Sterling Business Intelligence

Concepts Guide

Version 9.2

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Note

Before using this information and the product it supports, read the information in "Notices" on page 17.

This edition applies to version 9.2 of IBM Sterling Business Intelligence and to all subsequent releases and modifications until otherwise indicated in new editions.

Contents

Chapter 1. Overview of IBM Sterling Business Intelligence

An online transaction processing (OLTP) database is used in IBM® Sterling Selling and Fulfillment Foundation. The OLTP database is a relational database and consists of tables, views, aliases, indexes, stored procedures, triggers, events, and so on. This database stores a lot of operational and transactional data. Because there are performance implications in accessing large volumes of data on the transactional system, the OLTP is designed for performance and not for analysis. It is difficult to analyze such voluminous data and take business decisions based on this transactional data.

The *Sterling Selling and Fulfillment Foundation: Business Intelligence Operational Reports Guide* details operational reports that answers questions such as, "When was order 84305 shipped?" This query, for example, reflects the basic mechanics of conducting a business. It involves simple data selection and retrieval of one record (or several related records) identified by a unique order number. This record has a life span in the transactional world. It begins when a customer places the order and ends when the order is shipped and paid for. After this period, the record is archived.

In contrast, a typical series of analytical queries may include, "How do the sales in the Pacific Rim for this quarter compare with sales a year ago? Which products are generating more business? Which are the frequently returned products and why are they returned?" These are not questions about conducting business transactions, but about analyzing past performance and taking decisions that will improve future performance, provide a more competitive edge, and enhance profitability.

Business Intelligence is the capability for gathering, storing, and analyzing data stored in various applications to help customers take intelligent and informed decisions about conducting their business.

The IBM Sterling Business Intelligence solution helps extract information from the various applications used by an enterprise, analyze the data, and generate business reports with the help of IBM Cognos® Business Intelligence reporting tools. It helps to map and denormalize the transactional and operational data, and provides tactical information.

In the Sterling Business Intelligence solution, an analytic database is designed to provide the information required by decision makers whose ability to set goals is dependent on how well the business performed in the past. Consequently, the Cognos Business Intelligence layer is bundled as a part of the Sterling Selling and Fulfillment Foundation. The Sterling Business Intelligence solution leverages on the Cognos Business Intelligence layer to analyze the data, and generate the dashboards and reports.

Intended Audience

This document provides a high-level overview of the Sterling Business Intelligence solution to all the users.

Chapter 2. Business Intelligence Terminology

This topic describes some of the Business Intelligence terminology used in Sterling Business Intelligence solution.

Schema: This is the logical and physical definition of data elements, physical characteristics, and inter-relationships in a database.

Data Warehouse: A data warehouse is a relational database that is designed for query and analysis, rather than for transaction processing. It usually contains historical data derived from the transaction data, and can include data from other sources too. It separates analysis workload from transaction workload, and enables an organization to consolidate data from several sources.

The schema designed for transactional processing is referred as online transaction processing (OLTP). The schema designed for analysis purposes is called online analytical processing (OLAP).

Data Mart: It is also known as local data warehouse. A data mart is a database that has the same characteristics as a data warehouse, but is usually smaller, and is focused on data for one division or one work group within an enterprise. Following are the data mart objects:

- Dimension Table

  This is also known as a lookup table or reference table. It contains relatively static data in a data warehouse, and stores the information that is usually used to satisfy queries. Dimension tables are usually textual and descriptive and can be used as row headers. Examples of dimension tables are Customers and Products.
- Fact Table

  This is a large table in the data warehouse schema that stores business measurements. It typically contains facts and foreign keys to the dimension tables, and usually represents numeric and additive data that can be analyzed and examined. Examples of fact tables include Sales, Cost, and Profit.
- Aggregate Table

  This is also known as a summary table. It contains data that has been summarized up to a certain level of detail for the purpose of improving query performance.
- Star Schema

  This is the simplest data warehouse schema. It is called a star schema because the diagram resembles a star, with points radiating from the center. The center of the star consists of one or more fact tables and the points of the star are the dimension tables. A star schema optimizes performance by keeping queries simple and providing fast response time. All the information pertaining to each level is stored in one row. Star schema allows you to perform an analysis based on the metrics in a fact table by the attributes of the dimensions linked to it. For example, to calculate the total sales of a particular product in a quarter, the corresponding fact table is used to derive data. The product and time dimensions provide the contextual information about the particular product and the quarter.
- Snow Flake Schema

This is a type of star schema in which the dimension tables are either partly or fully normalized.

- ETL

  The online analytical processing (OLAP) database should be loaded regularly to perform the task of facilitating business analysis. In order to load the database regularly, data from one or more online transaction processing (OLTP) systems must be extracted and copied into the data warehouse. The process of extracting data from source systems and bringing it into the data warehouse is commonly called ETL, which stands for extraction, transformation, and loading.

- Denormalization

  The process of flattening the design of a database by adding redundant data or by grouping data is known as denormalization. A relational normalization database imposes a heavy access load on the physical storage of data even if the database is well tuned for optimal performance. In some cases, denormalization helps to resolve these inefficiencies in the relational database.

Chapter 3. IBM Sterling Business Intelligence Ecosystem

The Sterling Business Intelligence ecosystem consists of the following:

- Sterling Source Database

  This database is the source database from where the data is extracted, transformed, and loaded (ETL) into the Sterling Staging Database using the IBM Cognos Adaptive Warehouse and IBM Cognos Adaptive Warehouse Runtime.
- Sterling Staging Database

  This is the database in which the incremental transaction data that is extracted, transformed, and loaded from the source is stored. The Sterling Staging Database is the source for the data mart database.
- Sterling Data Mart Database

  The data in this database is dimensionally modeled to be analytics friendly. The Sterling Business Intelligence dashboards and reports are generated from this data using the IBM Cognos Adaptive Analytics and Cognos Adaptive Warehouse tools.

Chapter 4. IBM Sterling Business Intelligence Dashboards and Reports

The Sterling Business Intelligence solution provides various dashboards and reports such as Perfect Order Dashboard, Volume Analysis B2B Dashboard, Order Velocity Dashboard, B2B reports, B2C reports, and so on.

Time Period

All the metrics in the Sterling Business Intelligence solution are associated with a time period. You can select the required time period from a drop-down list and view the reports and dashboards for the selected time period. The various hierarchies associated with the time period are Year, Quarter, Month, and Days.

Drill-Through Reports

The Sterling Business Intelligence solution allows you to drill through the reports and dashboards and view the details at the next level. You can use the drill-through option to view the detailed reports pertaining to those metrics that have the footnote 'Drill Through is Available on Chart', by right-clicking the corresponding metric.

A drill-through report links two reports containing related information. You can access related or more detailed information in one report by selecting a value in the other report. For example, in the Percentage Shipped on Time metric of the Perfect Order Dashboard, you can drill though and view reports pertaining to shipment nodes, channels, and categories.

Drill-Down and Drill-Up Reports

The Sterling Business Intelligence solution allows you to drill down and drill up the reports and dashboards. A drill down report allows you to drill down to a lower level of the hierarchy, and a drill-up report allows you to drill up to a higher level of the hierarchy. Drilling up and down allows you to view either general or detailed information about your data within a selected category, without having to generate different reports. For example, when you click a bar graph pertaining to a quarter, you can view the report pertaining to the months in that quarter, and when you click the month bar, you can view the report pertaining to the days in that month.

Note: When you drill down on a selected category, the title of the x-axis , column title, and the summary title are displayed incorrectly in the drill down reports. For example, in the Top 10 Return Value by Customers report the title of the x-axis would display `Customer Identifier`, with bar graphs for Customer Identifier `C2` and `C1`. The column title and the summary title will be displayed as `Customer Identifier`. If you drill down on the Customer Identifier bar graph say `C2`, the title of the x-axis will be displayed as `C2` instead of displaying the title as `Customer Identifier` in the drill down report. The column title and the summary title will be displayed as `C2` instead of displaying the title as `Customer Identifier`.

Chapter 5. IBM Sterling Business Intelligence Embedded Analytics

The Sterling Business Intelligence application provides embedded analytics to incorporate business intelligence right into Sterling Business Intelligence, such as IBM Sterling Call Center and Sterling Store, IBM Sterling Field Sales, and Sterling Selling and Fulfillment Foundation. This helps provide intelligence that is more seamless, of a higher quality, and drives the customer's business performance in new ways because it is embedded in the applications.

By incorporating embedded analytics, key performance indicators, and resultant metrics data into the applications, Sterling Business Intelligence enriches Sterling Selling and Fulfillment Foundation with the capability to make decisions and take prescribed actions on its own, when specified conditions are met. This helps drive business performance, automate processes, and improve decision making for the customer.

For example, when a sales person creates a particular quote, the application workflow may skip the approval step during processing because the application automatically analyses the product availability, customer's history and credit, and other factors, and “decides” that the quote meets the threshold criteria that allow bypassing approval. This enables sales people to spend less time processing routine orders and helps fulfill the customer's order faster.

Advantages of Embedded Analytics

Embedded analytics provide intelligence that enables Sterling Selling and Fulfillment Foundation to respond immediately to challenges in the business environment, helping the customer to make continual improvements in their selling and fulfillment processes.

Embedded analytics provides applications the following types of intelligence:

- Intelligence ON the Process

  Intelligence ON the process enables customers to leverage their data strategically, to identify trends and analyze business performance metrics.

  Because the Sterling Selling and Fulfillment Foundation use embedded analytics, reports and dashboards are available for customers who want them. A business owner can see a dashboard that tracks overall performance against perfect order metrics like shipment on time and cycle times for shipment, and can drill down into a metric to understand the drivers of success or failure.
- Intelligence IN the Process

  Intelligence IN the process makes changes to a process while it is happening.

  Sterling Selling and Fulfillment Foundation use embedded analytics to provide tactical analytics in the context of a decision being made by a user on an application screen.

  For example, as a field sales person enters a quote for a particular item, a pop-up for that line item provides them with insight into previously successful quote discount percentages for that product category or industry. Front-line employees are thus empowered to make consistently better decisions by providing them with relevant metrics at the appropriate time.

- Intelligence DRIVING the Process

  Intelligence DRIVING the process uses metrics in a process to automatically trigger decisions or modify the process flow.

  Sterling Selling and Fulfillment Foundationoffer their maximum value to the customer by embedding Intelligence into a process.

  For example, applications can automatically reallocate constrained inventory based on priorities such as customer rating to ensure that their "most important customer" receives inventory first. This requires some customization to use the customer rating calculated by Sterling Business Intelligence as the order priority, when allocating items to orders using Item Based Allocation (IBA).

Reports Used for Embedded Analytics

Sterling Business Intelligence provides the following embedded analytics reports for Sterling Selling and Fulfillment Foundation:

- Customer Appeasement Report: This report is used to determine the appeasement to be given to a customer. When a customer reports not being satisfied or has a bad experience with any of the services that were provided, the Customer Appeasement report can be analyzed. Depending on the revenue generated by the customer, the user can present them with an option to appease them.

  The Customer Appeasement report contains the following metrics:

  - Total Lifetime Revenue: This indicates the revenue from a customer till the present date.
  - Revenue in the last year: This indicates the revenue from a customer in the last 11 months and the current month.
  - Average Order Value for Lifetime: This indicates the total revenue from order lines divided by the number of orders accumulated over lifetime for a customer.

    These metrics are compared with metrics for the average customer to provide the report. The value of a metric for the average customer is calculated as the average of the metric for all the customers. For example, the Lifetime Revenue of an average customer is equal to the sum of the lifetime revenue of all the customers divided by the number of customers.
- Quote Adviser Report By Category: This report provides the maximum, minimum, and average discount percentage provided on converted quotes for the item's category, aggregated over the lifetime. This report is provided at the quote line level for a specific Item and UOM that the user selected in the Sterling Call Center and Sterling Store application.
- Quote Adviser Report By Industry: This report provides the maximum, minimum, and average discount percentage provided on converted quotes for the item's category, within the customer's industry aggregated over the lifetime. This report is provided at the quote line level for a specific Item and UOM that the user selected in the Sterling Call Center and Sterling Store application.
- Customer Rating Report: This report provides the details of all the metrics used when calculating a customer's rating. Sterling Business Intelligence computes rating for the customers based on the data such as customers' past purchase history and credit holds. Based on the rating, Sterling Business Intelligence also determines a grade for each customer.

  The Customer Rating report contains the following metrics:

  - Total Lifetime Revenue: This indicates the revenue from the customer till the present date.

- Revenue in the Last Year: This indicates the revenue from the customer in the last 11 months and the current month.
- Current® Orders on Credit Hold: This indicates the number of orders that were on credit hold for the customer in the current quarter.
- Past One Year Orders on Credit Hold: This indicates the number of orders that were on credit hold for the customer in the last 11 months and the current month.
- Customer Rating and Grade: This indicates the rating calculated for the customer and the grade of the customer based on the rating. The description of the grade is also provided.

The Total Lifetime Revenue and Revenue in the Last Year metrics are compared with metrics for the average customer to provide the report. The value of a metric for the average customer is calculated as the average of the metric for all the customers. For example, the Lifetime Revenue of an average customer is equal to the sum of the lifetime revenue of all the customers divided by the number of customers for the organization.

Chapter 6. Data Extraction in IBM Sterling Business Intelligence

The Sterling Business Intelligence application provides the data extraction tool to extend "Software as a Service" support for the customer. This helps the customer to extract the required data for a specific time period and feed the data to the enterprise data warehouse. The Sterling Business Intelligence provides data extraction support on the data mart database.

Customers can now request data from entity groups like Order Data, Shipment Data, Order Modification Data and Order Hold Data. They can choose to extract data based on updated transactions for a specified time period or incrementally from the previous run date. The data extracted will be provided to the customer as a text (.txt) or comma-separated values (.csv) file, this can be loaded into the data warehouse.

Chapter 7. IBM Cognos Products

The Sterling Business Intelligence application leverages on the following IBM Cognos products for generating analytical and operational reports:

- **IBM Cognos Business Intelligence**

  The Sterling Business Intelligence uses the report generation capability of Cognos Business Intelligence to create and manage ad hoc reports and scheduled reports. It includes IBM Cognos Query Studio and IBM Cognos Report Studio. Cognos Query Studio is a Web-based tool that enables you to create ad hoc reports by selecting items from a package file. Cognos Report Studio is a Web-based tool used to build sophisticated, multiple-page, multiple-query reports from multiple databases.
- **IBM Cognos Analytic Applications**

  This is a performance management solution that includes data modeling and report authoring tools for business content specific to Sterling Business Intelligence application. It includes the following components:
  - **Cognos Adaptive Warehouse**

    This is the data modeling component for designing and populating the data warehouse. It provides an interface that facilitates the extraction, transformation, and loading of application specific data from a data source into the data warehouse.
  - **IBM Cognos Adaptive Warehouse Runtime**

    This component is used by the Cognos Adaptive Warehouse user interface and scripts. The Cognos Adaptive Warehouse Runtime helps to run the extract, transform, and load (ETL) scripts in different environments.
  - **Cognos Adaptive Analytics**

    This is an information modeling tool for generating and deploying analytic reports and operational reports to the Sterling Business Intelligence portal. After publishing the data model in Cognos Adaptive Warehouse, you can use Cognos Adaptive Analytics to create and publish analytic reports.

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Index

A

D

E

F

S

T

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