many of the campaign-related nodes in your topic.

Open your Campaign Management topic (Sales Campaigns in the sample data mart) and assign the Campaigns and Lists web page (in the sample data mart) to the nodes described in "table" on page 130.

Table 4: Campaign Management Topic Nodes for Campaign Web Pages

Nodes for ContactsCampaigns Web Page
Campaign – Specify – Email
Campaign – Specify – Email – Sch
Campaign – Specify – Formatted
Campaign – Specify – Formatted – Sch
Campaign – Specify – Personalization

Configuring the Analytic Nodes

A Campaign Management topic allows you to make use of the results of High/Low Clusters and Basic Rows & Columns reports to select campaign targets. You can use the web pages that you created in "Analyzing and Reporting Data," on page 107 for these nodes.

Configuring Analytic Nodes

- 1 In Admin Manager, navigate to the Presentation Folder and select the Topics subfolder.
- 2 Open the Sales Campaigns topic and click the **Navigation Nodes** tab.
- 3 Select the **Insight – Highs & Lows** node and add a High/Low Clusters web page to it. For the sample data mart, use the Sales Highs and Lows web page.
- 4 Select the **Insight – Rows & Columns – Basic** node and add a Rows & Columns web page to it. For the sample data mart, use the Sales Reports web page.
- 5 Click **OK** to close the Topic dialog box.

Configuring External Links

The Campaign Management topic includes links that allow you to go to other topics to do further data analysis.

Configuring External Links

- 1 In Admin Manager, navigate to the Presentation Folder and select the Topics subfolder.
- 2 Open the Sales Campaigns topic and click the **Navigation Nodes** tab.
- 3 In the grid, select the **YAH External Links** node and click the **Edit** icon.
The Navigation Node dialog box appears.
- 4 Click the **Links** tab.
- 5 Add a link to another topic that you created by doing the following:
 - a Click **New**.
The Navigation Link dialog box appears.
 - b Select a destination for the link from the **Dest. Topic/Node** drop-down list box.
Since these links are intended to take a user to a different topic, select a node from one of the Reporting and Analysis topics. For the sample data mart, select the **Sales Analysis.What type of Report** node.
 - c Select a **Behavior** for the link. The **Carry State, Display** allows you to perform further analysis on results from the current web page, and the **Clear State, Display** behavior clears any results from the current web page. For the sample data mart, select **Clear State, Display**.
 - d Select the **Navigation Type**. For the sample data mart, select **SameWindow** to display the new web page in the same window as the current web page.

- e Change the **Name** field so that it describes the destination node. For the sample data mart, enter the name **Sales Analysis**.
 - f Click **OK** to finish editing the node.
 - g Add additional external links if required. For the sample data mart, add a link to the **Marketing Analysis.What Type of Report** node.
- 6** Click **OK**.
The Navigation Node dialog box appears.
- 7** Click **OK**.
The Topic dialog box appears.
- 8** Verify that you have assigned a web page to every node.
- Note:** You do not have to assign web pages to the nodes that have names beginning with Email if you have not installed Infor Campaign Management for Email software. You also do not have to assign web pages to the nodes that have names beginning with RP if you have not installed Personalization Platform software.
- 9** Click **OK** to finish configuring the topic.

Performing Campaign Extraction

After creating your campaign management web pages and setting up the necessary topics, you need to configure your extraction job to handle lists and campaigns by doing the following:

- "Configuring List Extraction" on page 132
- "Building the Sampling Table" on page 134
- "Configuring Campaign Extraction" on page 134
- "Enabling the Campaign Queue" on page 136
- "Starting the Scheduler Service" on page 136
- "Running the Extraction Job" on page 142

Configuring List Extraction

List management requires a special fact table, called `Household_Contact`, that specifies which contacts belong to a household. You populate this table during extraction. To populate this table, you create extraction commands and Semantic extraction steps.

Creating the SQL extraction Group for Household_Contact

- 1 Expand the Extraction folder in your EpiCenter, and double-click the **Jobs** icon. Open the job that you created in "Populating a Data Mart" on page 51. For the sample data mart, the job is called `Extractorama`.
- 2 Navigate to the **Extraction Steps** tab in the Extractorama dialog box.
- 3 Right-click your fact extraction group (**Get Fact Data** in the sample data mart) in the Object Gallery and select **Group** from the **New** submenu. Create a new global extraction group called `Household_Contact Extract`.
- 4 Right-click your new extraction group and select **Truncation** from the **New** submenu. Create a truncation step for the `Household_Contact` fact table.
- 5 Right-click your new extraction group (`Household_Contact Extract`) and select **Extraction Command** from the **New** submenu. Admin Manager displays the Extraction Wizard.
- 6 Click the **Create Extraction Command with Editor** button to use the dialog box interface.
- 7 Select the **Write SQL by Hand** radio button.
The instructions that follow are tailored specifically to the dialog box interface with the **Write SQL by hand** radio button selected.
- 8 Enter a name. For the sample data mart, enter the name **Get Household_Contact Facts**.
- 9 Click **Populates a Fact Table** and select **Household_Contact** from the drop-down list.
- 10 Navigate to the **SQL Statement** tab.
- 11 Click **Template** to display a template for this fact table. The template is similar to:

```
SELECT
<YOUR EXPRESSION> ss_key,
$$TO_EPIDATE[ <YOUR EXPRESSION> ] date_key,
$$NVL[ <YOUR EXPRESSION> ~,~ 1 ] transtype_key,
$$NVL[ <YOUR EXPRESSION> ~,~ 1 ] contact_sskey,
$$NVL[ <YOUR EXPRESSION> ~,~ 1 ] household_sskey,
$$NVL[ <YOUR EXPRESSION> ~,~ 0 ] Member
FROM
<YOUR TABLE>
```

- 12 Fill in expressions that associate the `sskey` of each contact with the `sskey` of the household to which the contact belongs. A contact must not belong to more than one household.
- 13 Fill in the remaining SQL. For the sample data mart, use the following code:

```
SELECT
C.Contact_Id ss_key,
$$TO_EPIDATE[$$DBNOW] date_key,
1 transtype_key,
$$NVL[ H.Household_ID ~,~ 'UNKNOWN' ] household_sskey,
$$NVL[ C.Contact_Id ~,~ 'UNKNOWN' ] contact_sskey,
1 member
```

```
FROM  
Contact_table C, Household_table H  
WHERE  
H.Household_ID = C.Household_Id
```

- 14 Click **OK** to define the extraction step.
- 15 To create the Semantic extraction step for `Household_Contact`, open the `Extractorama Job` dialog box again (if it is not still open).
- 16 Right-click the fact semantics group (Fact Semantics in the sample data mart) in the Object Gallery and from the **New** menu, select **Semantic Instance**.
The Semantic Instance dialog box is displayed.
- 17 Under **References**, select the **Fact Table** radio button.
- 18 Select a fact table from the **Fact** list box. For the sample data mart, select `Household_Contact`.
- 19 Select an appropriate semantic type from the **Semantic Type** list box. For the sample data mart, use **Statelike/Error on Stage Duplicates**.
- 20 Click **OK** to define the semantic instance.
- 21 Verify that the Infor Campaign Management Builders group, which includes the `AggBuild` and `MomBuild` steps, has been added to the extraction job.
- 22 Click **OK** to finish setting up the job.

Building the Sampling Table

The List Manager and Campaign Manager use a special sampling table. You create the sampling table when you first generate the EpiMart schema. If you did not create the table, use the following procedure.

Building the Sampling Table

- 1 In Admin Manager, from the EpiCenter menu, select **Generate Schema**.
The Schema Generation dialog box appears.
- 2 Uncheck **Trial Run** and **Generate EpiMart**.
- 3 Select **Build dimension sampling table** check box .
- 4 Click **Go** to generate the sampling table.

Configuring Campaign Extraction

When a campaign is run, campaign information is automatically saved in the EpiMart backfeed tables. To make this campaign data available to users, you have to configure your extraction job to copy the data from the backfeed tables to the campaign fact and dimension tables in your EpiCenter. You can

do this configuration by adding the pre-defined **Infor Omni-Channel Campaign Management Campaign Extraction** group to your extraction job.

Configuring Campaign Extraction

- 1 Open your extraction job (**Extractorama** for the sample data mart).
The Job dialog box appears.
- 2 Click the **Extraction Steps** tab.
- 3 Remove the following semantics, if they exist, as they are added during the Campaign Extraction job step.
 - Expand the **Dimension Semantics** node that you added in the Object Gallery and remove the **Campaign** and **Cell** semantics, if exist.
 - Expand the **Fact Semantics** node that you added in the Object Gallery and remove the **Message** semantic, if exists.
- 4 Find the Campaign Extraction group in the Object Gallery . This group contains the following steps:

Campaign Undo Extraction steps	These extraction steps remove data for campaigns that are cancelled by users.
Extraction command steps	These extraction steps copy data from the backfeed tables into the Campaign, Cell, and Message staging tables. You do not have to change the SQL code in these steps unless you have modified the Campaign or Cell base tables.
Semantic extraction steps	These extraction steps merge data from the staging tables into the main Campaign, Cell, and Message data mart tables.

- 5 Drag the Campaign Extraction group from the Object Gallery to the root-level job step.
- 6 Use the **Up** button to move the Campaign Extraction group between the **Run Semantics** and **Builders** job steps.
- 7 Click the Job dialog box **Data Stores** tab.
- 8 Expand the Campaign Extraction group in the left pane.
- 9 Backfeed tables are located in the EpiOp database, so you have to specify that database as the input data store for the Campaign Extraction group. To set the proper input data store, drag the EpiOp data store from the Object Gallery to the Input data store role in the Campaign Extraction group.
- 10 Click **OK** to finish configuring the job.

Enabling the Campaign Queue

When you schedule a campaign, EpiCenter scheduler runs the campaign based on the configuration of the appropriate Queue. By default, every EpiCenter contains a Campaign queue that is configured for basic campaign functionality.

Enabling the Campaign Queue

- 1 Expand your Extraction folder. Expand the Queues subfolder, and double-click **Campaign**.
The Campaign: Queue dialog box appears.
- 2 Check **Enabled**.
- 3 Click **OK** to close the Queue dialog box.
For more information on the Scheduler Queue configuration, see “Setting Up a Queue” in chapter 12 of the *Infor Campaign Management Data Mart Implementation Guide*.

Starting the Scheduler Service

The Scheduler service allows administrators to schedule individual and recurring extraction jobs and users to schedule long-running or recurring reports and campaigns.

Starting the Scheduler

- 1 Navigate to the following location:
Start > Programs > Administrative Tools > Services.
The Services dialog box is displayed.
- 2 Select the scheduler from the list of services. The scheduler service for an EpiCenter instance is named instance `_Scheduler`, where instance is the name of the EpiCenter instance.
- 3 Click the **Start** button to start the scheduler. Windows displays the Service Control panel with a message indicating that the service is attempting to start.
- 4 After a short wait, the Service Control dialog box disappears, and the **Status** column for your EpiCenter instance says “Started.”

Note: If there are errors in your data mart, a dialog box is displayed saying that the service cannot be started because of an internal Windows error. If you see this dialog box, review the logs to see what went wrong.

The default installation places the Scheduler log files in the following directory:

`instance\Web\WWWRoot\logfiles`

After you successfully start the Scheduler service, refresh the Infor Campaign Management Server (See “Refreshing the Infor Campaign Management Server” on page 104) and try your new topic. You also have to create default saved reports for the nodes in the topic. (See “Adding Default Saved

Report" on page 103, for details). Refer to the online help for instructions on creating and scheduling campaigns.

Examples Of Scheduling Output Files Separately

The following example explains the scheduling of output files separately.

In this example, Campaign1 has three output files File1, File2 and File3.

If we schedule Campaign1, the **Track Campaign Participation** option is not displayed. If output files are scheduled separately, this option is displayed.

File1, File2 and File3 are scheduled to run on 1st of April, 10th of April and 20th of April respectively. While scheduling these files user can select either **When the Earliest Scheduled Campaign Output File Is Generated** or **when this campaign output file is generated** in the schedule window as track campaign participation option.

Two possibilities:

"Possibility 1" on page 137 - Selects **When the Earliest Scheduled Campaign Output File Is Generated** option for all the files

"Possibility 2" - Selects **When the Earliest Scheduled Campaign Output File Is Generated** for File1 and **When this campaign output file is generated** for File2 and File3

Possibility 1

Selects **When the Earliest Scheduled Campaign Output File Is Generated** option for all the files.

File1 target list is 10.

File2 target list is 15.

File3 target list is 20.

All Files are scheduled

Schedule_outputfiles is updated with the information. It is possible to change the option till one file is executed.

Table 5: Schedule_output_Files

Schedule_key	epifile_name	Track_campaign_participation	Added_to_backfeed
	File1	1	0
	File2	1	0
	File3	1	0

File1 is executed

If File1 is executed then we cannot change the option for File2 and File3. Target list related to File2 and File3 are added to backfeed tables and value of **added_to_backfeed** is set to 1.

Table 6: Schedule_output_Files

Schedule_key	epifile_name	Track_campaign_participation	Added_to_backfeed
	File2	1	1
	File3	1	1

Schedule File1 again

If user tries to schedule File1 again before File2 and File3 execution then it must not be possible to select the **Track Campaign Participation**. It must be defaulted to **When this campaign output file is generated**.

Table 7: Schedule_output_Files

Schedule_key	epifile_name	Track_campaign_participation	Added_to_backfeed
	File2	1	1
	File3	1	1
	File1	0	0

Backfeed tables after executing the File1

Every time the campaign executes new `campaign_id` is generated in backfeed tables.

After executing the File1, backfeed tables looks like this (Example for Customer context)

Table 8: Campaign_BF_P or Campaign_BF_Q

Campaign_sskey	Num_exported_cells	Num_exported_records	Campaign_id
13585	1	10	13585

Table 9: Cell_BF_P or Cell_BF_Q

Cell_sskey	Campaign_id	Cell_id	Is_tracking_cell	epifile_name
13585_1	13585	13585_1	0	File1
13585_2	13585	13585_2	1	File2
13585_3	13585	13585_3	1	File3

Table 10: Customer_GG_com_BF_P or Customer_GG_com_BF_Q

Customer_sskey	Campaign_sskey	Cell_sskey
	13585	13585_1
	13585	13585_2
	13585	13585_3

Gen schema needs to be updated to add new columns in backfeed tables.

Unschedule File2/File3

Campaign undo needs to be triggered for File2/File3. Two records are added to `campaign_output_file_undo` A/B tables (for each fact table, A/B tables are generated).

Example: `customer_GG_com_BFU_A` or `customer_GG_com_BFU_B`

Cell_sskey
13585_2
13585_3

Backfeed tables after executing the File2 and File3

(These are executed on different dates)

During the execution of File2 target list is read from the materialized list. This means that the target list for the remaining files is fixed and when the first file is executed, it won't apply the filter during the file 2 / file 3 execution.

After the execution of File2, backfeed tables needs to be updated as new `campaign_id` and `cell_id` are generated. Back feed tables looks like this. (new information is in blue colour and deleted information is in red colour). Undo campaign output file is used to remove the data related to file2/file3.

Table 11: Campaign_BF_P or Campaign_BF_Q

Campaign_sskey	Num_exported_cells	Num_exported_records	Campaign_id
13585	1	10	13585
13586	1	15	13586
13587	1	20	13586

Table 12: Cell_BF_P or Cell_BF_Q

Cell_sskey	Campaign_id	Cell_id	Is_tracking_cell	epifile_name
13585_1	13585	13585_1	0	File1
13585_2	13585	13585_2	1	File2

Cell_sskey	Campaign_id	Cell_id	Is_tracking_cell	epifile_name
13585_3	13585	13585_3	1	File3
13586_1	13586	13586_1	0	File2
13587_1	13587	13587_1	0	File3

Table 13: Customer_GG_com_BF_P or Customer_GG_com_BF_Q

Customer_sskey	Campaign_sskey	Cell_sskey
	13585	13585_1
	13585	13585_2
	13585	13585_3
	13586	13586_1
	13587	13587_1

Campaign undo needs to be triggered for File2/File3. Two records are added to `campaign_output_file_undo` A/B tables. (for each fact table we will generate A/B tables)

Cell_sskey
13585_2
13585_3

Backfeed Extraction is run before the execution of File2 and File3

Data is moved from P/Q tables to A/B tables. `is_tracking_cell` is set to true for the data related to file2 and file3.

Backfeed extraction needs to be updated for this.

A/B tables look like this....

Table 14: Cell_BF_A or Cell_BF_B

Cell_sskey	Campaign_id	Cell_id	epifile_name	is_tracking_cell
13585_1	13585	13585_1	File1	0
13585_2	13585	13585_2	File2	1
13585_3	13585	13585_3	File3	1

Records with `is_tracking_cell` as **1** are skipped during the campaign extraction. During the campaign extraction, only file1 related data are moved to mart tables. Campaign extraction needs to be modified to support this.

Backfeed tables after executing the File2 and File3

(These are executed on different dates)

Target list is read from materialized list. Backfeed P/Q tables is updated with the file2 and file3. Data needs to be removed from A/B tables. 'Campaign Undo' feature is used to achieve the functionality.

Campaign undo output file needs to be triggered for File2/File3. Two records are added to `campaign_output_file_undo` A/B tables (for each fact table, A/B tables are generated).

Cell_sskey
13585_2
13585_3

Campaign Undo Output File

During the execution of file2/file3 or unschedule of file2/file3, campaign undo (for specific output files) is triggered so that the data (related file2/file3) which is added to backfeed tables earlier will be removed. As of now undo campaign will remove the data based on `campaign_sskey`. If the whole data for `sskey` is removed, the data related to file1 is also removed. That is not desirable.

Change is needed to undo campaign process so that we can undo only some of the output files. This option is available for the end user but this is triggered by campaign export.

During the execution of File2 and File3, 'undo campaign output file' is triggered on File2 and File3.

`Campaign_output_file_undo` tables look like this:

New table `Campaign_output_file_undo` is added to OP. There will not be any change to the `campaign_undo` table in mart.

Cell_sskey
13585_2
13585_3

Campaign export/Backfeed extraction/Campaign extraction needs to be modified to undo the File2/File3 from OP A/B tables. Also backfeed extraction/campaign extraction needs to be modified so that the `campaign_output_file_undo` A/B tables is swapped.

After the undo, `Campaign_output_file_undo` tables is cleared.

Possibility 2

Selects **When the Earliest Scheduled Campaign Output File Is Generated** for File1 and **When this campaign output file is generated** for File2 and File3.

`Schedule_outputfiles` is updated with the information.

Schedule_key	epifile_name	Track_campaign_participation	Added_to_backfeed
	File1	1	0
	File2	0	0
	File3	0	0

If File1 is executed then we cannot change the option for File2 and File3. Target list related to File2 and File3 are not added to backfeed tables.

Running the Extraction Job

To run the extraction job, refer to "Running the Extraction Job" on page 77. When the extraction job completes with no errors, you have successfully set up the campaign extraction.

Viewing Campaign Management Web Pages

To view the campaign management web pages that you created, first refresh the Infor Campaign Management Server. (See "Refreshing the Infor Campaign Management Server" on page 104). After refreshing the Infor Campaign Management Server, you can see that the Home Page displays your campaign management topic.

Opening the Contact List Manager Web Page

- 1 On the home page, click the name of the new Campaign Management topic (Sales Campaigns in the sample data mart) to go to the Campaigns Management Start page.
- 2 Click **Make a List** to open the Specify list and get count Household page.
For additional information on list filtering and generation, refer to the online help.

This chapter provides an overview of aggregates and describes how to define and build aggregates.

Aggregates are pre-computed summary data for frequently queried sets of dimension columns. Aggregates are built and updated during extraction. You can significantly improve the response time of your web pages by building aggregates in your EpiCenter. Any query that can be answered using summarized data is faster because much of the computation is already done. However, aggregate building slows down extraction time, so carefully select the aggregates that you want to build.

An aggregate is a data summary based on a collection of dimension columns that you select. For example, users can ask for monthly sales data based on product category and customer demographics. You can speed up response time for these queries by building an aggregate using these dimension columns.

Defining Aggregates

In "Designing a Data Mart" on page 27, the star schema for the data mart was defined as in "figure 10-1 on page 10-2" on page 144.

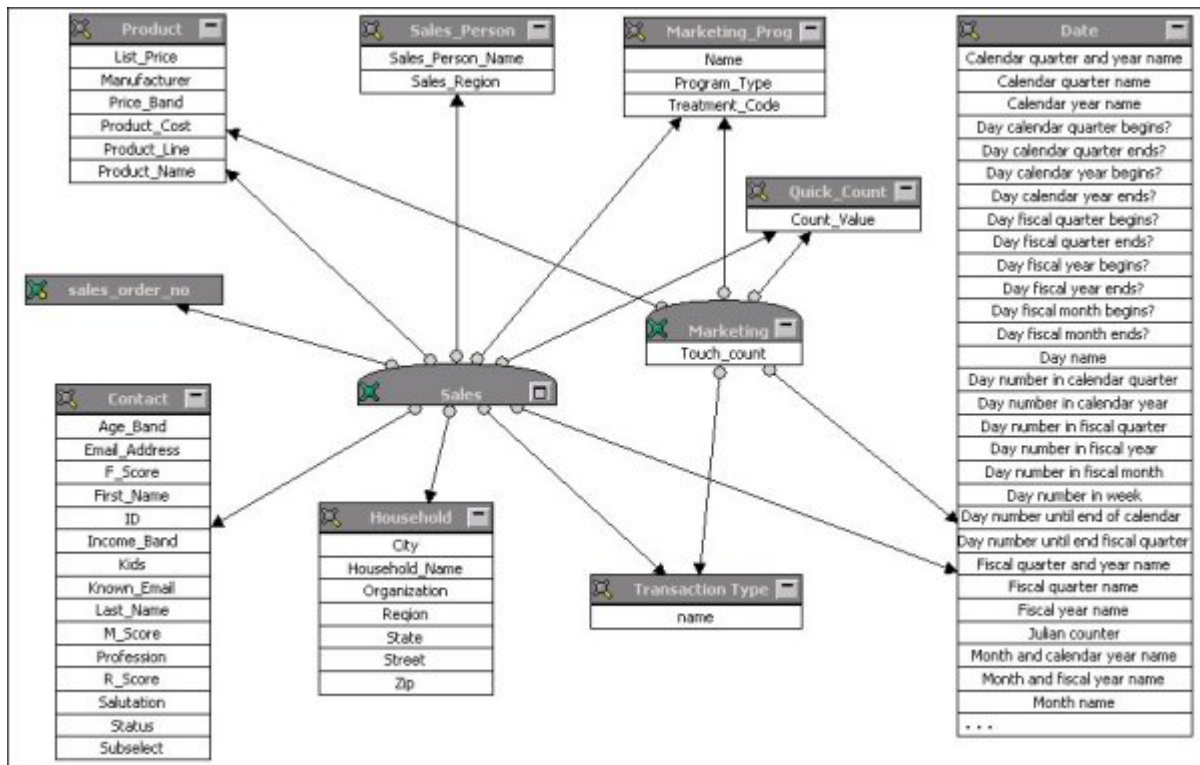


Figure 36: Sample Data Mart Star Schema

You can answer many user queries without the level of detail that is found in the above star schema. For example, users can have queries that can be answered by considering only the demographic attributes of the Contact dimension, such as age and salary, and the month of a transaction. By building an aggregate, you can define a sub-star that contains just the data needed for these queries.

An aggregate star is an aggregated version of a star schema that is made up of fact aggregates and dimension aggregates arranged in the same way as the original star schema. You can define an aggregate star as follows.

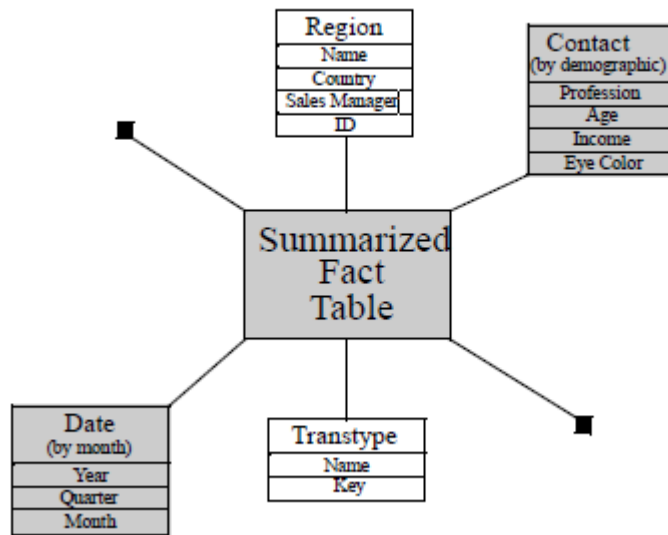


Figure 37: An Aggregate Star

In the above aggregate star, two of the original dimensions are replaced by sub-dimensions containing only some of the original columns, two dimensions are included in their entirety, and two dimensions are excluded. The fact table summarizes data from the original star schema based on these sub-dimensions.

Because this aggregate only considers the sub-dimensions shown in the aggregate star, this construction significantly speeds up query response time. The key to defining useful aggregates is to make them as small as possible (by defining sub-dimensions that have as few rows as possible), while ensuring that they are still useful for real-world queries.

Aggregate stars take up space. They must also be updated whenever new data is extracted. It can be tempting to build all possible aggregates, so that every query can be answered using an appropriate aggregate. However, a proliferation of aggregates can significantly increase extraction time. If aggregates are used indiscriminately, extraction can fail before completion. To keep extraction times within reasonable bounds, it is important to select aggregates carefully.

Infor Campaign Management recommends that you select aggregates based on actual usage. While you can build a few aggregates when you first set up your data mart, examining query logs for users' actual query patterns is the best way to find useful aggregation candidates. When you accumulate a significant query history, you can use the query history feature of the Fact and Dimension dialog boxes to generate aggregates that are optimized for the actual query patterns of users. For more information on the query history feature, see chapter 5, "Defining the EpiCenter Schema," in the *Infor Campaign Management Data Mart Implementation Guide*.

Building Aggregates

You build aggregates by doing the following:

- "Selecting Aggregate Dimensions" on page 146
- "Defining Dimension Aggregate Instructions" on page 147
- "Defining Fact Aggregate Groups" on page 147
- "Generating Fact Aggregate Instructions" on page 149
- "Running AggBuilder" on page 149

Selecting Aggregate Dimensions

An aggregate dimension is an aggregated set of dimension columns that is available for use in an aggregate star. The columns in an aggregate dimension are a subset of the columns in the original dimension. For every combination of values for the columns in the aggregate dimension, if the original dimension has at least one row with those values in the corresponding columns, then the aggregate dimension has exactly one row with those values.

When you define aggregate dimensions, consider both column size and usage. Infor Campaign Management recommends that you select dimension columns that have a small number of possible values. A smaller aggregate dimension usually results in a smaller aggregate star, which gives improved query performance.

For example, if you aggregate your customer dimension based only on gender, then the resulting aggregate dimension is very small (most likely, it has rows for male, female, and unknown). On the other hand, if you include the street address column in your aggregate dimension, then the aggregate dimension may not be much smaller than the original dimension (since very few customers are likely to have the same street address).

To maximize the likelihood that a user query can be answered by an aggregate, ensure that frequently-queried dimension columns and combinations of dimension columns are included in aggregate dimensions.

For example, users may frequently look at customer data based on age and income, so it is useful to have an aggregate that includes these two columns. On the other hand, users are unlikely to look at customer data based on eye color, so an eye color column is not very useful in an aggregate dimension (even though it probably has a small number of values).

The best way to determine usage is to analyze actual query statistics. There are no usage statistics for the sample data mart, so you have to estimate how often each column is likely to be queried.

To identify preliminary candidates for aggregate dimensions, you can perform some SQL queries on your data mart. What you are looking for is a collection of useful dimension attributes that produce a much smaller aggregate dimension.

For example, if you count the rows in the `Contact_0_A` table in the sample data mart, you will find that there are 797 rows. Counting rows with distinct **Income_Band** values gives **5**, since there are five income bands. You can find some other columns that you can include with **Income_Band** while still keeping the count low. If you count the rows with distinct **Income_Band** and **Profession** values you get a count of 29. If you include the `Last_Name` column as well, you get a count of 411. This is not much better than the original table. If you include `Age_Band` instead of `Last_Name`, you get a count of 80. This is better than the original table, but not by as much as you can like. This is the kind of

aggregate dimension that you can build if you find that a lot of queries used just those attributes. Infor Campaign Management recommends that you build the dimensions only after analyzing the query logs.

For the sample data mart, build an aggregate **Contact** dimension with `Profession` and `Income_Band` columns. This chapter describes how to define this aggregate dimension and then define two aggregate stars that include the dimension. Both of these aggregate stars also include the `Quick_Count` dimension and an aggregate date dimension for the calendar month. One of the stars includes the product dimension and one excludes it.

Defining Dimension Aggregate Instructions

- 1 In Admin Manager, expand the Schema folder, and select the Base Dimensions subfolder.
- 2 Double-click the dimension that you want to work with. For the sample data mart, use the **Contact** dimension.
The Base Dimension dialog box appears.
- 3 Click the **Agg Instructions** tab.
- 4 Click **New**.
The Base Dimension Aggregate dialog box appears.
- 5 In the **Name** field, enter a name for the aggregate instruction. For the sample data mart, enter **ProfAgeIncome**.
- 6 Select the columns that you want to include in the dimension aggregate. For the sample data mart, select the `Age_Band`, `Income_Band`, and `Profession` columns.
- 7 Click **Add** to add the columns to the aggregate instruction.
- 8 Click **OK**.
The new instruction appears in the base dimension dialog box.
- 9 Define additional aggregate instructions for this dimension (optional). For the sample data mart, create another aggregate instruction called **AgeIncomeStat** that includes the `Status`, `Age_Band`, `Known_Email`, and `Income_Band` columns.
- 10 Click **OK** to complete defining aggregate instructions.
Note: The `Date` dimension is often used for aggregation and it comes with a large collection of pre-defined aggregate instructions.

Defining Fact Aggregate Groups

Fact aggregate instructions are generated from Fact aggregate groups.

Defining a Fact Aggregate Group

- 1 In Admin Manager, expand the Schema folder, and select the Fact Tables subfolder.

- 2 Double-click the fact for which you want to define an aggregate. For the sample data mart, select the `Sales` fact table.
The Fact dialog box appears.
- 3 Click the **Agg Instructions** tab.
- 4 Click **New** in the Aggregate Groups pane.
The Fact Aggregate Group dialog box appears.
- 5 In the **Group Name** field, enter a name. For the sample data mart, enter **My Sales Aggregates**.
- 6 Click **Add Dim**.
The Choose: Dimension Role dialog box appears.
- 7 Select a dimension role that points at the dimension for which you defined a column set. For the sample data mart, select the `contact` dimension role, which points at the `Contact` dimension.
- 8 Click **OK** to add the dimension role.
The Fact Aggregate Group dialog box shows the name of the dimension role in the top pane and the column group (All columns in the base dimension) in the bottom pane. The `transtype` dimension role is added automatically.
- 9 With the newly-added dimension role still highlighted in the top pane, click **Add Agg**.
The Choose Dimension Aggregate Instruction dialog box appears.
- 10 Select the dimension aggregate instructions that you created. For the sample data mart, these instructions are called `AgeIncomeStat` and `ProfAgeIncome`.
- 11 Click **OK** to add the instructions. When an aggregate group has more than one aggregate instruction for a dimension role, a separate fact aggregate instruction is generated for each dimension aggregate instruction.
- 12 Select the (All columns in the base dimension) dimension-aggregate instruction, and click **Remove**.
- 13 Repeat the same process for any other dimension roles for which you want to add aggregate instructions. For the sample data mart, add the `CalendarMonth` column set of the `Date` dimension.
To add a particular dimension in its entirety, click **Add Dim**, select the dimension role, and click **OK**. Any dimension roles that you add with only the (All columns in the base dimension) instruction are included in their entirety in every fact-aggregate instruction that is generated from this aggregate group. For the sample data mart, add the `Quick_Count` dimension role.
To add a dimension that is included in some of the generated aggregates and excluded from others, use the above procedure but then add the instruction (Exclude the dimension role).
For the sample data mart, add the `Product` dimension role with both (All columns in the base dimension) and (Exclude the dimension role) instructions.
- 14 Click **OK** to finish defining the aggregate group.

Note: Adding a dimension role to an aggregate group with only the (Exclude the dimension role) instruction is equivalent to leaving that dimension role out of the aggregate group.

Note: If you add a dimension role to an aggregate group with the (Exclude the dimension role) instruction in addition to other dimension-aggregate instructions, then some of the fact-aggregate instructions that are generated from the aggregate group include the dimension role (using the other dimension-aggregate instructions) and the remaining fact-aggregate instructions exclude the dimension role.

Generating Fact Aggregate Instructions

A fact aggregate group specifies potential aggregates that can be built. To generate actual aggregate instructions from an aggregate group, perform the following procedure.

Generating Aggregate Instructions from an Aggregate Group

- 1 In the Fact dialog box, click the **Agg Instructions** tab.
- 2 Select the desired aggregate group. For the sample data mart, select the **My Sales Aggs** group.
- 3 Click **Generate**.
- 4 Click **OK** to generate aggregate instructions.
- 5 When you generate instructions, one fact aggregate instruction is generated for every combination of dimension aggregate instructions in the group. For the sample data mart, two of the dimension roles in the aggregate group have two dimension aggregate instructions and the remaining dimension roles have a single aggregate instruction, so a total of four fact aggregate instructions are generated.

Running AggBuilder

After you define the aggregates, you run an extraction job with the AggBuilder enabled to build the aggregates. The Aggregate Builder program, which is invoked as a step in an extraction job, generates aggregates based on the dimension column sets that you select. In "Populating a Data Mart," on page 51 you added the Infor Campaign Management Builders group, which includes the AggBuild: Agg Builder step to your extraction job. You have to run the job again.

- 1 Run your extraction job (`Extractorama` in the sample data mart), as described in "Running the Extraction Job" on page 77.
- 2 After the job is completed, open the dialog box for the fact table for which you built aggregates (`Sales` in the sample data mart) and click the **Built Aggs** tab to view at the aggregates that are built.

The Sample Data Mart



This appendix shows the Infor Campaign Management screens that you use to configure specific details for the sample data mart.

Note: Do not copy and paste scripts, commands or code from this document. Line breaks and some other characters picked up when you copy from the PDF can cause errors in the pasted text.

Base Dimensions

The sample data mart contains a number of base dimensions. The following figures illustrate each one.

- ""The Contact Base Dimension, General Tab," figure A-3 on page A-3" on page 152
- ""The Contact Base Dimension, Options Tab," figure A-4 on page A-4" on page 153
- ""The Marketing_Prog Base Dimension," figure A-7 on page A-6" on page 156
- ""The Product Base Dimension," figure A-8 on page A-6" on page 157
- ""The Quick_Count Base Dimension," figure A-9 on page A-7" on page 158
- ""The Sales Person Base Dimension," figure A-10 on page A-8" on page 159.

Note: You must set an additional parameter in the **Options** tab for the Contact and Household base dimensions in order to use these dimensions to produce lists for campaigns. For all other base dimensions, clear all checkboxes on the **Options** tab.

Base Dimension: Contact

Actions Help

General Options Agg Instructions Built Aggs Queries Object Properties Usage

A base dimension table consists of information for elements such as product, customer, or company that is referenced in fact data.

Name: Short ID:

Developer label: Current Letter:

Label:

SS Key type:

Key type:

Description:

Dimension columns:

Name	Dev Label	Physical Type	Indexed for F...	Allow list ...	Int Map	Low Cardina...	S.	Unknown Value
*			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
▶ Age_Band	Age_Band	VARCHAR_5	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Email_Address	Email_Address	VARCHAR_50	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
F_Score	F_Score	VARCHAR_15	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
First_Name	First_Name	VARCHAR_25	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
ID	ID	VARCHAR_50	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Income_Band	Income_Band	VARCHAR_15	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Kids	Kids	VARCHAR_15	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Known_Email	Known_Email	VARCHAR_15	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Last_Name	Last_Name	VARCHAR_25	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
M_Score	M_Score	VARCHAR_15	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Profession	Profession	VARCHAR_25	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
R_Score	R_Score	VARCHAR_5	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Salutation	Salutation	VARCHAR_5	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Status	Status	VARCHAR_15	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Subselect	Subselect	INT	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Help OK Cancel

Figure 38: The Contact Base Dimension, General Tab

The screenshot shows a software window titled "Base Dimension: Household". It has a menu bar with "Actions" and "Help". Below the menu bar is a tabbed interface with tabs: "General", "Options" (which is selected), "Agg Instructions", "Built Aggs", "Queries", "Object Properties", and "Usage".

The "Options" tab is divided into three sections:

- Extraction**: Contains four unchecked checkboxes:
 - ☐ This dimension is unmapped (fact tables refer to it with SSKeys)
 - ☐ This dimension is non-versioned (it can never be slowly changing)
 - ☐ Allow dimension fusion / fission
 - ☐ Allow EpiChannel to map SSKeys to keys in memoryBelow these is a text input field for "Revision percent:" followed by a percentage sign and the instruction "(leave blank for default)".
- Demographics (Lists and Campaigns)**: Contains five checkboxes:
 - ☒ Lists can be made from this dimension
 - ☐ Create seed tables for this dimension
 - ☐ Include this dimension in backfeeds
 - ☐ This dimension has inferred responses
 - ☐ Enable sampling for this dimension:Below these is a text input field for "Sample 1 row out of every:" followed by a numeric input field containing "10" and a spinner control, with the instruction "(must be a power of 2)".
- Special dimensions**: Contains one unchecked checkbox:
 - ☐ This dimension is the Real-Time dimension

At the bottom of the window are three buttons: "Help", "OK", and "Cancel".

Figure 39: The Contact Base Dimension, Options Tab

Base Dimension: Household

Actions Help

General Options Agg Instructions Built Aggs Queries Object Properties Usage

A base dimension table consists of information for elements such as product, customer, or company that is referenced in fact data.

Name: Short ID:

Developer label: Current Letter:

Label:

SS Key type:

Key type:

Description:

Dimension columns:

	Name	Dev Label	Physical Type	D	Indexed for...	All...	Int Map	Low C...	Seconda...	Unknown Value
*					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
▶	City	City	VARCHAR_25		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Household_Name	Household_Name	VARCHAR_50		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Organization	Organization	VARCHAR_50		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Region	Region	VARCHAR_25		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	State	State	VARCHAR_25		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Street	Street	VARCHAR_50		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Zip	Zip	VARCHAR_15		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Help OK Cancel

Figure 40: The Household Base Dimension, General Tab

The screenshot shows a software window titled "Base Dimension: Household". It has a menu bar with "Actions" and "Help". Below the menu bar is a tabbed interface with tabs for "General", "Options" (which is selected), "Agg Instructions", "Built Aggs", "Queries", "Object Properties", and "Usage".

The "Options" tab is divided into three sections:

- Extraction**: Contains four unchecked checkboxes: "This dimension is unmapped (fact tables refer to it with SSKeys)", "This dimension is non-versioned (it can never be slowly changing)", "Allow dimension fusion / fission", and "Allow EpiChannel to map SSKeys to keys in memory". Below these is a text input field for "Revision percent:" followed by a percentage sign and the instruction "(leave blank for default)".
- Demographics (Lists and Campaigns)**: Contains five checkboxes. The first, "Lists can be made from this dimension", is checked. The others are unchecked: "Create seed tables for this dimension", "Include this dimension in backfeeds", "This dimension has inferred responses", and "Enable sampling for this dimension:". Below these is a text input field for "Sample 1 row out of every:" with the value "10" and a spinner control, followed by the instruction "(must be a power of)".
- Special dimensions**: Contains one unchecked checkbox: "This dimension is the Real-Time dimension".

At the bottom of the window are three buttons: "Help", "OK", and "Cancel".

Figure 41: The Household Base Dimension, Options Tab

Base Dimension: Marketing_Prog

Actions Help

General Options Agg Instructions Built Aggs Queries Object Properties Usage

A base dimension table consists of information for elements such as product, customer, or company that is referenced in fact data.

Name: Marketing_Prog Short ID:

Developer label: Marketing_Prog Current Letter:

Label: Marketing_Prog

SS Key type: VARCHAR_50

Key type: INT

Description:

Dimension columns:

	Name	Dev Label	Physical Type	Indexed f...	Allow list filter	Int Map	Low Car...	Secondar...	Unknown Value
*				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
▶	Name	Name	VARCHAR_50	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Program_Type	Program_Type	VARCHAR_25	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Treatment_Code	Treatment_Code	VARCHAR_25	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Help OK Cancel

Figure 42: The Marketing_Prog Base Dimension

Base Dimension: Product

Actions Help

General Options Agg Instructions Built Aggs Queries Object Properties Usage

A base dimension table consists of information for elements such as product, customer, or company that is referenced in fact data.

Name: Product Short ID:

Developer label: Product Current Letter:

Label: Product

SS Key type: VARCHAR_50

Key type: INT

Description:

Dimension columns:

Name	Dev Label	Physical Type	Indexed ...	Allow list filter	Int Map	Low Card...	Second...	Unknown Value
*			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
▶ List_Price	List_Price	DECIMAL_2...	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0
Manufacturer	Manufacturer	VARCHAR_50	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Price_Band	Price_Band	VARCHAR_25	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Product_Cost	Product_Cost	DECIMAL_2...	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0
Product_Line	Product_Line	VARCHAR_25	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Product_Name	Product_Name	VARCHAR_50	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Help OK Cancel

Figure 43: The Product Base Dimension

Base Dimension: Quick_Count

Actions Help

General Options Agg Instructions Built Aggs Queries Object Properties Usage

A base dimension table consists of information for elements such as product, customer, or company that is referenced in fact data.

Name: Quick_Count Short ID:

Developer label: Quick_Count Current Letter:

Label: Quick_Count

SS Key type: VARCHAR_25

Key type: INT

Description:

Dimension columns:

	Name	Dev Label	Physical Type	Indexed f...	Allow list filter	Int Map	Low Cardi...	Seconda...	Unknown Value
*				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
▶	Count_Value	Count_Value	VARCHAR_15	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

Help OK Cancel

Figure 44: The Quick_Count Base Dimension

Base Dimension: Sales_Person

Actions Help

General Options Agg Instructions Built Aggs Queries Object Properties Usage

A base dimension table consists of information for elements such as product, customer, or company that is referenced in fact data.

Name: Sales_Person Short ID:

Developer label: Sales_Person Current Letter:

Label: Sales_Person

SS Key type: VARCHAR_50

Key type: INT

Description:

Dimension columns:

Name	Dev Label	Physical Type	Indexed	Allow Nulls	Int Map	Low Cardinality	Secondary	Unknown Value
*			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
▶ Quota	Quota	DECIMAL_21_5	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0
Sales_Person_Name	Sales_Person_Name	VARCHAR_100	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Sales_Region	Sales_Region	VARCHAR_25	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

Help OK Cancel

Figure 45: The Sales Person Base Dimension

Dimension Roles

Admin Manager automatically creates dimension roles of the same names as the base dimensions. For the sample data mart, verify that Admin Manager automatically created the following dimension roles.

Table 15: Dimension Roles

Dimension Role	Base Dimension
Contact	Contact
Household	Household
Marketing_Prog	Marketing_Prog
Product	Product
Quick_Count	Quick_Count
Sales_Person	Sales_Person

Fact Tables

Queries | Object Props | Options | Usage

General | Dimensionality | Indexes | Agg Instructions | Built Aggs

Fact tables store the transactions in Epimart. A transaction represents the intersection of dimension values along with numeric values describing that event.

Name: Current Letter: A

Developer label:

Label:

SSKey Type:

☐ Contains transactional and statelike rows

Description:

Fact Columns:

	Name	Dev Label	Physical Type	Description
*				
▶	Member	Member	SMALLINT	

New

Edit

Delete

Duplicate

Create Fact Terms

Help OK Cancel Apply

Figure 46: Household_Contact Fact Table, General Tab

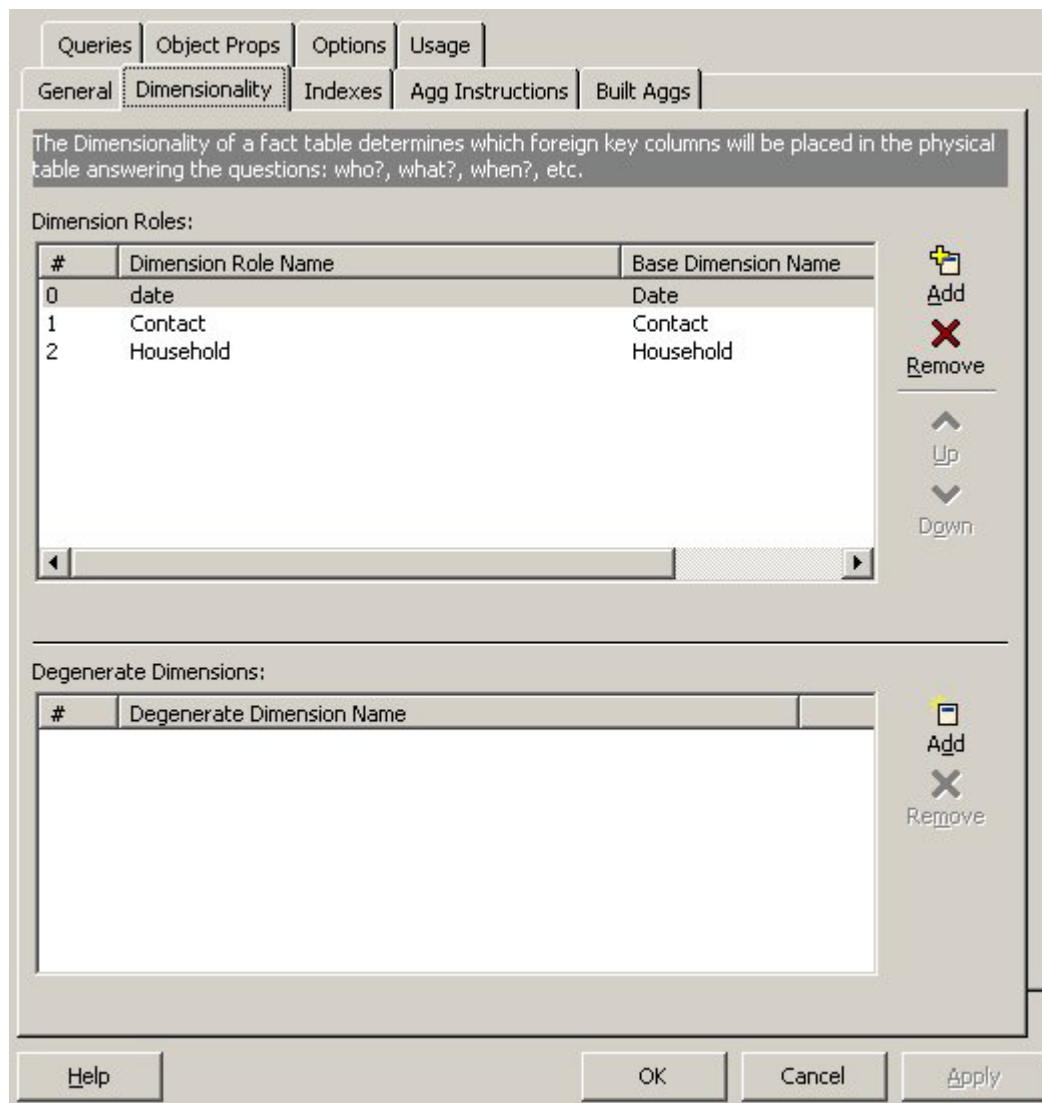


Figure 47: Household_Contact Fact Table, Dimensionality Tab

Fact Table: Marketing

Actions

Queries | Object Props | Options | Usage

General | Dimensionality | Indexes | Agg Instructions | Built Aggs

Fact tables store the transactions in Epimart. A transaction represents the intersection of dimension values along with numeric values describing that event.

Name: Current Letter: A

Developer label:

Label:

SSKey Type:

Description:

Fact Columns:

	Name	Dev Label	Physical Type	Description
*				
▶	Touch_count	Touch_count	INT	

New

Edit

Delete

Duplicate

Create Fact Terms

Help OK Cancel Apply

Figure 48: Marketing Fact Table, General Tab

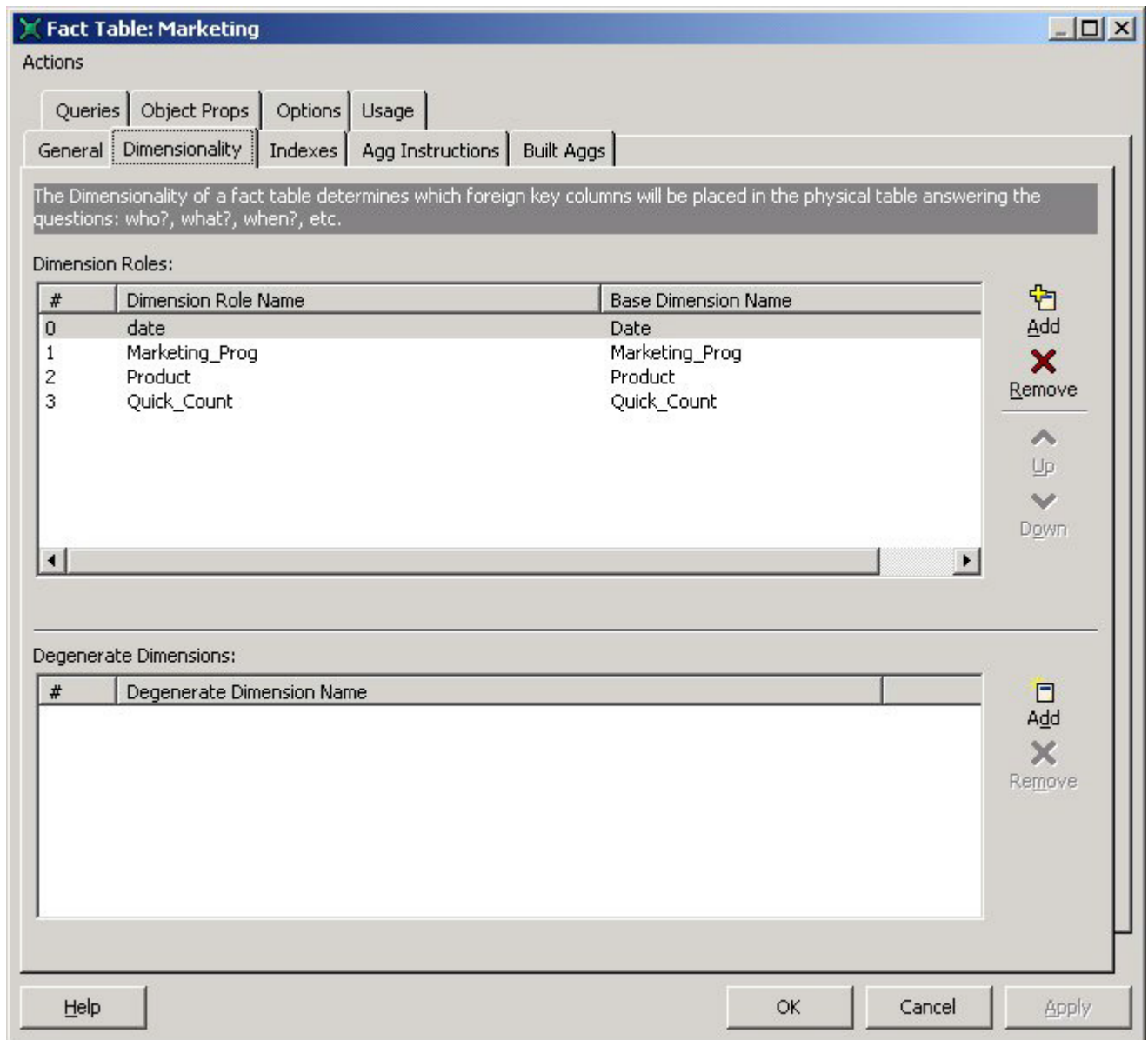


Figure 49: Marketing Fact Table, Dimensionality Tab

Fact Table: Sales

Actions

Queries | Object Props | Options | Usage

General | Dimensionality | Indexes | Agg Instructions | Built Aggs

Fact tables store the transactions in Epimart. A transaction represents the intersection of dimension values along with numeric values describing that event.

Name: Sales Current Letter: B

Developer label: Sales

Label: Sales

SSKey Type: VARCHAR_50

Description:

Contains transactional and statelike rows

Fact Columns:

	Name	Dev Label	Physical Type	Description
*				
▶	Cost	Cost	DECIMAL_21_5	
	List	List	DECIMAL_21_5	
	QTY	QTY	BIGINT	
	Revenue	Revenue	DECIMAL_21_5	
	Sales_Price_Per_Unit	Sales_Price_Per_Unit	DECIMAL_21_5	
	Web_Visits	Web_Visits	INT	

New

Edit

Delete

Duplicate

Create Fact Terms

Help OK Cancel Apply

Figure 50: Sales Fact Table, General Tab

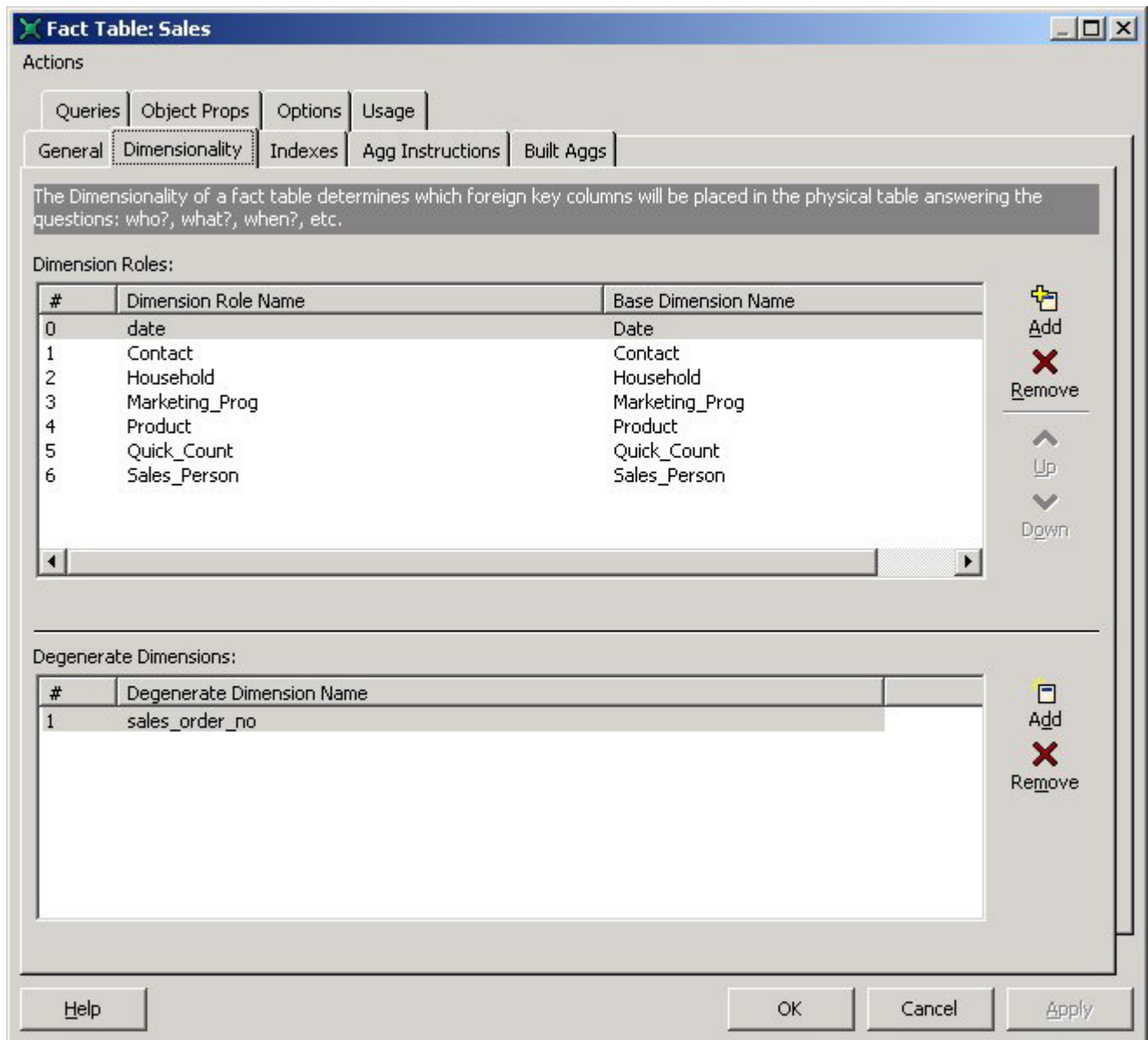


Figure 51: Sales Fact Table, Dimensionality Tab

Relations

Relations HH_Contacts Table, General Tab

General | Cardinality Labels

Relations define the relationships that exist between dimensions for use in List Manager.

Name: HH_Contacts

Developer label: HH_Contacts

Relation type: ☒ Explicit ☐ Implicit

Fact table: Household_Contact

Dimension role: Contact

Dimension role: Household

Uniqueness:

- ☐ 'Contact' has a one-to-one relationship with 'Household'
- ☐ 'Contact' has a one-to-many relationship with 'Household'
- ☒ 'Contact' has a many-to-one relationship with 'Household'
- ☐ 'Contact' has a many-to-many relationship with 'Household'

Description:

Help OK Cancel Apply

Figure 52: Relations HH_Contacts Table, General Labels Tab

General Cardinality Labels

Cardinality labels are used to describe quantities of objects selected from a relationship.

Dimension role: Household

Label Type	Label
At least one	At Least One Household
Everyone	
Exactly one	
No more than one	
No one	

Dimension role: Contact

Label Type	Label
At least one	At Least One Contact
Everyone	
Exactly one	
No more than one	
No one	

Help OK Cancel Apply

Figure 53: Relations HH_Contacts Table, Cardinality Labels Tab

Fact Terms

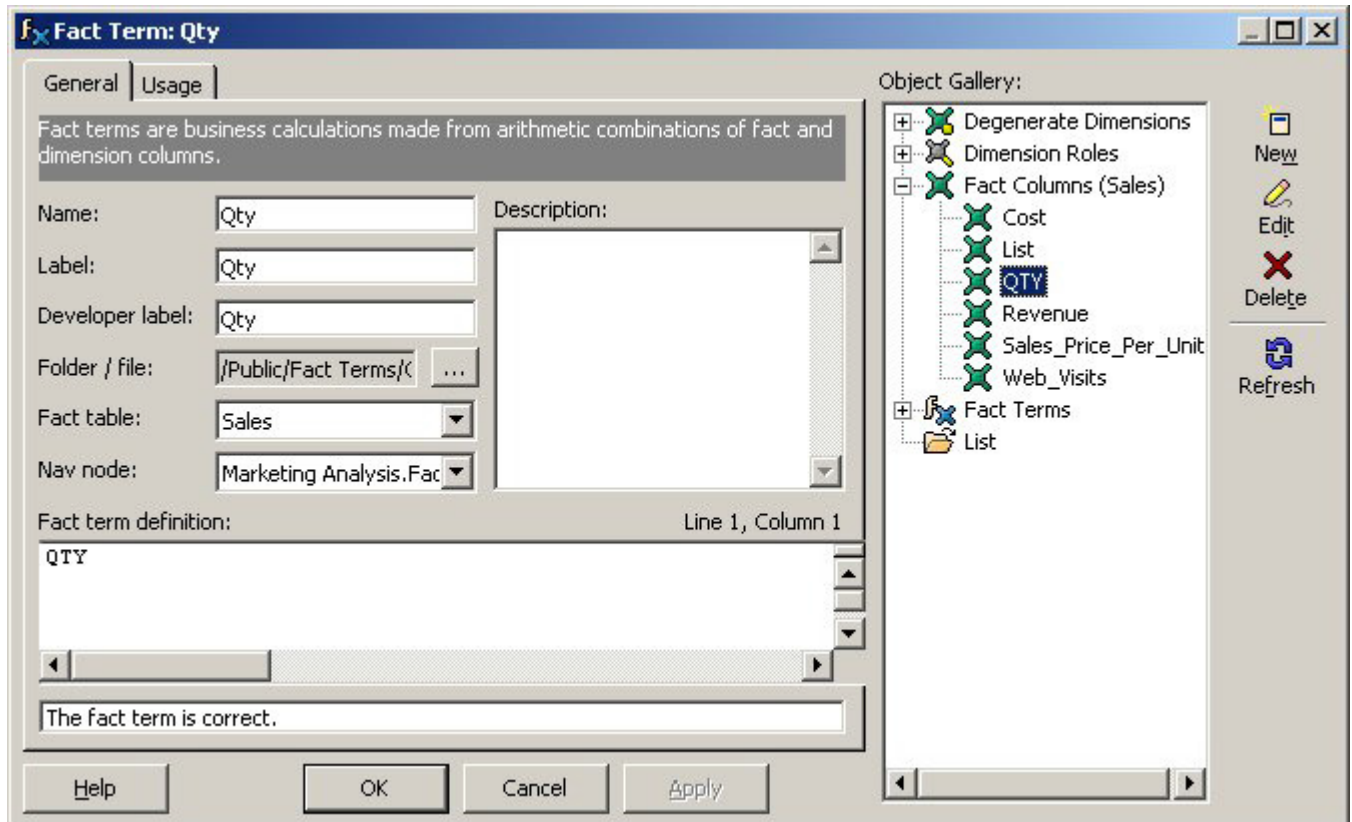


Figure 54: Touch_count Fact Term

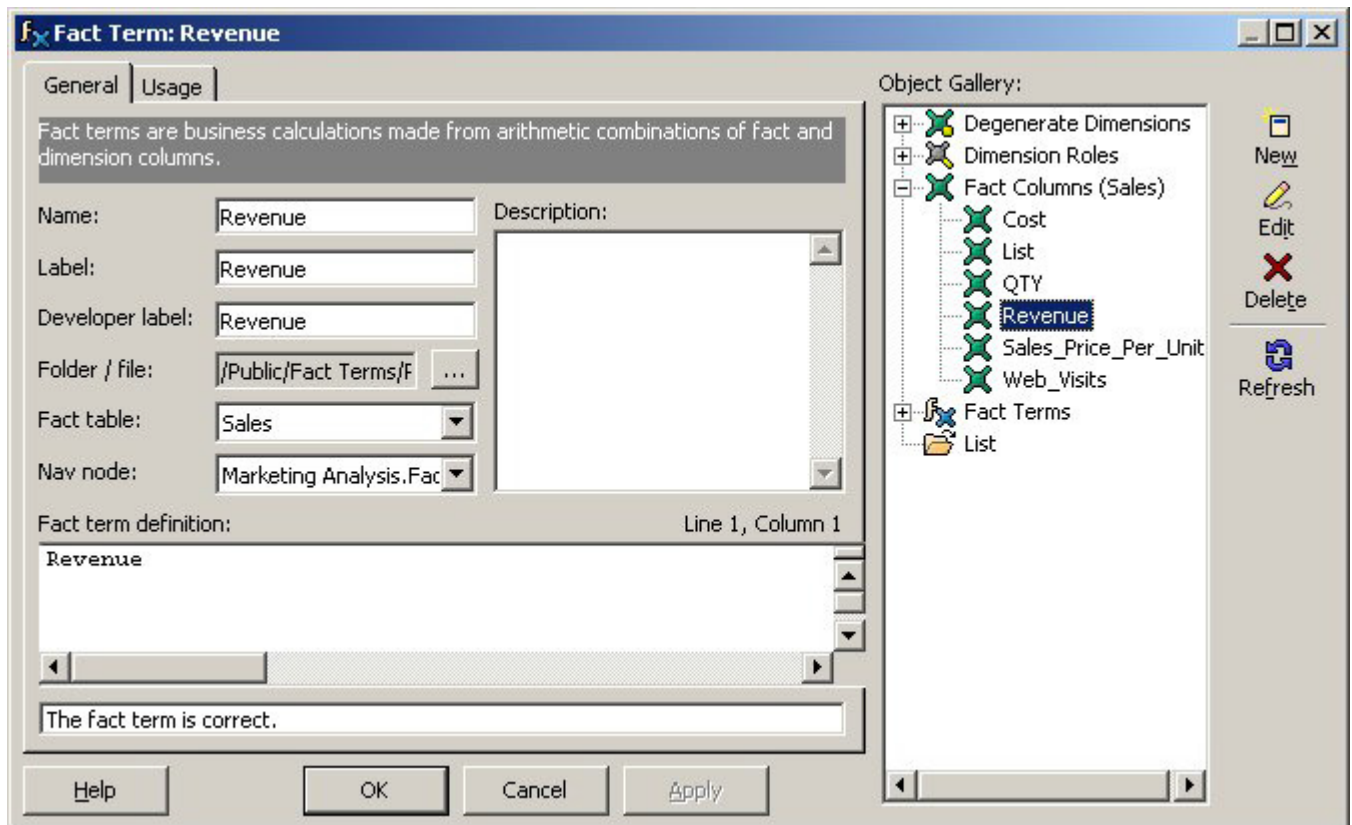


Figure 55: Revenue Fact Term

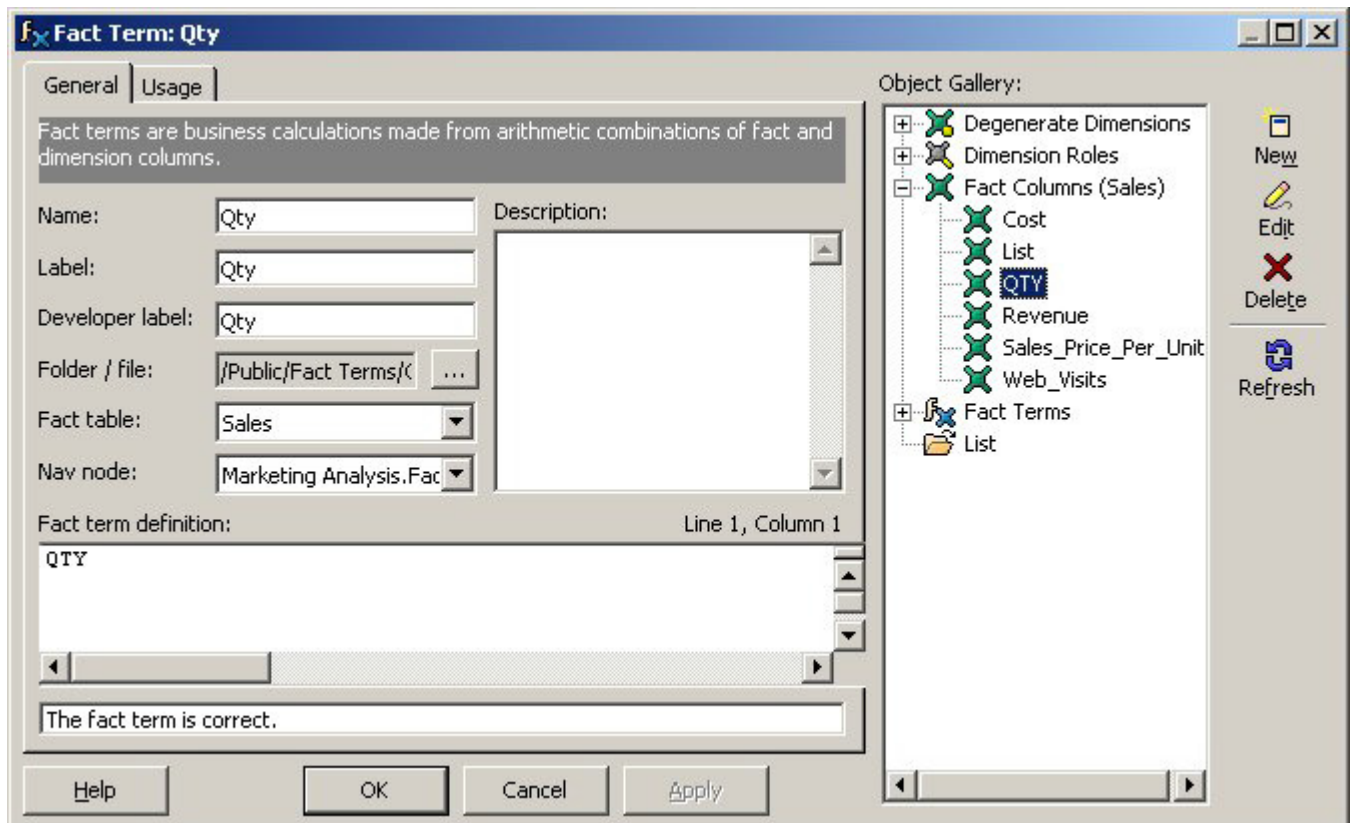


Figure 56: Qty Fact Term

Measures

Measure NumMailings

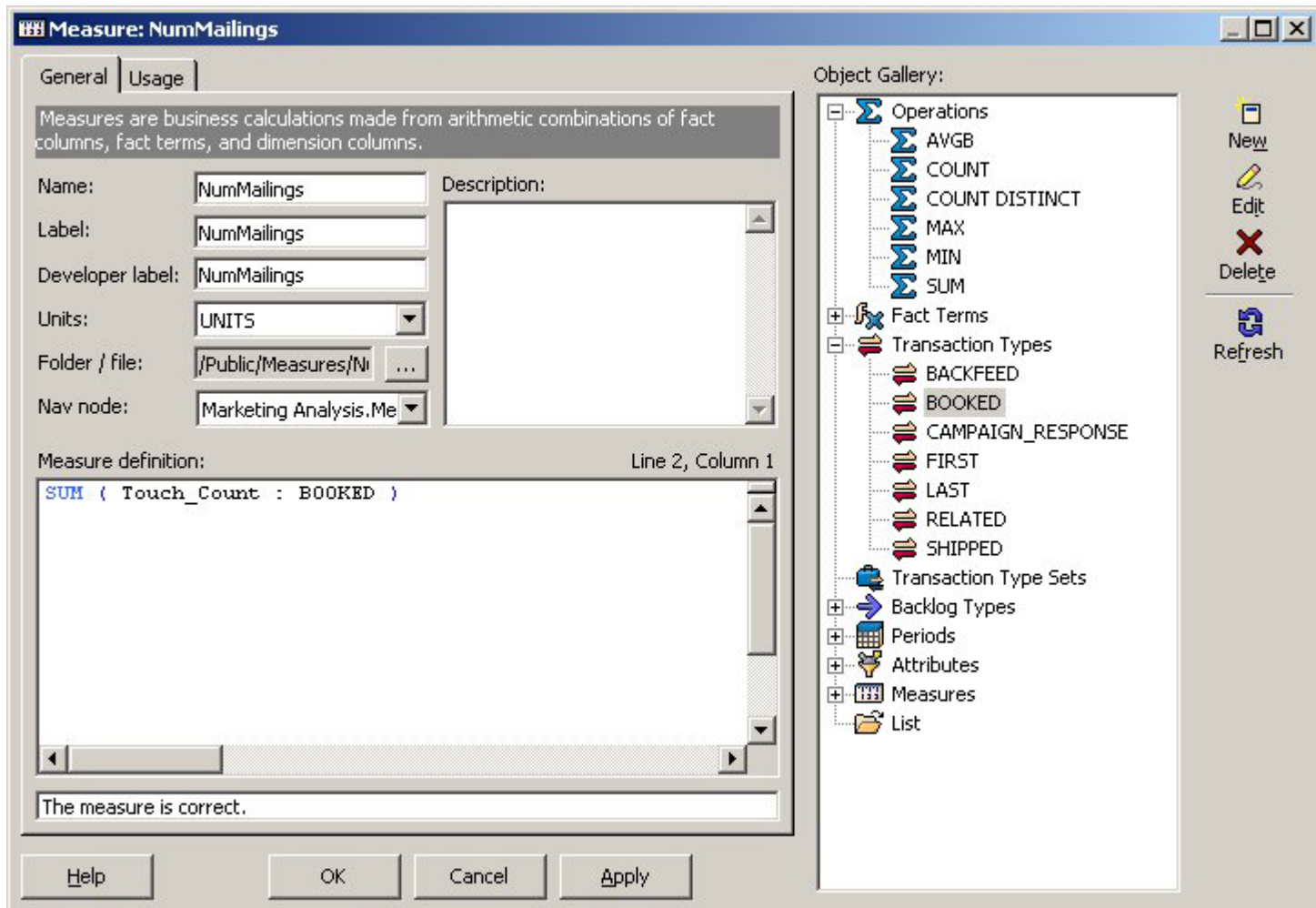
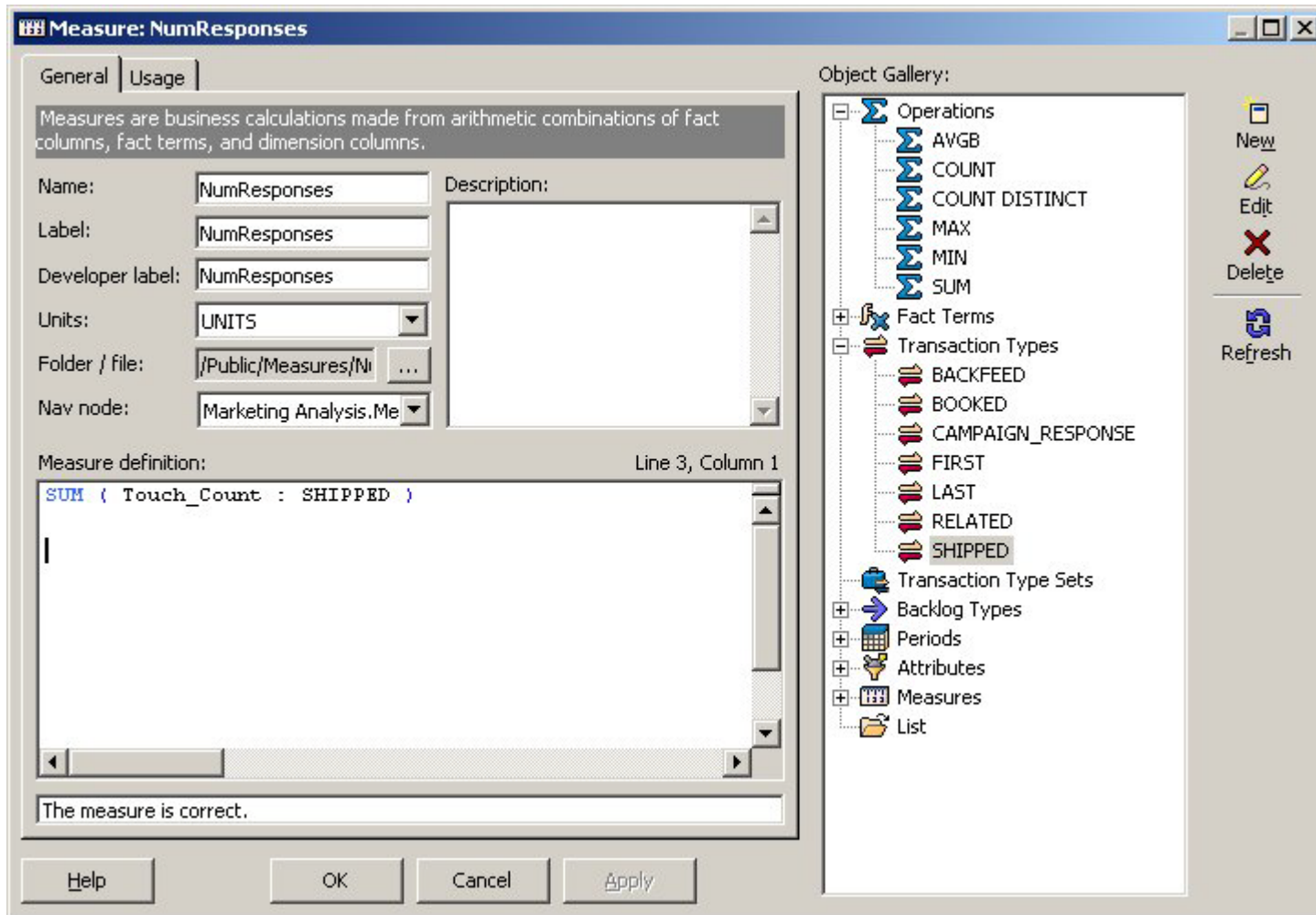


Figure 57: Measure NumMailings

**Figure 58: Measure NumResponses**

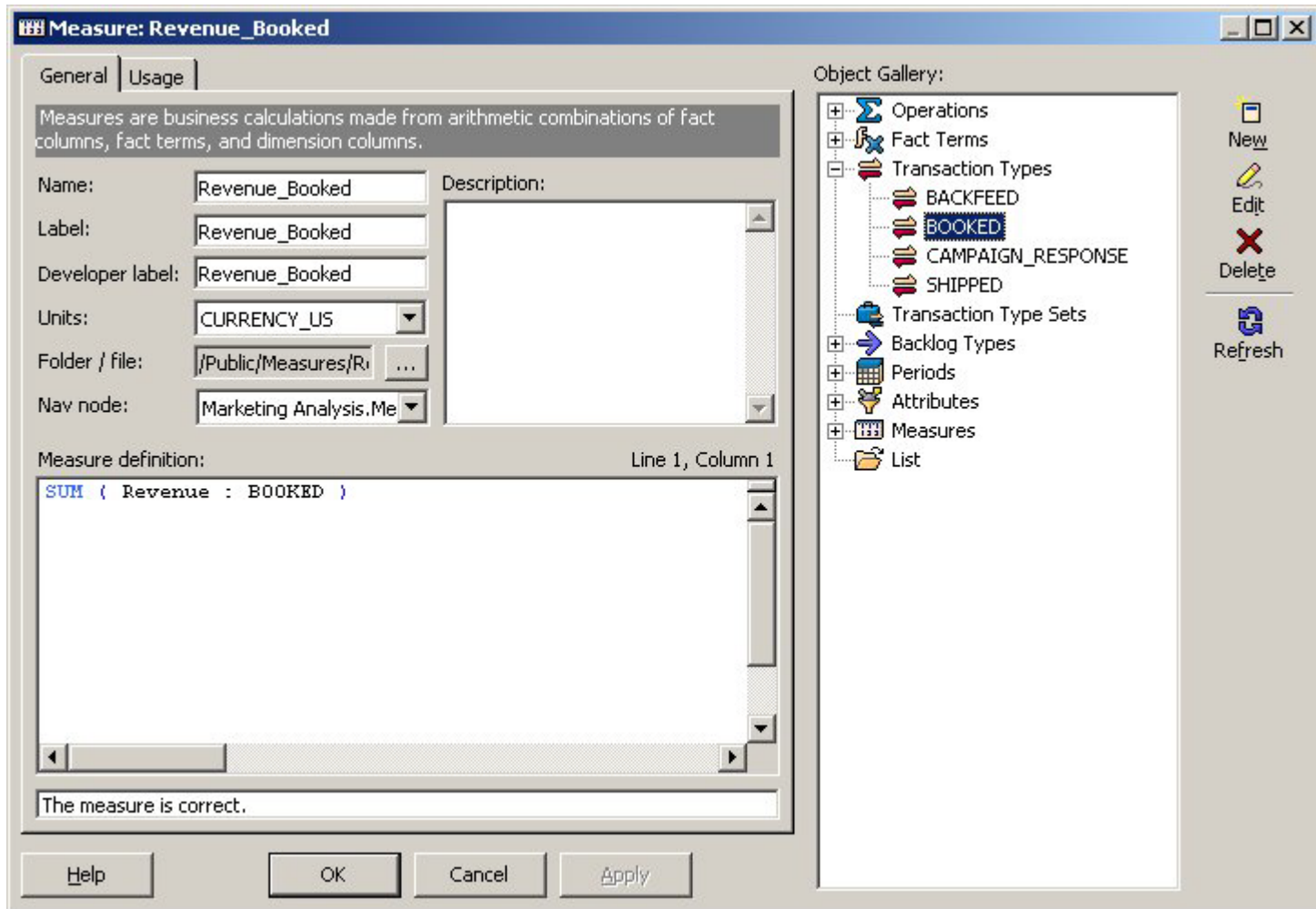
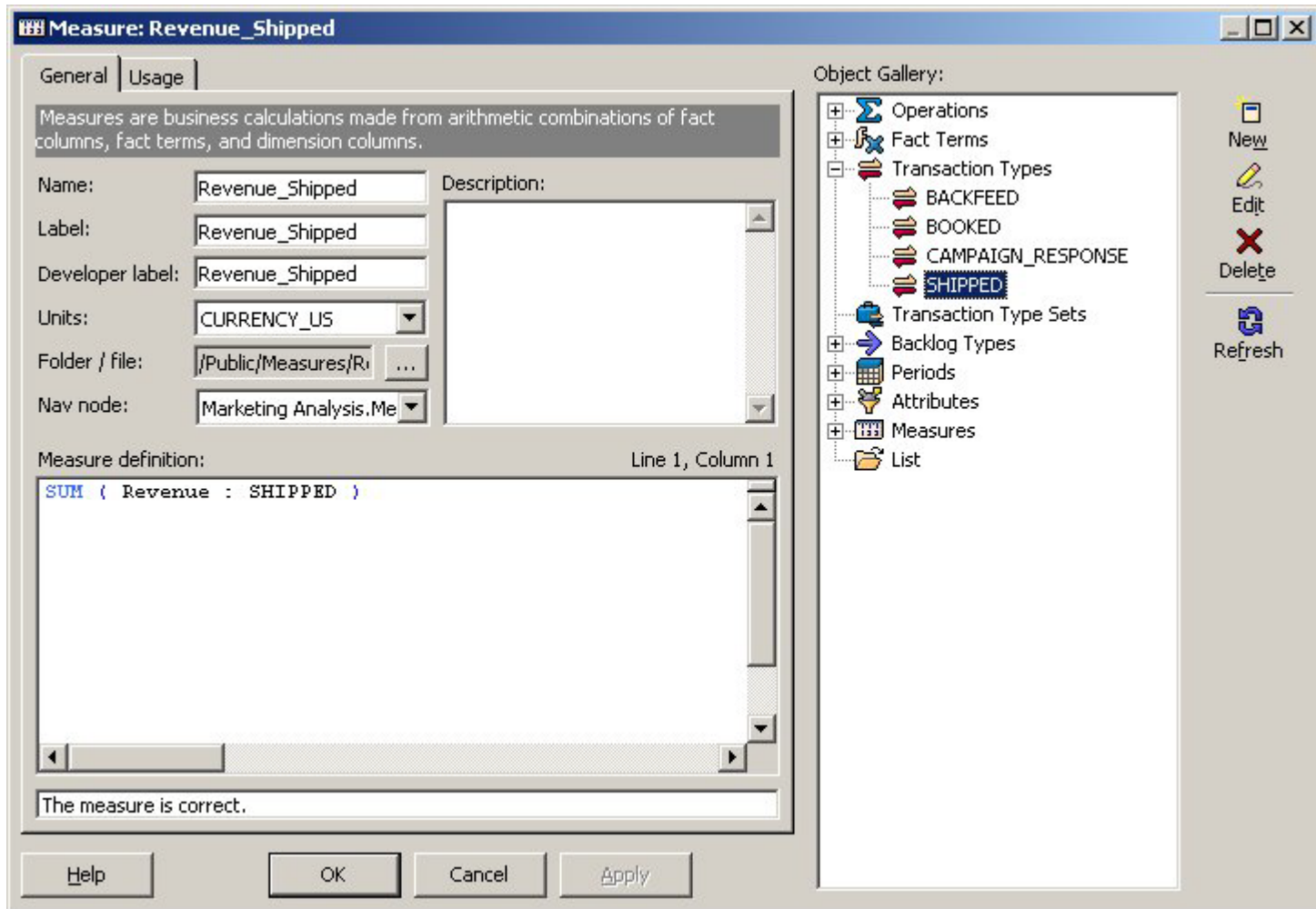


Figure 59: Measure Revenue_Booked

**Figure 60: Measure Revenue_Shipped**

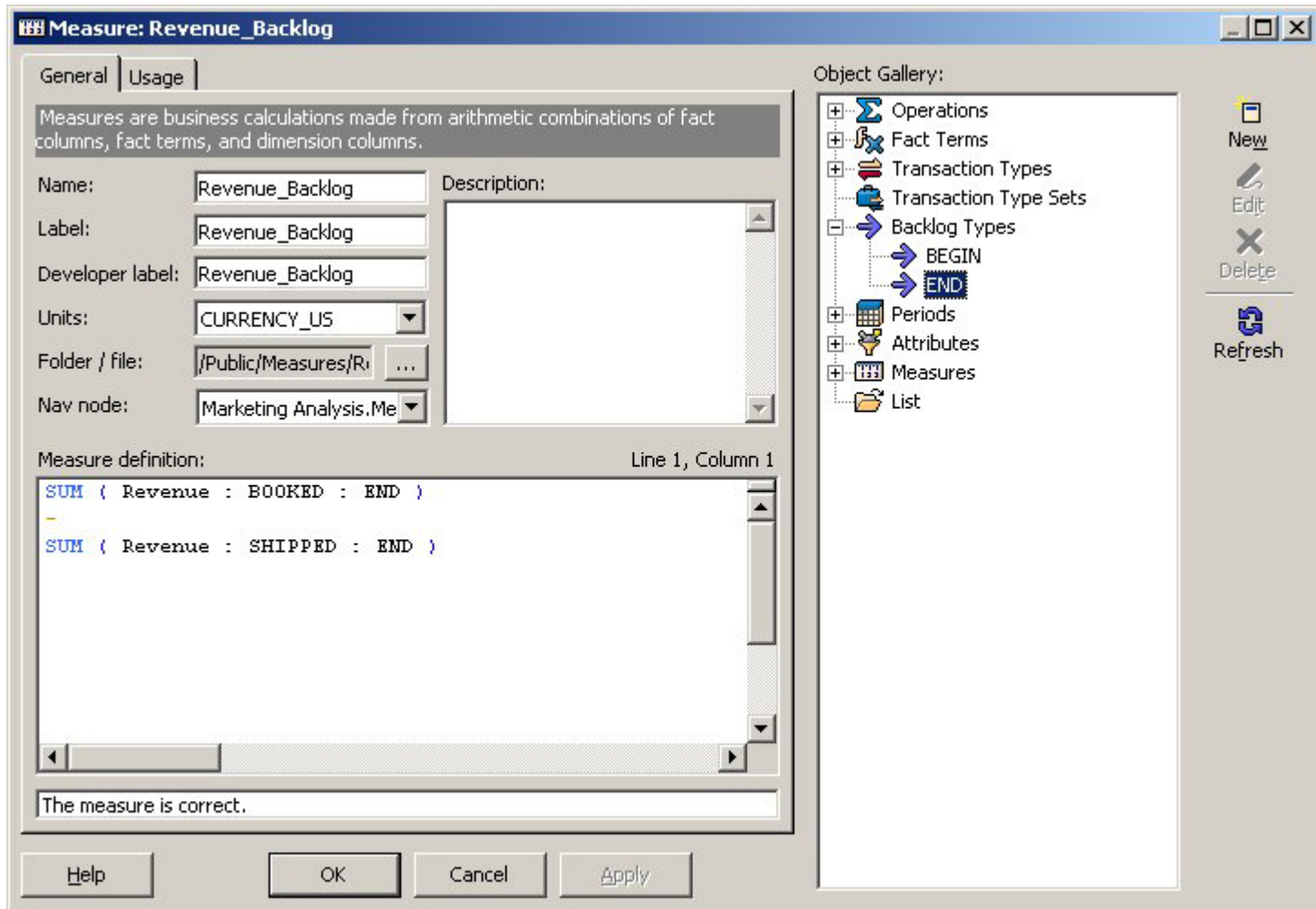


Figure 61: Measure Revenue_Backlog

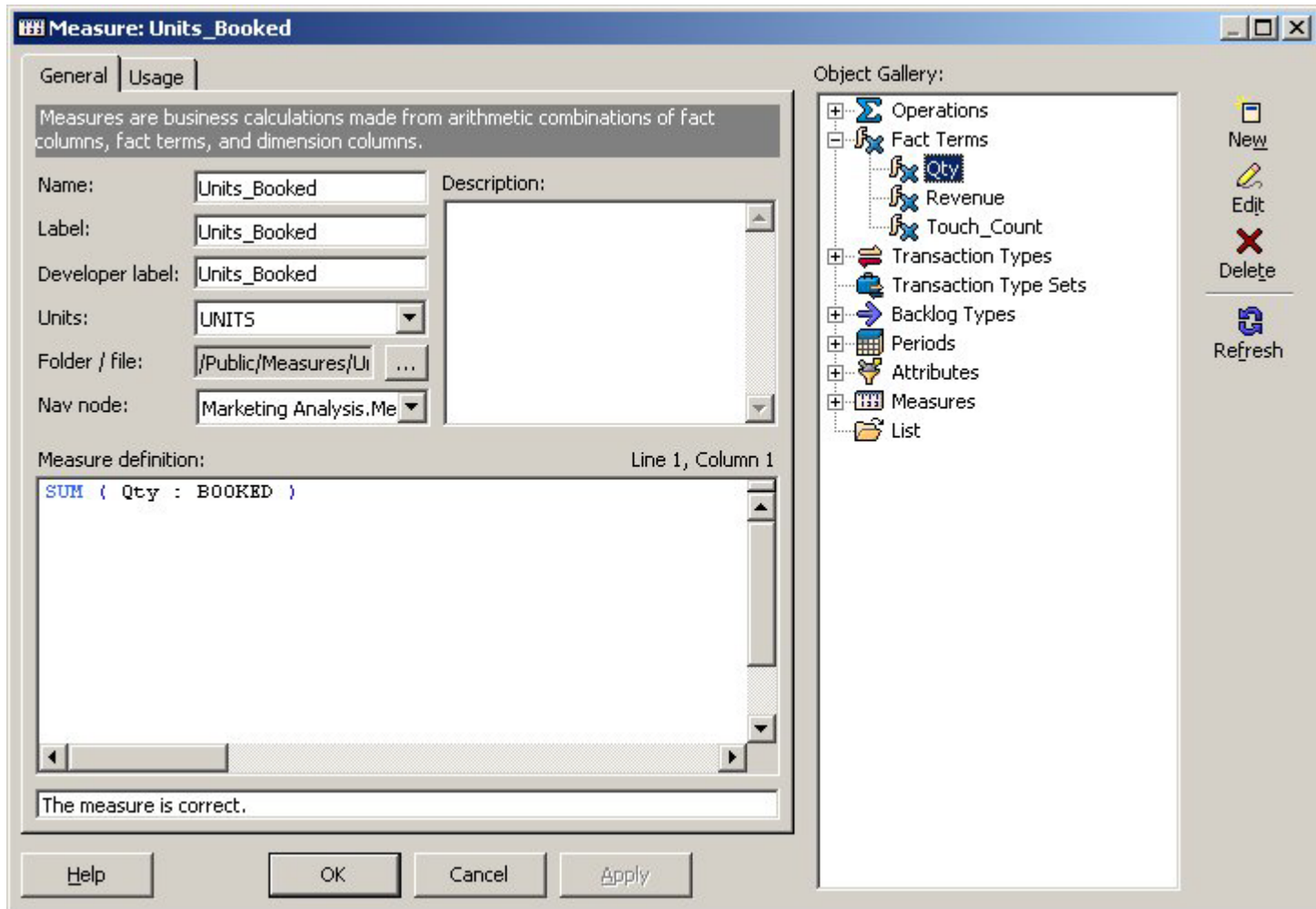


Figure 62: Measure Units_Booked

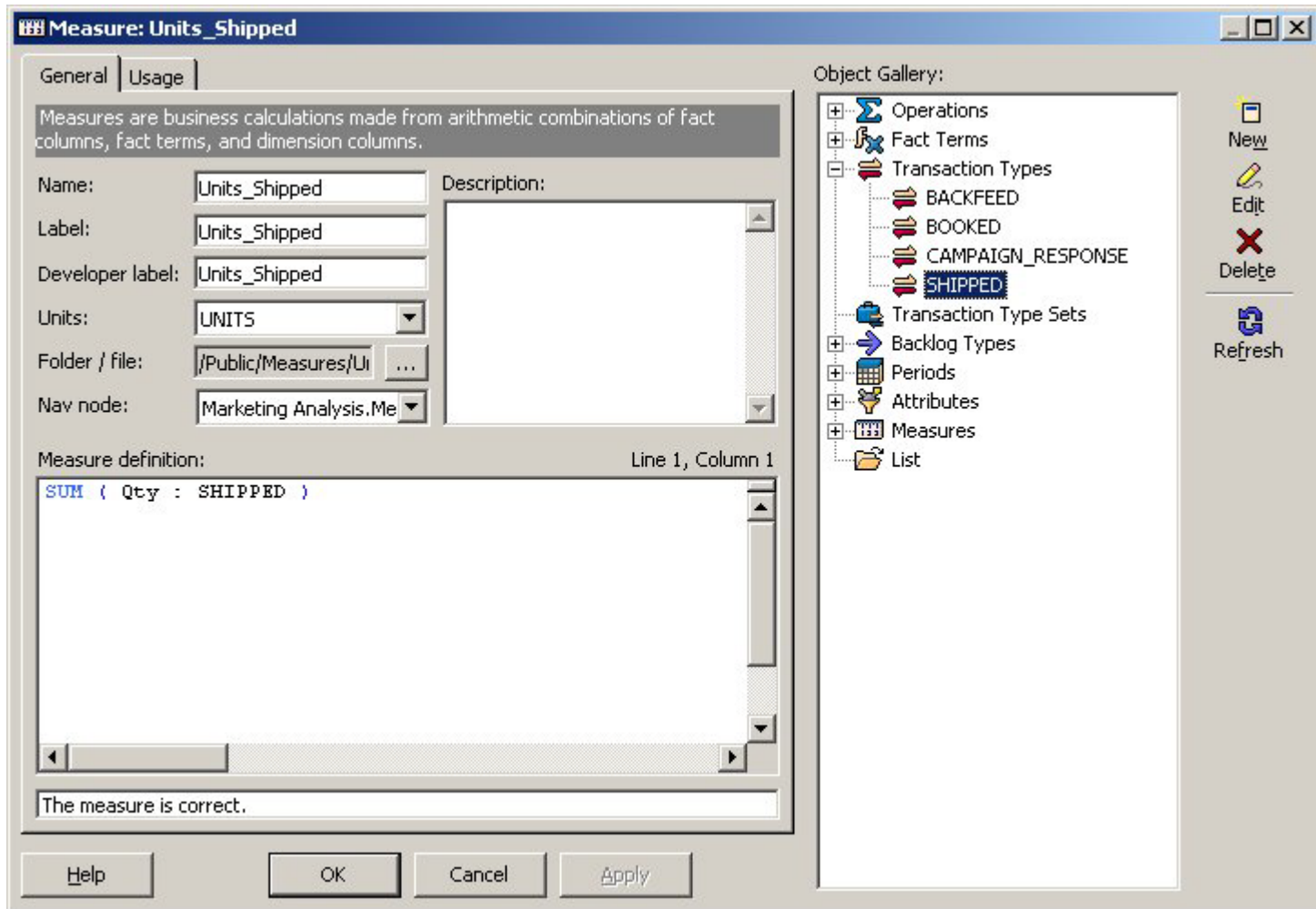


Figure 63: Measure Units_Shipped

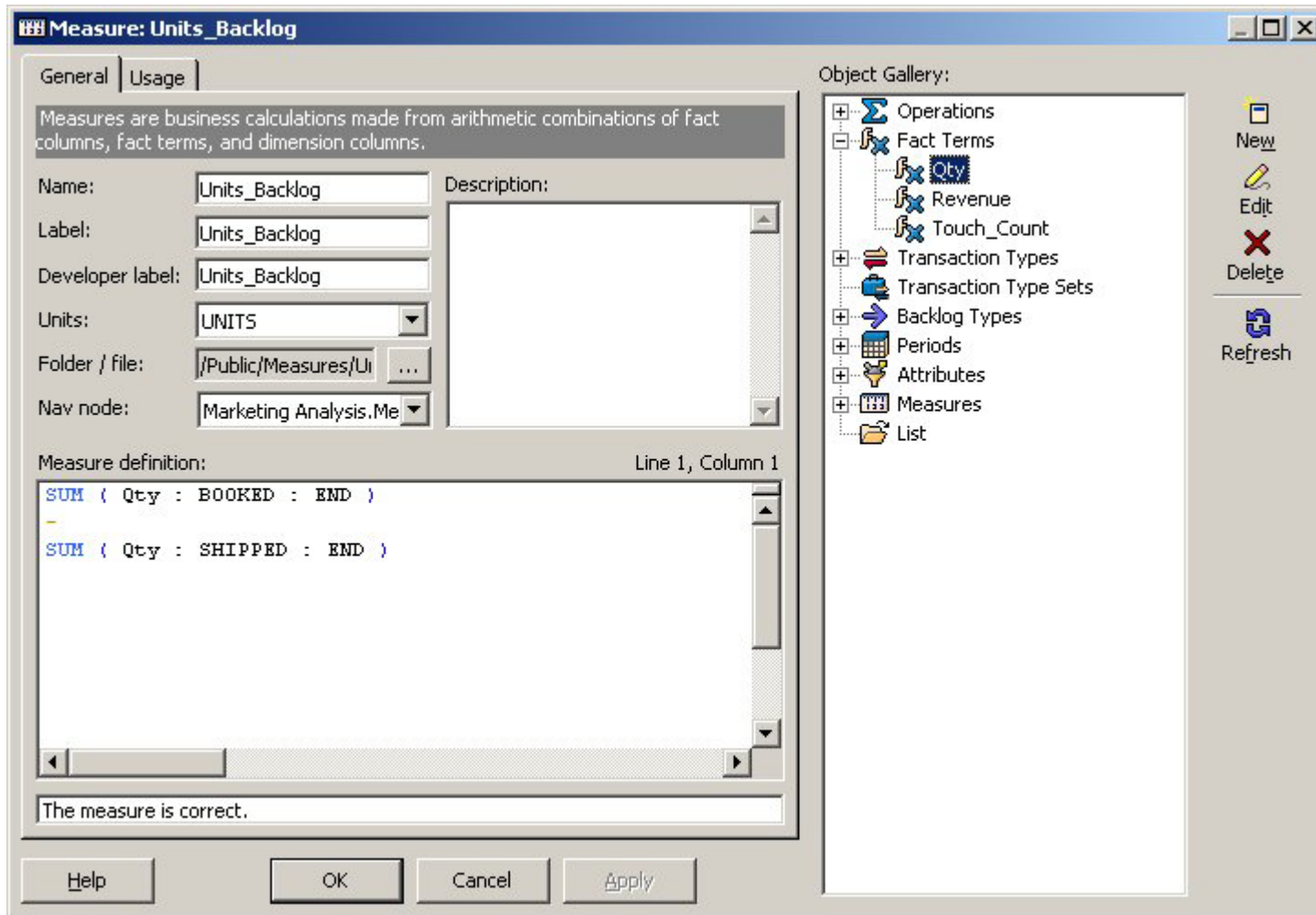


Figure 64: Measure Units_Backlog

Measure Layouts

Measure Layout Marketing Layout

Measure Layout: Marketing Layout

General | Preview | Usage

Measure Layouts define the contents of cells in a report. For most web page types, they are a set of check boxes.

Name: Marketing Layout Description:

Developer label: Marketing Layout

Label: Marketing Layout

Measure Column:

- Number of Mailings
- Number of Responses

To assign a measure to a combination of items, hold down Shift and select one item from each column, then choose a measure from the drop-down list box, below. To move a column, drag it to its new location

Measure: NumMailings

NumMailings

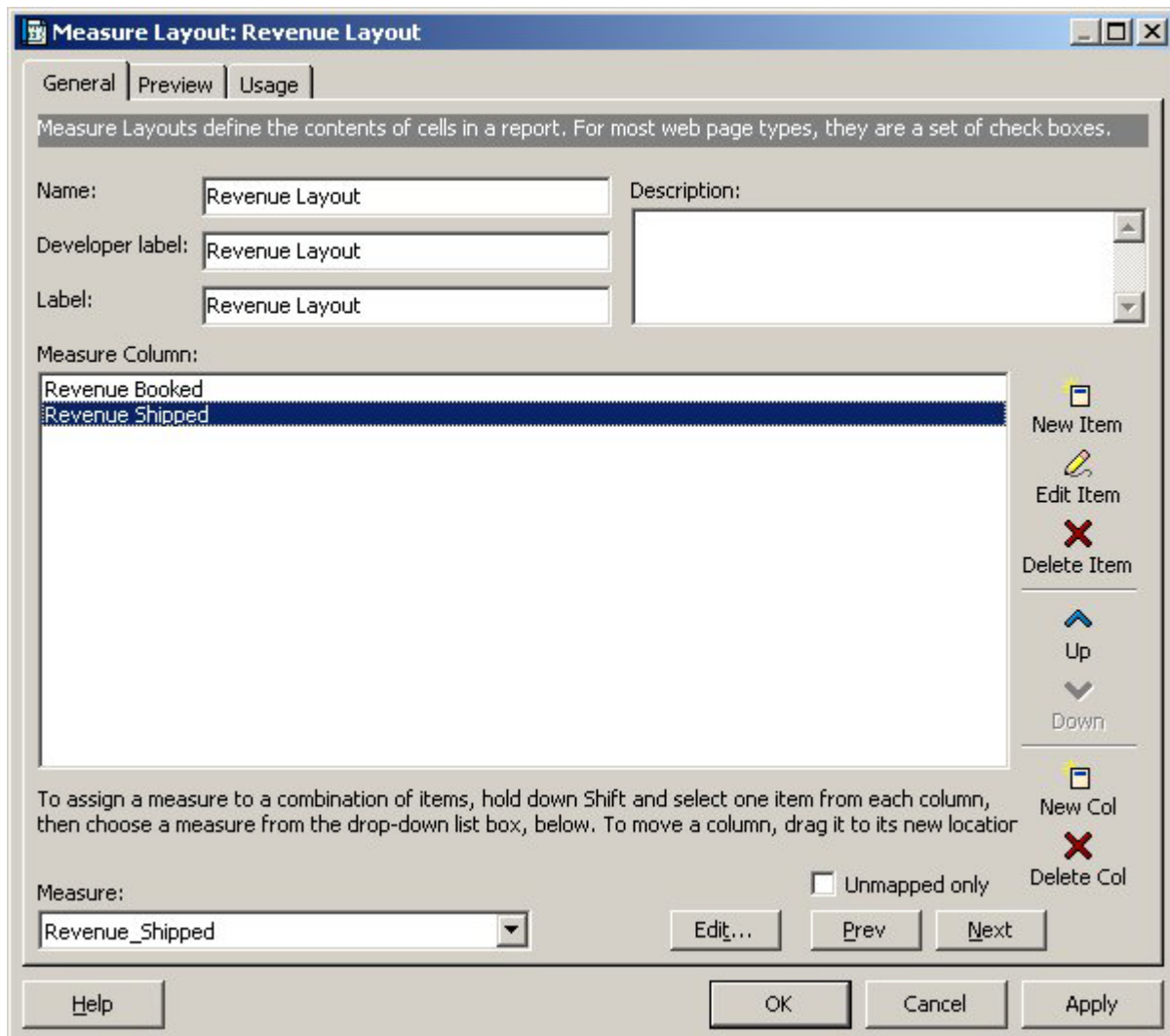
NumResponses

Unmapped only

Edit... Prev Next

OK Cancel Apply

Figure 65: Measure Layout Marketing Layout



Measure Layout: Revenue Layout

General | Preview | Usage

Measure Layouts define the contents of cells in a report. For most web page types, they are a set of check boxes.

Name: Revenue Layout Description:

Developer label: Revenue Layout

Label: Revenue Layout

Measure Column:

- Revenue Booked
- Revenue Shipped

To assign a measure to a combination of items, hold down Shift and select one item from each column, then choose a measure from the drop-down list box, below. To move a column, drag it to its new location

Measure: Revenue_Shipped

☐ Unmapped only

Edit... Prev Next

Help OK Cancel Apply

New Item
Edit Item
Delete Item
Up
Down
New Col
Delete Col

Figure 66: Measure Layout Revenue Layout

Measure Layout: Sales Layout

General | Preview | Usage

Measure Layouts define the contents of cells in a report. For most web page types, they are a set of check boxes.

Name: Sales Layout Description:

Developer label: Sales Layout

Label: Sales Layout

Measure Columns:

Revenue
Units

Booked
Shipped
Backlog

New Item
Edit Item
Delete Item
Up
Down
New Col
Delete Col

To assign a measure to a combination of items, hold down Shift and select one item from each column, then choose a measure from the drop-down list box, below. To move a column, drag it to its new location

Measure: Revenue_Backlog

☐ Unmapped only

Edit... Prev Next

Help OK Cancel Apply

Figure 67: Measure Layout Sales Layout

Attributes

The following attributes are used in the sample data mart.

Note: The sales order number is a degenerate dimension. When you select this dimension role, the name in the dimension column text box appears as `sales_order_no`.

Table 16: Attributes and Filters

Attribute Name	Dimension Column	Filter Type
Buyer's Age Band	Contact.Age_Band	Check Boxes

Attribute Name	Dimension Column	Filter Type
Buyer's City	Household.City	Text Box
Buyer's Company	Household.Organization	Dynamic List Box
Buyer's First Name	Household.First_Name	Text Box
Buyer's Income Band	Contact.Income_Band	Check Boxes
Buyer's Last Name	Household.Last_Name	Text Box
Buyer's No. of Children	Contact.Kids	Check Boxes
Buyer's Profession	Contact.Profession	List Box
Buyer's State	Household.State	Check Boxes
Buyers Zip	Household.Zip	List Box
Marketing Program	Marketing_Prog.Name	List Box
Nothing	Quick_Count.Count_Value	Text Box
Product Line	Product.Product_Line	Check Boxes
Product Name	Product.Product_Name	Check Boxes
Product Price Band	Product.Price_Band	Check Boxes
Sales Order Number	sales_order_no.sales_order_no_key	Text Box
Sales Region	Sales_Person.Sales_Region	Check Boxes
Sales Rep	Sales_Person.Sales_Person_Name	List Box
Year	Date.Calendar Year Name	Check Boxes
Year and Month	Date.Month and Calendar Year Name	Check Boxes
Year and Quarter	Date.Calendar Quarter and Year Name	Check Boxes

Attribute Filter SQL

After creating list box and check box attributes, you must populate each one with labels and values. Use the following SQL code to populate the attributes that use the list box and check box format.

Note: Do not copy and paste scripts, commands or code from this document. Line breaks and some other characters picked up when you copy from the PDF can cause errors in the pasted text.

Age Band

```
SELECT
  'All' group_label,
  con.Age_Band label,
  con.Age_Band value
FROM Contact_0$$CURR[Contact~,~Dimension] con
WHERE con.Age_Band IS NOT NULL
GROUP BY con.Age_Band
```

Company

```
SELECT DISTINCT
  hou.Organization label,
  hou.Organization value
FROM Household_0$$CURR[Household~,~Dimension] hou
WHERE hou.Organization IS NOT NULL
GROUP BY hou.Organization
```

Income Band

```
SELECT
  'All' group_label,
  con.Income_Band label,
  con.Income_Band value
FROM Contact_0$$CURR[Contact~,~Dimension] con
WHERE con.Income_Band IS NOT NULL
GROUP BY con.Income_Band
```

Kids

```
SELECT
  'All' group_label,
  con.Kids label,
  con.Kids value
FROM Contact_0$$CURR[Contact~,~Dimension] con
WHERE con.Kids IS NOT NULL
GROUP BY con.Kids
```

Marketing Program Name

```
SELECT
mp.Name label,
mp.Name value
FROM Marketing_Prog_0$$$CURR[Marketing_Prog~,~Dimension] mp
WHERE mp.Name IS NOT NULL
GROUP BY mp.Name
```

Price Band

```
SELECT
'All' group_label,
pro.Price_Band label,
pro.Price_Band value
FROM Product_0$$$CURR[Product~,~Dimension] pro
WHERE pro.Price_Band IS NOT NULL
GROUP BY pro.Price_Band
```

Product Line

```
SELECT
'All' group_label,
pro.Product_Line label,
pro.Product_Line value
FROM Product_0$$$CURR[Product~,~Dimension] pro
WHERE pro.Product_Line IS NOT NULL
GROUP BY pro.Product_Line
```

Profession

```
SELECT
con.Profession label,
con.Profession value
FROM Contact_0$$$CURR[Contact~,~Dimension] con
WHERE con.Profession IS NOT NULL
GROUP BY con.Profession
```

Sales Person

```
SELECT
sp.Sales_Person_Name label,
sp.Sales_Person_Name value
FROM Sales_Person_0$$$CURR[Sales_Person~,~Dimension] sp
WHERE sp.Sales_Person_Name IS NOT NULL
GROUP BY sp.Sales_Person_Name
```

Sales Region

```
SELECT
'All' group_label,
sp.Sales_Region label,
sp.Sales_Region value
FROM Sales_Person_0$$$CURR[Sales_Person~,~Dimension] sp
WHERE sp.Sales_Region IS NOT NULL
GROUP BY sp.Sales_Region
```

State

```
SELECT
'All' group_label,
hou.State label,
hou.State value
FROM Household_0$$$CURR[Household~,~Dimension] hou
WHERE hou.State IS NOT NULL
GROUP BY hou.State
```

Year

```
SELECT
'All' group_label,
dat.cy_name label,
dat.cy_name value
FROM Date_0 dat
WHERE dat.cy_name IS NOT NULL
GROUP BY dat.cy_name
```

Year and Month

```
SELECT
dat.cy_name group_name,
dat.month_and_cy_name label,
dat.month_and_cy_name value
FROM Date_0 dat
WHERE dat.month_and_cy_name IS NOT NULL
GROUP BY dat.cy_name, dat.month_and_cy_name, dat.month_number
ORDER BY dat.month_number
```

Year and Quarter

```
SELECT
dat.cy_name group_name,
dat.cq_and_cy_name label,
dat.cq_and_cy_name value
FROM Date_0 dat
WHERE dat.cq_and_cy_name IS NOT NULL
GROUP BY dat.cy_name, dat.cq_and_cy_name, fq_name
ORDER BY fq_name
```

Zip

```
SELECT
hou.Zip label,
hou.Zip value
FROM Household 0$$CURR[Household~,~Dimension] hou
WHERE hou.Zip IS NOT NULL
GROUP BY hou.Zip
```

Attribute Layouts

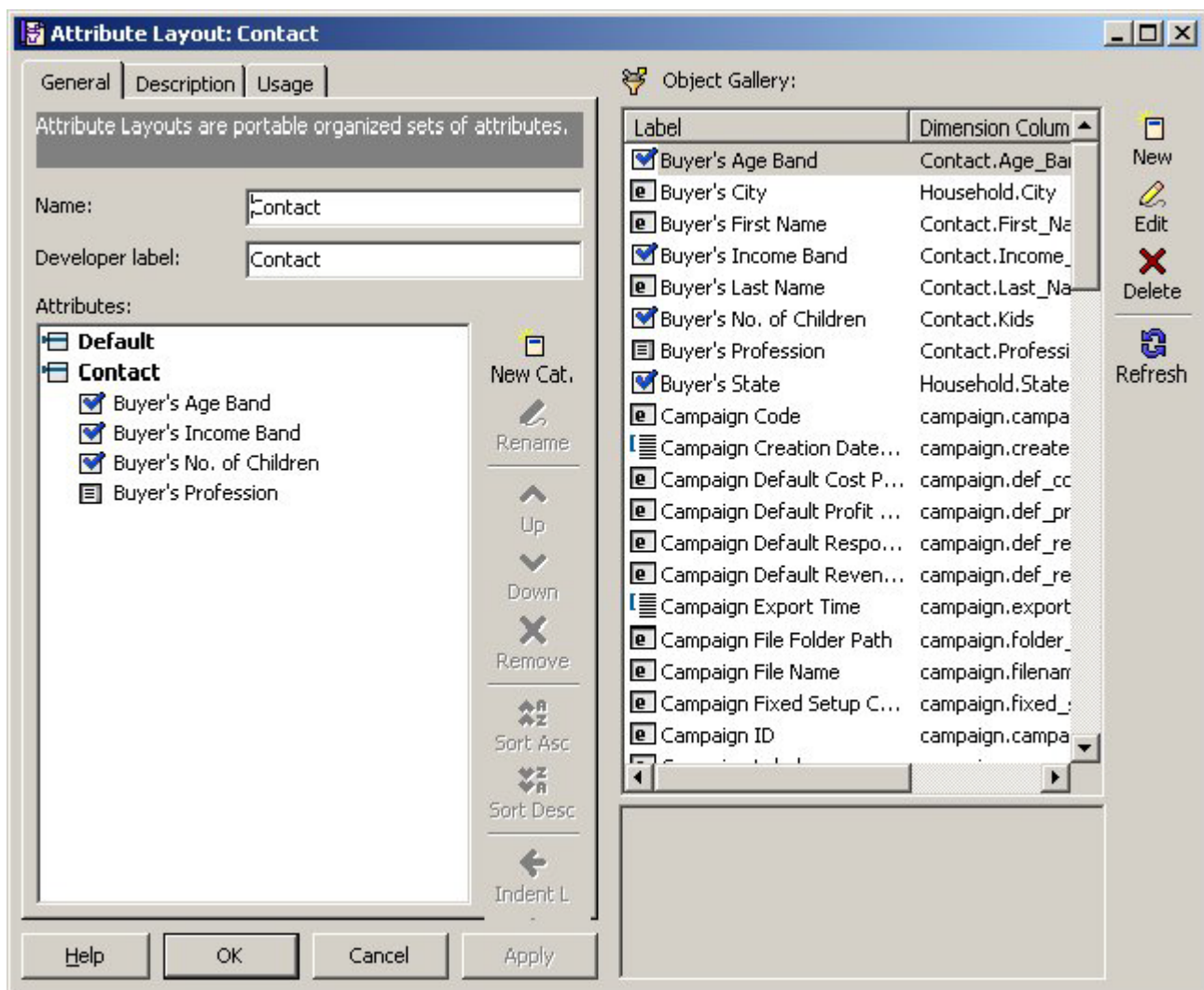


Figure 68: Contact Attribute Layout

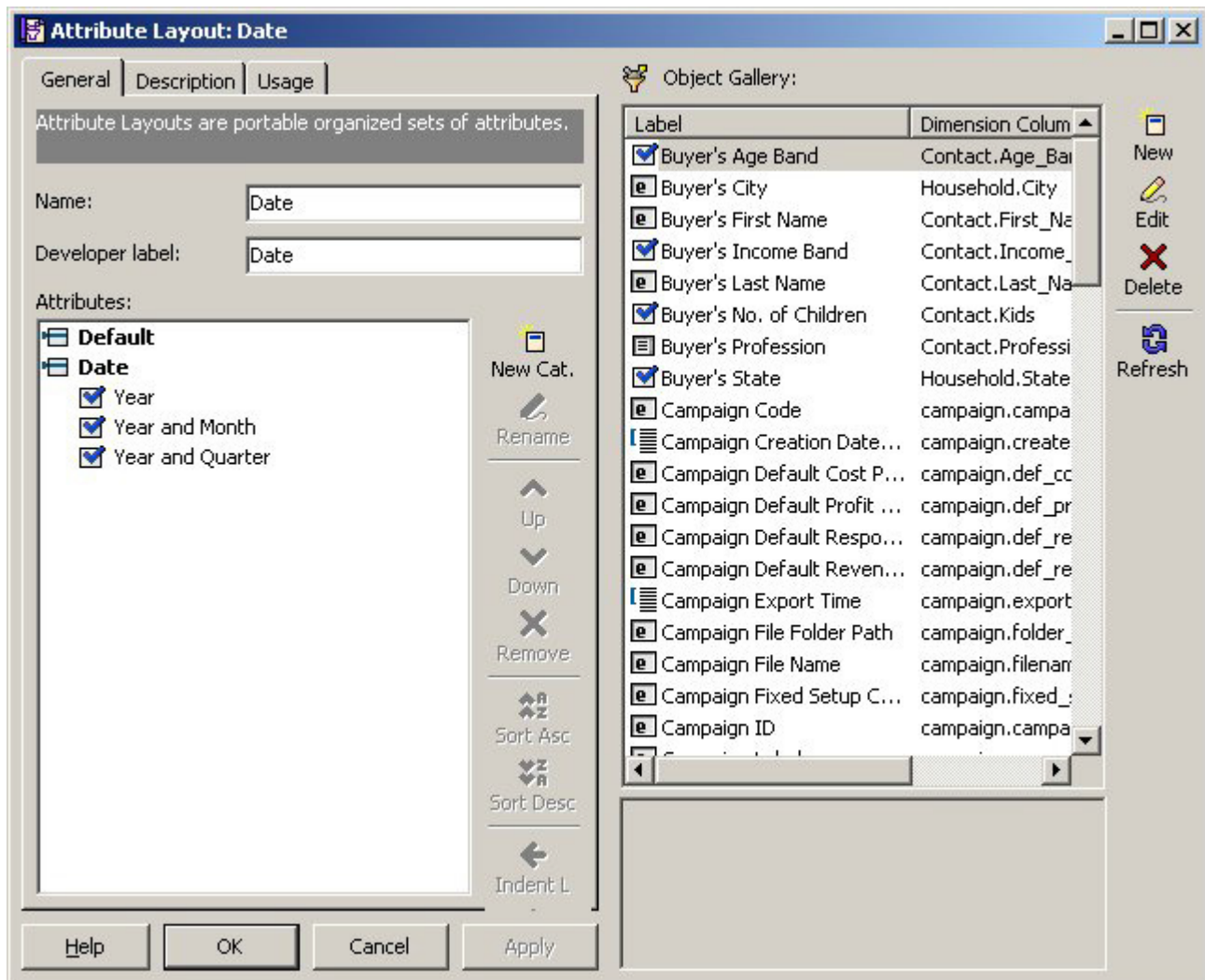


Figure 69: Date Attribute Layout1

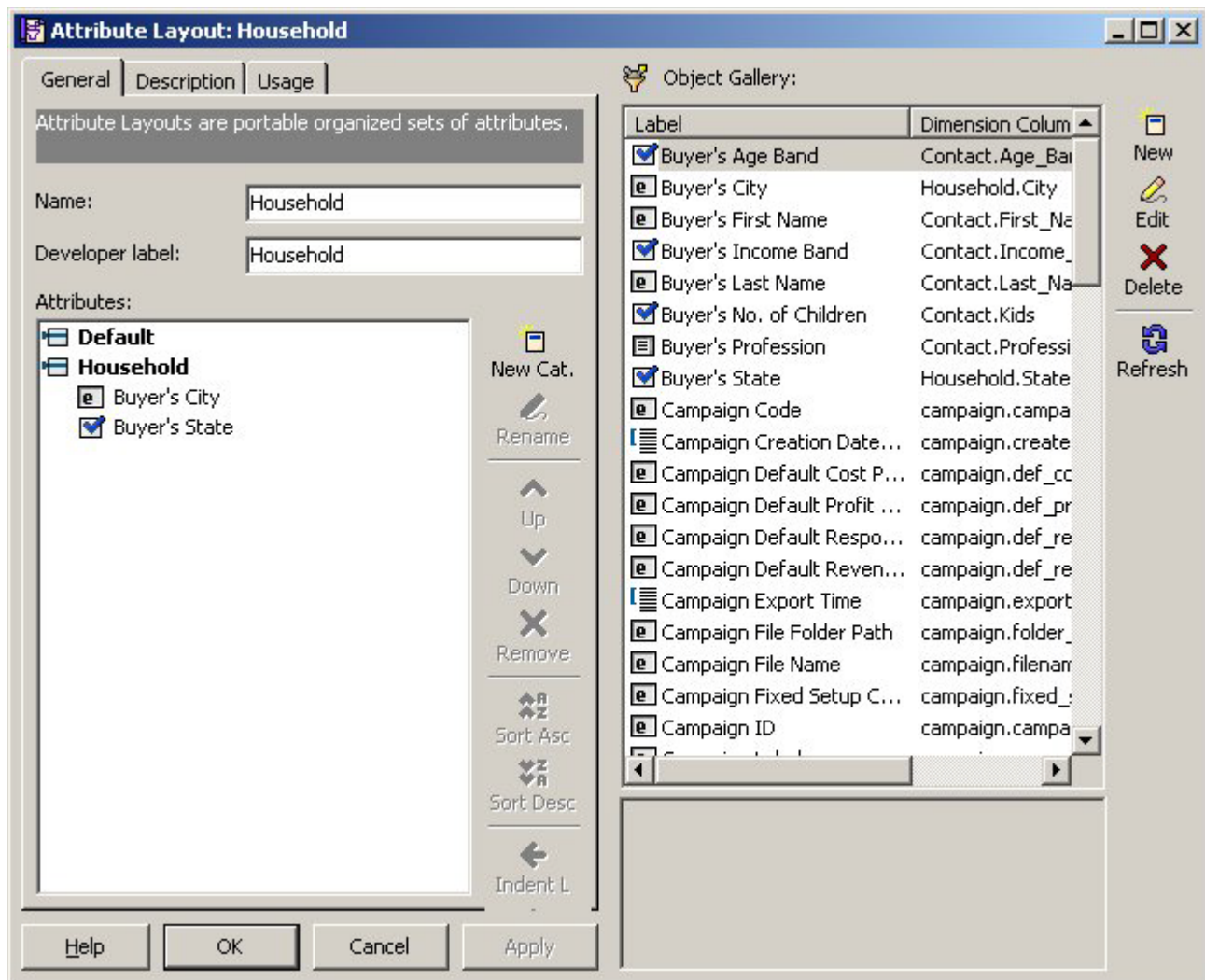


Figure 70: Household Attribute Layout

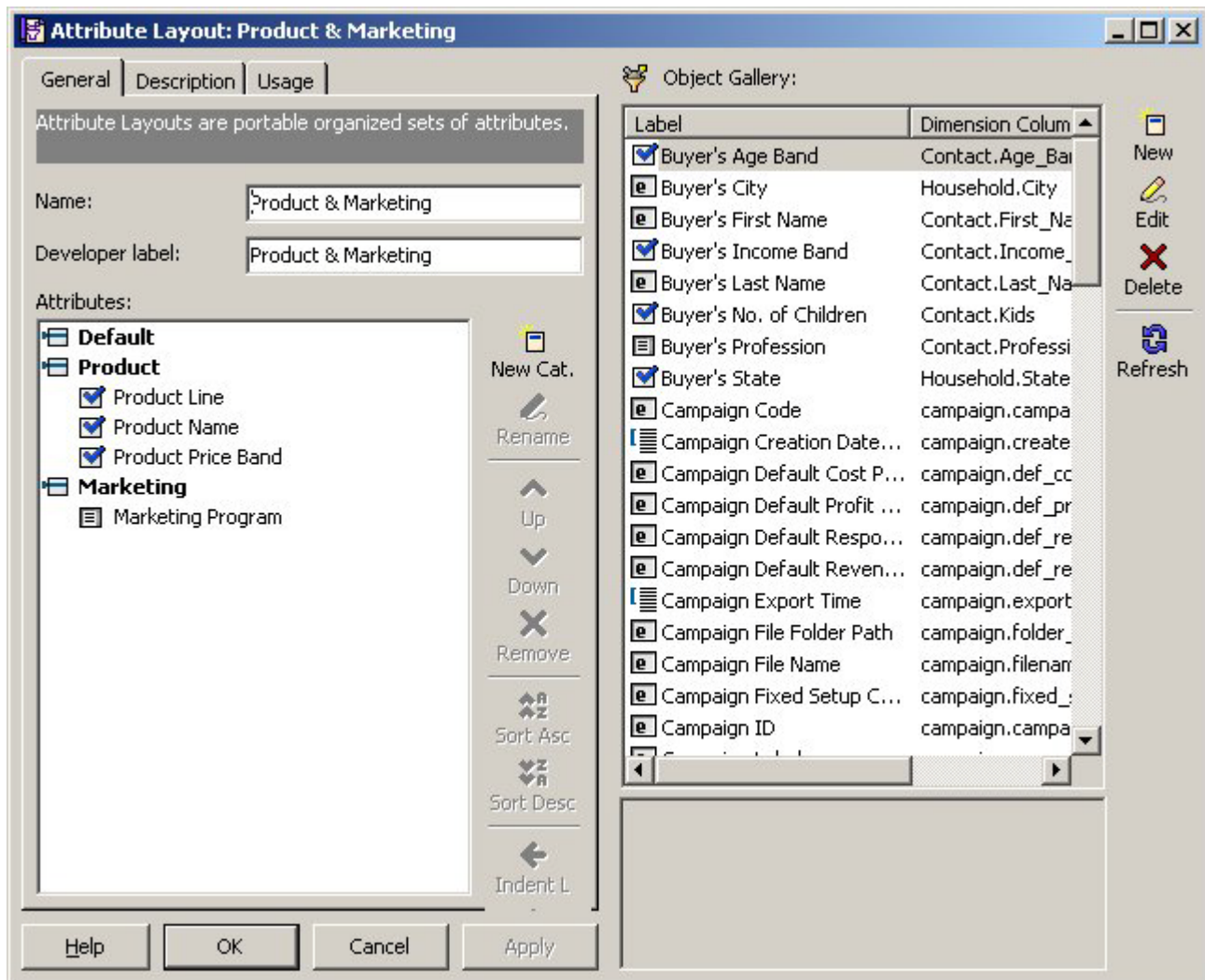


Figure 71: Product & Marketing Attribute Layout

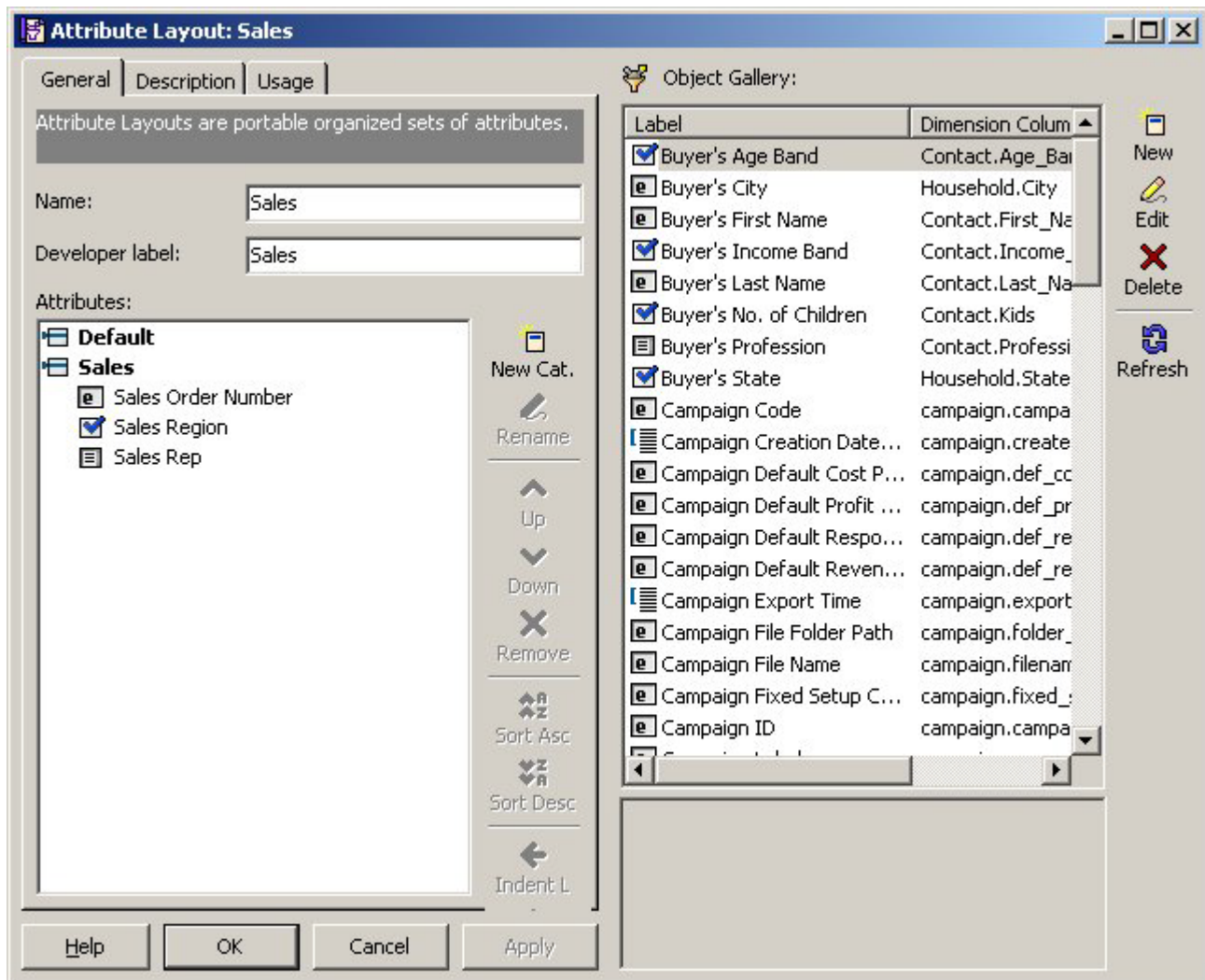


Figure 72: Sales Attribute Layout

Web Pages

The screenshot shows a Windows-style dialog box titled "Web Page: Marketing Reports". It has four tabs: "General", "Attributes", "Measure Layouts", and "Usage", with "General" currently selected. Below the tabs is a text box containing the instruction: "Web Pages are used by end users to query the EpiCenter and perform tasks such as defining a campaign." Below this are four input fields: "Name:" with the value "Marketing Reports", "Developer Label:" with the value "Marketing Reports", "Web page type:" with a dropdown menu showing "Basic Rows & Columns" and a bar chart icon, and "Context:" with an empty dropdown menu. Below these is a large "Description:" text area. At the bottom of the dialog are four buttons: "Help", "OK", "Cancel", and "Apply".

Figure 73: Web Page Marketing Reports, General Tab

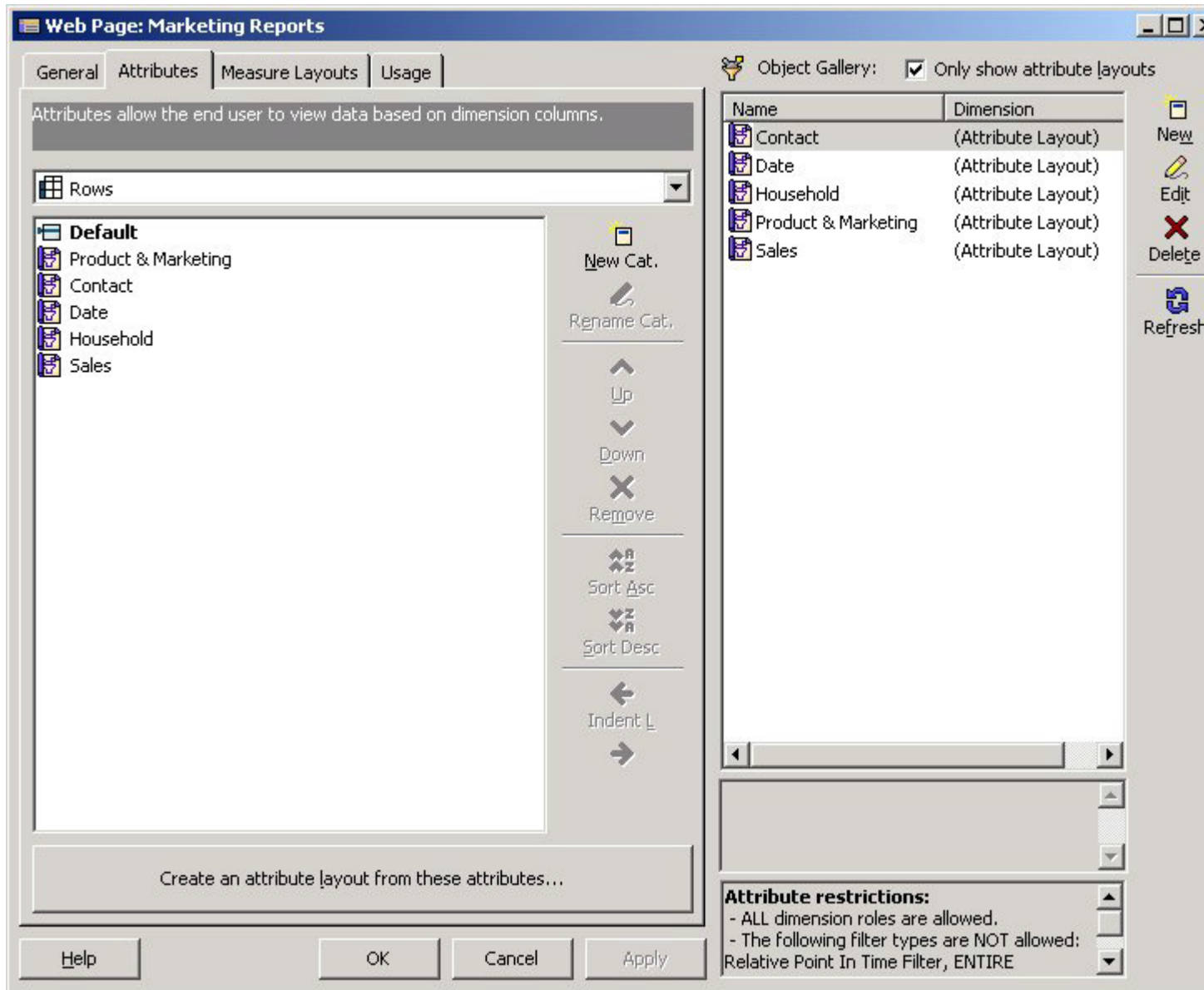


Figure 74: Web Page Marketing Reports, Attributes Tab

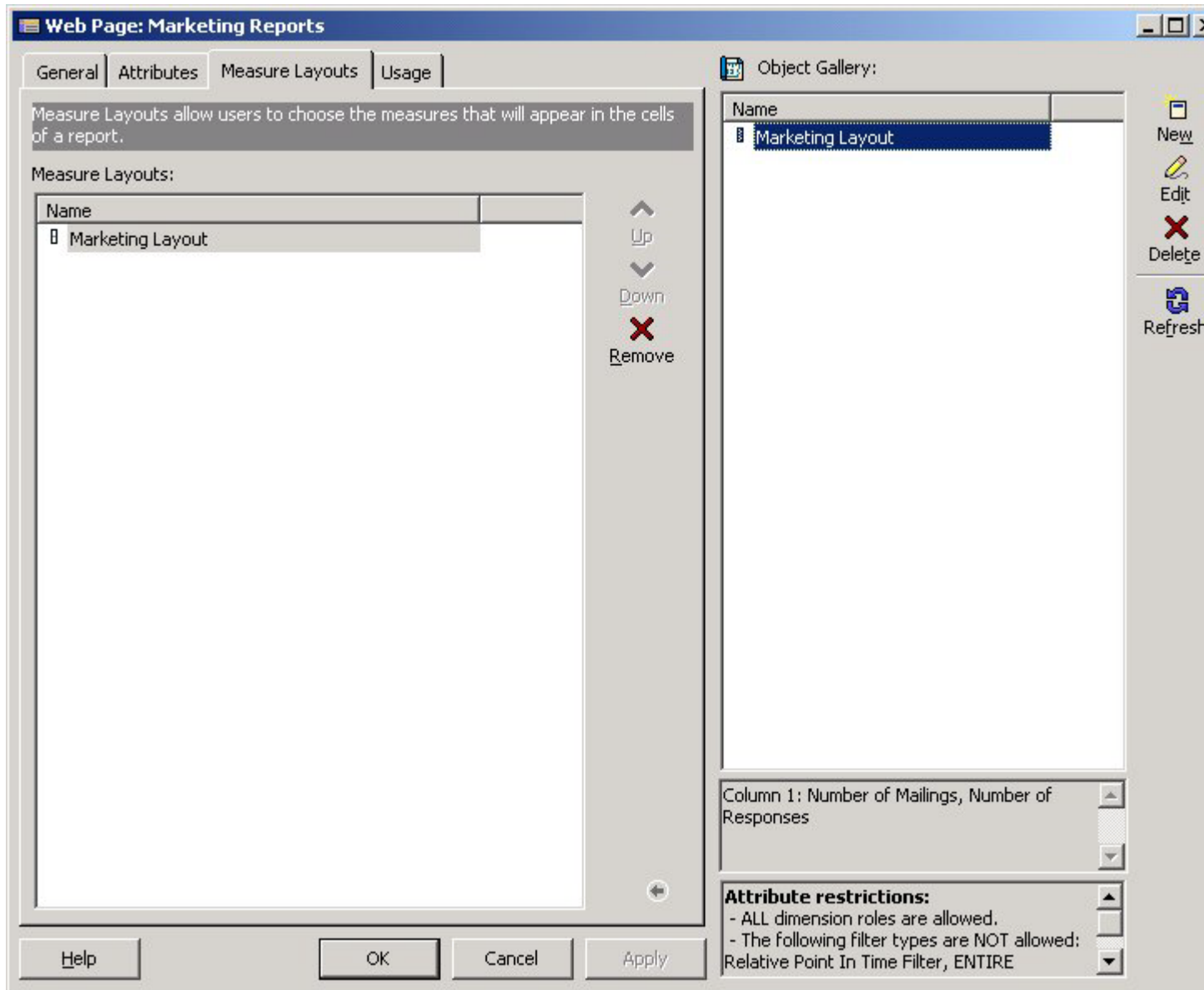


Figure 75: Web Page Marketing Reports, Measure Layout Tab

The screenshot shows a dialog box titled "Web Page: Sales Reports". It has four tabs: "General", "Attributes", "Measure Layouts", and "Usage". The "General" tab is selected. Below the tabs, there is a text box containing the text: "Web Pages are used by end users to query the EpiCenter and perform tasks such as defining a campaign." Below this text box, there are four input fields: "Name:" with the value "Sales Reports", "Developer Label:" with the value "Sales Reports", "Web page type:" with a dropdown menu showing "Basic Rows & Columns" and a bar chart icon, and "Context:" with an empty dropdown menu. Below these fields is a large text area labeled "Description:". At the bottom of the dialog box, there are four buttons: "Help", "OK", "Cancel", and "Apply".

Figure 76: Web Page Sales Reports, General Tab

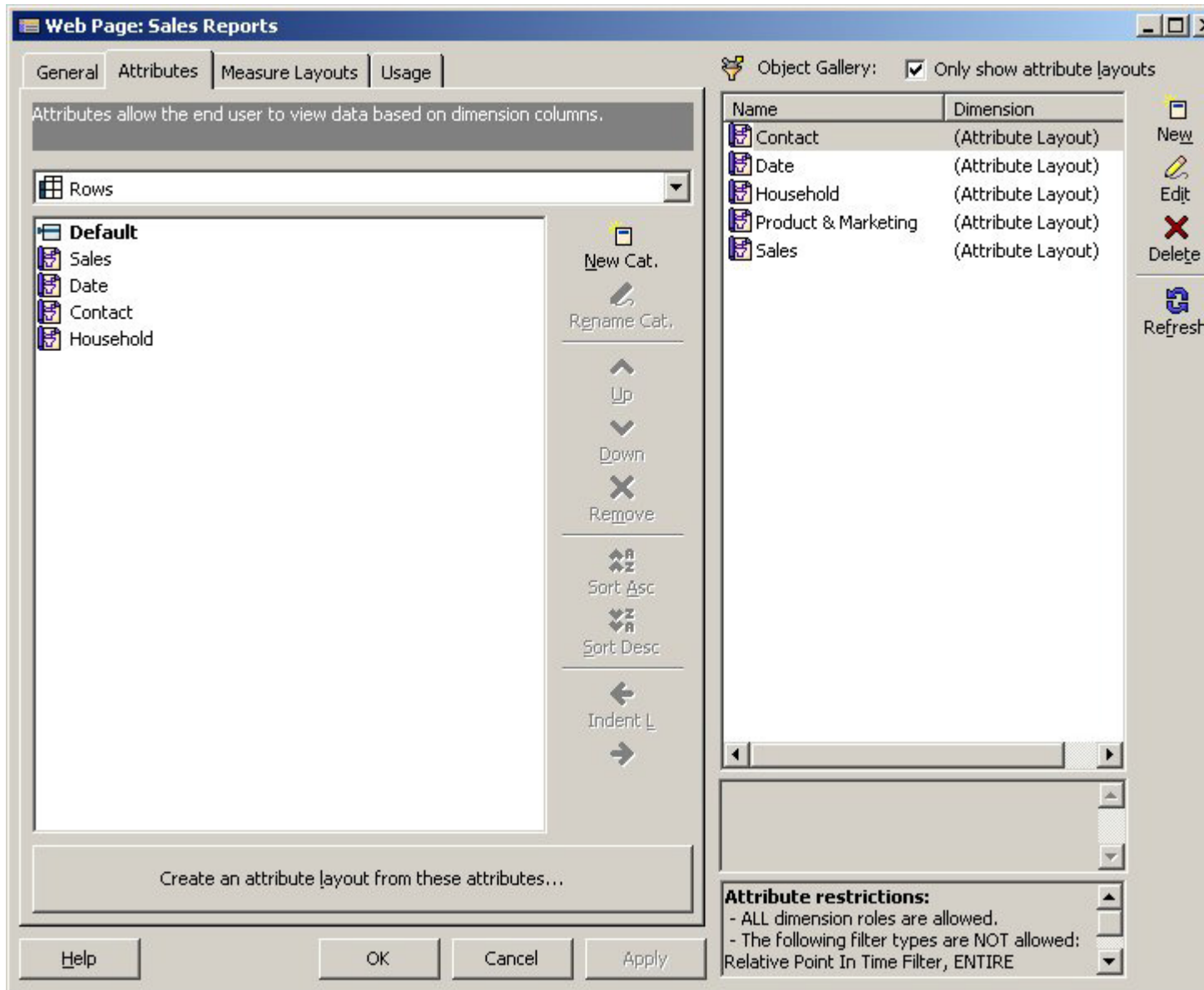


Figure 77: Web Page Sales Reports, Attributes Tab

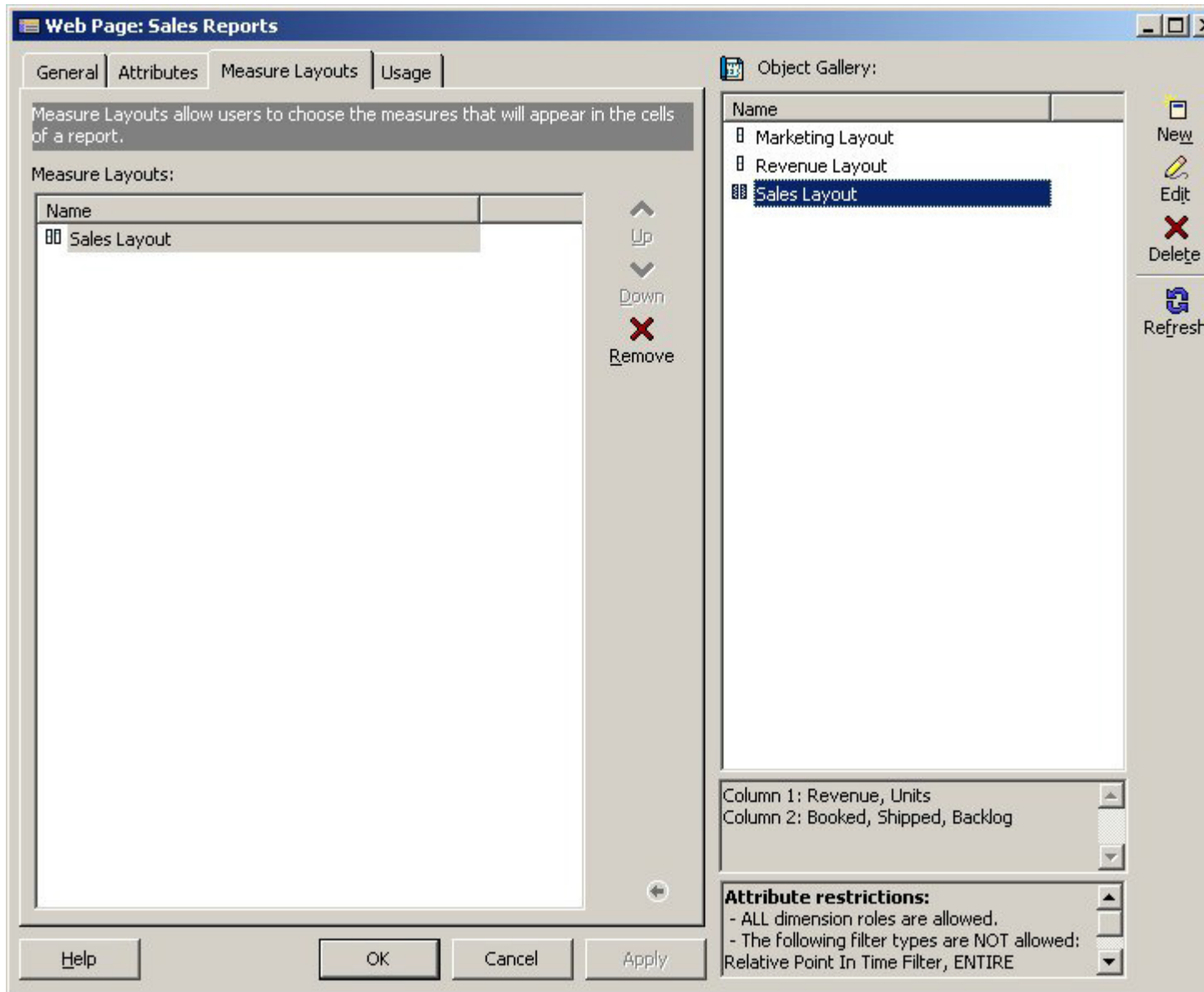


Figure 78: Web Page Sales Reports, Measure Layout Tab

Tables in the Sample Database

The sample database contains the following user tables.

contact_table

```
Contact_Id  
Household_Id  
Salutation  
Contact_first  
Contact_last  
Age  
Income  
Profession  
Number_of_kids  
Email  
Status  
Known_email  
Known_MSN  
R_score  
F_score  
M_score
```

Geographic_Region

```
Geographic_Region_Id  
Region_Name
```

household_table

```
Household_id  
Company_name  
Household_name  
Street  
City  
State  
Zip  
Geographic_region_id
```

Manufacturer

```
Manufacturer_Id  
Geographic_Region_Id  
Manufacturer_Name
```

Order_items

```
Order_Item_Id  
Sales_Order_Id  
Product_Id  
Number_of_Units
```

Product_Line

```
Product_Line_Id  
Line_Name  
Line_Name_PC  
Line_Name_Engine
```

Product_table

```
Product_Id  
Manufacturer_Id  
Product_Line_Id  
Product_Name  
List_Price  
Product_Cost  
Product_Name_PC  
List_Price_PC  
Product_Cost_PC  
Product_Name_Engine  
List_Price_Engine  
Product_Cost_Engine
```

program_table

```
program_number  
program_name  
program_name_PC  
program_name_engine  
product_code  
Program_type  
Treatment_code  
segment  
subsegment  
cell
```

quick_count

```
count_id  
dummy_value
```

response_table

```
table_id  
contact_id  
date_mailed  
date_responded  
program_id  
response_flag
```

sales_orders

```
Sales_Order_Id  
Sales_Person_Id  
Contact_Id  
Discount  
Web_visits  
Booked_Date
```

```
Marketing_program_id  
Shipped_date  
Shipped_flag
```

Sales_Person

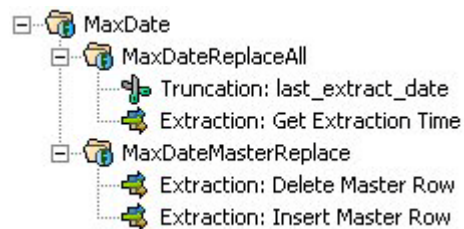
```
Sales_Person_Id  
Sales_Region_Id  
Sales_Person_Name  
Quota
```

Extraction SQL

Use the following SQL code samples in the appropriate extraction steps.

Note: Do not copy and paste scripts, commands or code from this document. Line breaks and some other characters picked up when you copy from the PDF can cause errors in the pasted text.

MaxDate



Get Extraction Time

```
SELECT  
$$TO_EPIDATE[$$DBNOW] max_date,  
'UNKNOWN' tbl_name  
$$NO_FROM_LIST
```

Get Dimension Data

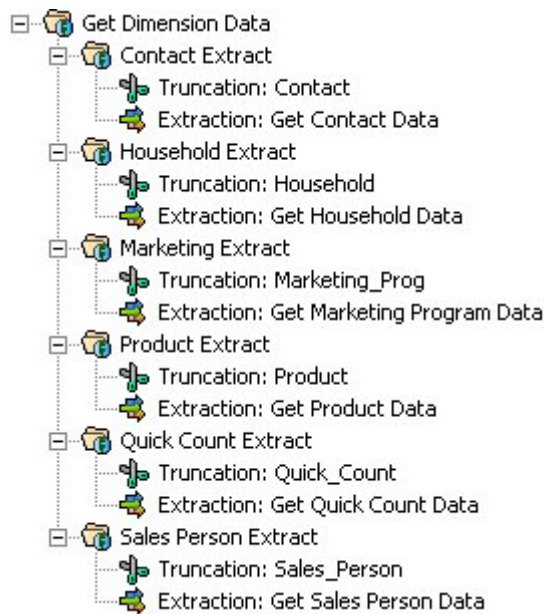


Figure 79: Get Dimension Data

Get Contact Data

```

SELECT DISTINCT
Contact_Id Contact_sskey,
$$TO_EPIDATE[$$DBNOW] date_modified,
$$SEARCHED_CASE_BEGIN[Age-20 < 1 ~,~ '..20']
$$SEARCHED_CASE_ELSEIF[Age-40 < 1 ~,~ '21-40']
$$SEARCHED_CASE_ELSEIF[Age-60 < 1 ~,~ '41-60']
$$SEARCHED_CASE_ELSEIF[Age-60 > 1 ~,~ '61..']
$$SEARCHED_CASE_ELSE[ 'UNKNOWN' ]
$$SEARCHED_CASE_END Age_Band,
$$NVL[ Contact_Id ~,~ 'UNKNOWN' ] ID,
$$NVL[ Email ~,~ 'UNKNOWN' ] Email_Address,
$$NVL[ F_Score ~,~ 'UNKNOWN' ] F_Score,
$$NVL[ Contact_first ~,~ 'UNKNOWN' ] First_Name,
$$SEARCHED_CASE_BEGIN[Income-30001 < 1 ~,~ '<$30k']
$$SEARCHED_CASE_ELSEIF[Income-60001 < 1 ~,~ '$30k-$60k']
$$SEARCHED_CASE_ELSEIF[Income-90001 < 1 ~,~ '$60k-$90k']
$$SEARCHED_CASE_ELSEIF[Income-90001 > 1 ~,~ '>$90k']
$$SEARCHED_CASE_ELSE[ 'UNKNOWN' ]
$$SEARCHED_CASE_END Income_Band,
$$NVL[ $$TO_CHAR[Number_of_kids] ~,~ 'UNKNOWN' ] Kids,
$$NVL[ Known_email ~,~ 'UNKNOWN' ] Known_Email,
$$NVL[ Contact_last ~,~ 'UNKNOWN' ] Last_Name,
$$NVL[ M_Score ~,~ 'UNKNOWN' ] M_Score,

```

```
$$NVL[ Profession ~,~ 'UNKNOWN' ] Profession,  
$$NVL[ R_Score ~,~ 'UNKNOWN' ] R_Score,  
$$NVL[ Salutation ~,~ 'UNKNOWN' ] Salutation,  
$$NVL[ Status ~,~ 'UNKNOWN' ] Status,  
$$NVL[ $$TO_INT[ Contact_Id ] % 20 ~,~ 0 ] Subselect  
FROM  
contact_table
```

Note: Since `Number_of_kids` is in integer form in the source database, the `$$TO_CHAR` macro is used to convert it to a string. Also, notice that the UNKNOWN value in the `Age_Band` `SEARCHED_CASE` statement has been truncated as the `Age_Band` data type is `VARCHAR_5`.

Get Household Data

```
SELECT DISTINCT  
H.Household_id Household_sskey,  
$$TO_EPI_DATE[$$DBNOW] date_modified,  
$$NVL[ H.Household_name ~,~ 'UNKNOWN' ] Household_Name,  
$$NVL[ H.Company_name ~,~ 'UNKNOWN' ] Organization,  
$$NVL[ H.Street ~,~ 'UNKNOWN' ] Street,  
$$NVL[ H.City ~,~ 'UNKNOWN' ] City,  
$$NVL[ H.Zip ~,~ 'UNKNOWN' ] Zip,  
$$NVL[ H.State ~,~ 'UNKNOWN' ] State,  
$$NVL[ R.Region_Name ~,~ 'UNKNOWN' ] Region  
FROM  
household_table H,  
Geographic_Region R  
WHERE  
H.Geographic_region_id = R.Geographic_Region_Id
```

Get Marketing Data

```
SELECT DISTINCT  
program_number Marketing_Prog_sskey,  
$$TO_EPI_DATE[$$DBNOW] date_modified,  
$$NVL[ program_name_PC ~,~ 'UNKNOWN' ] Name,  
$$NVL[ Treatment_code ~,~ 'UNKNOWN' ] Treatment_Code,  
$$NVL[ Program_type ~,~ 'UNKNOWN' ] Program_Type  
FROM  
program_table  
WHERE  
program_number is not null
```


Get Product Data

```

SELECT DISTINCT
P.Product_Id Product_sskey,
$$TO_EPIDATE[$$DBNOW] date_modified,
$$NVL[ P.Product_Name_PC ~,~ 'UNKNOWN' ] Product_Name,
$$NVL[ P.List_Price_PC ~,~ 0] List_Price,
$$NVL[ PL.Line_Name_PC ~,~ 'UNKNOWN' ] Product_Line,
$$NVL[ P.Product_Cost_PC ~,~ 0 ] Product_Cost,
$$NVL[ M.Manufacturer_Name ~,~ 'UNKNOWN' ] Manufacturer,
$$$SEARCHED_CASE_BEGIN[ P.List_Price_PC-500 < 1 ~,~ '<$500' ]
$$$SEARCHED_CASE_ELSEIF[P.List_Price_PC-1000 < 1 ~,~ '$500-$1,000']
$$$SEARCHED_CASE_ELSEIF[P.List_Price_PC-3000 < 1 ~,~ '$1,000-$3,000']
$$$SEARCHED_CASE_ELSEIF[P.List_Price_PC-3000 > 1 ~,~ '> $3,000']
$$$SEARCHED_CASE_ELSE['UNKNOWN']
$$$SEARCHED_CASE_END Price_Band
FROM
Product_table P,
Product_Line PL,
Manufacturer M
WHERE
P.Product_Line_Id = PL.Product_Line_Id AND
P.Manufacturer_Id = M.Manufacturer_Id

```

Get Quick Count Data

```

SELECT
'1' Quick_Count_sskey,
$$TO_EPIDATE[$$DBNOW] date_modified,
'Results' Count_Value
$$NO_FROM_LIST

```

Get Sales Person Data

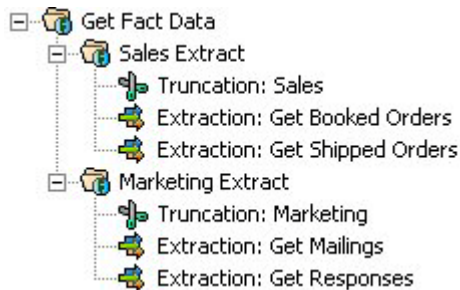
```

SELECT DISTINCT
S.Sales_Person_Id Sales_Person_sskey,
$$TO_EPIDATE[$$DBNOW] date_modified,
$$NVL[ G.Region_Name ~,~ 'UNKNOWN' ] Sales_Region,
$$NVL[ S.Sales_Person_Name ~,~ 'UNKNOWN' ] Sales_Person_Name,
$$NVL[ S.Quota ~,~ 0 ] Quota
FROM
Sales_Person S,
Geographic_Region G

```

```
WHERE  
S.Sales_Region_Id = G.Geographic_Region_Id
```

Get Fact Data



Get Booked Orders

```
SELECT  
SO.Sales_Order_Id $$CAT '-' $$CAT OI.Order_Item_Id ss_key,  
$$TO_EPIDATE[SO.Booked_Date] date_key,  
1 transtype_key,  
1 process_key,  
$$NVL[ C.Household_Id ~,~ 'UNKNOWN' ] Household_sskey,  
$$NVL[ C.Contact_Id ~,~ 'UNKNOWN' ] Contact_sskey,  
$$NVL[SO.Marketing_program_id~,~'UNKNOWN'] Marketing_Prog_sskey,  
$$NVL[ OI.Product_Id ~,~ 'UNKNOWN' ] Product_sskey,  
'1' Quick_Count_sskey,  
$$NVL[ SO.Sales_Order_Id ~,~ 'UNKNOWN' ] sales_order_no_key,  
$$NVL[ SO.Sales_Person_Id ~,~ 'UNKNOWN' ] Sales_Person_sskey,  
$$NVL[ P.Product_Cost_PC ~,~ 0 ] Cost,  
$$NVL[ P.List_Price_PC ~,~ 0 ] List,  
$$NVL[ OI.Number_of_Units ~,~ 0 ] Qty,  
$$NVL[P.List_Price_PC*(1-SO.Discount)*OI.Number_of_Units~,~0] Revenue,  
$$NVL[ P.List_Price_PC * (1-SO.Discount) ~,~ 0 ] Sales_Price_Per_Unit,  
$$NVL[ SO.web_visits ~,~ 0 ] Web_Visits  
FROM  
sales_orders SO,  
Order_items OI,  
contact_table C,  
Product_table P  
WHERE  
SO.Sales_Order_Id = OI.Sales_Order_Id AND  
SO.Contact_Id = C.Contact_Id AND  
OI.Product_Id = P.Product_Id
```

Note: The unique source-system key is generated by concatenating two ID numbers. The IDs are already in string form, and the \$\$CAT macro is used to concatenate the strings.

Get Shipped Orders Data

```
SELECT
SO.Sales_Order_Id $$CAT '-' $$CAT OI.Order_Item_Id ss_key,
$$TO_EPIDATE[SO.Shipped_date] date_key,
101 transtype_key,
1 process_key,
$$NVL[ C.Household_Id ~,~ 'UNKNOWN' ] Household_sskey,
$$NVL[ C.Contact_Id ~,~ 'UNKNOWN' ] Contact_sskey,
$$NVL[ SO.Marketing_program_id ~,~ 'UNKNOWN' ] Marketing_Prog_sskey,
$$NVL[ OI.Product_Id ~,~ 'UNKNOWN' ] Product_sskey,
'1 'Quick_Count_sskey,
$$NVL[ SO.Sales_Order_Id ~,~ 'UNKNOWN' ] sales_order_no_key,
$$NVL[ SO.Sales_Person_Id ~,~ 'UNKNOWN' ] Sales_Person_sskey,
$$NVL[ P.Product_Cost_PC ~,~ 0 ] Cost,
$$NVL[ P.List_Price_PC ~,~ 0 ] List,
$$NVL[ OI.Number_of_Units ~,~ 0 ] Qty,
$$NVL[ P.List_Price_PC*(1-SO.Discount)*OI.Number_of_Units~,~0] Revenue,
$$NVL[ P.List_Price_PC * (1-SO.Discount) ~,~ 0 ] Sales_Price_Per_Unit,
$$NVL[ SO.Discount ~,~ 0 ] Discount,
$$NVL[ web_visits ~,~ 0 ] Web_Visits
FROM
sales_orders SO,
Order_items OI,
Contact_table C,
Product_table P
WHERE
SO.Shipped_flag like '1' AND
SO.Contact_Id = C.Contact_Id AND
SO.Sales_Order_Id = OI.Sales_Order_Id
```

Get Mailings Data

```
SELECT
R.table_id ss_key,
$$TO_EPIDATE[R.date_mailed] date_key,
1 transtype_key,
1 process_key,
$$NVL[ C.Household_Id ~,~ 'UNKNOWN' ] Household_sskey,
$$NVL[ R.contact_id ~,~ 'UNKNOWN' ] Contact_sskey,
$$NVL[ R.program_id ~,~ 'UNKNOWN' ] Marketing_Prog_sskey,
$$NVL[ P.product_code ~,~ 'UNKNOWN' ] Product_sskey,
```

```
'1' Quick_Count_sskey,  
1 Touch_Count  
FROM  
response_table R,  
contact_table C,  
program_table P  
WHERE  
R.contact_id = C.Contact_Id AND  
R.program_id = P.program_number
```

Note: Since `program_table` has null values in the `product_code` column, the `$$NVL` macro is used to assign the result values. This replaces all null values with 'UNKNOWN'.

Get Responses Data

```
SELECT  
R.table_id ss_key,  
$$TO_EPIDATE[R.date_responded] date_key,  
101 transtype_key,  
1 process_key,  
$$NVL[ C.Household_Id ~,~ 'UNKNOWN' ] Household_sskey,  
$$NVL[ R.contact_id ~,~ 'UNKNOWN' ] Contact_sskey,  
$$NVL[ R.program_id ~,~ 'UNKNOWN' ] Marketing_Prog_sskey,  
$$NVL[ P.product_code ~,~ 'UNKNOWN' ] Product_sskey,  
'1' Quick_Count_sskey,  
1 Touch_Count  
FROM  
response_table R,  
contact_table C,  
program_table P  
WHERE  
R.contact_id = C.Contact_Id AND  
R.program_id = P.program_number AND  
R.response_flag LIKE '1'
```

Get Household Contact

```
SELECT  
C.Contact_Id ss_key,  
$$TO_EPIDATE[$$DBNOW] date_key,  
1 transtype_key,  
$$NVL[ H.Household_ID ~,~ 'UNKNOWN' ] household_sskey,  
$$NVL[ C.Contact_Id ~,~ 'UNKNOWN' ] contact_sskey,  
1 member
```

```
FROM  
Contact_table C, Household_table H  
WHERE  
H.Household_ID = C.Household_Id
```

Glossary

