Sterling Business Intelligence

# Implementation Guide

*Version 9.2*

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*Version 9.2*

**Note**
Before using this information and the product it supports, read the information in "Notices" on page 129.

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. Getting Started

The IBM® Sterling Business Intelligence solution can be extended and customized to meet specific business requirements. Sterling Business Intelligence provides a predefined set of content, including the IBM Cognos® Adaptive Warehouse model, IBM Cognos Adaptive Analytics reports, and dashboards for sales order business processes. You can analyze your business requirements and customize each of this content according to individual requirements.

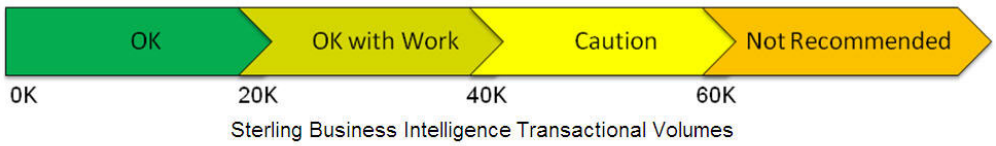
## Intended Audience

This document is intended for use by application developers, analytic system administrators, and analytic users who implement the Sterling Business Intelligence solution.

## Transaction Volume Guidelines

There are many variables that influence the scaling of a software solution. The Sterling Selling and Fulfillment Foundation is capable of scaling to a significantly higher number of transactions per hour than the Sterling Business Intelligence. Sterling Selling and Fulfillment Foundation processing rates can exceed the typical capabilities of Sterling Business Intelligence during the extract-transform-load (ETL) process, which performs optimally at lower rates.

IBM provides guidance on how to optimally tune the Sterling Business Intelligence. For more information, refer to the http://pic.dhe.ibm.com/infocenter/ssfs/v9r2/topic/com.ibm.help.perf.manage.doc/c_FND_PM_PerformanceTuningConsiderationsForBIBusinessIntelligenc.html. IBM has many Business Analytics solutions. If your transactional rates are expected to exceed those published in the guidelines, contact IBM to discuss other solutions that may be more appropriate for higher volumes.




### Guidelines

- For processing about 20,000 order lines per hour
  - You must read, understand and apply recommendations from the http://pic.dhe.ibm.com/infocenter/ssfs/v9r2/topic/com.ibm.help.perf.manage.doc/c_FND_PM_PerformanceTuningConsiderationsForBIBusinessIntelligenc.html and the http://pic.dhe.ibm.com/infocenter/ssfs/v9r2/topic/com.ibm.help.sbi.implement.doc/Getting_Started.html.
- For processing about 40,000 order lines per hour or less
  - You must read, understand and apply recommendations from the http://pic.dhe.ibm.com/infocenter/ssfs/v9r2/topic/com.ibm.help.perf.manage.doc/c_FND_PM_PerformanceTuningConsiderationsForBIBusinessIntelligenc.html

and the http://pic.dhe.ibm.com/infocenter/ssfs/v9r2/topic/com.ibm.help.sbi.implement.doc/Getting_Started.html.

- You must also follow the hardware and server recommendations such as ensuring the extractions are directed to read only database (not the main OLTP database).
- You must also have a Business Intelligence administrator to manage the Business Intelligence solution.

- For processing about 40,000 - 60,000 order lines per hour
  - You must read, understand and apply recommendations from the http://pic.dhe.ibm.com/infocenter/ssfs/v9r2/topic/com.ibm.help.perf.manage.doc/c_FND_PM_PerformanceTuningConsiderationsForBIBusinessIntelligenc.html and the http://pic.dhe.ibm.com/infocenter/ssfs/v9r2/topic/com.ibm.help.sbi.implement.doc/Getting_Started.html.
  - You must perform Sterling Business Intelligence Load Tests with OLTP running at their targeted peak volumes to ensure the entire solution works.
  - You will likely have to customize Sterling Business Intelligence ETL's. For example, disable data flows that are not needed.
- Sterling Business Intelligence is not recommended above 60,000 order lines per hour.

# Implement IBM Sterling Business Intelligence

## Before you begin

Ensure that you have installed Sterling Business Intelligence, and that the content is deployed as per the instructions provided in the *Sterling Business Intelligence: Installation Guide*.

Use the following process to perform the implementation of the Sterling Business Intelligence solution:

## Procedure

1. Review the reports and dashboards provided in Sterling Business Intelligence and understand whether they meet your business requirements. For more information about the reports and dashboards, refer to the *Sterling Business Intelligence: User Guide*.
2. Make appropriate configuration changes to the model. For more information about configuring Sterling Business Intelligence, refer to the topic Chapter 2, "Configure IBM Sterling Business Intelligence," on page 5.
3. Perform the initial data load, which helps load the existing data into the data mart. For more information about initial data load, refer to the topic Chapter 3, "Load Management," on page 15.
4. Perform incremental data load, which helps load the transactional data into the data mart. For more information about incremental data load, refer to the topic Chapter 3, "Load Management," on page 15.
5. Extend and customize Sterling Business Intelligence to meet your business requirements. For more information about extending and customizing, refer to the topic Chapter 6, "Extend and Customize IBM Sterling Business Intelligence," on page 43.

## Conventions

In this manual, Windows refers to all the supported Windows operating systems.

The following conventions may be used in this manual:

**Convention**
**Meaning**

**<AC_INSTALL_DIR>**

User-supplied location of the Sterling Business Intelligence Analytics Content installation directory.

**<AW_INSTALL_DIR>**

User-supplied location of the IBM Cognos Adaptive Warehouse Runtime installation directory.

**<INSTALL_DIR>**

User-supplied location of the IBM Sterling Selling and Fulfillment Foundation installation directory. This is only applicable for Release 9.2.

**COGNOS_AW_HOME**

This is an environment variable. The value of this environment variable is set to the user-supplied location of the Cognos Adaptive Warehouse Runtime installation directory.

# Chapter 2. Configure IBM Sterling Business Intelligence

You can configure Sterling Business Intelligence to restrict the data that is loaded into the data warehouse from the online transaction processing (OLTP) system.

Prior to configuring Sterling Business Intelligence, ensure that you have performed all the steps mentioned in the *Sterling Business Intelligence: Installation Guide*.

For details about setting up the Cognos Adaptive Warehouse Content, refer to the *Sterling Business Intelligence: Installation Guide*.

## Configure the Data Mart Project

After setting up the Cognos Adaptive Warehouse Content, perform the following configurations to restrict the data that is loaded into the data mart.

### Configure the Install Locale

#### Before you begin

To configure the install locale, perform the following tasks:

#### Procedure

1. Launch the Cognos Adaptive Warehouse application.
2. Open `Sterling Data Source` project.
3. Click the **Source** tab.
4. Click **Parameter Maps** and select **Locale Code Map**.
   The Parameter Map Definition screen is displayed.
5. Change the values for the Country or Region and Language keys. By default, US and en are the values respectively for the Country or Region and Language keys. For example, if your base locale is ja_JP, the Country or Region and Language values must be changed to ja and JP respectively.
6. Click the **Warehouse** tab.
7. Click **Save**.

### Define a Catalog

You must determine a catalog for analytical purpose. Only items belonging to this catalog will be considered for analysis.

#### About this task

**Note:** When an item belongs to multiple categories in a catalog, the item is displayed as a part of one category only.

To define a catalog, perform the following tasks:

#### Procedure

1. Launch the Cognos Adaptive Warehouse application.
2. Open Sterling Data Source project.
3. Click the **Source** tab.

4. Navigate to Source > Product Category Hierarchy source > Product Category Hierarchy Product Category Tree Input Source.
5. Double-click **Category Domain Filter**.

   The Filter Definition screen is displayed.
6. Click the **Parameter** tab.
7. Select the required catalog code from Category Domain Map.
8. Click **OK**.
9. Click the **Warehouse** tab.
10. Double-click the **Product Category Hierarchy** dimension.
11. Click the **Dataflow** tab.
12. For each dataflow, apply the category domain filter.
13. Click **Save**.

# Define Hold Types for Order Hold Analysis

## About this task

The model that is shipped along with Sterling Business Intelligence consists of all the hold types, including the system-specific hold types. You can exclude specific hold types and perform the analysis. To perform analysis based on specific hold types, perform the following tasks:

## Procedure

1. Launch the Cognos Adaptive Warehouse application.
2. Open Sterling Data Source project.
3. Click the following folders sequentially: **Warehouse**, **Order Management**, **Sales Order**.
4. Double click **SO Hold**.
5. Click the **Dataflow** tab.
6. Double click **SO Hold Initial Load Input Source**.
7. Click the **Filters** tab.
8. Add a new filter and provide a list of hold types that have to be considered, for example,

   ```
   [SO Hold SO Hold Initial Load Input Source].[SO Hold Initial Load Input Source].[Hold Type] in (
   ```
9. Add the above Hold Type filter to the input query subject pertaining to **SO Hold** dataflow.
10. Click **Save**.

# Define Credit Hold Types for Customer Rating

For customer rating, it is recommended that you consider only credit hold types.

## Before you begin

To define credit hold types for customer rating:

## Procedure

1. Launch the Cognos Adaptive Warehouse application.
2. Open Sterling Data Source project.
3. Click the **Source** tab.
4. Click **Parameter Maps** and select **Credit Hold Type**.

5. The Parameter Map Definition screen is displayed. In the **Value** field, enter the hold types considered for credit hold as the value of the **HOLD_TYPE** key. If there are more than one hold types, the hold types should be entered in the form of comma separated strings, for example,

   'Credit Hold Type', 'Credit Fraud Check'.
6. Click **Save**.

## Modify Weights for Customer Rating

### About this task

To modify weights for customer rating:

### Procedure

1. Launch the Cognos Adaptive Warehouse application.
2. Open Sterling Data Source project.
3. Click the **Source** tab.
4. Click **Parameter Maps** and select **Customer Rating Weightage**.
5. In the Parameter Map Definition screen that is displayed, perform the following steps:
   a. Change the value of the Last Year Revenue Weightage key. By default, 0.6 is the value of this key.
   b. Change the value of the Lifetime Revenue Weightage key. By default, 0.4 is the value of this key.
   c. Change the value of the Current Credit Hold Revenue Weightage key. By default, 0.2 is the value of this key.
   d. Change the value of the Last Year Credit Hold Weightage key. By default, 0.05 is the value of this key.
6. Click **Save**.

# Configure the IBM Sterling Business Intelligence Application

After setting up the Cognos Adaptive Warehouse Content, perform follow the additional configurations to restrict the data that is loaded into staging.

## Map Address to a Region

You must define a region schema for analytical purpose. This region schema is used to determine the region associated with the customer's address and to perform analysis based on regions.

### About this task

To define a region schema for analytics purpose, perform the following tasks:

### Procedure

1. Launch Application Manager.
2. Click **Application** menu and select **Application Platform**. From the Application Platform Side panel, select **Business Intelligence > Region Usage For Business Intelligence**.

   The Region Usage For Business Intelligence window is displayed.
3. From the Schema For Business Intelligence select the region schema, you want to use for the data warehouse reports.

4. Click **Save**. For more information about configuring Region Match Preference and Region Level, refer to the *Sterling Selling and Fulfillment Foundation: Configuration Guide*.

### Convert Long Zip Code to Short Zip Code

Short zip code is used to obtain the best match region for a customer's address. It is a simplified format of an address' zip code. Short zip code regex expression defined for a country or region is used to convert long zip codes to a simplified format. You can also implement YCPGetShortZipCodeUE user exit to convert long zip code into short zip code.

If you have installed Sterling Selling and Fulfillment Foundation Release 9.2, in upgrade mode, you must follow the instructions provided in the section “Business Intelligence Enhancements: Best Match Region” in the . If you have installed Sterling Selling and Fulfillment Foundation, Release 9.2, in the non-upgrade mode, refer to the section “Update Best Match Region” in the *Sterling Selling and Fulfillment Foundation: Configuration Guide*.

### Configure Grades for Customer Rating

The grades for customer rating, defined in Applications Manager and stored in the YFS_CUSTOMER_GRADE table in Sterling Selling and Fulfillment Foundation, can be used by other applications. Sterling Business Intelligence imports this YFS_CUSTOMER_GRADE table from Sterling Selling and Fulfillment Foundation and maps the calculated customer's rating to the appropriate grade. For example, if a customer's rating is 1.2, the ETL looks for a grade in which the value of the grade_Code Minimum_Rating attribute is lesser than 1.2 and the value of Maximum_Rating attribute is greater than or equal to 1.2. For more information about configuring grades, refer to the *Sterling Selling and Fulfillment Foundation: Distributed Order Management Configuration Guide*.

## Configure the Purge Criteria

Purge transactions determine when a record has to be purged, by determining the current date and subtracting the retention days specified in the purge criteria. If the timestamp on the table is less than or equal to the value of current days minus retention days, the record is purged.

You can define purge criteria rules for data purges not related to specific document types. Purge is the process by which old data is removed from the system database. A purge minimizes the number of unused database records to increase search efficiency and reduce the size of the required physical disk.

For more information about configuring a document's purge criteria, refer to the *Sterling Selling and Fulfillment Foundation: Distributed Order Management Configuration Guide*.

### Order Timestamp Tag Purge

The Order Timestamp Tag (YFS_ORDER_TS_TAG) table maintains a record of each order and quote that is added or updated in the online transaction processing (OLTP) system. The ETL_TS column of this table is used as a Change Data Capture filter for all the order-related and quote-related dataflows. Based on the data volumes, this table can grow rapidly. To avoid this, a purge agent is provided to purge the records that are older than the configured retention days. The records are purged only if the data has been loaded into the staging system.

## Purge Criteria

The following table displays the purge rule for the Order Timestamp Tag Purge:

| Rule | Description | Retention Days |
|---|---|---|
| SBIORDERTAGTS | Order Tag Timestamp Purge | 7 |

## Attributes

The following table displays the attributes for the Order Timestamp Tag Purge transaction:

**Attribute**
**Value**

**Base Transaction ID**

ORDER_TS_TAG_PRG

**Agent Criteria ID**

ORDERTSTAGPRG

**Base Document Type**

General

**Base Process Type**

General

**Abstract Transaction**

No

**APIs Called**

None

**User Exits Called**

YFSBeforePurgeUE

## Criteria Parameters

The following table displays the criteria parameters for the Order Timestamp Tag Purge transaction:

**Criteria Parameter**
**Description**

**Action**

Required. Triggers the transaction. If left blank, it defaults to Get, the only valid value.

**CollectPendingJobs**

If this parameter is set to N, the agent does not collect information about the pending jobs for this monitor. This pending job information is used for monitoring the monitor in the System Management Console.

**Number of Records To Buffer**

Optional. Number of records to retrieve and process at one time. If left blank or specified as 0 (zero), it defaults to 5000.

**EnterpriseCode**

Optional. The organization for which the Alert Purge has to be run. If it is not passed, all the enterprises are monitored.

**Live**

Optional. Mode in which to run. Valid values are:

Y - Deletes qualifying records from the YFS_ORDER_TS_TAG table.

N - Determines the rows that are deleted from the YFS_ORDER_TS_TAG table.

**PurgeCode**

Required. Cannot be modified. Used for internal calculations, such as determining retention days. Corresponds with the PurgeCode used in Business Rules Purge Criteria. Purge code is SBIORDERTAGTS.

### Statistics Tracked

None.

### Events Raised

None.

### Tables Purged

YFS_ORDER_TS_TAG.

## Shipment Timestamp Tag Purge

The Shipment Timestamp Tag (YFS_SHIPMENT_TS_TAG) table maintains a record of the orders that are shipped. The ETL_TS column of this table is used as a CDC filter for all the shipment-related dataflows. Based on the data volumes, this table can grow rapidly.

### Attributes

The following table displays the attributes for the Shipment Timestamp Tag Purge transaction:

**Attribute**
**Value**

**Base Transaction ID**

SHIPMENT_TS_TAG_PRG

**Agent Criteria ID**

SHIPMENTTSTAGPRG

**Base Document Type**

General

**Base Process Type**

General

**Abstract Transaction**

No

**APIs Called**

None

**User Exits Called**

YFSBeforePurgeUE

## Purge Criteria

The following table displays the purge rule for the Shipment Tag Timestamp Purge:

| Rule | Description | Retention Days |
|---|---|---|
| SBISHIPMENTTAGTS | Shipment Tag Timestamp Purge | 7 |

## Criteria Parameters

The following table displays the criteria parameters for the Shipment Timestamp Tag Purge transaction:

**Criteria Parameter**
**Description**

**Action**

Required. Triggers the transaction. If left blank, it defaults to Get, the only valid value.

**CollectPendingJobs**

If this parameter is set to N, the agent does not collect information on the pending jobs for this monitor. This pending job information is used for monitoring the System Management Console.

**Number of RecordsTo Buffer**

Optional. Number of records to retrieve and process at one time. If left blank or specified as 0 (zero), it defaults to 5000.

**EnterpriseCode**

Optional. The organization for which the Alert Purge has to be run. If it is not passed, all the enterprises are monitored.

**Live**

Optional. Mode in which to run. Valid values are:

Y - Default value. Moves qualifying records from the regular tables listed under Tables Purged to the corresponding history tables.

N - Test mode. Determines the rows that are being purged without actually purging them.

**PurgeCode**

Required. Cannot be modified. Used for internal calculations, such as determining retention days. Corresponds with the PurgeCode used in Business Rules Purge Criteria. Purge Code is SBISHIPMENTTAGTS.

### Statistics Tracked

None

### Events Raised

None.

### Tables Purged

YFS_SHIPMENT_TS_TAG

## Opportunity Timestamp Tag Purge

The Opportunity Timestamp Tag (YFS_OPPORTUNITY_TS_TAG) table maintains a record of each opportunity that is added or updated in the online transaction processing (OLTP) system. The ETL_TS column of this table is used as a Change Data Capture filter for all the opportunity-related dataflows. Based on the data volumes, this table can grow rapidly. To avoid this, a purge agent is provided to purge the records that are older than the configured retention days. The records are purged only if the data has been loaded into the staging system.

### Purge Criteria

The following table displays the purge rule for the Opportunity Timestamp Tag Purge:

| Rule | Description | Retention Days |
|---|---|---|
| SBIOPPORTUNITYTAGTS | Opportunity Tag Timestamp Purge | 7 |

### Attributes

The following table displays the attributes for the Opportunity Timestamp Tag Purge transaction:

**Attribute**
**Value**

**Base Transaction ID**

OPPORTUNITY_TS_TAG_PRG

**Agent Criteria ID**

OPPORTUNITYTSTAGPRG

**Base Document Type**

General

**Base Process Type**

General

**Abstract Transaction**

No

**APIs Called**

None

**User Exits Called**

YFSBeforePurgeUE

## Criteria Parameters

The following table displays the criteria parameters for the Opportunity Timestamp Tag Purge transaction:

**Criteria Parameter**
**Description**

**Action**

Required. Triggers the transaction. If left blank, it defaults to Get, the only valid value.

**CollectPendingJobs**

If this parameter is set to N, the agent does not collect information about the pending jobs for this monitor. This pending job information is used for monitoring the monitor in the System Management Console.

**Number of Records To Buffer**

Optional. Number of records to retrieve and process at one time. If left blank or specified as 0 (zero), it defaults to 5000.

**EnterpriseCode**

Optional.

**Live**

Optional. Mode in which to run. Valid values are:

Y - Deletes qualifying records from the YFS_OPPORTUNITY_TS_TAG table.

N - Determines the rows that are deleted from the YFS_OPPORTUNITY_TS_TAG table.

**PurgeCode**

Required. Cannot be modified. Used for internal calculations, such as determining retention days.Corresponds with the PurgeCode used in Business Rules Purge Criteria. Purge code is SBIOPPORTUNITYTAGTS.

## Statistics Tracked

None.

## Events Raised

None.

## Tables Purged

YFS_OPPORTUNITY_TS_TAG.

# Chapter 3. Load Management

Load management extracts, transforms, and loads (ETL) data from the online transaction processing (OLTP) database and other data sources into your data warehouse. Load management synchronizes the source model and target model to the warehouse model and updates the data mart to reflect the changes in the warehouse model. Load management also publishes the source and target packages to the IBM Cognos portal. You can use load management differently, depending on the environment that you work in.

**Note:** The ETL process may not load some data into the data mart if the system time of the IBM Cognos Business Intelligence server is ahead of the OLTP database server. To avoid this, prior to starting the ETL process, you must ensure that the time in the Cognos Business Intelligence Server is set to at least one minute slower that the OLTP database server. In case the platform considerations do not allow for time synchronization, the Cognos Business Intelligence server should run one minute slower than the OLTP server.

## Staging

Staging serves as a gateway for integrating data from multiple schemas, and delivering the same to the data mart. Staging is required for an ETL process to deliver functionally correct data with the least impact on the source system. The advantages of the staging process are as follows:

- Staging reduces the load on the production server by ensuring that the incremental data is first copied to a staging, and then transforms are applied from the staging to the data mart.
- In a multischema mode, staging helps obtain data from multiple colonies into a single data mart.

## Disk Sizing

Factors such as the amount of custom extensions and the frequency of the staging contribute to how much disk space is required. The following table gives information about the minimum disk space required:

| Database | Temporary Space | Data Size |
|---|---|---|
| Staging | Same size as OLTP | Same size as OLTP tables being staged. |
| Data mart | • 4-5 times the size of OLTP for database temporary space.<br>• 3 times the size of OLTP data in the IBM Cognos temporary directory on filesystem. | • Same size as OLTP tables being staged.<br>• One fifth the size of OLTP initially.<br>**Note:** The data mart size will continue to grow overtime and should be regularly monitored to check growth rate. The growth rate and existing disk space should be used to estimate future needs. |

## Data Mart

Data mart is a dimensionally modeled relational database. The reports in Sterling Business Intelligence are based on this database.

The Sterling Data Source project extracts data from the staging and performs the necessary transformations and loads them into the warehouse database. This project contains all the metric calculations and star schema definitions. The Sterling Data Source project contains scripts that extract data such as Configuration, Master, and Transaction.

## Change Data Capture Filters

Change Data Capture (CDC) filters determine the updates to your OLTP source system from one load to another. You can set a date range to control the amount of data that is loaded.

CDC filters also determine the updates to your data warehouse from one load to another. You can set a date range to control the amount of data that is loaded. Let us for example, consider that you have previously loaded data for the period 2000-2006, and now want to load only the data pertaining to 2007. You must create a CDC filter to add only the new or changed data and avoid reloading data from 2000-2006.

## Configuring IBM Sterling Business Intelligence for Loading Large Dimensions

While loading very large dimensions and their dependant facts in Sterling Business Intelligence memory related errors occur as system memory can be a limiting resource. Very large dimensions are dimensions that are typically in excess of one million rows and greater than 2 Kilo bytes wide. These may exhaust available memory used to cache records during the `Dimension Build` and `Look Up` ETL steps when running load management.

Symptomatic of this will be `memory allocation failure` errors reported in load management job logs. Under normal operating conditions memory constraints may prevent successful delivery of very large dimensions and their dependant facts.

The following techniques can be applied to successfully load large dimensions :

- "Loading a Large Dimension using Load Partitioning"
- "Loading a Fact with a Related Large Dimension" on page 17

Ensure that you apply the above techniques, before you perform load management.

### Loading a Large Dimension using Load Partitioning

Loading a very large dimension (i.e. a dimension with no historical attributes) will require processing of the ETL in multiple batches. This is done using the Cognos Adaptive Warehouse Load Partitioning.

For more information on the procedure to perform load partitioning, refer to the following link: http://publib.boulder.ibm.com/infocenter/caapps/v10r1m0/topic/com.ibm.swg.ba.cognos.ug_aw.10.1.0.doc/t_crtldpart.html#CrtLdPart.

With the partitions configured, proceed to run load management for the dimension as you would normally.

# Loading a Fact with a Related Large Dimension

## Purpose

Unmatched dimensional member processing in the fact delivery requires the whole dimension be cached in memory. This can cause memory allocation errors with very large dimensions. To alleviate this problem, the reference between the fact and the dimension in the Cognos Adaptive Warehouse model can be removed. Instead, a dimension business key is manually added to the fact and once the fact is loaded a new relationship is created in the Target Framework Manager Model to relate the fact to the very large dimension.

## Sample Procedure for SO Line Fact

Memory allocation errors occur while loading records from the Product and Address Region dimensions into memory while running ETL for SO Line dataflow. To successfully load the records perform the following steps:

1. In the Cognos Adaptive Warehouse SO Line Start Schema model delete the reference to Address Region and Product. Deleting the SO Line to Product reference and SO Line to Address Region reference will bypass the Product and Address Region unmatched dimensional processing and the memory allocation error when loading the SO Line fact.
2. Move Product and Address Region to the Measures table by setting the **Is Degenerative Dimension** property to **No** and the **Is Stored** property to **Yes**.
3. Run Load Management to load the SO Line fact.
4. Create the following relationships :
   - Create a new Relationship between [Product].[Product_] and [Database Layer].[SO Line Measures] in the Target model.
   - Create a new Relationship between [Address Region].[Address Region_] and [Database Layer].[SO Line Measures] in the Target model.

   **Note:** A Left Outer Join is used to prevent losing transaction data when unmatched dimensional members are encountered. For more information about creating new relationships, refer to the following link : http://publib.boulder.ibm.com/infocenter/caapps/v10r1m0/topic/com.ibm.swg.im.cognos.ug_fm.10.1.0.doc/ug_fm_id4224verifying_relationships.html#verifying_relationships

   **Note:** While creating this new relationship, you will be prompted with a dialogue box with the following message :

   ```
   Creating this relationship will cause the referenced query subject to
   behave as a stand-alone query subject; this will override the ability to
   use underlying relationships.
   ```

   Ensure that you click on the **No** button.
5. Create a shortcut to Product and Address Region dimension in the SO Line namespace.
6. Create Scope Relationship between Product and SO Line Measures, Address Region and SO Line Measures. For more information, refer to the following topic : http://publib.boulder.ibm.com/infocenter/caapps/v10r1m0/topic/

com.ibm.swg.im.cognos.ug_fm.10.1.0.doc/
ug_fm_id7646dimensions_rel_metadata.html#dimensions_rel_metadata

7. Republish the target model.

## Load Interval

You can set a load interval for a CDC filter. Specifying a load interval reduces the amount of data being read and processed by the Cognos Adaptive Warehouse load engine at one time by dividing the data into a number of smaller batches. This ensures that the server does not run out of memory and that the load operation completes successfully.

For example, for the initial load of your data warehouse, will probably have historical data from many years that you want to load. Calculate the number of batches for the filter by dividing the difference between the From and To dates by the number of load intervals. The Cognos Adaptive Warehouse load engine creates a maximum of 99 batches. Based on the volume of the data, you must find a balance between the batch limit and the memory capacity of your machine.

The load interval is measured in days for loading a fact with a change date. For example, if the date range for a CDC filter is from January 1, 2000, to June 15, 2007, and you specify a load interval of 30. When load management is run, multiple batches are generated by the Cognos Adaptive Warehouse load engine. Each batch consists of 30 days. The first batch extracts data from January 1, 2000, to January 30, 2000, the second batch extracts data from January 31, 2000, to March 1, 2000, and so on. In this example, the Cognos Adaptive Warehouse load engine generates 90 batches.

For more information about load management and optimizing performance, refer to the *IBM Cognos Analytic Applications Installation and Configuration Guide* and the *IBM Cognos Analytic Applications Adaptive Warehouse User Guide*.

## Generate the Staging Project Package File

To load data from the OLTP database to the Staging, you require the Staging Project Package file that can be generated by the Staging Project Package file generation tool. To run the Staging Project Package file generation tool, you must perform the following tasks:

1. "Define a DB-Alias File" on page 19
2. "Staging Entity Metadata File" on page 19
3. "Generating the Staging Project Package File" on page 20

The Staging Project Package file generation tool uses the data source connection information from the DB-Alias file and stores it in the generated Staging Project Package file. The Staging Entity Metadata file contains information about the entities required to be loaded into staging. The tool gets the entity information such as entity name, supported table types of entity, columns associated with the entity, extended columns, and so on from the entity repository. An ETL job takes the required information from the Staging Project Package file to load the data into the staging.

**Note:** Ensure that you perform all these tasks from the server in which Sterling Selling and Fulfillment Foundation is installed.

## Define a DB-Alias File

A DB-Alias file provides information about the data source connections.

### About this task

To define a DB-Alias file:

### Procedure

1. Create the `<db_alias>.txt` file.
2. Add the connection information for the required data sources in <db_alias>.txt file. The syntax for a connection string is as follows:

   ```
   <PRODUCTION> '<data_source>' <catdb_driver> '<catdb_items>'
   ```

   - <data_source> is the name of the data source. For staging and data mart, the data source names should be STERLING_STAGING_DATA_SOURCE and STERLING_DATA_SOURCE respectively.

     You must start all the transaction schemas data source names with TRANSACTION and the Configuration schema names with CONFIGURATION. Ensure that the complete value for this variable is defined in single quotes. It is assumed that master and transaction schemas are shared. Therefore, it is not required to define data source details of master data schema.

     **Note:** In a multischema deployment, you must define the data source information of transaction schemas in all the colonies that are required to be loaded.
   - <catdb_driver> specifies the database driver used to connect to the catalog containing the Job Stream. The value of this property depends on the database being used.

     The database name and its corresponding <catdb_driver> values are as follows:

     – Oracle: ORACLE
     – DB2®: DB2
   - <catdb_items> specifies the connection string that is required to connect to the data source. Ensure that the value for this variable is defined in single quotes.

     The database name and its corresponding <catdb_ items> values are as follows:

     – Oracle: '<userid>/<password>@<SID>'
     – DB2: '<DSN=<database>;UID=<userid>;PWD=<password>'

### Example

A sample DB-Alias file is as follows:

```
<PRODUCTION> 'STERLING_STAGING_DATA_SOURCE' ORACLE 'staging_test/staging_test@ORCL'
<PRODUCTION> 'STERLING_DATA_SOURCE' ORACLE 'target_test/staging_test@ORCL'
<PRODUCTION> 'CONFIGURATION-1' ORACLE 'oltp_config/oltp-config@ORCL'
<PRODUCTION> 'TRANSACTION-1' ORACLE 'oltp_colony_1/oltp_colony_1@ORCL'
<PRODUCTION> 'TRANSACTION-2' ORACLE 'oltp_colony_2/oltp_colony_2@ORCL'
```

## Staging Entity Metadata File

The Staging Entity Metadata file contains information about the following:

- Entities that need to be loaded into the staging.

- Entity information such as table name, table type, and so on.
- Relationship between the transaction entities, the driver tables, and filters.

The data is loaded into the staging from all the columns of an entity including the extended columns. You should not change this file. If you want to add new entities, you need to define the extended Staging Entity Metadata file before generating the Staging Project Package file. For more information about customizing the staging project, refer to the Extend and Customize Sterling Business Intelligence topic.

## Generating the Staging Project Package File

Execute the Staging Project Package file generation tool to generate the Staging Project Package file. This tool gets the required information from the DB-Alias file, Staging metadata entity file, and the entity repository.

### Before you begin

To generate the Staging Project Package file:

### Procedure

1. Navigate to the <install_dir>/bin folder.

   Here, <install_dir> is the directory in which Sterling Selling and Fulfillment Foundation is installed.
2. Execute either of the following commands:
   - To generate the initial load package file:

     For Windows

     ```
     sci_ant.cmd -f generate_staging_package.xml initial
     -Dfile_name=<package_file_name> -Ddb_alias=<db_alias_file_path>
     ```

     For Linux or UNIX

     ```
     sci_ant.sh -f generate_staging_package.xml initial
     -Dfile_name=<package_file_name> -Ddb_alias=<db_alias_file_path>
     ```

     Here, <package_file_name> is the name of the generated Staging Project Package file. If you do not pass any argument, the Staging Project Package file is generated with Staging_Initial_Load_Package.pkg as the name.

     <db_alias_file_location> is the path in which the DB-Alias file is defined. This argument is mandatory.
   - To generate the incremental load package file:

     For Windows

     ```
     sci_ant.cmd -f generate_staging_package.xml incremental
     -Dfile_name=<package_file_name> -Ddb_alias=<db_alias_file_path>
     ```

     For Linux or UNIX

     ```
     sci_ant.sh -f generate_staging_package.xml incremental
     -Dfile_name=<package_file_name> -Ddb_alias=<db_alias_file_path>
     ```

     Here, <package_file_name> is the name of the generated Staging Project Package file. If you do not pass any argument, the Staging Project Package file is generated with Staging_Incremental_Load_Package.pkg as the name.

     <db_alias_file_location> is the path in which the DB-Alias file is defined. This argument is mandatory.

     The package files generated are located in the <INSTALL_DIR>/bin folder, where <INSTALL_DIR> is directory in which Sterling Selling and Fulfillment Foundation is installed.

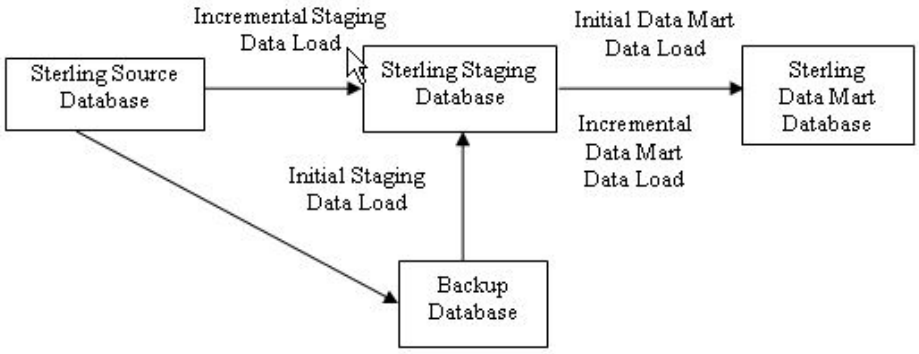
For more information about load management, refer to the following:

– Load Initial Data into the Staging
– Load Incremental Data into the Staging

For more information refer to the *Sterling Business Intelligence: Implementation Guide*.

## Load Data Into Data Mart

The load management process in Sterling Business Intelligence is illustrated here:




1. Back up the OLTP source database before you go live (typically two weeks earlier) with Sterling Business Intelligence.
2. Initial data load from the backup database to the Sterling Staging Database
3. Initial data load from the Sterling Staging Database to the Sterling Data mart Database
4. Incremental data load from the Sterling Source Database to the Sterling Staging Database
5. Incremental data load from the Sterling Staging Database to the Sterling Data mart Database

### Create a Backup Database

It is recommended that you take a backup of your OLTP source database along with the history data as required (typically, 2 years) before you go live with Sterling Business Intelligence. Restore this backup into a different database and use this to perform initial data load.

For more information about taking a backup and restoring your database, refer to your database vendor documentation.

### Configure the NLS_LANG Parameter for Oracle Database

To localize your reports to a multibyte language for oracle database, you must set the NLS_LANG environment variable to the appropriate value.

For Unix or Linux,

**export NLS_LANG=<language>_<territory>_UTF8**.

For example, **export NLS_LANG=AMERICAN_AMERICA.UTF8**

For Windows,

**set NLS_LANG=<language>_<territory>_UTF8**.

For example, **set NLS_LANG=AMERICAN_AMERICA.UTF8**

## Initial Data Load

Initial load dataflow enables you to load existing data into the data mart. These dataflows load data from transaction tables and their history tables. You can set properties such as CDC filters and Load Interval, to improve the performance of the ETL process that occurs during load management. Initial data load is used to bring data into the data warehouse the first time. For loading existing data into staging project, the configuration, master, and transaction tables are used.

Because Initial Data Load is a long-running and memory-intensive process, you must control the amount of data that is loaded in order to avoid running into out-of-memory exceptions. This is done using the CDC filters and Load Interval properties.

**Note:** When an order is purged, the quantity in YFS_ORDER_RELEASE_STATUS record is set to zero. These records are not considered in the Volume Analysis metrics calculations.

**Note:** To configure parallel processes in the Cognos Adaptive Warehouse application click **Options** in the Load Management tab. The number of parallel processes that can be configured during ETL is one half the number of CPUs on your computer. Set this number in the **Number of Parallel Processes** field. Leave it at the default value of one if you have one CPU. The actual number of processes that run simultaneously can vary from the number specified.

**Note:** To delete the contents of the data warehouse before loading data for aggregate summary facts, in the Cognos Adaptive Warehouse application, select Load Management from the **Actions** menu. Click **Properties** to open the Set Dataflow/Instance Runtime Parameters window. Set the **Complete Reload** property to **Yes**.

## Loading Initial Data into the Staging

The staging project loads the data from the following configuration, master, and transaction tables:

- **Configuration Tables**
  - YFS_ORGANIZATION
  - YFS_COMMON_CODE
  - YFS_PAYMENT_TYPE
  - YFS_HOLD_TYPE
  - YFS_STATUS_MODIFICATION_TYPE
  - YFS_PERSON_INFO_CONFIG
  - YFS_REGION
  - YFS_DOCUMENT_PARAMS
  - YFS_LOCALIZED_STRINGS
  - YFS_REGION_BEST_MATCH
  - YFS_CATEGORY_DOMAIN
  - YFS_REGION_SCHEMA

- YFS_REGION_USAGE
- YFS_CAT_DOMAIN_LOCALE
- YFS_DATA_SECURITY_GROUP
- YFS_CHARGE_CATEGORY

- **Master Tables**
  - YFS_ITEM
  - YFS_CATEGORY
  - YFS_CATEGORY_ITEM
  - YFS_CUSTOMER
  - YFS_CONSUMER
  - YFS_CUSTOMER_CONTACT
  - YFS_USER
  - YFS_USER_GROUP_LIST
  - YFS_ITEM_LOCALE
  - YFS_CATEGORY_LOCALE
- **Transaction Tables**
  - YFS_ORDER_HEADER
  - YFS_ORDER_LINE
  - YFS_ORDER_RELEASE_STATUS
  - YFS_ORDER_DATE
  - YFS_ORDER_LINE_SCHEDULE
  - YFS_CHARGE_TRANSACTION
  - YFS_PAYMENT
  - YFS_ORDER_HOLD_TYPE
  - YFS_ORDER_HOLD_TYPE_LOG
  - YFS_ORDER_AUDIT
  - YFS_ORDER_AUDIT_LEVEL
  - YFS_SHIPMENT
  - YFS_SHIPMENT_LINE
  - YFS_OPPORTUNITY
  - YFS_PERSON_INFO
  - YFS_LINE_CHARGES

## Load Initial Data in IBM Sterling Business Intelligence for the Staging Project

To load the initial data in Sterling Business Intelligence for the staging project, perform the following steps:

### Procedure

1. Copy the generated initial load Staging Project Package file from the `<INSTALL_DIR>/bin` folder to the server where Cognos Adaptive Warehouse Runtime is installed.

   Here, `<INSTALL_DIR>` is the directory in which the Sterling Selling and Fulfillment Foundation is installed.
2. For Windows, copy the `staging_load_management.cmd` file from the `<AC_INSTALL_DIR>/bin/` folder to the server where Cognos Adaptive Warehouse Runtime is installed.

For Linux or UNIX, copy the staging_load_management.sh file from the <AC_INSTALL_DIR>/bin/ folder to the server where Cognos Adaptive Warehouse Runtime is installed. After copying the file, provide execute permission to the staging_load_management.sh file.

**Note:** Ensure that all the environment variables are set before launching the Cognos Adaptive Warehouse Runtime and creating datasources.

**Note:**

- If Oracle is the database for your data mart and you are using a 64 bit client on UNIX, before running the command, ensure that the 32 bit client libraries are present in the shared libraries path you provide.

  Set the environment variables as follows:

  – Set the value of the COGNOS_AW_HOME environment variable to the install directory of Cognos Adaptive Warehouse Runtime.
  – Set the value of the DB_ALIAS_DRIVER environment variable to the database name.

    The database name and its corresponding values are as follows:

    - Oracle: ORACLE
    - DB2: DB2

- Set the value of the DB_ALIAS_ITEM environment variable to the connection string information of Sterling Staging Database. This value must be passed in double quotes.

  Database name and its corresponding values are as follows:

  – Oracle: "<userid>/<password>@<SID>"
  – DB2: "DSN=<database>;UID=<userid>;PWD=<password>"

- Set the value of the LOG_DIR environment variable to the directory in which the ETL log files are stored. The default location of the ETL log files is <AW_Install_Dir>\datamanager\log.

3. To create the staging catalog tables, DDL, and CDC tables, run the following commands respectively:

   - For Windows

     ```
     staging_load_management.cmd setup <initial_load_package_file>
     ```

   - For Linux or UNIX

     ```
     staging_load_management.sh setup <initial_load_package_file>
     ```

   Here, the <initial_load_package_file> variable indicates the path and the name of Sterling Staging Initial Package file.

4. To load data from all the configuration and master tables, run the following command:

   - For Windows

     ```
     staging_load_management.cmd Configuration_Master
     <initial_load_package_file path>
     ```

   - For Linux or UNIX

     ```
     staging_load_management.sh Configuration_Master
     <initial_load_package_file path>
     ```

5. To load data from the transaction tables, run the following command:

   - For Windows

     ```
     staging_load_management.cmd Initial_Load_Bulk_Data
     <initial_load_package_file path> <start_date> <end_date> <table_name>
     ```

- For Linux or UNIX

  ```
  staging_load_management.sh Initial_Load_Bulk_Data
  <initial_load_package_file path> <start_date> <end_date> <table_name>
  ```

**Note:** Here <table_name> is an optional parameter. If you do not add <table_name> parameter to the commands above, then data from all the transaction tables are loaded.

Also, pass the values for the <start_date> and <end_date> variables in the 'YYYY-MM-DD' format. <start_date> and <end_dates> are the dates in which the initial load data is distributed. For example, if the initial load data is distributed from 01/01/2007 to 12/31/2009 then run the following command to load initial data:

```
staging_load_management.cmd/sh Initial_Load_Bulk_Data
<initial_load_package_file path> '2007-01-01' '2009-12-31'
```

**Note:**

You can view the log files in the `<AW_Install_Dir>\datamanager\log\ <etl_execution_time>` directory to find if the initial data load job stream is successful. If any build stream fails to execute, you must truncate the corresponding table in the staging and execute the build stream again. To execute a build stream, run the following command:

```
staging_load_management.cmd/sh Initial_Load_Bulk_Data
<initial_load_package_file path> <start_date> <end_dates> <table_name>
```

## Loading Initial Data in IBM Sterling Business Intelligence for the Data Mart Project

The data mart project contains dataflows that extract data from the configuration, master, and the transaction tables.

The dataflows that extract data pertaining to initial data load for the data mart project are listed below.

- **Configuration Dataflows and Master Dataflows**
  - Address Dataflow
  - Address Region Hierarchy Dataflow
  - Buyer Dataflow
  - Calendar Dataflow
  - Channel Dataflow
  - Customer Contact Dataflow
  - Customer Dataflow
  - Customer Hierarchy Dataflow
  - Delivery Method Dataflow
  - Document Type Dataflow
  - Enterprise Dataflow
  - Fulfillment Type Dataflow
  - Hold Type Dataflow
  - Industry Dataflow
  - Modification Type Dataflow

  - Payment Type Dataflow
  - Product Category Tree Dataflow
  - Product Dataflow
  - Return Reason Dataflow
  - Sales Person Dataflow
  - Sales Team Dataflow
  - Seller Dataflow
  - Ship Node Dataflow
  - Time Period Dataflow
  - User Ranges Dataflow
- **Transaction Dataflows**
  - Opportunity Initial Load Dataflow
  - Quote Line Initial Dataflow
  - RO Line Initial Dataflow
  - Shipment Line Initial Load Dataflow
  - SO Hold Initial Load Dataflow
  - SO Line Initial Load Dataflow
  - SO Modification Initial Load Dataflow
  - SO Payment Initial Load Dataflow
- **Aggregate (Summary) Dataflows**
  - Customer Category Quotes Daily Summary Dataflow
  - RO Daily Summary Dataflow
  - Shipment Summary Dataflow
  - SO Customer Monthly Summary Dataflow
  - SO Daily Category Summary Dataflow
  - SO Daily Range Summary
  - SO Daily Region Summary Dataflow
  - SO Daily Summary Dataflow
  - SO Hold Summary Dataflow
  - SO Modification Summary Dataflow
  - SO Payment Summary Dataflow
- **SO Monthly Summary Dataflow**
  - SO Monthly Summary Dataflow
- **Customer Rating Dataflow**
  - Customer Rating Dataflow

## Load the Initial Data in IBM Sterling Business Intelligence for the Data Mart Project

To load the initial data in Sterling Business Intelligence for the data mart project, perform the following steps:

### Procedure

1. Launch the Cognos Adaptive Warehouse application.
2. Open the Sterling Data Source project.
3. From the **Actions** menu, select **Load Management**.
   The Load Management screen is displayed with the available dataflows.

4. Select the required initial dataflow and click **CDC Filters**.

   The Change Data Capture Parameters screen is displayed.
5. Enter the time period range in the **From Value** field and **To Value** field to load data in each filter item.
6. Repeat steps 3 to 5, for the other required dataflows.
7. If you want to delete the contents of the data warehouse before loading data, perform the following steps:
   a. Click **Properties** to open the **Set Dataflow/Instance Runtime Parameters** window.
   b. Set the **Complete Reload** property to **Yes**.
8. Click **Close**.
9. Click **Save**.
10. From the `Actions` menu, select **Load Management**.

    The Load Management screen is displayed with all the available dataflows.
11. Click **Deselect All**.
12. Generate the script for all Configuration, Master, and Transaction dataflows as follows:

    Select all the Configuration, Master, and Transaction dataflows.

    Click **Script**.

    The `Script` dialog box is displayed.

    Enter `\cognos\ap\bin\<configuration_master_transaction_script_filename>.xml` in the Script Location field and click **Save**.
13. Generate the script for all Aggregate (Summary) dataflows as follows:
    a. Select all the Aggregate (Summary) dataflows.
    b. Click **Script**. The Script dialog box is displayed.
    c. Enter `\cognos\ap\bin\<aggregate_script_filename>.xml` in the Script Location field and click **Save**.
14. Generate the script for the SO Monthly Summary dataflow as follows:
    a. Select all the SO Monthly Summary dataflow.
    b. Click **Script**. The Script dialog box is displayed.
    c. Enter `\cognos\ap\bin\<SO_monthly_summary_script_filename>.xml` in the Script Location field and click **Save**.
15. Generate the script for the Customer Rating dataflow as follows:
    a. Select all the Customer Rating dataflow.
    b. Click **Script**. The Script dialog box is displayed.
    c. Enter `\cognos\ap\bin\<customer_rating_script_filename>.xml` in the Script Location field and click **Save**.
16. Click **OK**.
17. Click **Close**.

**Note:** Ensure that all the environment variables are set before launching the Cognos Adaptive Warehouse Runtime and creating datasources.

**Note:**

- If the Cognos Adaptive Warehouse Runtime and Cognos Adaptive Warehouse applications are installed on different servers, copy the generated script to the appropriate location.

- The script must be regenerated every time there is a change in the Sterling Staging Data Source project.

18. To run the load management scripts, execute the following command from the `\cognos\ap\bin` folder:

    `pwexec.cmd <path\filename>.xml` (For Windows)

    `pwexec.sh <path\filename>.xml` (For UNIX)

    **Note:**

    - If Oracle is the database for your data mart and you are using a 64 bit client on UNIX, before running the command, ensure that the 32 bit client libraries are present in the shared libraries path you provide.
    - When running or scheduling the scripts, ensure that the scripts are executed in the following sequence:
      a. Configuration, Master, and Transaction dataflow script
      b. Aggregate dataflow script
      c. SO Monthly Summary dataflow script
      d. Customer Rating dataflow script
    - After you run the scripts, you may see some "Circular referencing detected" and "Using non-string item [User Ranges].[User Ranges].[User Ranges].[Range Identifier].[Range Identifier] for _memberCaption role" warnings in the `<AW_INSTALL_DIR>/ap/data/aaf/logs/aw-<timestamp>.log` file. You can ignore these warnings.
    - After you run the scripts, you may see some `ICCLConfiguration exception` and `CCLConfigurationException` errors in the `<AW_INSTALL_DIR>/ap/logs/ipfInternal_cpp.log` file. You can ignore these errors.

    It is recommended that you truncate all the transaction tables in the staging before starting the incremental load.

    **Note:** Before running the data mart load ensure that you run the command to collect the database statistic on staging. For more information, about the command to collect the database statistic, refer to your database vendor documentation.

## Incremental Data Load

Incremental data load refers to changes in the OLTP source system. Every change in the OLTP source system must be reflected in the data mart system, and occurs through incremental load (basically, synchronizing the data between the OLTP source system and the data mart system). You must also add the configuration data and master data because they do not change frequently. It is recommended that the incremental load scripts are run as scheduled jobs, and the configuration data and master data are reloaded periodically.

**Note:** The CDC filters for the incremental data load use the ETL_TS column in the YFS_ORDER_TS_TAG table or the YFS_SHIPMENT_TS_TAG table.

## Loading Incremental Data into the Staging

The staging project contains tables that extract data from the configuration, master, and transaction tables. For incremental data load, the tables that extract the configuration data and the master data are the same as that of the initial data load. The tables that extract transaction data are:

- YFS_ORDER_HEADER

- YFS_ORDER_LINE
- YFS_ORDER_RELEASE_STATUS
- YFS_ORDER_DATE
- YFS_ORDER_LINE_SCHEDULE
- YFS_CHARGE_TRANSACTION
- YFS_PAYMENT
- YFS_ORDER_HOLD_TYPE
- YFS_ORDER_HOLD_TYPE_LOG
- YFS_ORDER_AUDIT
- YFS_ORDER_AUDIT_LEVEL
- YFS_SHIPMENT
- YFS_SHIPMENT_LINE
- YFS_OPPORTUNITY
- YFS_ORDER_TS_TAG
- YFS_SHIPMENT_TS_TAG
- YFS_PERSON_INFO
- YFS_LINE_CHARGES
- YFS_OPPORTUNITY_TS_TAG

## Load Incremental Data into the Staging

### Before you begin

Ensure that all the Staging database schema tables are dropped after loading initial load data into staging and data mart. These tables will be recreated when you load incremental data.

### About this task

To load the incremental data in Sterling Business Intelligence for the staging project, perform the following steps:

### Procedure

1. Copy the generated incremental load `Staging Project Package` file from the `<INSTALL_DIR>/bin` folder to the server where Cognos Adaptive Warehouse Runtime is installed. Here, `<INSTALL_DIR>` is the directory in which the Sterling Selling and Fulfillment Foundation is installed.
2. Perform the following step:
   - For Windows, copy the `staging_load_management.cmd` file from the `<AC_INSTALL_DIR>/bin/` folder to the server where Cognos Adaptive Warehouse Runtime is installed.
   - For Linux or UNIX, copy the `staging_load_management.sh` file from the `<AC_INSTALL_DIR>/bin/` folder to the server where Cognos Adaptive Warehouse Runtime is installed. After copying the file, provide execute permission to the `staging_load_management.sh` file.

   **Note:**
   - If Oracle is the database for your data mart and you are using a 64 bit client on UNIX, before running the command, ensure that the 32 bit client libraries are present in the shared libraries path you provide. Set the environment variables as follows:

- Set the value of the COGNOS_AW_HOME environment variable to the install directory of Cognos Adaptive Warehouse Runtime.
- Set the value of the DB_ALIAS_DRIVER environment variable to the database name. The database name and its corresponding values are as follows:
  - Oracle: ORACLE
  - DB2: DB2

- Set the value of the DB_ALIAS_ITEM environment variable to the connection string information of Sterling Staging Database. This value must be passed in double quotes. Database name and its corresponding values are as follows:
  - Oracle: "<userid>/<password>@<SID>"
  - DB2: "DSN=<database>;UID=<userid>;PWD=<password>"
- Set the value of the LOG_DIR environment variable to the directory in which the ETL log files are stored. The default location of the ETL log files is <AW_INSTALL_DIR>\datamanager\log.

3. To create the staging catalog tables, DDL, and CDC tables, run the following commands: For Windows, staging_load_management.cmd setup <incremental_load_package_file>. For Linux or UNIX staging_load_management.sh setup <incremental_load_package_file>. Here, the variable <incremental _load_package_file> indicates the path and name of the Sterling Staging Incremental Package file.
4. You can load data from the configuration and master tables at the same time. Alternatively, you can also choose to load data from the configuration and master tables one after the other.
   a. To load data from the configuration and master tables at the same time, run the following command:

      For Windows

      **staging_load_management.cmd Configuration_Master <incremental_load_package_file>**

      For Linux or UNIX

      **staging_load_management.sh Configuration_Master <incremental_load_package_file>**

   b. To load data from configuration tables only, run the following command:

      For Windows

      **staging_load_management.cmd Configuration <incremental_load_package_file>**

      For Linux or UNIX

      **staging_load_management.sh Configuration <incremental_load_package_file>**

   c. To load data from master tables only, run the following command:

      For Windows

      **staging_load_management.cmd Master <incremental_load_package_file>**

      For Linux or UNIX

      **staging_load_management.sh Master <incremental_load_package_file>**
5. To load the incremental data, the following commands are available:
   a. To load incremental data from all the tables, run the following command:

      For Windows

**staging_load_management.cmd ALL_Incremental <incremental_load_package_file> <interval_in_hours> <offset_value> "<user_start_date_and_time>" "<user_end_date_and_time>" "<user_defined_end_date_time>"**

For Linux or UNIX

**staging_load_management.sh ALL_Incremental <incremental_load_package_file> <interval_in_hours> <offset_value> "<user_start_date_and_time>" "<user_end_date_and_time>"**

Here,

**<interval_in_hours>**
Indicates the time interval in hours for dividing the incremental data into batches. Ensure that you specify a positive integer. The default value is 1 hour. You must specify <interval_in_hours> when you want to specify the <offset_value> "<user_start_date_and_time>" "<user_end_date_and_time>".

**<offset_value>**
Indicates the lead time in seconds, after which the data will be loaded into the data mart. The default value is 900 seconds.

**"<user_start_date_and_time>"**
You can specify a date and time range to load the incremental data. The "<user_start_date_and_time>" indicates the start date and time to for the incremental data. Ensure that you specify the value in the following format: "YYYY-MM-DD HH24:MI:SS". For example, "2012-09-04 13:45:30". The "<user_start_date_and_time>" should always be lesser than "<user_end_date_and_time>".

**"<user_end_date_and_time>"**
You can specify a date and time range to load the incremental data. The "<user_end_date_and_time>" indicates the end date and time to load the incremental data. Ensure that you specify the value in the following format: "YYYY-MM-DD HH24:MI:SS". For example, "2012-09-05 13:45:30". The "<user_end_date_and_time>" should always be lesser than "<user_start_date_and_time>".

The incremental data will always be loaded from the last processed date. For example, if you have incremental data that is not loaded from the past 3 days and you want to load the data in batches every 2 hours, then execute the following command:

**staging_load_management.sh ALL_Incremental <incremental_load_package_file> 2**

Here, the incremental data will be loaded in (3 days *24 hours )/2 hours = 36 batches.

**Note:** The higher the volume of data you are having, the more batches you will need. This ensures that the data is broken up and the incremental data load is more balanced.

b. To load incremental data for a particular table, run the following command:

For Windows

**staging_load_management.cmd Incremental_Load <incremental_load_package_file> <table_name> <interval_in_hours> <offset_value> "<user_start_date_and_time>" "<user_end_date_and_time>"**

For Unix or Linux

**staging_load_management.sh Incremental_Load <incremental_load_package_file> <table_name> <interval_in_hours> <offset_value> "<user_start_date_and_time>" "<user_end_date_and_time>"**

Here,

**<interval_in_hours>**
Indicates the time interval in hours for dividing the incremental data into batches. Ensure that you specify a positive integer. The default value is 1 hour. You must specify <interval_in_hours> when you want to specify the <offset_value> "<user_start_date_and_time>" "<user_end_date_and_time>".

**<table_name>**
Indicates the name of the database table. This is a mandatory parameter.

**Note:** For example, if the user wants to load data for YFS_ITEM, then run the following command:**staging_load_management.sh Incremental_Load <incremental_load_package_file> YFS_ITEM**

**<offset_value>**
Indicates the lead time in seconds, after which the data will be loaded into the data mart. The default value is 900 seconds.

**"<user_start_date_and_time>"**
You can specify a date and time range to load the incremental data. The "<user_start_date_and_time>" indicates the start date and time to for the incremental data. Ensure that you specify the value in the following format: "YYYY-MM-DD HH24:MI:SS". For example, "2012-09-04 13:45:30". The "<user_start_date_and_time>" should always be lesser than "<user_end_date_and_time>".

**"<user_end_date_and_time>"**
You can specify a date and time range to load the incremental data. The "<user_end_date_and_time>" indicates the end date and time to load the incremental data. Ensure that you specify the value in the following format: "YYYY-MM-DD HH24:MI:SS". For example, "2012-09-05 13:45:30". The "<user_end_date_and_time>" should always be lesser than "<user_start_date_and_time>".

## Loading Incremental Data in IBM Sterling Business Intelligence for Data Mart Project

In the incremental data load process for the data mart project, the dataflows that extract the configuration data and the master data are the same as that of the initial data load.

The dataflows that extract data pertaining to incremental data load for the data mart project are listed below.

- **Configuration Dataflows and Master Dataflows**
  - Address Dataflow
  - Address Region Hierarchy Dataflow
  - Buyer Dataflow
  - Calendar Dataflow
  - Channel Dataflow
  - Customer Contact Dataflow

  - Customer Dataflow
  - Customer Hierarchy Dataflow
  - Delivery Method Dataflow
  - Document Type Dataflow
  - Enterprise Dataflow
  - Fulfillment Type Dataflow
  - Hold Type Dataflow
  - Industry Dataflow
  - Modification Type Dataflow
  - Payment Type Dataflow
  - Product Dataflow
  - Product Category Tree Dataflow
  - Return Reason
  - Sales Person Dataflow
  - Sales Team Dataflow
  - Seller Dataflow
  - Ship Node Dataflow
  - Time Period Dataflow
  - User Ranges Dataflow
- **Transaction Dataflows**
  - Opportunity Dataflow
  - Quote Line Dataflow
  - Shipment Line Dataflow
  - SO Hold Dataflow
  - SO Line Dataflow
  - SO Modification Dataflow
  - SO Payment Dataflow
- **Aggregate (Summary) Dataflows**
  - Customer Category Quotes Daily Summary Dataflow
  - RO Daily Summary Dataflow
  - Shipment Summary Dataflow
  - SO Customer Monthly Summary Dataflow
  - SO Daily Category Summary Dataflow
  - SO Daily Range Summary Dataflow
  - SO Daily Region Summary Dataflow
  - SO Daily Summary Dataflow
  - SO Hold Summary Dataflow
  - SO Modification Summary Dataflow
  - SO Payment Summary Dataflow
- **SO Monthly Summary Dataflow**
  - SO Monthly Summary Dataflow
- **Customer Rating Dataflow**
  - Customer Rating Dataflow
- **Return Dataflow**
  - RO Line Dataflow

## Load the Incremental Data in Sterling Business Intelligence for the Data Mart Project

### Before you begin

To load the incremental data in Sterling Business Intelligence for the data mart project, perform the following steps:

### Procedure

1. Launch the Cognos Adaptive Warehouse application.
2. Open the Sterling Data Source project.
3. From the **Actions** menu, select **Load Management**.

   The Load Management screen is displayed with all the available dataflows.
4. Click **Deselect All**.
5. To load incremental changes in the configuration data and master data, generate the script for all Configuration and Master dataflows as follows:
   a. Select the Configuration and Master dataflows.
   b. Click **Script**. The Script dialog box is displayed.
   c. Enter `\cognos\ap\bin\<configuration_master_script_filename>.xml` in the Script Location field and click **Save**.
6. Generate the script for all Transaction dataflows as follows:
   a. Select the Transaction dataflows.
   b. Click **Script** . The Script dialog box is displayed.
   c. Enter `\cognos\ap\bin\<transaction_script_filename>.xml` in the Script Location field and click **Save**.
7. Generate the script for Return dataflow as follows:
   a. Select RO Line dataflow.
   b. Click **Script**. The Script dialog box is displayed.
   c. Enter `\cognos\ap\bin\<ro_line>.xml` in the Script Location field and click **Save**.
8. Generate the script for all Aggregate (Summary) dataflows as follows:
   a. Select the Aggregate dataflow.

      **Note:** You must not select SO Modification Summary Dataflow as it behaves as a transaction dataflow.
   b. Click **Properties**. The Set Dataflow/Instance Runtime Properties window opens. Set **Complete Reload** to **Yes**. Click **OK**.
   c. Click **Script**. The Script dialog box is displayed.
   d. Enter `\cognos\ap\bin\<aggregate_script_filename>.xml` in the Script Location field and click **Save**.
9. Generate the script for the SO Monthly Summary dataflow as follows:
   a. Select the SO Monthly Summary dataflow.
   b. Click **Script**. The Script dialog box is displayed.
   c. Enter `\cognos\ap\bin\<SO_monthly_summary_script_filename>.xml` in the Script Location field and click **Save**.
10. Generate the script for the Customer Rating dataflow as follows:
    a. Select the Customer Rating dataflow.
    b. Click **Script**. The Script dialog box is displayed.

c. Enter \cognos\ap\bin\<customer_rating_script_filename>.xml in the Script Location field and click **Save**.

11. Click **OK**.
12. Click **Close**.

**Note:**

- If the Cognos Adaptive Warehouse Runtime and Cognos Adaptive Warehouse applications are installed on different servers, copy the generated script to the appropriate location.
- The script must be regenerated every time there is a change in the Sterling Staging Data Source project.

13. To run the load management scripts, execute the following command from the \cognos\ap\bin folder:

pwexec.cmd <path\filename>.xml (For Windows)

pwexec.sh <path\filename>.xml (For UNIX)

**Note:**

- If Oracle is the database for your data mart and you are using a 64 bit client on UNIX, before running the command, ensure that the 32 bit client libraries are present in the shared libraries path you provide.
- When running or scheduling the scripts, ensure that the scripts are executed in the following sequence:
  a. Configuration and Master dataflow script

     **Note:** Execute Configuration and Master dataflow script only if there are incremental changes in the configuration data or master data.
  b. Transaction dataflow script
  c. Return dataflow script
  d. Aggregate dataflow script
  e. SO Monthly Summary dataflow script
  f. Customer Rating dataflow script
- After you run the scripts, you may see some "Circular referencing detected" and "Using non-string item [User Ranges].[User Ranges].[User Ranges].[Range Identifier].[Range Identifier] for _memberCaption role" warnings in the <AW_INSTALL_DIR>/ap/data/aaf/logs/aw-<timestamp>.log file. You can ignore these warnings.
- After you run the scripts, you may see some "ICCLConfiguration exception" and "CCLConfigurationException" errors in the <AW_INSTALL_DIR>/ap/logs/ipfInternal_cpp.log file. You can ignore these errors.

**Note:** Before running the data mart load ensure that you run the command to collect the database statistic on staging. For more information about the command to collect the database statistic, refer to your database vendor documentation.

## About Purging the Staging Tables

Staging is used to stage the data before loading it into the data mart. To keep the staging tables manageable, timely clean up has to be carried out. The purge is based on retention days, and only records older than the retention days are deleted. Retention days should be set based on the volumes of data and the

frequency of the incremental load. To ensure that only data that is no longer useful is cleaned up, the data is cleaned only if the ETL job of the Sterling Data Source project has successfully run within the last 'n' days. Purging of transaction tables pertaining to YFS_ORDER_HEADER is done only when the order is in Closed status.

**Note:** The command to purge the staging tables deletes the records from the staging permanently.

## Purge the Staging Tables

To purge the staging tables, perform the following tasks:

### Procedure

1. In the server where Cognos Adaptive Warehouse Runtime is installed, navigate to the folder in which the `staging_load_management.cmd` or `staging_load_management.sh` file is copied. Ensure that the environment variables are set as follows:
   - Set the value of the COGNOS_AW_HOME environment variable to the install directory of Cognos Adaptive Warehouse Runtime.
   - Set the value of the DB_ALIAS_DRIVER environment variable to the database name.

     The database name and its corresponding values are as follows:
     - Oracle: ORACLE
     - DB2: DB2
   - Set the value of the DB_ALIAS_ITEM environment variable to the connection string information of Sterling Staging Database. This value must be passed in double quotes.

     Database name and its corresponding values are as follows:
     - Oracle: "<userid>/<password>@<SID>"
     - DB2: "DSN=<database>;UID=<userid>;PWD=<password>"
   - Set the value of the LOG_DIR environment variable to the directory in which the ETL log files are stored. The default location of the ETL log files is `<AW_Install_Dir>\datamanager\log`.
2. To purge data from the transaction tables in the staging, run the following command:
   - For Windows:

     ```
     staging_load_management.cmd Purge <incremental_load_package_file>
     <retention_days>
     ```
   - For Linux or UNIX:

     ```
     staging_load_management.sh Purge <incremental_load_package_file>
     <retention_days>
     ```

   Here, the `<retention_days>` variable indicates the number of days for which you want to retain the data in staging. For example, if the value of this variable is set to 7, the records older than 7 days are considered for purge.

# Chapter 4. Integration of Sterling Selling and Fulfillment Foundation with Sterling Business Intelligence Mashups

Sterling Business Intelligence provides out-of-the-box analytical reports to help users of applications such as Sterling Selling and Fulfillment Foundation, IBM Sterling Call Center, Sterling Store, and IBM Sterling Field Sales to analyze the data. The other applications can get the data from reports provided by Sterling Business Intelligence by using the Representational State Transfer (REST) Interface of the IBM Cognos Content Mashup Service. The REST interface requires other applications to provide inputs such as Report Name, Required Format of the Report Data (Simple format) and Report Criteria for a given report, and gives back the report data in the specified format. For more information about the REST interface, refer to the IBM Cognos Content Mashup Service Developer Guide.

The following prerequisites must be considered for accurate reports:

- Ensure that the other applications such as Sterling Selling and Fulfillment Foundation, Sterling Call Center, Sterling Store, and Sterling Field Sales are installed on the same server as Sterling Business Intelligence.
- Ensure that the required customer data is loaded into the data mart.

When the other application user views these reports, Sterling Business Intelligence provides the latest data up to when the last ETL was run.

**Note:** Sterling Business Intelligence assumes that B2C (Business to Customers) and B2B (Business to Business) customers are maintained by different customer organizations. When analyzing the customers and generating customer reports, Sterling Business Intelligence does not differentiate between B2C and B2B customers.

## Integration with IBM Sterling Call Center and IBM Sterling Store

A Sterling Call Center or Sterling Store user uses the following reports provided by Sterling Business Intelligence:

- 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.

For more information about how Sterling Call Center use these reports, see the *Sterling Call Center: Implementation Guide*.

For more information about how Sterling Store use these reports, see the *Sterling Store: Implementation Guide*.

## Integration with IBM Sterling Field Sales

When considering discounts on a quote, a Sterling Field Sales user needs to understand the discounts provided on items in the same category and for the same industry in the past. To fulfill this requirement, Sterling Business Intelligence provides the following reports:

- 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 Field Sales 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 Field Sales 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.

For more information about how the Sterling Field Sales application uses these reports, see the *Sterling Field Sales: Implementation Guide*.

## Integration with IBM Sterling Selling and Fulfillment Foundation

In the quote approval process, other applications such as Sterling Call Center, Sterling Store, and Sterling Field Sales need to apply specific discounts to customers, based on the customer's rating. To fulfill this requirement, Sterling Business Intelligence computes rating for customers based on data such as customers' past purchase history and credit holds. The past purchase history comprises data such as total lifetime amount spent and amount spent over the last year compared with the average customer. The credit holds comprise data such as current orders on credit hold and last year's orders on credit hold. Based on the rating, Sterling Business Intelligence also determines a grade for the customer. When the users view the rating and grade for a customer, Sterling Business Intelligence provides the latest data up to when the last ETL was run for the corresponding configuration tables. For more information about configuring grades, refer to the *Sterling Selling and Fulfillment Foundation: Distributed Order Management Configuration Guide*.

By default, the customer rating is always between 0 and 2. The rating for a customer is calculated based on the following formula:

$$= \frac{\text{Customer Lifetime \$ Spent}}{\text{Average Customer Lifetime \$ Spent}} * w1$$

$$+ \frac{\text{Customer \$ spent over last 1 year}}{\text{Average Customer \$ spent over last 1 year}} * w2 - \text{Current orders on credit hold}$$

$$* w3 - \text{Past 1 year orders on credit hold} * w4$$

Here, w1 is Lifetime Revenue Weightage, w2 is Last Year Revenue Weightage, w3 is Current Credit Hold Weightage, and w4 is Last Year Credit Hold Weightage. The default values of these weights are as follows:

- Last Year Revenue Weightage = 0.6
- Lifetime Revenue Weightage = 0.4
- Current Credit Hold Weightage = 0.2
- Last Year Credit Hold Weightage = 0.05

You can modify these weights as per your business' requirements. For more information about modifying weights and configuring grades, refer to the following sections:

- “Modify Weights for Customer Rating” on page 7
- “Configure Grades for Customer Rating” on page 8

# Chapter 5. Enhancing the Performance of the Sterling Business Intelligence Dashboards and Reports By Using Aggregate Fact Tables

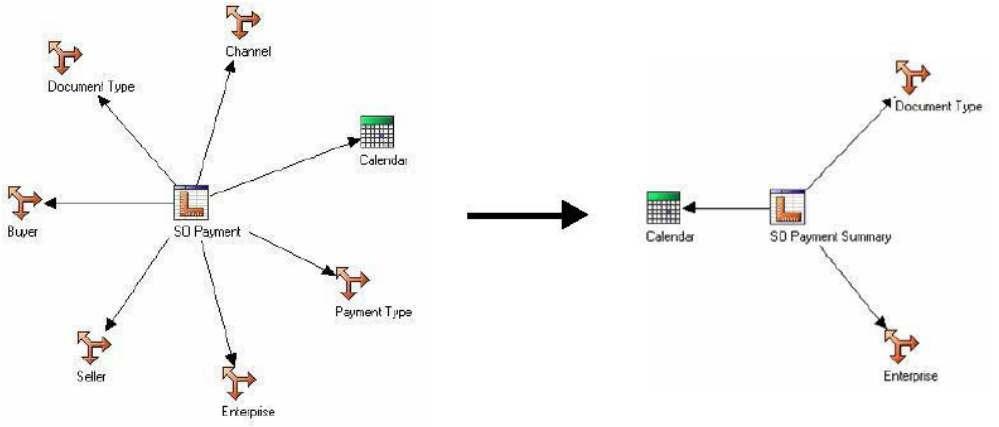
Sterling Business Intelligence provides various dashboards and reports in which the metrics are associated with a time period. These metrics are stored in fact tables that are located at the centre of the corresponding star schemas. The fact tables are stored at the lowest level of granularity in a data mart. A report takes a long period of time to fetch data from the fact tables because the calculations and summarization of data is performed when executing the report. Because of this, the Sterling Business Intelligence user interface takes more time to display the dashboards and reports. To enhance the performance of the dashboards and reports, the pre-summarized or pre-aggregated data should be stored at a higher level of granularity. For example, Sterling Business Intelligence provides out-of-the-box aggregate fact tables that contain new metrics derived either from one or more aggregate functions such as COUNT, MIN, MAX, and so on. The new metrics in an aggregate fact table are stored and maintained in special fact tables at the grain of aggregation in the data mart. You can create an aggregate table by performing the following steps when summarizing a fact table:

- Excluding one or more dimensions. For example, the SO Payment Summary aggregate fact table is derived from the SO Payment fact table by excluding certain dimensions. The SO Payment fact table consists of the following dimensions:
  - Channel
  - Calendar
  - Payment Type
  - Enterprise
  - Seller
  - Buyer
  - Document Type

    The SO Payment Summary aggregate fact table consists of the following dimensions:
  - Enterprise
  - Document Type
  - Calendar
- Replacing one or more dimensions by their shrunken or rolled versions. For example, the SO Customer Monthly Summary aggregate fact table is created by replacing the dimensions by their shrunken and rolled versions. The daily-grain dimensions in the SO Daily Summary aggregate fact table have been replaced by the monthly-grain dimensions in the SO Customer Monthly Summary aggregate fact table.

Though maintaining aggregate fact tables in a data mart increases the time taken to complete an ETL process, but the time taken to display the dashboards and reports is remarkably decreased. For example, the SO Payment Summary aggregate fact table has been created from the SO Payment fact table. Because of this, the report execution time for the Percentage Authorization Failure and Percentage Settlement Failure metrics in the Perfect Order dashboard has been reduced approximately by a factor of 10.

The following figure illustrates the SO Payment fact table being aggregated to the SO Payment Summary aggregate fact table:




**SO Payment Fact Table** **SO Payment Summary Aggregate Fact Table**

Based on your business requirements, you can analyze the metrics required by a dashboard or report and the existing grain to create aggregate fact tables to enhance the performance of the dashboard or report. When creating an aggregate fact table, consider the following:

- Number of records: As compared to a fact table, decrease the total number of records in an aggregate table by ten to twenty times.
- Storage: As compared to a fact table, increase the size of a record at the most by a factor of two.
- Granularity: Select a grain that addresses the maximum number of metrics. You can create a daily, monthly, or yearly summary aggregate tables based on the time dimension. However, it is recommended to create a daily summary aggregate tables that addresses most of the metrics for a report.

# Chapter 6. Extend and Customize IBM Sterling Business Intelligence

### Before you begin

Sterling Business Intelligence can be customized to meet your business requirements. Prior to extending and customizing Sterling Business Intelligence, you must perform the following tasks:

### Procedure

1. Analyze the reports, models, and dashboards that are shipped along with Sterling Business Intelligence.
2. Based on your business requirements, identify the customizations that have to be performed.
3. Identify the components that have to be customized to meet your business requirements.

   Based on your analysis, perform the following tasks:

   - Extending Resource Bundles in Sterling Business Intelligence
   - Extend the Cognos Adaptive Warehouse Content
   - Extend the Cognos Adaptive Analytics Reports
   - Extend the Dashboards
   - Customize the User Interface
   - Customize the Staging Project

   **Note:** This version of Sterling Business Intelligence is shipped with the Order data mart. All the extensions should be limited to bringing in data that is related to orders or shipments because incremental change data capture is supported only for the order and shipment objects.

## Extending Resource Bundles in IBM Sterling Business Intelligence

You can define new server-side bundle entries and override the out-of-the-box server-side bundle entries. The server-side bundle file (`sbibundle.properties`) is located in the `<INSTALL_DIR>/resources/` directory. For more information about extending resource bundles on the server, refer to *Sterling Selling and Fulfillment Foundation: Customization Basics*.

## Extend the IBM Cognos Adaptive Warehouse Content

The Sterling Business Intelligence model can be customized based on your business requirements. A model is a set of related warehouse objects such as dimensions, facts, and calendars required for one or more related reporting applications. To customize your model, you must identify the warehouse objects required to meet your business requirements, create the warehouse model, and publish it.

**Prerequisites:** To extend the Cognos Adaptive Warehouse content, you must be familiar with developing metadata model using the Cognos Adaptive Warehouse application.

To extend and customize the Cognos Adaptive Warehouse content, perform the following tasks:

- Modify the existing dimensions, facts, and add new warehouse objects
- Add new facts, dimensions, and create a new star schema
- Add custom hierarchy, target model filters, and new target model calculation
- Add custom hierarchy, hierarchy levels to existing hierarchy, source and target model filters, filters on warehouse objects, and new target model calculation

When extending and customizing the Cognos Adaptive Warehouse content, you must not perform the following tasks:

- Delete existing warehouse objects, including facts, dimensions, and references
- Modify the existing target model calculations, filters, and hierarchy

To extend the Cognos Adaptive Warehouse content, modify the existing Cognos Adaptive Warehouse projects that are shipped with Sterling Business Intelligence, namely Sterling Staging Data Source (staging project) and Sterling Data Source (data mart project).

For more information about working with warehouse objects, refer to the *IBM Cognos Analytic Applications Adaptive Warehouse User Guide*.

# Extend the IBM Cognos Adaptive Analytics Reports

## Before you begin

Based on your business requirements, you can add new reports in Sterling Business Intelligence. For customizing the reports, you must determine the metric types, hierarchy references, and the corresponding packages, create a deployment archive, and publish the reports.

**Prerequisites:** To extend the reports in Sterling Business Intelligence, you must be familiar with developing reports in the Cognos Adaptive Analytics application.

**Note:** When extending and customizing reports using Sterling Business Intelligence, you can add new reports, but you should not delete or modify the existing reports.

To create a new analytic report, follow the process listed here:

## Procedure

1. Open the Sterling Data Source Adaptive Analytics project.
2. Create a Report Pack within a metric type. The metric type defines what you are reporting on.
3. Select an Hierarchy to report.
4. Create an Analytic Type. The Analytic Type defines the style of the report.
5. Optionally, set other properties as follows:
   - Define additional measures or levels (hierarchy)
   - Define filters

   **Note:** All adaptive analytic reports must contain a time reference. If the time hierarchy is not present in the report, you must select an available prompt parameter in the Parameter Configuration screen and set the time reference properties to Yes.

### Results

For more information about generating analytic reports, refer to the *IBM Cognos Analytic Applications Adaptive Analytics User Guide*.

## Extend the Dashboards

Based on your business requirements, you can add dashboards in Sterling Business Intelligence. For customizing the dashboards, you must clearly understand the business requirements and the layout of the dashboards. Ensure that the metrics and the dimensions required are available in the model. If the metrics and dimensions are not available, modify the model to meet your business requirements.

Prerequisites: To extend and customize the dashboards, you must be familiar with the task of authoring reports using IBM Cognos Report Studio.

**Note:**

- You must not modify or delete the existing dashboards. If you want to modify the existing dashboards, ensure that you make a copy of the dashboard and modify it in the same folder where the existing dashboards are present.
- All customizations of the dashboards must be saved in the Analytic Applications/Info Packs/Sterling Analytics Package/Metric Type Report Packs/Sterling TOC /Dashboards folder in the Content Store.

For more information about creating reports, refer to the *IBM Cognos Report Studio User Guide*.

## Customize the User Interface

You can customize the Sterling Business Intelligence user interface by using the Sterling Designer Workbench application, which allows you to add new screens.

Prerequisites: To customize the Sterling Business Intelligence user interface, you must be familiar with the task of developing an user interface using the Sterling Web UI Framework.

In Sterling Business Intelligence, you can perform the following customizations:

- **Create new screens**: You must create a new screen if you are adding a new report or a dashboard and want to deliver this using the Web UI Framework. You can create new screens using the Sterling Designer Workbench application.

  **Note:** You cannot modify an existing screen. You can only add new screens. When customizing the user interface, copy the standard resources of the application and then modify your copy. Do not modify the standard resources of the application.
- **CSS**: Icons and font sizes in the user interface can be customized by modifying the CSS entries in the CSS file. You can create a new CSS entry, and extend and override the existing CSS entries. This is done by creating a file in the `extn` folder with the same structure as the `sbi` folder. For more information about customizing a CSS file, refer to the *Sterling Selling and Fulfillment Foundation: Customizing the Web UI Framework*.
- **Menu**: The menu bar and the menu options in the interface can be customized. You can customize the sequence of the menu options and add new menu

options. For more information about customizing menu options, refer to the *Sterling Selling and Fulfillment Foundation: Customizing the Web UI Framework*.

- **Sterling Business Intelligence Home Page**: The dashboards displayed on the Sterling Business Intelligence home page can be customized. You can add or remove dashboards by editing the `dashboard.xml` file. You can also add or remove dashlets with in a dashboard by editing the `dashlet.xml` file. To customize the dashboards and dashlets:
  - Create `dashlet.xml` and `dashboard.xml` files in the following directory `<INSTALL_DIR>/extensions/sbi/webpages/bi/home/metadata`.
  - Ensure that you have copied the content from the `<INSTALL_DIR>/repository/eardata/sbi/war/home/metadata/dashboard.xml` file to the `<INSTALL_DIR>/extensions/sbi/webpages/bi/home/metadata/dashboard.xml`.
  - Ensure that you have copied the content from the `<INSTALL_DIR>/repository/eardata/sbi/war/home/metadata/dashlet.xml` to the `<INSTALL_DIR>/extensions/sbi/webpages/bi/home/metadata/dashlet.xml` file.
  - Add or remove entries in the `<INSTALL_DIR>/extensions/sbi/webpages/bi/home/metadata/dashboard.xml` and `<INSTALL_DIR>/extensions/sbi/webpages/bi/home/metadata/dashlet.xml` files.
  - Re-create the EAR file. For more information refer to the *Sterling Business Intelligence: Installation Guide*.

# Create a New Screen

## Procedure

1. Install the Sterling Business Intelligence application and build a WAR file for it.

   Deploy the WAR file on the server in the exploded format.

   After the deployment is completed, start the application server.
2. Explode the `smcfs.ear` to obtain `sbi.war` and extract the contents of `sbi.war` to a folder, say `<web_ui_extn>` .
3. If you need to launch the designer work bench, make the following modifications : Go to `<web_ui_extn>/designer` folder and double click on `platform_workbench.html` to launch the Designer workbench. Open the `<screenname>.json` file in Designer Workbench.
4. Copy the `SBISample.json` file from the `<web_ui_extn>/sbi/bi/json` folder to the appropriate folder and rename it as `<screenname>.json`.
5. Open the `<screenname>.json` file in Designer Workbench. Change the properties of the screen that you want to create as follows:
   - sciId as <screen name >
   - class name as sc.bi.<screenname>
   - regxtype as sc.bi.<screenname>
   - Source `namespaces` as the `namespace` names as required by the added widgets in the screen.
6. Change the value of the hidden parameter `report_name` to `<cognos report name>`.
7. Add the required widgets in the SearchPanel. For details about adding a widget to a screen, refer to the *Sterling Selling and Fulfillment Foundation: Customizing the Web UI Framework*.

   **Note:** If you do not require the Time Period drop-down list in a screen, remove the TimePanel from the screen.

8. If the custom report has a new parameter, which needs to be displayed as a list of values, for example, as a check box or combination box, from the data mart, then you must change the value of a hidden parameter named QueryIds. The QueryIds should be same as the parameter in the report.Change the value of the hidden parameter QueryIds as required, using the added widgets in the screen.

   **Note:**

   - The sbi_query.xml file defines a list of queries used by the entityLookup API. Each query defined in sbi_query.xml is identified by a QueryId. For details about the entityLookup API, refer to API javadocs.
   - If you are adding a new query to populate a widget in a screen, you must define a new entry in a new file named sbi_query.xml inside the <Runtime>/repository/xapi/template/merged/metadata/extn folder.
   - For new QueryIds, you must extend and add new corresponding entries pertaining to the mashups. The id attribute of the mashup entry should be get<queryid>. The value of QueryIds must be a coma separated value and each value must be same as defined in the sbi_query.xml file.
   - To extend the sbi_mashups.xml file, create a new file, <filename>.xml, in the <Runtime>/repository/eardata/sbi/war/mashupxmls/extn folder.

9. Navigate to **Screen > SearchPanel > Buttons > Btn_Search**.
10. Change the value of Handler property to sc.bi.utils.generateReportForPrompt.
11. Click **Save**.

    The <screen name>_config.js and <screen name>.js files are created.
12. Add the following code in the `<screen name>.js` file within the <screen name> class:

```
getViewID :function(){
return "<screenname>";
},
getScreenContext : function(){
return "<screenname>";
}
```

13. Copy the `<screen name>_config.js` and `<screen name>.js` files, created in step 10 to `<INSTALL_DIR>/extensions/sbi/webpages/bi/screens` folder. If this folder does not exist, create the same.
14. Create a Java Script builder file sbi.jsb in the `<INSTALL_DIR>/extensions/<sbi>/webpages/bi/screens` folder. The folder contains entries for the newly created screens.

    **Note:** If you have chosen to retain the Time Period drop-down list, add the entry in the same target element of sbi.jsb file.

    Following is the sample code for JSB:

```
<?xml version="1.0" encoding="utf-8"?>
<project name="sbi" author="Sterling Commerce Pvt.Ltd"
version="1.0" source="False"
     source-dir="$output/source" minify="True"
     min-dir="$output/build" doc="False"
     doc-dir="$output/docs" master="true"
     master-file="$output/yui-ext.js" zip="false"
      zip-file="$output/yuo-ext.$version.zip">
            <target name="<screenname>"
      file="/extn/bi/scripts/<screenname>Lib.js" allowDynamicLoad="true"
            debug="true" shorthand="false" shorthand-list="">
            <include name="/extn/bi/screens/<screenname>_config.js" />
            <include name="/extn/bi/screens/<screenname>.js" />
```

```
            <include name="/bi/common/TimeScreen_config.js" />
            <include name="/bi/common/TimeScreen.js" />
            </target>
</project>
```

15. Create a new servlet to register the new JSB and mashup file.

    Following is a sample code for creating servlet:

```
import javax.servlet.ServletConfig;
import javax.servlet.ServletException;
import javax.servlet.http.HttpServlet;
Import
com.sterlingcommerce.ui.web.framework.helpers.SCUIJSLibraryHelper;
import
com.sterlingcommerce.ui.web.framework.helpers.SCUIMashupHelper;
public class CreateServlet extends HttpServlet {
private static final long serialVersionUID =
4693417985837892469L;
public synchronized void init(final ServletConfig config)
throws ServletException {
//loads the JSB specified at the path
SCUIJSLibraryHelper.loadJSLibraryXml
("/extn/bi/screens/sbi.jsb", config.getServletContext());
//loads the mashup XML specified at the path
SCUIMashupHelper.loadMashupXml
("/extn/bi/screens/<filename.xml>", config.getServletContext());
}
}
```

16. Compile the above mentioned sample code and package the servlet into a JAR file and place it in the `<INSTALL_DIR>/extensions/<sbi>/webpages/bi/screens` folder.
17. Go to the *<INSTALL_DIR>/repository/eardata/sbi/extn/web.xml* directory and rename the existing `web.xml.sample` to `web.xml` and add the entry for the servlet in `web.xml` file as follows:

```
<servlet>
<display-name><servletName></display-name>
<servlet-name><servletName></servlet-name>
<servlet-class><full servlet class name> </servlet-class>
<load-on-startup>1500</load-on-startup>
</servlet>
```

18. Run the following command in the <INSTALL_DIR>/bin directory so that the JAR file containing the servlet is added to the WAR file when he WAR file is generated:

    `install3rdParty.sh <vendorName> <vendorVersion> -j <full path of the JAR file> -targetJVM APP` (for UNIX)

    `install3rdParty.cmd <vendorName> <vendorVersion> -j <full path of the JAR file> -targetJVM APP` (for Microsoft Windows)

    **Note:** install3rdParty.sh script should be executed only when EAR is built with -Dsupportmultiwar=false. If the EAR is built with -Dsupportmultiwar=true execute Step 19.
19. Copy the `servelet.jar` in `<smcfs_install>/repository/eardata/sbi/war/WEB-INF/lib` folder.
20. Create a minified file using the following command:

    `sci_ant.sh –f jsUtil.xml minify-js –Dgis.install=<Install> -Dminify=true` (for UNIX)

    `sci_ant.cmd –f jsUtil.xml minify-js –Dgis.install=<Install> -Dminify=true` (for Microsoft Windows)

For more details about compiling and minimizing JavaScript files, refer to *Sterling Selling and Fulfillment Foundation: Customizing the Web UI Framework*.

21. Create the `resource.jar` file using the following command:

    `<INSTALL_DIR>/bin/deployer.sh -t resourcejar` (for UNIX)

    `<INSTALL_DIR>/bin/deployer.cmd -t resourcejar` (for Microsoft Windows)

22. Create a new menu item using Application Manager, and attach the Resource ID. For more information about configuring presentation components, refer to the *Sterling Selling and Fulfillment Foundation: Application Platform Configuration Guide*.

    **Note:** To create a new menu add the property yfs.sc.configurator.devmode=Y to the `<INSTALL_DIR>/properties/customer_overrides.properties` file. For additional information about the `customer_overrides.properties` file, refer to the *Sterling Selling and Fulfillment Foundation: Properties Guide*.

23. Create user permissions for the resources that have been added. For more information about user permissions, refer to the *Sterling Selling and Fulfillment Foundation: Application Platform Configuration Guide*.

24. Re-create the `smcfs.ear` file.

    For more information about recreating the EAR file, refer to the *Sterling Selling and Fulfillment Foundation: Installation Guide*. Create a resource with resourceId as <screenname> for the new screen. For more information about creating a resource, refer to the *Sterling Selling and Fulfillment Foundation: Application Platform Configuration Guide*.

## Customize the Staging Project

You can customize the staging project by creating a new Staging Entity Metadata file. In the Staging Entity Metadata file, you can add new filters to an existing entity if you want to exclude certain records when analyzing the data. You can also add a new entity and configure load partitions by modifying the NumberOfLoadIntervals attribute.

You can perform the following tasks when customizing the Staging Entity Metadata file:

- Add a New Entity
- Add Filters to an Existing Entity
- Configure Load Partitions
- Deploy the Customization

**Note:** You cannot perform the following tasks when customizing the Staging Entity Metadata file:

- Change the value of the DriverEntity attribute
- Change the existing filter of an entity
- Add a new relationship to an existing entity

### Add a New Entity

To add a new entity:

## Before you begin

## Procedure

1. Create the sbi_staging_entities.xml file, if it does not already exist, in the <INSTALL_DIR>/extensions/global/template/metadata directory.
2. Create a new element, Entity. Consider the following structure of a sample Entity element when creating a new entity:

```
<DBSchema>
 <Entities>
  <Entity TableName="YFS_ORDER_HOLD_TYPE_LOG"
    DriverEntity="YFS_ORDER_TS_TAG" NumberOfLoadIntervals="4" >
   <Attributes>
    <Attribute ColumnName="STATUS" AttributeQuery="NFLIKE">
     <AttributeValues>
      <AttributeValue Value="1300"/>
     </AttributeValues>
    </Attribute>
   </Attributes>
   <RelationShips>
    <RelationShip   ForeignEntity="YFS_ORDER_HOLD_TYPE">
     <Attribute Name="ORDER_HOLD_TYPE_KEY"
             ParentName="ORDER_HOLD_TYPE_KEY"/>
    </RelationShip>
    <RelationShip   ForeignEntity="YFS_ORDER_TS_TAG">
     <Attribute Name="ORDER_HEADER_KEY" ParentName="ORDER_HEADER_KEY"/>
    </RelationShip>
   </RelationShips>
  </Entity>
 </Entities>
</DBSchema>
```

3. Set the value of the XML attributes.

## Results

Refer to the following table for more information about defining the values of the otherXML attributes:

| Component | Component Type | Component Location | Description |
|---|---|---|---|
| TableName | Attribute | Entities/Entity | Indicates the table name of the entity that is required to be loaded into staging. |

| Component | Component Type | Component Location | Description |
|---|---|---|---|
| DriverEntity | Attribute | Entities/Entity | Indicates the tablename of the driver entity that is related with this entity. The system supports the following driver tables:<br>• YFS_ORDER_TS_TAG<br>• YFS_SHIPMENT_TS_TAG<br>• YFS_OPPUTUNITY_TS_TAG<br>Based on the entity being defined, you must provide the correct driver entity value that is related with this entity. For example, for the YFS_ORDER_HOLD_TYPE_LOG entity that is related to ORDER, set the value of the DriverEntity attribute to YFS_ORDER_TS_TAG. The DriverEntity attribute is defined only for transaction tables. However, certain transaction tables such as YFS_PERSON_INFO do not contain any driver entity. Therefore, the value of the DriverEntity attribute should be left blank. |
| NoOfLoadIntervals | Attribute | Entities/Entity | This attribute is used to generate the initial load package file. For example, if you want to load data for one year from the YFS_ORDER_HEADER table and the value of the NumberOfLoadIntervals attribute is set to 4, four build streams are created for the YFS_ORDER_HEADER table when loading data in to staging and each build stream loads data of 3 months. |
| Attributes | Element | Entities/Entity | This element contains the filter information such as the column name on which a filter is applied, the filter operation, and the applicable filter attribute values. |
| ColumnName | Attribute | Entities/Entity/ Attributes/ Attribute | Indicates the column name of the table on which a filter is applied. |

| Component | Component Type | Component Location | Description |
|---|---|---|---|
| AttributeQuery | Attribute | Entities/Entity/ Attributes/ Attribute | Indicates the filter operation. The system supports the following filter operations:<br>• EQ - equal<br>• NE - not equal<br>• GT - greater than<br>• GE - greater than and equal<br>• LT - less than<br>• LE - less than and equal<br>• IS - equal to Null<br>• ISNOT - not equal to Null<br>• BETWEEN - between<br>• FLIKE - starts with<br>• ELIKE - ends with<br>• NFLIKE - does not start with<br>• NELIKE - does not end with<br>• IN - is in the list of values<br>• NOTIN - not in the list of values |
| Value | Attribute | Entities/Entity/ Attributes/ Attribute | Indicates the value of the filter attribute. |
| RelationShip | Element | Entities/ Entity/ Relationship | This element defines the relationship of an entity with its corresponding driver entity. It must be defined in the order in which the entities are related. For example, the YFS_ORDER_HOLD_TYPE_LOG entity is related with the YFS_ORDER_HOLD_TYPE driver entity and the YFS_ORDER_HOLD_TYPE entity is related with the YFS_ORDER_TS_TAG driver entity. Therefore, the relationship between the YFS_ORDER_HOLD_TYPE_LOG entity and YFS_ORDER_HOLD_TYPE driver entity must be defined first and then the relationship between the YFS_ORDER_HOLD_TYPE entity and the YFS_ORDER_TS_TAG driver entity must be defined. |
| ForeignEntity | Attribute | Entities/Entity/ Attributes/ Attribute/ RelationShips/ RelationShip | Indicates the foreign entity. |
| Name | Attribute | Entities/Entity/ RelationShips/ RelationShip | Indicates the column name of the entity. |

| Component | Component Type | Component Location | Description |
|---|---|---|---|
| ParentName | Attribute | Entities/Entity/ RelationShips/ RelationShip | Indicates the column name of the ForeignEntity that has a foreign key element relationship. |

## Add Filters to an Existing Entity

You can add new filters to an existing entity if you want to exclude certain records when analyzing the data. For example, the model that is shipped along with Sterling Business Intelligence consists of all the hold types, including the system-specific hold types. You can exclude specific hold types and perform the analysis.

### Before you begin

To add filters to an existing entity:

### Procedure

1. Create the sbi_staging_entities.xml file, if it does not already exist, in the <INSTALL_DIR>/extensions/global/template/metadata directory.
2. Create a structure of the existing entity. For example, create a structure as follows:

```
<DBSchema>
 <Entities>  <Entity TableName="YFS_HOLD_TYPE"  >
  </Entity>
 </Entities>
</DBSchema>
```

3. Create an element, Attribute, as a child element of the root element, Attributes.
4. Set the value of the ColumnName attribute.
5. Set the value of the AttributeQuery attribute.
6. Create an element, AttributeValues, as child element of the root element, Attribute.
7. Set the value of the Value attribute.
8. To add multiple filters, repeat steps 3 through 7.

   Following is the sample of the Staging Entity Metadata file that contains new filters for an existing entity:

```
<DBSchema>
 <Entities>
  <Entity TableName="YFS_HOLD_TYPE"  >
   <Attributes>
    <Attribute ColumnName="HOLD_TYPE" AttributeQuery="IN">
     <AttributeValues>
      <AttributeValue Value="Fraud Check"/>
      <AttributeValue Value="Credit Fraud"/>
     </AttributeValues>
    </Attribute>
   </Attributes>
  </Entity>
 </Entities>
</DBSchema>
```

## Configure Load Partitions

You can configure the load partitions by modifying the NumberOfLoadIntervals attribute in the Staging Entity Metadata file. The NumberOfLoadIntervals attribute

is used to load initial data. For example, if you want to load data for one year from the YFS_ORDER_HEADER table and the value of the NumberOfLoadIntervals attribute is set to 4, four build streams are created for the YFS_ORDER_HEADER table when loading data into the staging and each build stream loads data of 3 months. The default value of this attribute is 2. By increasing the value of this attribute, the number of processes and database connections are also increased. Set this value based on the number of connections and processes that the environment can support.

### Before you begin

To modify the NumberOfLoadIntervals attribute in an existing entity:

### Procedure

1. Create the sbi_staging_entities.xml file, if it does not already exist, in the <INSTALL_DIR>/extensions/global/template/metadata directory.
2. Create an element, Entity.
3. Set the value of the TableName atttribute.
4. Set the value of the NumberOfLoadIntervals attribute.

   Following is the sample of the Staging Entity Metadata file that contains a modified NumberOfLoadIntervals attribute in an existing entity:

```
<DBSchema>
<Entities>
  <Entity TableName="YFS_ORDER_RELEASE_STATUS" NumberOfLoadIntervals="4" >
</Entity>
</Entities>
</DBSchema>
```

## Deploy the Customization

After performing the required customizations in a Staging Entity Metadata file, perform the following steps:

### Before you begin

### Procedure

1. To create the resource jar file, run the following command:

   For Windows:

   ```
   <INSTALL_DIR>/bin/deployer.cmd -t resourcejar
   ```

   For Linux or UNIX:

   ```
   <INSTALL_DIR>/bin/deployer.sh -t resourcejar
   ```

2. Re-create the smcfs.ear file. For more information about recreating the EAR file, refer to the *Sterling Selling and Fulfillment Foundation: Installation Guide*.
3. Generate the staging project package file. For more information about generating the staging project package file, see Generate the Staging Project Package File.

# Chapter 7. Data Extraction using Data Mart

The data extraction feature allows you to extract the required data from the data mart for a specific time period. The extracted data will be provided as a text (.txt) or comma-separated value (.csv) file.

There are two stages in the data extraction process:

1. Generate the Data Extraction Package file.
2. Generate the Extracted File.

## Generate the Data Extraction Package File

The Data Extraction Package file is generated by using the Data Extraction Package file generation tool. Before you run the Data Extraction Package file generation tool, you must perform the following tasks:

- Define the Extract Criteria Group xml file.
- Define the Fact Extract xml file.
- Define the Data Sources xml file.
- Specify the properties to define the format of the Extracted File .

### Defining the Extract Criteria Group File

The Extract Criteria Group file contains information about the Fact Extract files and the absolute path where the Extracted File needs to be generated.

#### About this task

To define the Extract Criteria Group xml file:

#### Procedure

1. Create the `<extract_criteria_group>.xml` file.
2. Specify the following attributes in the ExtractCriteriaGroup element
   a. GroupName
   b. FactExtractFileName
   c. OutputFolderName

#### Example

The following example describes a Extract Criteria Group file:

```
<ExtractCriteriaGroups>
 <ExtractCriteriaGroup GroupName="DEGroup"
  FactExtractFileName=".\ExtractFile.xml"
  OutputFolderName="E:\Work\DEOutput"/>
</ExtractCriteriaGroups>
```

### ExtractCriteriaGroup Attributes in the Extract Criteria Group File

The following table describes the attributes used in `ExtractCriteriaGroup` element:

*Table 1. Xml Attributes used in the ExtractCriteriaGroup element*

| XML Attribute | Mandatory | Attribute Location | Description |
|---|---|---|---|
| GroupName | Y | ExtractCriteriaGroups/ ExtractCriteriaGroup | Indicates a unique GroupName. The GroupName will be used when you add a new tenant or participant to Sterling Business Intelligence.<br><br>The GroupName attribute must be less than 28 characters. |
| FactExtractFileName | Y | ExtractCriteriaGroups/ ExtractCriteriaGroup | Indicates the name of the Fact Extract file. |
| OutputFolderName | Y | ExtractCriteriaGroups/ ExtractCriteriaGroup | Indicates the directory path where the Extracted File will be generated. |

## Defining the Fact Extract File

The Fact Extract file contains information about the fact table and the dimensions' from which the data will be extracted. You can also include filters to refine the data extraction.

### About this task

To define the Fact Extract file:

### Procedure

1. Create the `<fact_extract_file>.xml` file.
2. You can specify the fact tables to be extracted using the `Fact` element. The attributes in the `Fact` element are mentioned below:
   a. FactName
   b. TableName
   c. DbAliasName
   d. CDCDate
   e. PartitionInterval

   For more information, refer to "Fact Attributes in the Fact Extract File" on page 58
3. Specify all the fact table attributes to be extracted using the `IncludeAttribute` element. For more information, refer to "IncludeAttribute Attribute in the Fact Extract File" on page 59
4. If the participant attribute does not exist in the fact table, then you can specify the participant dimension using the `ParticipantDimension` element. The attributes in the `ParticipantDimension` element are mentioned below:
   a. Name
   b. TableName
   c. ParticipantAttributeName

   For more information, refer to "ParticipantDimension Attributes in the Fact Extract File" on page 59

5. Specify all the participant dimension attributes to be extracted using the `IncludeAttribute` element. For more information, refer to "IncludeAttribute Attribute in the Fact Extract File" on page 59
6. Specify the relationship between the fact table and the participant dimension using the `RelationShip` element. The attributes in the `RelationShip` element are mentioned below:
   a. ChildAttributeName
   b. ParentAttributeName

   For more information, refer to "Relationship Attributes in the Fact Extract File" on page 59
7. Specify the dimensions to be extracted using the `Dimension` element. The attributes in the `Dimension` element are mentioned below:
   a. Name
   b. TableName

   For more information, refer to "Dimension Attributes in the Fact Extract File" on page 60
8. Specify all the dimension attributes to be extracted using the `IncludeAttribute` element. For more information, refer to "IncludeAttribute Attribute in the Fact Extract File" on page 59
9. Specify the relationship between the fact table and the dimension using the `RelationShip` element. For more information, refer to "Relationship Attributes in the Fact Extract File" on page 59
10. You can attach filters on the fact, participant dimension and dimension tables to further refine the required attributes for data extraction. When multiple filters are specified on the same table, filters are always "AND". Specify the following attributes in the `Filter` element.
    a. AttrName
    b. DataType
    c. AttrOP
    d. Value
    e. FromValue
    f. ToValue
    g. PartitionBy

    For more information, refer to "Filter Attributes in the Fact Extract File" on page 60.

    **Note:** The values specified in the filter are not case sensitive.

## Example

The following example describes a Fact Extract file for SO_LINE_MEASURES fact table:

```
<Facts>
<Fact Name="SalesOrder" TableName="SO_LINE_MEASURES" DbAliasName="DM_DATA_SOURCE"
CDCDate="CHANGED_DATE" PartitionInterval="20">
 <IncludeAttributes> <IncludeAttribute Name="TOTAL_LINE_CHARGES"/>
  <IncludeAttribute Name="SHIPPED_QUANTITY"/>
  <IncludeAttribute Name="ORDERED_QUANTITY"/>
 </IncludeAttributes>
 <ParticipantDimension Name="Enterprise" TableName="ENTERPRISE"
  ParticipantAttributeName="ENTERPRISE_CODE">
 <IncludeAttributes>
```

```
 <IncludeAttribute Name="ENTERPRISE_CODE"/>
</IncludeAttributes>
<RelationShips>
 <RelationShip ChildAttributeName="ENTERPRISE_SID"
  ParentAttributeName="ENTERPRISE_SID"/>
</RelationShips>
</ParticipantDimension>
<Dimensions>
 <Dimension Name="Product" TableName="PRODUCT">
 <IncludeAttributes>
  <IncludeAttribute Name="PRODUCT_CODE"/>
  <IncludeAttribute Name="UNIT_OF_MEASURE_CODE"/>
 </IncludeAttributes>
<RelationShips>
 <RelationShip ChildAttributeName="PRODUCT_SID"
  ParentAttributeName="PRODUCT_SID"/>
</RelationShips>
</Dimension>
 <Dimension Name="Channel" TableName="CHANNEL">
 <IncludeAttributes> <IncludeAttribute Name="CHANNEL_CODE"/>
 </IncludeAttributes>
<RelationShips>
 <RelationShip ChildAttributeName="CHANNEL_SID"
  ParentAttributeName="CHANNEL_SID"/>
</RelationShips>
<Filters>
 <Filter AttrName="CHANNEL_CODE" AttrOP="EQ"  Value="Web" />
 <!--Filter AttrName="CONFIRMED_DATE" AttrOP="BETWEEN"
     FromValue="2010-08-30" ToValue="2011-08-30" PartitionBy="Y" /-->
 </Filters>
</Dimension>
</Dimensions>
</Fact>
</Facts>
```

## Fact Attributes in the Fact Extract File

The following table describes the attributes used in the Fact element in the Fact Extract xml file:

*Table 2. Xml Attributes used in the Fact Element*

| XML Attribute | Mandatory | Attribute Location | Description |
|---|---|---|---|
| Name | Y | Facts/ Fact | Indicates an unique name for the Fact element entry.<br><br>The Name attribute must be less than 28 characters. |
| TableName | Y | Facts/ Fact | Indicates the fact table name in the data mart. |
| DbAliasName | N | Facts/ Fact | By default data extraction happens from DM_DATA_SOURCE database. If you want the extraction to happen from a different database then specify the database name here.<br>**Note:** The database name provided here must match the value in AliasName attribute in Data Sources file. |
| CDCDate | N | Facts/ Fact | Indicates that the data extraction happens from the previous data extraction date to the current date. You must provide a unique string value. |
| PartitionInterval | N | Facts/ Fact | Indicates the interval in days based on which the Extracted File file will be split into multiple files. By default the time interval is thirty days. |

## IncludeAttribute Attribute in the Fact Extract File

The following table describes the attributes used in the IncludeAttribute element in the Fact Extract xml file:

*Table 3. Xml Attributes used in the IncludeAttribute Element*

| XML Attribute | Mandatory | Attribute Location | Description |
|---|---|---|---|
| Name | Y | Facts/ Fact/ IncludeAttributes/ IncludeAttribute<br><br>Facts/ Fact/ ParticipantDimension/ IncludeAttributes/ IncludeAttribute<br><br>Facts/ Fact/ Dimensions/ Dimension/ IncludeAttributes/ IncludeAttribute | Indicates column name to be extracted from the fact, participant dimension or dimension tables in the data mart. |

## ParticipantDimension Attributes in the Fact Extract File

The following table describes the attributes used in the `ParticipantDimension` element in the Fact Extract xml file:

*Table 4. Xml Attributes used in the ParticipantDimension Element*

| XML Attribute | Mandatory | Attribute Location | Description |
|---|---|---|---|
| Name | Y | Facts/ Fact/ Participant Dimension | Indicates a unique name for the ParticipantDimension element entry. |
| TableName | Y | Facts/ Fact / Participant Dimension | Indicates the participant dimension table name in the data mart. |
| ParticipantAttribute Name | Y | Facts/ Fact / Participant Dimension | Indicates column name to be extracted from the participant dimension table in the data mart. |

## Relationship Attributes in the Fact Extract File

The following table describes the attributes used in the `Relationship` element in the Fact Extract xml file:

*Table 5. Xml Attributes used in the Relationship Element*

| XML Attribute | Mandatory | Attribute Location | Description |
|---|---|---|---|
| ChildAttributeName | Y | Facts/ Fact/ Participant Dimension/ Relationships/ Relationship<br><br>Facts/ Fact/ Dimensions / Dimension/ Relationships/ Relationship | Indicates column name in the participant dimension or dimension table. |

*Table 5. Xml Attributes used in the Relationship Element (continued)*

| XML Attribute | Mandatory | Attribute Location | Description |
|---|---|---|---|
| ParentAttributeName | Y | Facts/ Fact/ Participant Dimension/ Relationships/ Relationship<br><br>Facts/ Fact/ Dimensions /Dimension/ Relationships/ Relationship | Indicates column name in the fact table. |

## Dimension Attributes in the Fact Extract File

The following table describes the attributes used in the `Dimension` element in the Fact Extract xml file:

*Table 6. Xml Attributes used in the Dimension Element*

| XML Attribute | Mandatory | Attribute Location | Description |
|---|---|---|---|
| Name | Y | Facts/ Fact/ Dimensions/ Dimension | Indicates an unique name for the Dimension element entry. |
| TableName | Y | Facts/ Fact/ Dimensions/ Dimension | Indicates the dimension table name in the data mart. |

## Filter Attributes in the Fact Extract File

The following table describes the attributes used in the `Filter` element in the Fact Extract xml file:

*Table 7. Xml Attributes used in the Filter Element*

| Attribute | Mandatory | Attribute Location | Description |
|---|---|---|---|
| AttrName | Y | Facts/Fact/ Filters/ Filter<br><br>Facts/Fact/ ParticipantDimension/ Filters/ Filter<br><br>Facts/ Fact/ Dimensions/ Dimension/ Filters/ Filter | Indicates column name in the fact, participant dimension or dimension table on which the filter is applied. |

*Table 7. Xml Attributes used in the Filter Element (continued)*

| Attribute | Mandatory | Attribute Location | Description |
|---|---|---|---|
| AttrOP | Y | Facts/ Fact/ Filters/ Filter<br><br>Facts/ Fact/ ParticipantDimension/ Filters/ Filter<br><br>Facts/ Fact/ Dimensions/ Dimension/ Filters/ Filter | Indicates the filter operation. The following filter operations are supported:<br><br>EQ - equal<br><br>NE - not equal<br><br>GT - greater than<br><br>GE - greater than and equal<br><br>LT - less than<br><br>LE - less than and equal<br><br>BETWEEN - between<br><br>FLIKE - starts with<br><br>ELIKE - ends with<br><br>NFLIKE - does not start with<br><br>NELIKE - does not end with |
| Value | N | Facts/ Fact/ Filters/ Filter<br><br>Facts/ Fact/ ParticipantDimension/ Filters/ Filter<br><br>Facts/ Fact/ Dimensions/ Dimension/ Filters/ Filter | Indicates the filter value. This attribute will not be used when the `AttrOP` is BETWEEN. |
| FromValue | N | Facts/ Fact/ Filters/ Filter<br><br>Facts/ Fact/ ParticipantDimension/ Filters/ Filter<br><br>Facts/ Fact/ Dimensions/ Dimension/ Filters/ Filter | You can provide a range of values using the FromValue and ToValue attributes. This attribute will be used only when the AttrOP is BETWEEN. The FromValue should always be lesser than or equal to the ToValue. |
| ToValue | N | Facts/ Fact/ Filters/ Filter<br><br>Facts/ Fact/ ParticipantDimension/ Filters/ Filter<br><br>Facts/ Fact/ Dimensions/ Dimension/ Filters/ Filter | You can provide a range of values using the FromValue and ToValue attributes. This attribute will be used only when the AttrOP is BETWEEN. The FromValue should always be lesser than or equal to the ToValue. |

*Table 7. Xml Attributes used in the Filter Element (continued)*

| Attribute | Mandatory | Attribute Location | Description |
|---|---|---|---|
| PartitionBy | N | Facts/ Fact/ Filters/ Filter<br><br>Facts/ Fact/ ParticipantDimension/ Filters/ Filter<br><br>Facts/ Fact/ Dimensions/ Dimension/ Filters/ Filter | Indicates if you want to partition the Extracted File using the filter. Ensure that the AttrName attribute refers to a database column of type date or timestamp. This attribute will be used only when the AttrOP is BETWEEN.The possible values are :<br><br>Y - yes<br><br>N - no |

# Defining the Data Sources File

You can configure data extraction to select data from multiple databases. The Data Sources file contains information about the database from which the data needs to be extracted.

## About this task

To define the Data Sources xml file:

## Procedure

1. Create the `<datasource>.xml` file.
2. Specify the following attributes in the `DataSource` element
   a. AliasName
   b. DataSourceName
   c. DatabaseType
   d. Database
   e. UserName
   f. Password
   g. Host
   h. Port
   i. Driver
   j. SchemaName

   For more information, refer to "DataSource Attributes in Data Sources File" on page 63

## Example

A sample Data Sources file is as follows:

```
<DataSources>
 <DataSource>
   <AliasName>DM_DATA_SOURCE</AliasName>
   <DataSourceName>SBIMART</DataSourceName>
   <DatabaseType>DB2</DatabaseType>
        <Database>SBIMART</Database>
    <UserName>target</UserName>
    <Password>targetpasswd</Password>
    <Host>localhost</Host>
    <Port>50000</Port>
```

```
    <SchemaName>TARGET</SchemaName>
        <Driver>com.ibm.db2.jcc.DB2Driver</Driver>
  </DataSource>
</DataSources>
```

### DataSource Attributes in Data Sources File
### Purpose

The following table describes the attributes used in DataSource element:

*Table 8. Xml Attributes used in the DataSource Element*

| XML Attribute | Mandatory | Attribute Location | Description |
|---|---|---|---|
| AliasName | Y | DataSources/ DataSource | Indicates the database alias name. By default data extraction happens from DM_DATA_SOURCE database. **Note:** The database name provided here must match the value in DbAliasName attribute in Fact Extract file. |
| DataSourceName | Y | DataSources/ DataSource | Indicates the name provided in the database client application of database. |
| DatabaseType | Y | DataSources/ DataSource | Indicates the database type. The supported databases are:<br>DB2<br>ORACLE |
| Database | Y | DataSources/ DataSource | Indicates the name provided in the database server application of database. |
| UserName | Y | DataSources/ DataSource | Indicates the username to connect to the database. |
| Password | Y | DataSources/ DataSource | Indicates the password to connect to the database. |
| Host | Y | DataSources/ DataSource | Indicates the host name where the database is located. |
| Port | Y | DataSources/ DataSource | Indicates the port number to connect to the database. |
| SchemaName | N | DataSources/ DataSource | Indicates the schema name of the database. If the schema name is not available the UserName will be considered. |
| Driver | Y | DataSources/ DataSource | Indicates the database driver class name. |

## Formatting the Extracted File

You can configure the format in which the Extracted File is generated using the `dataextractionconfig.properties` file.

### About this task

To configure the format of the Extracted File:

## Procedure

1. Rename <AC_INSTALL_DIR>/resources/dataextractionconfig.properties.sample file as <AC_INSTALL_DIR>/resources/dataextractionconfig.properties. Here, <AC_INSTALL_DIR> is the Analytics Content Installation directory.
2. Configure the properties in the dataextractionconfig.properties file.

## Data Extraction Properties

The following table describes the properties defined in the dataextractionconfig.properties file:

*Table 9. Properties in dataextractionconfig.properties file*

| Property | Values | Default Value | Description |
|---|---|---|---|
| DE_FACT_DELIVERY_LINE_DELIMITER | TAB<br>COMMA<br>SPACE<br>NONE<br>NL [ New Line] | NL [New Line] | Indicates the type of line delimiter. |
| DE_FACT_DELIVERY_DELIMITER | TAB<br>COMMA<br>SPACE<br>NONE<br>NL [ New Line] | TAB | Indicates the column delimiter. |
| DE_FACT_DELIVERY_QUOTEDATA | YES<br>NO | NO [ No double quotes] | Indicates if the extracted values need to be in double quotes. If YES the values in the Extracted File will be in double quotes. |
| DE_FACT_DELIVERY_TITLE | YES<br>NO | NO | Indicates that a title will be inserted in the extracted file. |
| DE_FACT_DELIVERY_ENCODING | UTF-8 | UTF-8 | Indicates the type of encoding. |

*Table 9. Properties in `dataextractionconfig.properties` file (continued)*

| Property | Values | Default Value | Description |
|---|---|---|---|
| DE_FACT_DELIVERY_ TRACE_VALUES | PROGRESS, DETAIL, INTERNAL, EXECUTEDSQL, USERVARIABLE | PROGRESS, DETAIL, INTERNAL, EXECUTEDSQL, USERVARIABLE | Indicates trace option for debugging purpose. You must provide one of the values or provide multiple values by separating them using a comma.<br><br>Here,<br><br>PROGRESS - Shows the overall progress of the application.<br><br>DETAIL - Shows more detailed progress messages.<br><br>INTERNAL - Shows all the SQL statements used at each stage of execution. This information can help resolve database errors.<br><br>EXECUTEDSQL - Shows the executed SQL for SELECT statements.<br><br>USERVARIABLE - Shows all the variables used in the build. |
| DE_LOG_CONFIG_FILE | `<path>/ <log_properties>` | JRE `logging.properties` | Indicates the properties file for configuring log files. |
| DE_LOG_FILE | `<path>/ <log_filename>` | `<AC_INSTALL_DIR>/ resources/ dataextract.log` | Indicates the location and name of the log file. Here, <AC_INSTALL_DIR> is the Analytics Content Installation directory. |
| DE_FACT_DELIVERY_ FILE_TYPE_ EXTENSION | TXT<br>CSV | TXT | Indicates the format of the Extracted File. |

# Generating the Data Extraction Package File

## Before you begin

Ensure that you have defined the Fact Extract file, Extract Criteria Group file and Data Sources file. The required properties are set in the `dataextractionconfig.properties` file.

### About this task

Execute the Data Extraction Package file generation tool to generate the Data Extraction Package file.

### Procedure

1. Navigate to the <AC_INSTALL_DIR>/bin folder. Here, <AC_INSTALL_DIR> is the is the Analytics Content Installation directory.
   a. Set or export (set for Windows and export for Linux/UNIX) the value of the DATABASE_DRIVER environment variable.

   For example,

   If the database is DB2, then

   on Windows, **set DATABASE_DRIVER="e:\db2jcc.jar: e:\ db2jcc_license_cu.jar"**

   on Unix/ Linux, **export DATABASE_DRIVER="$home/db2jcc.jar: $home/db2jcc_license_cu.jar"**
2. Execute either of the following commands:
   - For Windows,

     **generateDEPackage.bat <extract_group_file> <data_source_file> <dataextract_package_name>**
   - For Unix/ Linux,

     **generateDEPackage.sh <extract_group_file> <data_source> <dataextract_package_name>**

   Here,

   **<extract_group_file>**
   Indicates the directory path and filename of the Extract Criteria Group file.

   **<data_source_file>**
   Indicates the directory path and filename of the Data Sources file.

   **<dataextract_package_name>**
   Indicates the path and filename of Data Extraction Package file.

### Results

The Data Extraction Package will be generated.

## Subscribing a Tenant for Data Extraction

Multiple tenants also called as participants, can subscribe for data extraction from the Sterling Business Intelligence data mart . You must assign the participant to a group or many such groups, based on the data you want to extract. The GroupName attribute represents the group for which the data will be extracted from the fact and dimension tables. This attribute is present in the Extract Criteria Group file.

### Before you begin

Before you insert a participant for the first time make sure you perform the following step:

- Execute the following SQL script in the data mart:
  <AC_INSTALL_DIR>/resources/de_dataextraction_participant.sql

For more information, refer to the documentation provided by your database vendor.

### Procedure

Execute the following command to insert or remove a participant:

- For Windows,

  **<AC_INSTALL_DIR>\bin\manageparticipant.bat <mode> <data_ source_ file> <alias_name> <group_name> <participant>**

- For Unix or Linux,

  **<AC_INSTALL_DIR>/bin/manageparticipant.sh <mode> <data_ source_ file> <alias_name> <group_name> <participant>**

Here,

**<AC_INSTALL_DIR>**
Indicates the Analytics Content Installation directory.

**<mode>**
Set the value of the <mode> parameter to either of the following:

- INSERT - To add the participant to Sterling Business Intelligence.
- DELETE- To delete the participant from Sterling Business Intelligence.

**<data_ source_ file>**
Specify the name of the Data Sources file.

**<alias_name>**
Set the value to match with the `AliasName` attribute in the Data Sources file.

**<group_name>**
Set the value to match with the `GroupName` attribute in the Extract Criteria Group file.

**<participant>**
Specify a unique participant name.

## Generating the Extracted File

The Extracted File contains information about the metadata extracted from the data mart. The Extracted File can be loaded into the data warehouse.

### Before you begin

Generate the Data Extraction Package file. Copy the Data Extraction Package file to the `<COGNOS_AW_HOME>` directory.

Before you generate the Extracted File, set or export (set for Windows and export for Linux/UNIX) the following environment variables on the Cognos Adaptive Warehouse Runtime server:

*Table 10. Environment Variables in Cognos Adaptive Warehouse Runtime Server*

| Environment Variable | Description |
|---|---|
| COGNOS_AW_HOME | Indicates the location of the Cognos Adaptive Warehouse Runtime installation directory. |
| DB_ALIAS_DRIVER | Indicates the database driver to use to connect to the database. For example, if the database is DB2 the DB_ALIAS_DRIVER is '<database>;UID=<userid>;PWD=<password>' |

*Table 10. Environment Variables in Cognos Adaptive Warehouse Runtime Server (continued)*

| Environment Variable | Description |
|---|---|
| DB_ALIAS_ITEM | Indicates the connection string to pass to the database driver. For example, if the database is DB2 the DB_ALIAS_ITEM is DB2 |

## About this task

To generate the Extracted File:

## Procedure

1. If you have configured the `CDCDate` attribute in the Fact Extract file. Execute the following command:
   - For Windows,

     **<COGNOS_AW_HOME>\dataextraction.bat CDCSETUP_Jobs <data_extraction_package>**
   - For Unix or Linux,

     **<COGNOS_AW_HOME>/dataextraction.sh CDCSETUP_Jobs <data_extraction_package>**

   **Note:** This command will register the current date as the start date for data extraction. The current date is the date on the database.
2. Execute the following command to generate the Extracted File:
   - For Windows,

     **<COGNOS_AW_HOME>\dataextraction.bat <group_name>_Jobs <data_extraction_package> "<variable_arguments>"**
   - For Unix or Linux,

     **<COGNOS_AW_HOME>/dataextraction.sh <group_name>_Jobs <data_extraction_package> "<variable_arguments>"**

   Here,

   **<group_name>**
   Indicates the value in the `GroupName` attribute in the Extract Criteria Group file.

   **<variable_arguments>**
   Indicates the variable arguments. For example, "-VStart=2011-12-01 -VEnd=2012-12-01"

   **Note:** If the `CDCDate` attribute is configured in Fact Extract file, then data extraction happens from the previous data extraction date to the current date.

## Results

The Extracted File is generated in the following path: `<output_folder>/<participant>`

Here,

**<output_folder>**
Indicates the directory path mentioned in the `OutputFolderName` attribute in the Extract Criteria Group file.

**<participant>**
Indicates the participant name specified in Sterling Business Intelligence. Refer to, "Subscribing a Tenant for Data Extraction" on page 66

.

## Naming Convention for the Extracted File

The Extracted File is generated by using the following naming convention:

```
<fact_name>_<group_name>_<participant>_<timestamp>.<file_extension>
```

Here,

**<fact_name>**
Indicates the value of the fact `Name` attribute as specified in the Fact Extract file.

**<group_name>**
Indicates the value of the `GroupName` attribute as specified in the Extract Criteria Group file.

**<participant>**
Indicates the value of the participant dimension `Name` attribute as specified in the Fact Extract file.

**<timestamp>**
Indicates the system date when the Extracted File was generated.

**<file_extension>**
Indicates if the file is in txt or csv format.

# Chapter 8. The IBM Sterling Business Intelligence Model

This topic explains the data model and the schemas pertaining to Sterling Business Intelligence.

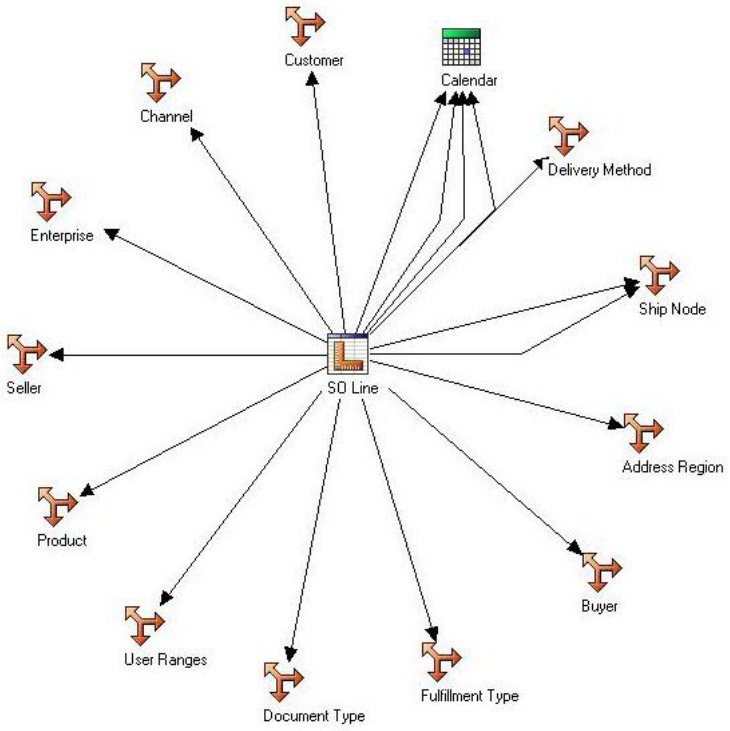
## Warehouse Model Star Schemas for IBM Sterling Business Intelligence

Sterling Business Intelligence provides metadata to deliver the warehouse content in the warehouse model using the star schemas shown in the following illustration.

The tables in this section list the dimensions and the corresponding role names for each star schema. A role is the role name given when multiple references exist between a fact and a dimension.

### SO Line Star Schema

The SO Line star schema is illustrated here.




The SO Line star schema consists of SO Line measures and references to the dimensions listed in the following table:

**Dimension**
**Role**

**Enterprise**

Default

**Address Region**

Default

**Calendar**

Actual Ship Date-SO Line

Released Date

Confirmed Date

Promised Ship Date

**Ship Node**

Default

**User Ranges**

Default

**Buyer**

Default

**Seller**

Default

**Customer**

(Default)

**Product**

Default

**Delivery Method**

Default

**Fulfillment Type**

Default

**Document Type**

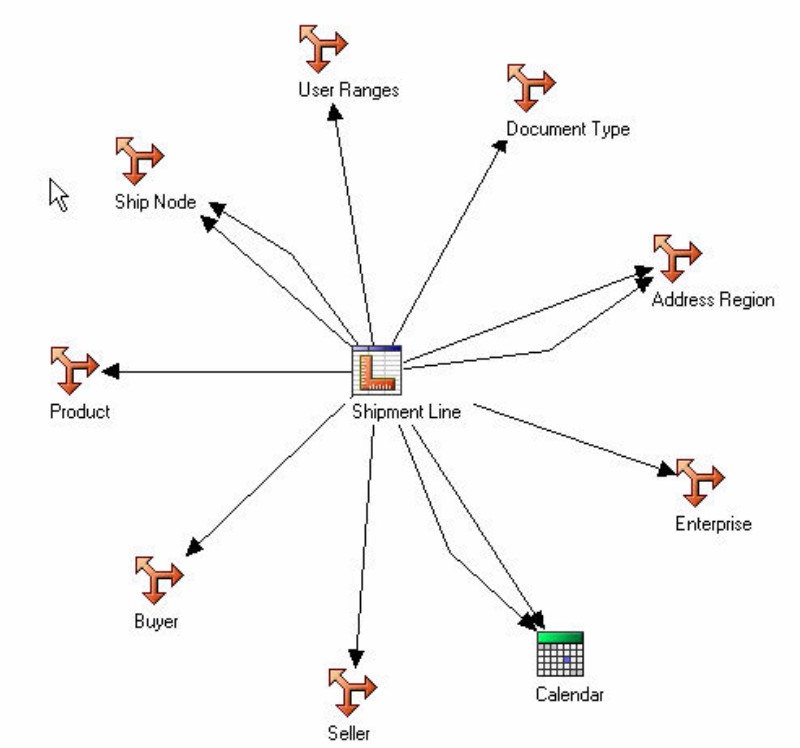
Default

**Channel**

Default

## Shipment Line Star Schema

The Shipment Line star schema is illustrated here.




The Shipment Line star schema consists of the Shipment Line measures and references to the dimensions listed in the following table:

**Dimension**
**Role**

**Enterprise**

Default

**Address Region**

Ship To

Bill To

**Calendar**

Actual Ship Date-Shipment Line

Expected Shipment Date

**Ship Node**

Default

Procurement Node

**User Ranges**

Default

**Buyer**

Default

**Seller**

Default

**Product**

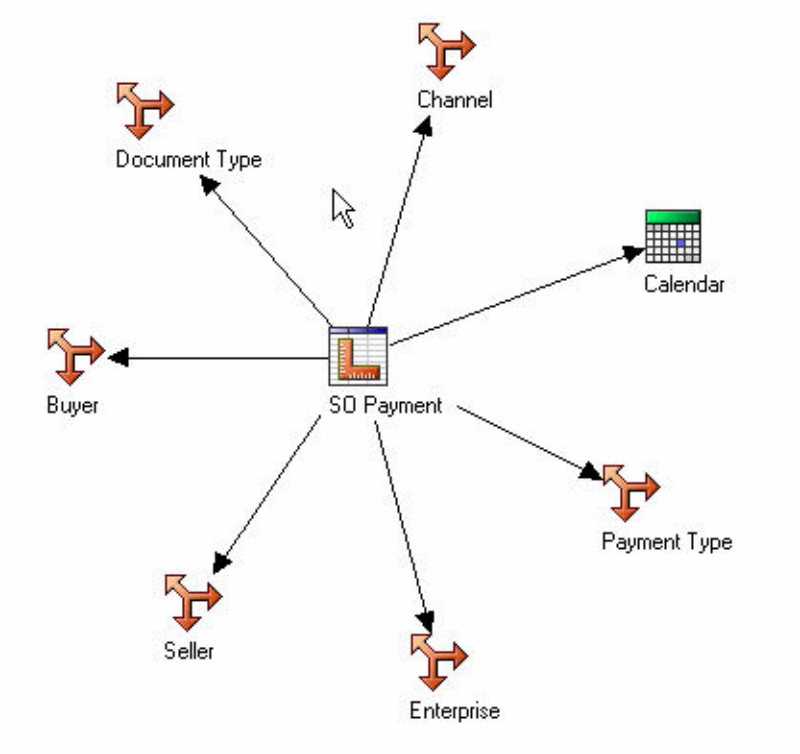
Default

**Document Type**

Default

## SO Payment Star Schema

The SO Payment star schema is illustrated here.




The SO Payment star schema consists of the SO Payment measures and references to the dimensions listed in the following table:.

**Dimension**
**Role**

**Calendar**

Charge Date

**Channel**

Default

**Document Type**

Default

**Seller**

Default

**Buyer**

Default

**Enterprise**

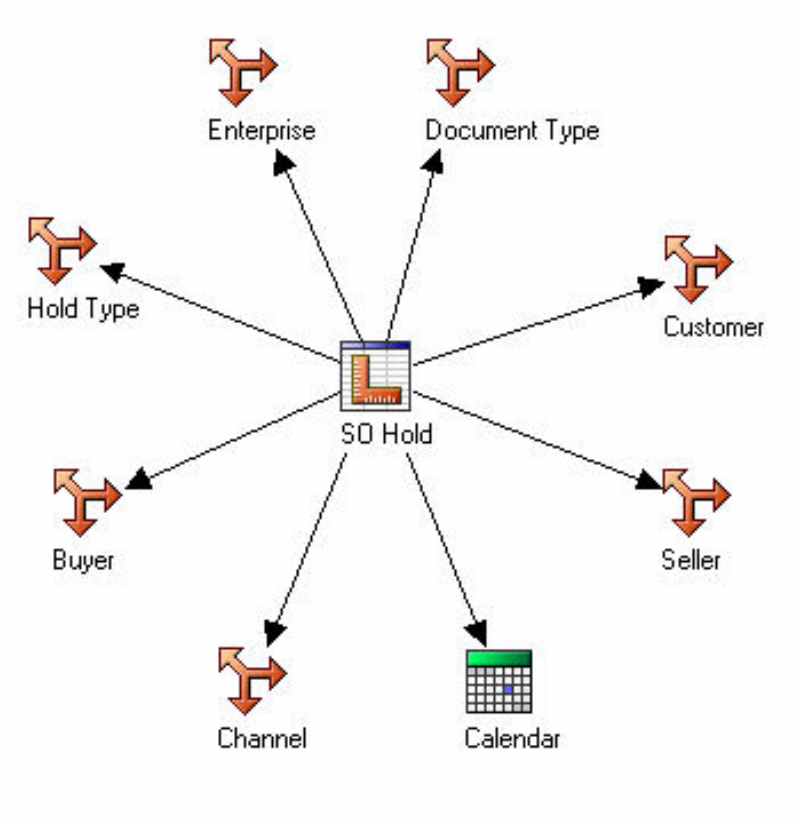
Default

**Payment Type**

Default

## SO Hold Star Schema

The SO Hold star schema is illustrated here.




The SO Hold star schema consists of the SO Hold measure and references to the dimensions listed in the following table:.

**Dimension**
**Role**

**Enterprise**

Default

**Customer**

Default

**Document Type**

Default

**Calendar**

Hold Date

**Seller**

Default

**Channel**

Default

**Buyer**

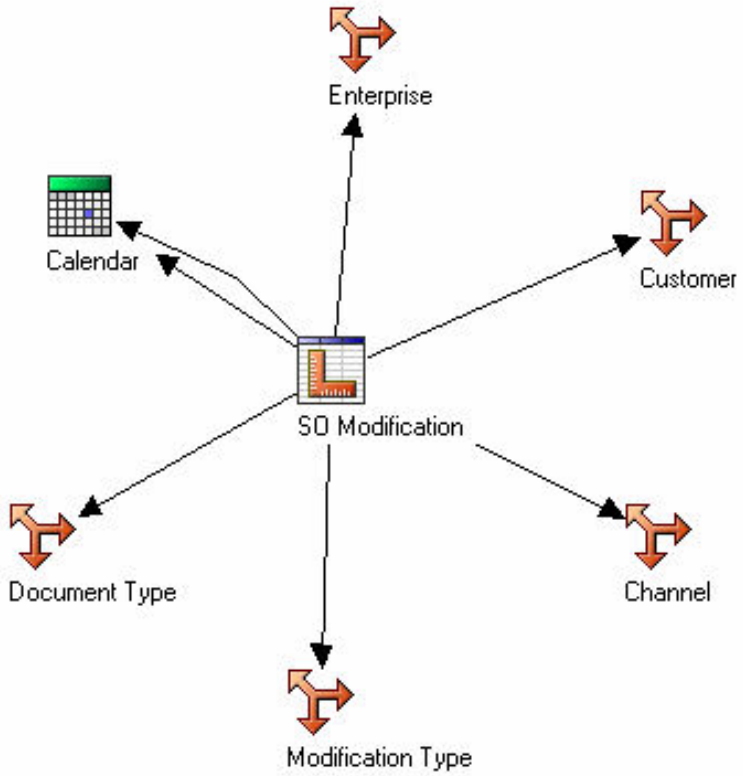
Default

**Hold Type**

Default

## SO Modification Star Schema

The SO Modification star schema is illustrated here.




The SO Modification star schema consists of the SO Modification measure and references to the dimensions listed in the following table:.

**Dimension**

**Role**

**Enterprise**

Default

**Customer**

Default

**Channel**

Default

**Modification Type**

Default

**Document Type**

Default

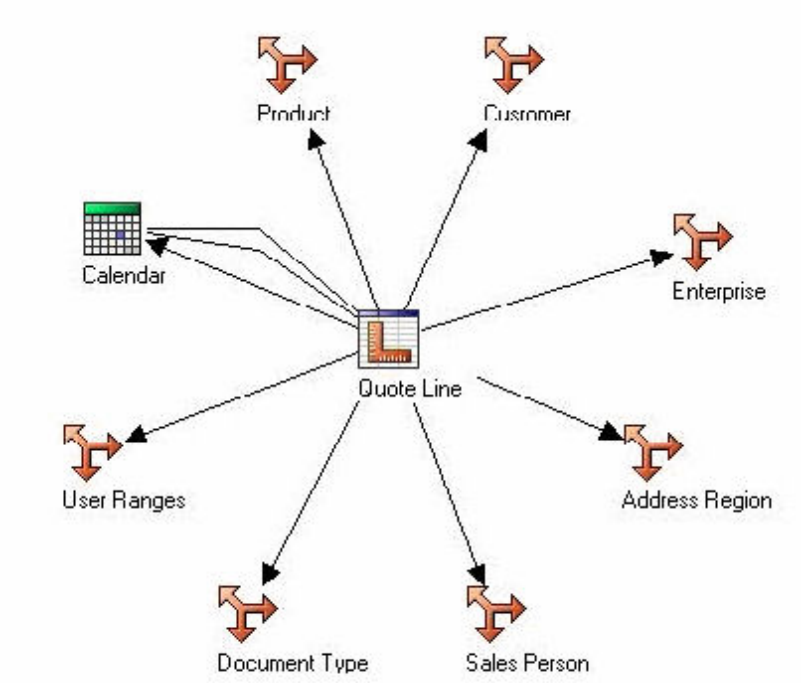
**Calendar**

Confirmed Date

Modify Date

## Quote Line Star Schema

The Quote Line star schema is illustrated here:




The Quote Line star schema consists of the Quote Line measure and references to the dimensions listed in the following table:.

**Dimension**

**Role**

**Sales Person**

Owner

**Document Type**

Default

**Product**

Default

**Customer**

Default

**Enterprise**

Default

**Sales Team**

Owner

**Address Region**

Default

**Calendar**

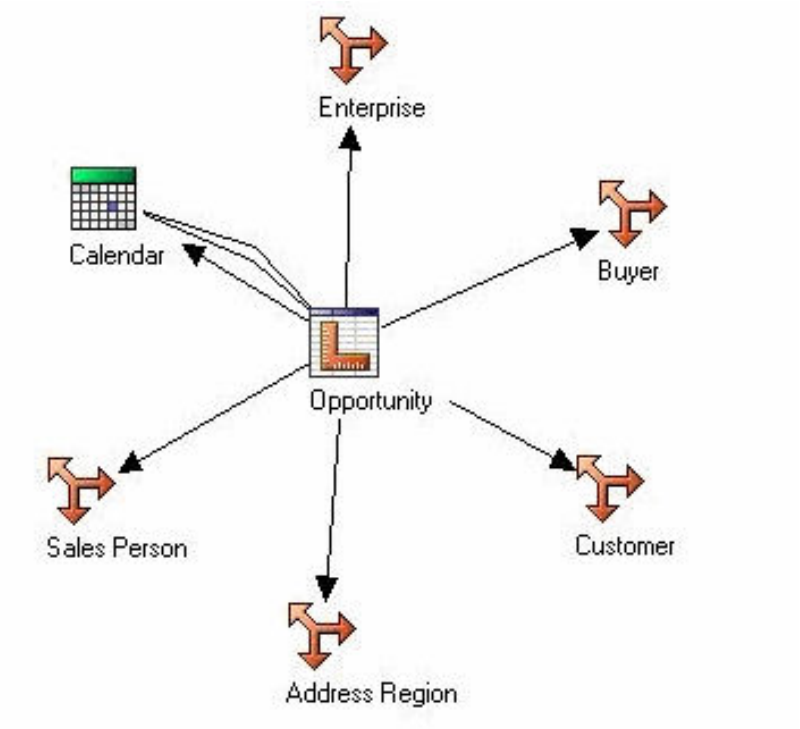
Ordered Date

Abandoned Date

Created Date

## Opportunity Star Schema

The Opportunity star schema is illustrated here:




The Opportunity star schema consists of the Opportunity measure and references to the dimensions listed in the following table:

**Dimension**
**Role**

**Sales Person**

Owner

**Address Region**

Default

**Calendar**

Opportunity Creation Date

Opportunity Won Date

Expected Close Date

**Enterprise**

Default

**Buyer**

Default

**Customer**

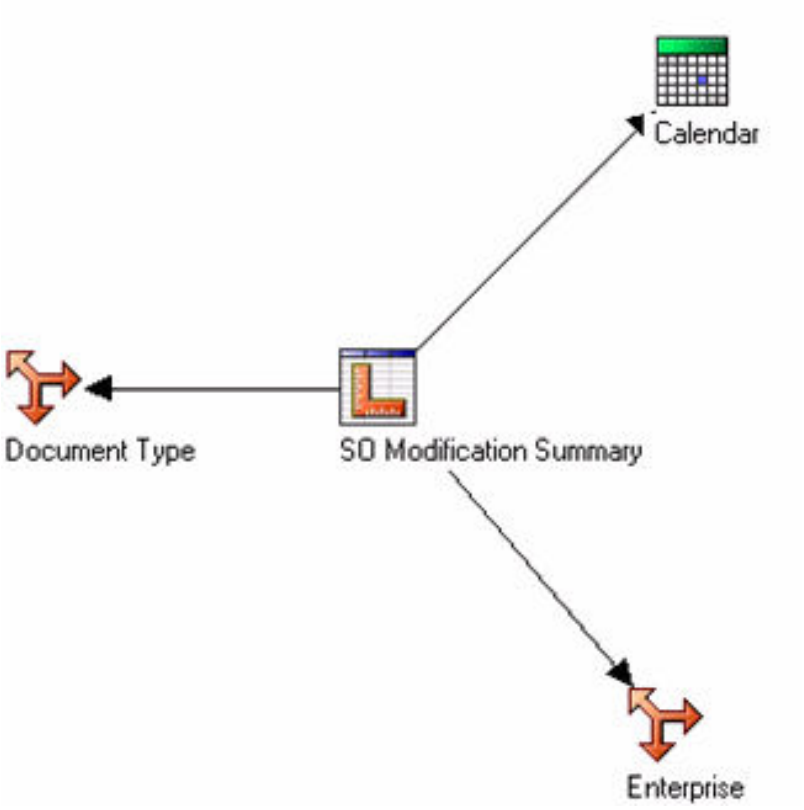
Default

**Sales Team**

Owner

## SO Modification Summary Star Schema

The SO Modification Summary star schema is illustrated here:




The SO Modification Summary star schema consists of the SO Modification Summary measure and references to the dimensions listed in the following table:

**Dimension**

**Role**

**Calendar**

Default

**Enterprise**

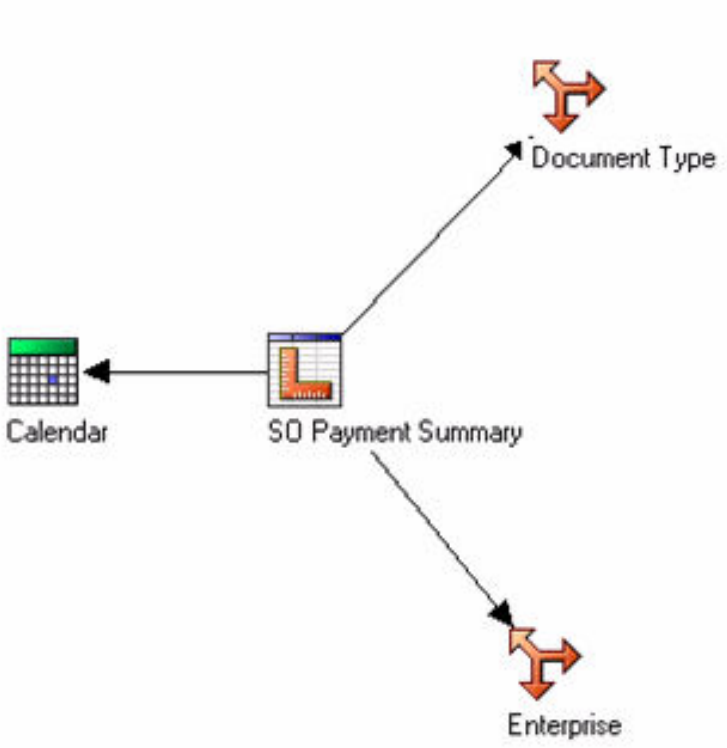
Default

**Document Type**

Default

## SO Payment Summary Star Schema

The SO Payment Summary star schema is illustrated here:




The SO Payment Summary star schema consists of the SO Payment Summary measure and references to the dimensions listed in the following table:

**Dimension**

**Role**

**Calendar**

Default

**Enterprise**

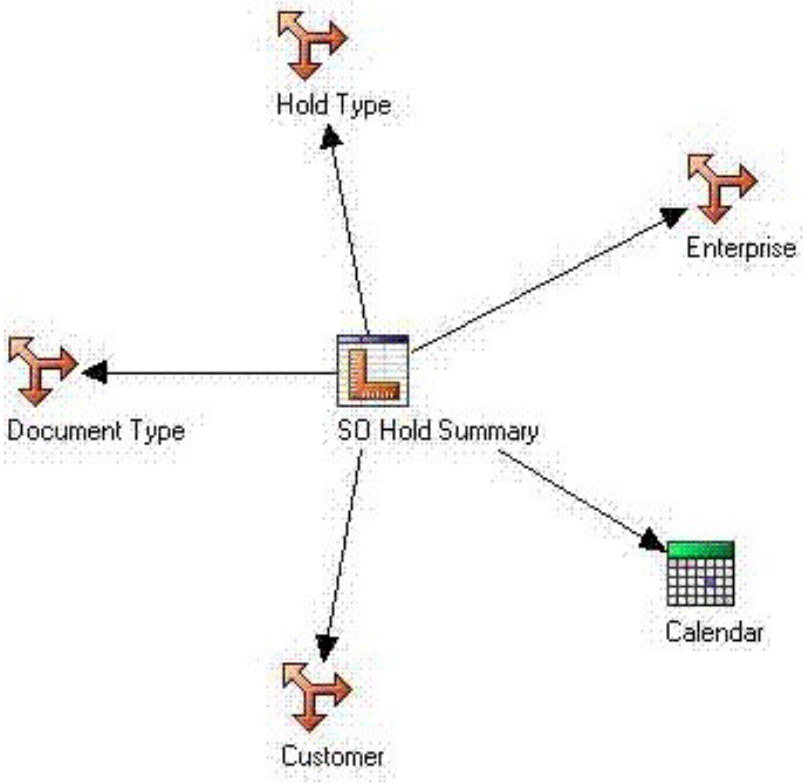
Default

**Document Type**

Default

## SO Hold Summary Star Schema

The SO Hold Summary star schema is illustrated here:




The SO Hold Summary star schema consists of the SO Hold Summary measure and references to the dimensions listed in the following table:

**Dimension**
**Role**

**Hold Type**

Default

**Document Type**

Default

**Calendar**

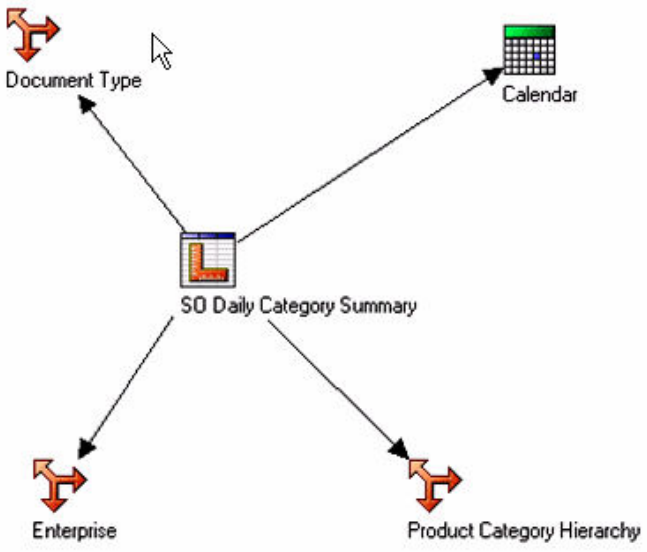
Default

**Enterprise**

Default

## SO Daily Category Summary Star Schema

The SO Daily Category Summary star schema is illustrated here:




The SO Daily Category Summary star schema consists of the SO Daily Category Summary measure and references to the dimensions listed in the following table:

**Dimension**
**Role**

**Calendar**

Default

**Product Category Hierarchy**

Default

**Enterprise**

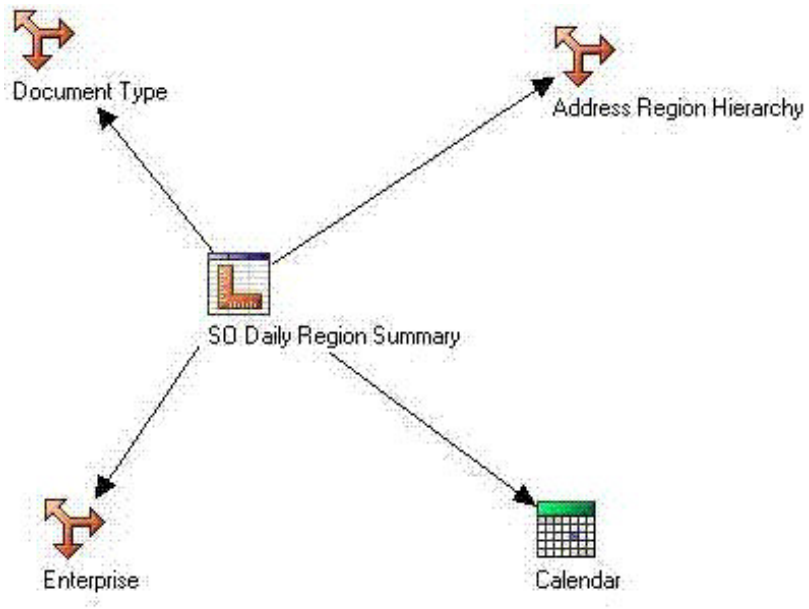
Default

**Document Type**

Default

## SO Daily Region Summary Star Schema

The SO Daily Region Summary star schema is illustrated here:




The SO Daily Region Summary star schema consists of the SO Daily Region Summary measure and references to the dimensions listed in the following table:

**Dimension**
**Role**

**Address Region Hierarchy**

Default

**Calendar**

TranDate

**Enterprise**

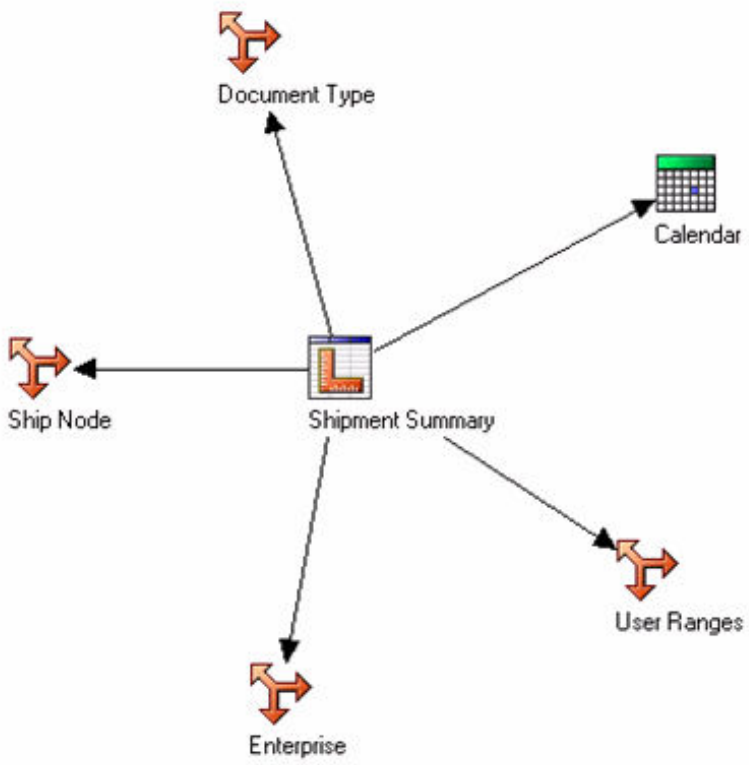
Default

**Document Type**

Default

## Shipment Summary Star Schema

The Shipment Summary star schema is illustrated here:




The Shipment Summary star schema consists of the Shipment Summary measure and references to the dimensions listed in the following table:

**Dimension**
**Role**

**Calendar**

Default

**User Ranges**

Default

**Enterprise**

Default

**Ship Node**

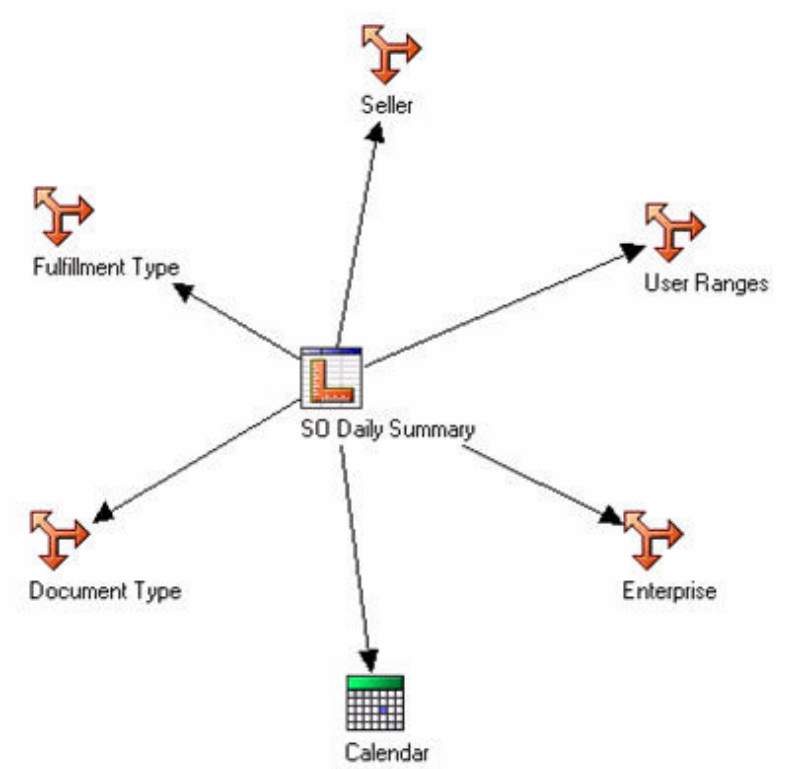
Default

**Document Type**

Default

## SO Daily Summary Star Schema

The SO Daily Summary star schema is illustrated here:




The SO Daily Summary star schema consists of the SO Daily Summary measure and references to the dimensions listed in the following table:

**Dimension**
**Role**

**Seller**

Default

**User Ranges**

Default

**Enterprise**

Default

**Calendar**

TranDate

**Document Type**

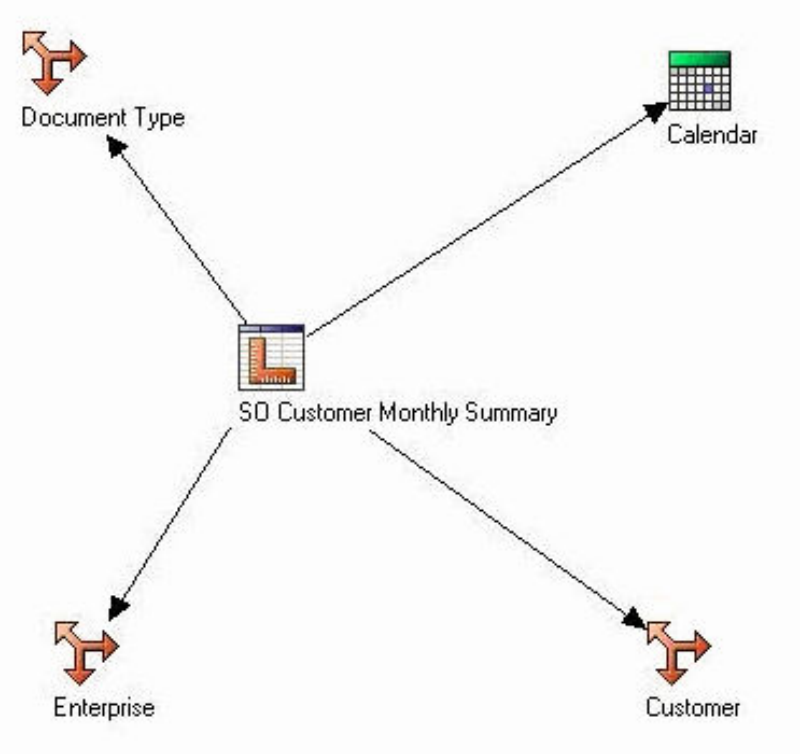
Default

**Fulfillment Type**

Default

## SO Customer Monthly Summary Star Schema

The SO Customer Monthly Summary star schema is illustrated here:




The SO Customer Monthly Summary star schema consists of the SO Customer Monthly Summary measure and references to the dimensions listed in the following table:.

**Dimension**
**Role**

**Calendar**

Default

**Enterprise**

Default

**Customer**

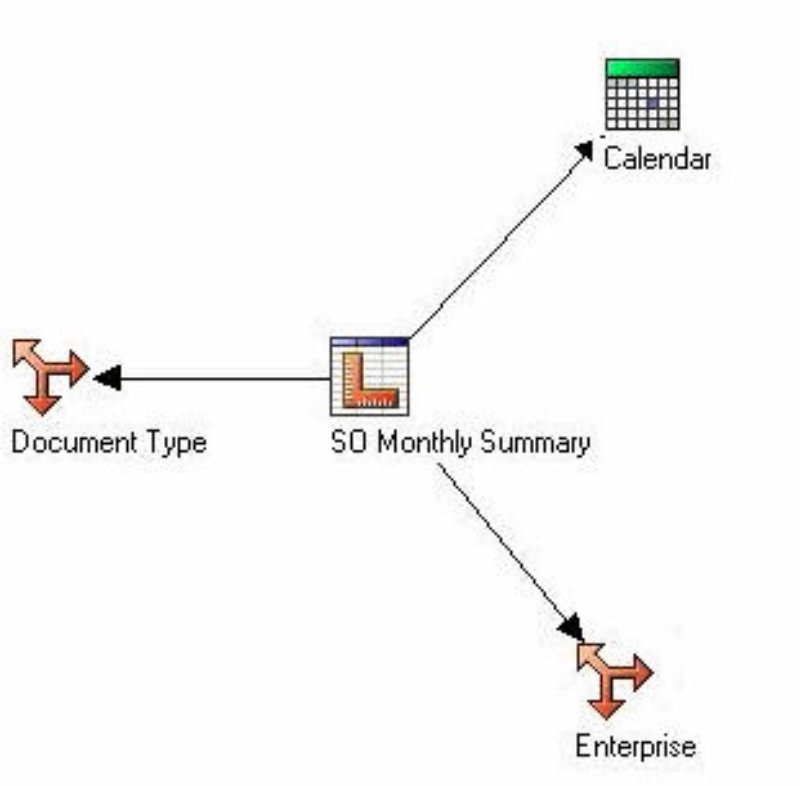
Default

**Document Type**

Default

## SO Monthly Summary Star Schema

The SO Monthly Summary star schema is illustrated here:




The SO Monthly Summary star schema consists of the SO Monthly Summary measure and references to the dimensions listed in the following table:.

**Dimension**
**Role**

**Calendar**

Default

**Enterprise**

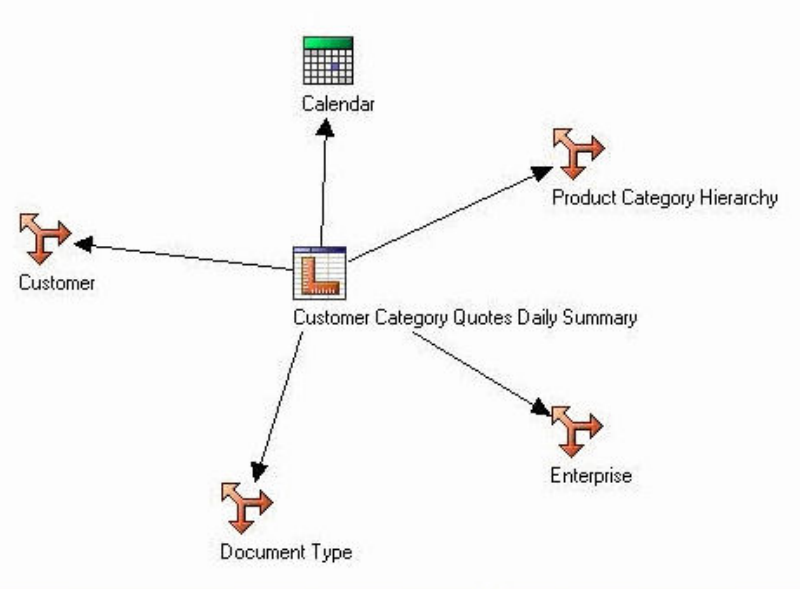
Default

**Document Type**

Default

## Customer Category Quotes Daily Summary Star Schema

The Customer Category Quotes Daily Summary star schema is illustrated here:




The Customer Category Quotes Daily Summary star schema consists of the Customer Category Quotes Daily Summary measure and references to the dimensions listed in the following table:

**Dimension**
**Role**

**Calendar**

Default

**Product Category Hierarchy**

Default

**Enterprise**

Default

**Document Type**

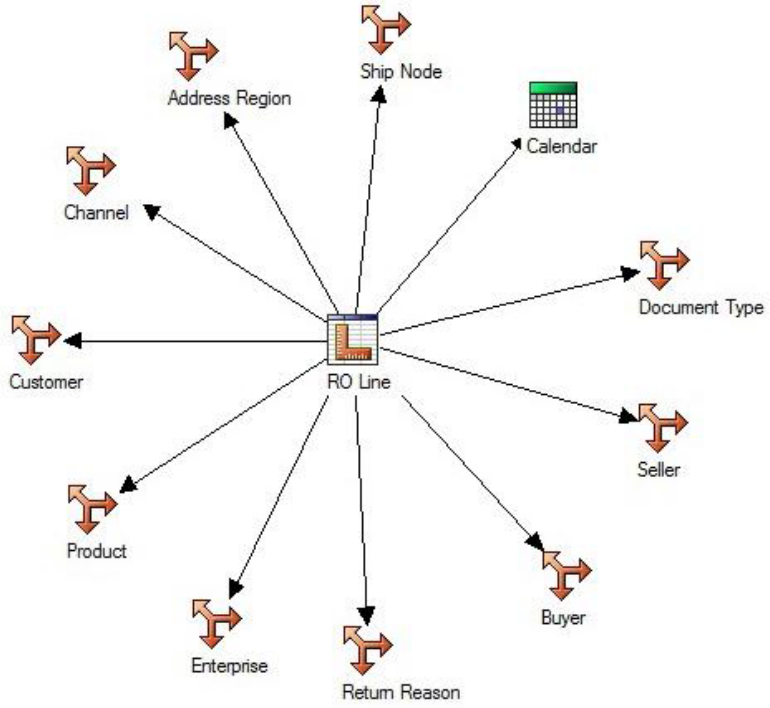
Default

**Customer**

Default

## RO Line Star Schema

The Return Order Line Star Schema is illustrated here:




The RO Line star schema consists of RO Line measures and references to the dimensions listed in the following table:

**Dimension**
**Role**

**Enterprise**
Default

**Ship Node**
Default

**Document Type**
Default

**Product**
Default

**Calender**
Received Date

**Channel**
Default

**Customer**
Default

**Return Reason**
Default

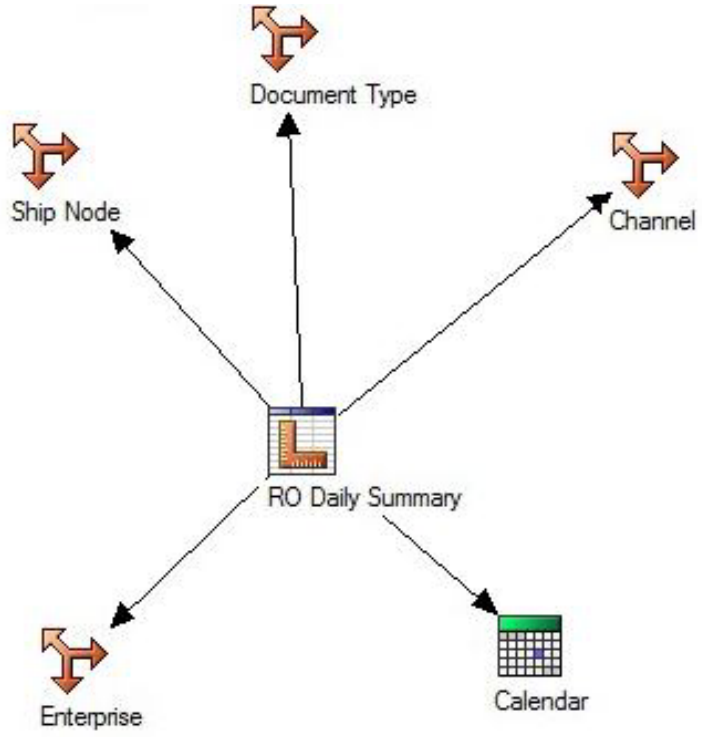
**Seller** Default

**Address Region**
Default

**Buyer** Default

## RO Daily Summary Star Schema

The Return Order Daily Summary Star Schema is illustrated here:




The RO Daily Summary star schema consists of RO Daily Summary measures and references to the dimensions listed in the following table:

**Dimension**
**Role**

**Enterprise**
Default

**Document Type**
Default

**Calendar**
Transaction Date

**Channel**
Default

**Ship Node**
Default

# Target Model Star Schemas for IBM Sterling Business Intelligence

The target model generated by the Cognos Adaptive Warehouse applies the best practices for reporting. The target model provides a business view of the information in the source model, and is used to simplify the building of reports, analyses, and queries. The following star schema groupings are delivered in the target model of the Cognos Adaptive Warehouse content.

# SO Line Star Schema Grouping

The SO Line star schema grouping consists of the SO Line measures and the following dimensions.

## Dimensions

- "Enterprise" on page 113
- "Buyer" on page 115
- "Seller" on page 114
- "Channel" on page 116
- "Calendar" on page 122
- "Delivery Method" on page 116
- "Fulfillment Type" on page 116
- "Product" on page 117
- "Product Category Hierarchy" on page 117
- "Address Region" on page 120
- "Ship Node" on page 114
- "Address Region Hierarchy" on page 120
- "Customer" on page 118
- "Customer Hierarchy" on page 119
- "Document Type" on page 121
- "User Ranges" on page 121
-

## Measures

The following table provides a list of the SO Line measures:

**Measure**
**Description**

**Bundle Line count**
This measure is count of bundle components for bundle orders.

**Total Line Charges**

This is the total amount pertaining to an order line.

**Is Shipped**

This measure indicates whether the order line is shipped.

**Elapsed Time Actual Ship Promised**

The time that has elapsed between the actual shipment time and the promised time (in minutes).

**Elapsed Time Actual Ship Released**

The time that has elapsed between the actual shipment time and the released time (in minutes).

**Elapsed Time Confirm Release**

The time that has elapsed between the released time and confirmed time (in minutes)

**Shipped Quantity**

This is the shipped quantity of the order lines.

**Is ASAP Order**

This measure indicates whether the order is an ASAP order.

**Ordered Quantity**

This is the ordered quantity of the order lines.

**Capture to Shipment Time for ASAP Order**

This is the time between the shipped time and the captured time for ASAP orders.

**Is Delayed**

This measure indicates whether the order line has been delayed.

**Is BackOrdered**

This measure indicates whether the order line has been backordered.

**Is BackOrdered and Delayed**

This measure indicates whether the order line has been backordered and delayed.

**Is Shipped On Time**

This measure indicates whether the order line has been shipped on time.

**Elapsed Time Actual Ship Confirmed**

The time that has elapsed between the actual shipment time and the confirmed time (in minutes).

**Elapsed Lead Time ASAP**

The time that has elapsed for the ASAP orders (in minutes).

**Sales Order Line Count**

This is the total number of order lines.

**Fulfilled Revenue (Currency)**

This is the fulfilled revenue of an order line.

**Is Released**

This measure indicates whether the order line has been released.

**Booked Value (Currency)**

This measure indicates the booked value.

**Is Shipped ASAP Order**

This measure indicates whether the shipped order is an ASAP order.

**Not Cancelled**

This measure indicates whether the order line has been cancelled.

**Is Currently Backordered**
This measure indicates if the order line is presently in backordered status.

**Backordered Quantity**
This measure indicates the backordered quantity.

### Grouped Measures

The following table provides a list of the SO Line group measures:

**Measure**
**Description**

**Percentage Shipped on Time**

This is the percentage of order lines shipped on or before the first promised date.

**No. of Orders Shipped**

This is the total number of orders shipped.

**Avg. Exp. Lead Time (ASAP Orders)**

This is the time between the promised date and the confirmed date for ASAP orders.

**Avg. Capture to Ship Time (ASAP)**

This is the average amount of time between the stage an ASAP order line is captured and the time it is shipped.

**Avg. Lead Time to Ship**

This is the average time required to move the order lines from the release stage to the ship stage.

**Avg. Value of an Order**

This is the average booked value of confirmed orders.

**No. of Order Lines Confirmed**

This is the total number of order lines confirmed.

**Percentage BackOrdered**

This is the percentage of shipment lines backordered from a node.

**No. of Order Lines Shipped**

This is the total number of order lines shipped.

**Avg. Capture to Ship Time (ASAP)**

This is the average amount of time between the stage when an ASAP order line is captured and the time it is shipped.

**Avg. Order to Release Time**

This is the average time required to move the order lines from the order capture stage to the order release stage.

**Avg. Order Lines per Order**

This is the average number of order lines in a confirmed order.

## Shipment Line Star Schema Grouping

The Shipment Line star schema grouping consists of the Shipment Line measures and following dimensions.

## Dimensions

- "Seller" on page 114
- "Ship Node" on page 114
- "Enterprise" on page 113
- "Buyer" on page 115
- "Address Region" on page 120
- "Product" on page 117
- "Product Category Hierarchy" on page 117
- "Address Region Hierarchy" on page 120
- "Calendar" on page 122
- "Document Type" on page 121

## Measures

The following table provides a list of the Shipment Line measures:

**Measure**
**Description**

**Shipped Quantity**

This measure indicates the quantity that has been shipped.

**Elapsed Time Expected Ship**

This measure indicates the difference between the shipped time and the expected time (in minutes).

**Is Procured**

This measure indicates whether the shipment line has been procured.

**Is Shipped**

This measure indicates whether the shipment has been shipped.

**Is Delayed**

This measure indicates whether a shipment line has been delayed.

**Delay in Shipment per Line**

This measure indicates the delay in shipment for each shipment Line.

**Elapsed Time Released Ship**

This measure indicates the difference between the shipment time and the released time (in minutes).

**Is Shipped on Time**

This measure indicates whether the shipment has been shipped on time.

**Is Backordered from Node**

This measure indicates whether the order line has been backordered from a node.

**Ordered Quantity**

This measure provides the ordered quantity.

**Is Fulfillment Partner**

This measure indicates whether the ship node of a shipment line is a fulfilled partner.

**Delay in Shipment**

This measure indicates the delay in shipment for each shipment.

### Grouped Measures

The following table provides a list of the Shipment Line group measures:

**Measure**
**Description**

**Percentage Shipped on Time**

This is the percentage of order lines that are shipped on or before the first promised date.

**No. of Shipment Lines Shipped**

This is the total number of shipment lines shipped.

**Avg. Release to Ship Time**

This is the average time required to move the shipment lines from the release stage to the ship stage.

**Percentage Procured**

This is the percentage of shipment lines procured for a node.

**No. of Shipments Shipped**

This is the total number of shipment shipped.

**Avg. Value of an Order**

This is the average booked value of the confirmed orders.

**Avg. Delay in Shipment**

This is the average delay in the delayed shipments shipped.

## SO Payment Star Schema Grouping

The SO Payment star schema grouping consists of the SO Payment measures and the following dimensions.

### Dimensions

- "Enterprise" on page 113
- "Calendar" on page 122(Charge Date)
- "Buyer" on page 115
- "Seller" on page 114
- "Channel" on page 116
- "Payment Type" on page 115
- "Document Type" on page 121

### Measures

The following table provides a list of the SO Payment measures:

**Measure**
**Description**

**Authorization Count**

This measure indicates whether the transaction has been authorized.

**Authorization Failure Count**

This measure indicates whether the authorization of transaction has failed.

**Credit Amount**

This is the amount that is actually charged or refunded to the buyer.

**Authorized Amount**

This is the amount that is authorized for an order.

**Settlement Count**

This measure indicates whether the transaction settlement has been completed or not.

**Settlement Failure Count**

This measure indicates whether the settlement of transaction has failed.

**Request Amount**

This is the amount that has been requested for settlement or authorization.

**Settled Amount**

This measure is the amount for which a settlement has been requested.

### Grouped Measures

The following table provides a list of the SO Payment grouped measures:

**Measure**
**Description**

**Percentage Authorization Failures**

This is the percentage of payment instruments that failed during the authorization of payment.

**Percentage Settlement Failures**

This is the percentage of settlements that failed during the settlement cycle.

## SO Hold Star Schema Grouping

The SO Hold star schema grouping consists of the SO Hold measure and following dimensions.

### Dimensions

- "Calendar" on page 122 (Hold Date)
- "Enterprise" on page 113
- "Seller" on page 114
- "Buyer" on page 115
- "Channel" on page 116
- "Hold Type" on page 115
- "Document Type" on page 121
- "Customer" on page 118
- "Customer Hierarchy" on page 119

### Measures

The SO Hold measure is Hold Duration. This field indicates the duration of hold applied on an order (in minutes).

### Grouped Measures

The following table provides a list of the SO Hold grouped measures:

**Measure**
**Description**

**No. of Orders on Hold**

This is the total number of orders on hold.

**Avg. Hold Duration**

This is the average time the orders are kept on hold.

## SO Modification Star Schema Grouping

The SO Modification star schema grouping consists of the SO Modification measure and following dimensions.

### Dimensions

- "Calendar" on page 122 (Modify Date)
- "Channel" on page 116
- Modification Type
- "Enterprise" on page 113
- "Document Type" on page 121
- "Customer" on page 118
- "Customer Hierarchy" on page 119

### Measures

The SO Modification measure is Is Manually Modified. This field indicates whether the order is manually modified.

### Grouped Measures

The following table provides a list of the SO Modification grouped measures:

**Measure**
**Description**

**Orders from SO Modification**

This is the total number of orders manually modified after confirmation.

**Orders from SO line**

This is the total number of orders confirmed.

**Percentage of Orders Manually Modified**

This is the percentage of orders that have been manually modified after confirmation.

# Quote Line Star Schema Grouping

The Quote Line star schema grouping consists of the Quote Line measures and the following dimensions:

## Dimensions

- "Sales Person" on page 123
- "Document Type" on page 121
- "Product" on page 117
- "Customer" on page 118
- "Enterprise" on page 113
- "Sales Team" on page 124
- "Address Region" on page 120
- "Calendar" on page 122

## Measures

The following table provides a list of the Quote Line measures:

**Measure**
**Description**

**Is Ordered**

Indicates If the quote to which this quote line belongs has been converted to an order.

**Is Abandoned**

Indicates if the quote to which this quote line belongs has been abandoned.

**Sold At Price**

Indicates the price of a quote line at which it is sold. This price includes all the charges considered for the quote line.

**Ordered Quantity**

Indicates the quantity of a quote line in an order.

**Profit Margin Percentage**

Indicates the percentage of the profit margin made when an order was created for a quote line.

**Selling Price**

Indicates the selling price of a quote line as specified in a quote.

**Cost Price**

Indicates the cost price of a quote line.

**Quote Line Count**

Indicates the count of a quote line for a specific criteria.

**Total Profit Margin**

Indicates the total profit margin made when an order was created for a quote line.

**Total Discount**

Indicates the total discount provided for a quote line.

**Discount Percentage**

Indicates the percentage of the discount that is provided on a quote line.

### Grouped Measures

The following table provides a list of the Quote Line grouped measures:

**Measure**
**Description**

**Average Discount Percentage**

Indicates the average of the discount percentage that is provided for a quote line.

**Maximum Discount Percentage**

Indicates the maximum discount percentage that is provided for a quote line.

**Minimum Discount Percentage**

Indicates the minimum discount percentage that is provided for a quote line.

**Average Profit Margin Percentage**

Indicates the average of the profit margin percentage that is made for a quote line.

## Opportunity Star Schema Grouping

The Opportunity star schema grouping consists of the Opportunity measures and the following dimensions:

### Dimensions

- "Sales Person" on page 123
- "Address Region" on page 120
- "Calendar" on page 122
- "Enterprise" on page 113
- "Buyer" on page 115
- "Customer" on page 118
- "Sales Team" on page 124

### Measures

The following table provides a list of the Opportunity measures:

**Measure**
**Description**

**Is Opportunity Won**

Indicates if an opportunity is won and converted into an order.

**Opportunity Value**

Indicates the budget allocated for an opportunity.

**Opportunity Revenue**

Indicates the total revenue generated by an opportunity after being converted into an order.

**Opportunity Count**

Indicates the count of an opportunity for a specific criteria.

### Grouped Measures

The Opportunity grouped measure is Opportunity Conversion Percentage. It indicates the percentage of the opportunities that were successfully converted into orders.

## SO Modification Summary Star Schema Grouping

The SO Modification Summary aggregate fact table is derived from the SO Line and SO Modification facts and consists of the following dimensions:

### Dimensions

- "Enterprise" on page 113
- "Document Type" on page 121
- "Calendar" on page 122 (Confirmed Date)

### Measures

The following table provides a list of the SO Modification Summary measures:

**Measure**
**Description**

**Modified Order**

Indicates the total number of modified orders.

**Confirmed Order**

Indicates the total number of confirmed orders.

### Grouped Measures

The SO Modification Summary grouped measure is % Orders Manually Modified. It indicates the percentage of the orders that were manually modified.

## SO Payment Summary Star Schema Grouping

The SO Payment Summary aggregate fact table is derived from the SO Payment fact and consists of the following dimensions:

### Dimensions

- "Enterprise" on page 113
- "Document Type" on page 121
- "Calendar" on page 122 (Execution Date)

### Measures

The following table provides a list of the SO Payment Summary measures:

**Measure**
**Description**

**Authorized Amount**

Indicates the amount that has been authorized for a payment.

**Credit Amount**

Indicates the amount that has been allowed for credit in a payment.

**Settled Amount**

Indicates the amount that has been settled for a payment.

**Request Amount**

Indicates the amount that has requested for a payment.

**Authorization Count**

Indicates the number of payments that have been authorized.

**Settlement Count**

Indicates the number of settlements.

**Authorization Failure Count**

Indicates the number of authorizations that have failed.

**Settlement Failure Count**

Indicates the number of settlements that have failed.

### Grouped Measures

The following table provides a list of the SO Payment Summary grouped measures:

**Measure**
**Description**

**Percentage Authorization Failures**

Indicates the percentage of the failed authorizations.

**Percentage Settlement Failures**

Indicates the percentage of the failed settlements.

## SO Hold Summary Star Schema Grouping

The SO Hold Summary aggregate fact table is derived from the SO Hold fact and consists of the following dimensions:

### Dimensions

- "Enterprise" on page 113
- "Document Type" on page 121
- "Hold Type" on page 115
- "Calendar" on page 122 (Hold Date)

### Measures

The following table provides a list of the SO Hold Summary measures:

**Measure**
**Description**

**Hold Duration**

Indicates the duration for which an order is held.

**Order Count**

Indicates the number of orders that are on hold.

### Grouped Measures

The following table provides a list of the SO Hold Summary grouped measures:

**Measure**
**Description**

**No. of Orders on Hold**

Indicates the number of orders on hold.

**Avg. Hold Duration**

Indicates the average duration for which an order is kept on hold.

## SO Daily Category Summary Star Schema Grouping

The SO Daily Category Summary aggregate fact table is derived from the SO Line fact and consists of the following dimensions:

### Dimensions

- "Enterprise" on page 113
- "Document Type" on page 121
- "Product Category Hierarchy" on page 117(Category)
- "Calendar" on page 122 (Transaction Date)

### Measures

The following table provides a list of the SO Category Summary measures:

**Measure**
**Description**

**Shipped Count**

Indicates the number of orders that have been shipped.

**Shipped On Time Count**

Indicates the number of orders that have been shipped on time.

**Shipped Quantity**

Indicates the shipped quantity.

**B2C Fulfilled Revenue**

Indicates the fulfilled revenue of B2C orders.

**B2B Fulfilled Revenue**

Indicates the fulfilled revenue of B2B orders.

**Backordered Count**

Indicates the number of orders that have been backordered.

### Grouped Measures

The following table provides a list of the SO Category Summary grouped measures:

**Measure**
**Description**

**B2C Fulfilled Revenue (Currency)**

Indicates the fulfilled revenue of a B2C order.

**B2B Fulfilled Revenue (Currency)**

Indicates the fulfilled revenue of a B2B order.

**Percentage Shipped On Time**

Indicates the percentage of the orders that have been shipped on time.

## SO Daily Region Summary Star Schema Grouping

The SO Daily Region Summary aggregate fact table is derived from the SO Line fact and consists of the following dimensions:

### Dimensions

- "Enterprise" on page 113
- "Document Type" on page 121
- "Address Region Hierarchy" on page 120
- "Calendar" on page 122 (Transaction Date)

### Measures

The following table provides a list of the SO Daily Region Summary measures:

**Measure**
**Description**

**Shipped Count**

Indicates the number of orders that have been shipped.

**Shipped On Time Count**

Indicates the number of orders that have been shipped on time.

**Shipped Quantity**

Indicates the shipped quantity.

**B2C Fulfilled Revenue**

Indicates the fulfilled revenue of B2C orders.

**B2B Fulfilled Revenue**

Indicates the fulfilled revenue of B2B orders.

### Grouped Measures

The SO Daily Region Summary grouped measure is B2C Fulfilled Revenue (Currency). It indicates the fulfilled revenue of B2C orders.

## Shipment Summary Star Schema Grouping

The Shipment Summary aggregate fact table is derived from the Shipment Line fact and consists of the following dimensions:

### Dimensions

- "Enterprise" on page 113
- "Document Type" on page 121
- "Calendar" on page 122 (Actual Ship Date)
- "User Ranges" on page 121
- "Ship Node" on page 114

### Measures

The following table provides a list of the Shipment Summary measures:

**Measure**
**Description**

**Procured Count**

Indicates the number of shipments that have been procured.

**BackOrdered from Node Count**

Indicates the number of shipments that have been backordered from a node.

**Shipped Count**

Indicates the number of shipments that have been sent.

**Ordered Quantity**

Indicates the ordered quantity.

**Delay in Shipment per Line**

Indicates the delay in shipment per line.

**Elapsed Time Released Ship**

Indicates the time elapsed between the released date and the actual shipment date.

**Shipment Number**

Indicates the shipment number.

**Shipped On Time Count**

Indicates the number of shipments that have been sent on time.

### Grouped Measures

The following table provides a list of the Shipment Summary grouped measures:

**Measure**
**Description**

**No. of Shipment Lines Shipped**

Indicates the number of shipment lines that have been shipped.

**Percentage Backordered From Node**

Indicates the percentage of orders that have been backordered from a given node.

**Percentage Procured**

Indicates the percentage of the orders that have been procured.

**No. of Shipments Shipped**

Indicates the number of shipments that have been shipped.

**Avg. Delay in Shipment**

Indicates the average amount of delay that occurred when sending shipments.

# SO Daily Summary Star Schema Grouping

The SO Daily Summary aggregate fact table is derived from the SO Line fact and consists of the following dimensions:

## Dimensions

- "Enterprise" on page 113
- "Document Type" on page 121
- "Seller" on page 114
- "Fulfillment Type" on page 116
- "Calendar" on page 122 (Transaction Date)

## Measures

The following table provides a list of the SO Daily Summary measures:

**Measure**
**Description**

**ASAP Order Count**

Indicates the number of orders that are to be shipped as soon as possible.

**BackOrdered Count**

Indicates the number of orders that have been backordered.

**BackOrdered and Delayed Count**

Indicates the number of orders that have been backordered and delayed.

**Released Count**

Indicates the number of orders that have been released.

**Shipped Count**

Indicates the number of orders that have been shipped.

**Shipped On Time Count**

Indicates the number of orders that have been shipped on time.

**Elapsed Lead Time ASAP**

Indicates the time that has elapsed between the promised time and the confirmed time (in minutes).

**Elapsed Time Actual ship Confirmed**

Indicates the time that has elapsed between the actual shipment time and the confirmed time (in minutes).

**Elapsed Time Actual ship Promised**

Indicates the time that has elapsed between the actual shipment time and the promised time (in minutes).

**Elapsed Time Actual ship Released**

Indicates the time that has elapsed between the promised time and the released time (in minutes).

**Elapsed Time Confirm Release**

Indicates the time that has elapsed between the released time and confirmed time (in minutes).

**Fulfilled Revenue**

Indicates the fulfilled revenue of an order.

**Shipped Quantity**

Indicates the shipped quantity.

**Promised Count**

Indicates the number of orders that have been promised to be delivered.

**Confirmed Order Lines**

Indicates the confirmed order lines.

**Ordered Quantity**

Indicates the ordered quantity.

**Confirmed Orders**

Indicates the confirmed orders.

**Booked Value**

Indicates the booked value of the confirmed order.

**B2B Booked Value**

Indicates the booked value of the B2B orders.

**B2C Booked Value**

Indicates the booked value of the B2C orders.

**B2B Fulfilled Value**

Indicates the fulfilled value of the B2B orders.

**B2C Fulfilled Value**

Indicates the fulfilled value of the B2C orders.

**B2B Shipped Quantity**

Indicates the shipped quantity of the B2B orders.

**B2C Shipped Quantity**

Indicates the shipped quantity of the B2C orders.

**B2B Ordered Quantity**

Indicates the ordered quantity of the B2B orders.

**B2C Ordered Quantity**

Indicates the ordered quantity of the B2C orders.

**B2B Orders Confirmed**

Indicates the B2B orders that have been confirmed.

**B2C Orders Confirmed**

Indicates the B2C orders that have been confirmed.

**B2B Order Lines Confirmed**

Indicates the B2B order lines that have been confirmed.

**B2C Order Lines Confirmed**

Indicates the B2C order lines that have been confirmed.

**B2B Shipped Count**

Indicates the number of B2B orders lines that have been shipped.

**B2C Shipped Count**

Indicates the number of B2C orders lines that have been shipped.

**B2B Shipped Order Count**

Indicates the number of B2B orders that have been shipped.

**B2C Shipped Order Count**

Indicates the number of B2C orders that have been shipped.

**B2B Order Count**

Indicates the number of B2B orders.

**B2C Order Count**

Indicates the number of B2C orders.

**Order Delay**

Indicates the time taken to ship an order.

**Capture to Ship Time**

Indicates the amount of time between the stage an order is captured and the time it is shipped.

**Delayed Count**

Indicates the number of orders that have been delayed.

**Shipped ASAP Order Count**

Indicates the number of ASAP orders that have been shipped.

## Grouped Measures

The following table provides a list of the SO Daily Summary grouped measures:

**Measure**
**Description**

**Percentage Shipped on Time**

Indicates the percentage of orders that have been shipped on time.

**Percentage BackOrdered**

Indicates the percentage of orders that have been backordered.

**No. of Order Lines Shipped**

Indicates the number of order lines that have been shipped.

**Avg. Exp. Lead Time (ASAP Orders)**

Indicates the average expected lead time for ASAP orders.

**Avg. Capture to Ship Time (ASAP)**

Indicates the average amount of time between the stage an ASAP order line is captured and the time it is shipped.

**Avg. delay for Delayed Orders**

Indicates the average amount of delay occurred in the delayed orders.

**Avg. Order to Release time**

indicates the average time required to move the order lines from the order capture stage to the order release stage.

**Avg. Lead Time to Ship**

Indicates the average time required to move the order lines from the release stage to the ship stage.

**Avg. Order Lines per Order**

Indicates the average number of order lines in a confirmed order.

**Avg. Value of an Order**

Indicates the average booked value of confirmed orders.

**No. of Orders Confirmed**

Indicates the number of orders that have been confirmed.

**No. of Order Lines Confirmed**

Indicates the number of order lines that have been confirmed.

**No. of Order Lines Shipped (B2B)**

Indicates the number of shipped order lines pertaining to a B2B order.

**No. of Order Lines Shipped (B2C)**

Indicates the number of shipped order lines pertaining to a B2C order.

**B2B Booked Value (Currency)**

Indicates the booked value of a B2B order.

**B2C Booked Value (Currency**

Indicates the booked value of a B2C order.

**B2B Fulfilled Value (Currency**

Indicates the fulfilled value of a B2B order.

**B2C Fulfilled Value (Currency**

Indicates the fulfilled value of a B2C order.

**Avg. Value of an Order B2B**

Indicates the average value of a B2B order.

**Avg. Value of an Order B2C**

Indicates the average value of a B2C order.

**Avg. Order Lines per Order B2B**

Indicates the average number of order lines confirmed per a B2B order (excluding bundle component line).

**Avg. Order Lines per Order B2C**

Indicates the average number of order lines confirmed per a B2C order (excluding bundle component line).

**No. of Order Lines Confirmed B2B**

Indicates the average number of B2B order lines confirmed.

**No. of Order Lines Confirmed B2C**

Indicates the average number of B2C order lines confirmed.

**No. Of B2B Orders Shipped**

Indicates the number of B2B orders that have been shipped.

**No. Of B2C Orders Shipped**

Indicates the number of B2C orders that have been shipped.

## SO Customer Monthly Summary Star Schema Grouping

The SO Customer Monthly Summary aggregate fact table is derived from the SO Line fact and consists of the following dimensions:

### Dimensions

- "Enterprise" on page 113
- "Document Type" on page 121
- "Customer" on page 118
- "Calendar" on page 122 (Month)

### Measures

The following table provides a list of the SO Customer Monthly Summary measures:

**Measure**
**Description**

**Fulfilled Revenue**

Indicates the fulfilled revenue by a customer in a month.

**Order Count**

Indicates the total number of orders placed by a customer.

### Grouped Measures

The SO Customer Monthly Summary grouped measure is Average Order Value. It indicates the average lifetime order value for a customer.

## SO Monthly Summary

The SO Monthly Summary aggregate fact table is derived from the SO Line fact and consists of the following dimensions:

### Dimensions

- "Enterprise" on page 113
- "Document Type" on page 121
- "Calendar" on page 122 (Month)

### Measures

The following table provides a list of the SO Monthly Summary measures:

**Measure**
**Description**

**Fulfilled Revenue**

Indicates the fulfilled revenue of a customer in a month.

**Order Count**

Indicates the total number of orders placed by a customer.

**Customer Count**

The number of customers for the Enterprise.

### Grouped Measures

The following table provides a list of the SO Monthly Summary grouped measures:

**Measure**
**Description**

**Average Customer Revenue**

Indicates the amount of revenue generated by an average customer. An average customer is the customer with whom other customers are compared in terms of revenue generated

**Customer Spent**

Indicates the total amount that a customer has spent.

**Customer Spent Ratio**

Indicates the ratio of the amount spent by a customer by the total amount.

## Customer Category Quotes Daily Summary Star Schema Grouping

The Customer Category Quotes Daily Summary aggregate fact table is derived from the Quote Line fact and consists of the following dimensions:

### Dimensions

- "Enterprise" on page 113
- "Document Type" on page 121
- "Calendar" on page 122
- "Customer" on page 118
- "Product Category Hierarchy" on page 117

### Measures

The following table provides a list of the Customer Category Quotes Daily Summary measures:

**Measure**
**Description**

**Maximum Discount Percentage**

Indicates the maximum discount percentage that is provided for a quote line.

**Minimum Discount Percentage**

Indicates the minimum discount percentage that is provided for a quote line.

**Discount Percentage Total**

Indicates the percentage of the discount that is provided on a quote line.

**Number of Quote Lines**

Indicates the total number of quote lines selected for the given criteria.

**Profit Margin Percentage Total**

Indicates the total profit margin percentage made when an order was created for a quote.

### Grouped Measures

The following table provides a list of the Customer Category Quotes Daily Summary grouped measures:

**Measure**
**Description**

**Average Discount Percentage**

Indicates the average of the discount percentage that is provided for a quote line.

**Maximum Discount Percentage**

Indicates the maximum discount percentage that is provided for a quote line.

**Minimum Discount Percentage**

Indicates the minimum discount percentage that is provided for a quote line.

**Average Profit Margin Percentage**

Indicates the average of the profit margin percentage that is made for a quote line.

## RO Line Star Schema Grouping

The RO Line star schema grouping consists of the RO Line measures and the following dimensions:

### Dimension

- "Enterprise" on page 113
- "Ship Node" on page 114
- "Document Type" on page 121
- "Product" on page 117
- "Calendar" on page 122
- "Channel" on page 116
- "Customer" on page 118
- "Return Reason" on page 124
- "Seller" on page 114
- "Address Region" on page 120
- "Buyer" on page 115

### Measures

The following table provides a list of the RO Line measures:

**Measure**
**Description**

**IsReceived**
Indicates if the return order line is in received status.

**NotCancelled**
Indicates if the return order line is cancelled.

**Returned Quantity**
Indicates the quantity that is returned.

**Return Value**
Indicates the return value when the order line is in received status.

### Grouped Measures

The following table provides a list of the RO Line group measures:

**Measure**
**Description**

**No of Return Order Lines**
Indicates the number of return order lines in received status.

## RO Daily Summary Star Schema Grouping

The RO Daily Summary schema grouping consists of the RO Daily Summary measures and the following dimensions:

### Dimension

- "Enterprise" on page 113
- "Document Type" on page 121
- "Calendar" on page 122
- "Channel" on page 116
- "Ship Node" on page 114

### Measures

The following table provides a list of the RO Daily Summary measures:

**Measure**
**Description**

**Returned Quantity**
Indicates the quantity that is returned.

**Return Value**
Indicates the return value when the order line is in received status.

**No of Return Order Lines**
Indicates the number of return order lines in received status.

**Fulfilled Revenue**
Indicates the revenue from the sales order line.

**No of Sales Order Lines**
Indicates the number of sales order lines.

### Group Measures

The following table provides a list of the RO Daily Summary grouping measures:

**Measure**
**Description**

**Percentage Return Value**
Indicates the percentage of returned lines compared to the revenue of all the lines that were fulfilled for a given time period.

**Percentage Of Order Lines Returned**
Indicates the percentage of the number of return order lines compared to the number of sales order lines.

## Target Model Dimensions for IBM Sterling Business Intelligence

Dimensions reflect the attributes of a business, such as enterprise, channel, seller, buyer, and so on. Each dimension consists of one or more hierarchy that typically contain several levels. For example, the enterprise dimension contains the enterprise hierarchy and the corresponding levels such as Enterprise (All) and Enterprise Code.

Dimensions also provide contextual information to facts. For example, order being shipped is a fact, However, data such as the order ship date, ship to address, ship from address, and so on are contextual information that is captured by a dimension. Dimensions can be used to filter data and arrive at an appropriate data set. Sterling Business Intelligence contains the following target model dimensions.

### Enterprise

An enterprise is an organization that brokers business. An enterprise represents the organization that owns and controls all transactions. An enterprise controls the flow of documents such as a sales order, and is considered the owner of the documents. Most business rules and fulfillment processes pertaining to an order are defined by an enterprise.

### Dimension Hierarchy

The dimension hierarchy related to enterprise is Enterprise.

The levels associated with enterprise are:
- Enterprise (All)
- Enterprise Code

Location in the target model: Enterprise

### Filter

The filter associated with the enterprise dimension is Enterprise Code.

## Ship Node

This dimension contains all the ship nodes. Ship node is the warehouse or distribution center that is shipping the shipment or products.

### Dimension Hierarchy

The dimension hierarchy related to ship node is Ship Node.

The levels associated with ship node are:
- Ship Node (All)
- Ship Node Code

Location in the target model: Ship Node

### Filter

The filter associated with the ship node dimension is Ship Node Code.

### Dimension Role Play

The dimension role play related to ship node are:is .
- Ship Node (Procurement Node)
- Assigned Node (Pre Assigned Ship Node)

## Seller

This dimension contains all the sellers. A seller is an organization that supplies products to an enterprise or other buyer organizations.

### Dimension Hierarchy

The dimension hierarchy related to seller is Seller.

The levels associated with seller are:
- Seller (All)
- Seller Code

Location in the target model: Seller

### Filter

The filter associated with the seller dimension is Seller Code.

## Buyer

This dimension contains all the buyers. A buyer is an organization that purchases product from an enterprise or other seller organizations.

### Dimension Hierarchy

The dimension hierarchy related to buyer is Buyer.

The levels associated with buyer are:

- Buyer (All)
- Buyer Code

Location in the target model: Buyer

### Filter

The filter associated with the buyer dimension is Buyer Code.

## Payment Type

This dimension contains the credit card payment types supported by various organizations. Payment type is the type of payment that a customer uses to pay for an order, for example, check, credit card, store value card, and so on.

### Dimension Hierarchy

The dimension hierarchy related to payment type is Payment Type.

The levels associated with payment type are:

- Payment Type (All)
- Enterprise Code
- Payment Type Code

Location in the target model: Payment Type

### Filter

There is no filter associated with the payment type dimension.

## Hold Type

Holds are applied on orders because of exception conditions and can be used to stop order processing. For example, an order can be put on fraud hold. Holds can be applied at either the order level or the order line level that meeting a certain condition.

### Dimension Hierarchy

The dimension hierarchy related to hold type is Hold Type.

The levels associated with hold type are:

- Hold Type (All)
- Enterprise Code
- Hold Type Code

Location in the target model: Hold Type

### Filter

There is no filter associated with the hold type dimension.

## Channel

This dimension contains the channel. Orders are placed through various channels, for example, Web channel, catalog, call center, so on.

### Dimension Hierarchy

The dimension hierarchy related to channel is Channel.

The levels associated with channel are:

- Channel (All)
- Channel Code

Location in the target model: Channel

### Filter

The filter associated with the channel dimension is Channel Code.

## Fulfillment Type

An enterprise can define the list of valid values for fulfillment type, and specify them on the order line. Fulfillment type specifies how the order line will be sourced.

### Dimension Hierarchy

The dimension hierarchy related to fulfillment type is Fulfillment Type.

The levels associated with fulfillment type are:

- Fulfillment Type (All)
- Enterprise Code
- Fulfillment Type Code

Location in the target model: Fulfillment Type

### Filter

There is no filter associated with the fulfillment type dimension.

## Delivery Method

This dimension contains all the delivery methods. This specifies how an order is delivered.

### Dimension Hierarchy

The dimension hierarchy related to delivery method is Delivery Method.

The levels associated with delivery method are:

- Delivery Method (All)
- Enterprise Code
- Delivery Method Code

Location in the target model: Delivery Method

### Filter

There is no filter associated with the delivery method dimension.

## Product

This dimension contains the products. A product is an item that has at least one characteristic that is different from all other products, and which requires a unique identifier such as a Stock Keeping Unit (SKU) or part number. A product is the most basic part of a catalog hierarchy.

**Note:** When an item has multiple units of measures (UOM) defined, only one unit of measure is considered for analysis in Sterling Business Intelligence.

### Dimension Hierarchy

The dimension hierarchy related to product are:

- Product

  The levels associated with Product are:
  - Product (All)
  - Catalog Organization Code
  - Product Code
  - Unit of Measure Code
- Products

  The levels associated with Products are:
  - Product (All)
  - Product Code

Location in the target model: Product

### Filter

There is no filter associated with the product dimension.

## Product Category Hierarchy

Items are classified based on categories. You can define an hierarchy of categories for a product.

### Dimension Hierarchy

The dimension hierarchy related to product category hierarchy are:

- Categories (Product)

  The levels associated with Categories (Product) are:
  - Categories (Product) (All)
  - Top Level Categories (Product)
  - Second Level Categories (Product)
  - Third Level Categories (Product)
  - Fourth Level Categories (Product)
  - Fifth Level Categories (Product)
- Product Category Hierarchy

  The levels associated with Products are:
  - Product Category Hierarchy (All)
  - Catalog Organization Code
  - Category Identifier

Location in the target model: Product Category Hierarchy

### Filter

The filter associated with the product category hierarchy dimension is Product Category.

## Customer

This dimension contains a repository of all customers. Customers are further categorized into Business Customers (Organizations or Businesses) and Consumer Customers (Individual).

### Dimension Hierarchy

The dimension hierarchies related to customer are Customer, Customer Membership Type, Customer Membership Level, and Customer Industry.

The levels associated with Customer are:

- Customer (All)
- Customer Organization Code
- Customer Identifier

The levels associated with Customer Membership Type are:

- Customer Membership Type (All)
- Customer Membership Type
- Customer Identifier

The levels associated with Customer Membership Level are:

- Customer Membership Level (All)
- Customer Membership Level
- Customer Identifier

The levels associated with Customer Industry are:

- Customer Industry (All)
- Customer Industry
- Customer Identifier

Location in the target model: Customer

### Filters

The filter associated with the category dimension is Industry.

## Customer Hierarchy

This dimension contains the entire customer hierarchy. It signifies the hierarchy of customers. Customers are further categorized into Business Customers (Organizations or Businesses) and Consumer Customers (Individual). Sterling Business Intelligence supports up to five levels of customer hierarchy.

### Dimension Hierarchy

The dimension hierarchy related to customer hierarchy is Customer Hierarchy.

The levels associated with customer hierarchy are:

- Customer Hierarchy

  The levels associated with customer hierarchy are:
  - Customer Hierarchy (All)
  - Customer Organization Code
  - Customer Identifier Customers
- Customers

  The levels associated with customers are:
  - Customers (All)
  - Top Level Customers
  - Second Level Customers
  - Third Level Customers
  - Fourth Level Customers
  - Fifth Level Customers

Location in the target model: Customer Hierarchy

### Filters

The filters associated with the customer hierarchy dimension are Business Customer and Consumer Customer.

## Customer Contact

Customer contacts represent individuals at a customer location.You can define multiple contacts for each customer.

### Dimension Hierarchy

The dimension hierarchy related to customer contact is Customer Contact.

The levels associated with customer contact are:

- Customer Contact (All)
- Customer Identifier
- Customer Contact Identifier
- Customer Organization Code

Location in the target model: Customer Contact

### Filter

There is no filter associated with the Customer Contact dimension.

## Address Region

This dimension contains the address of a customer.

### Dimension Hierarchy

The dimension hierarchy related to address region is Address Region.

The levels associated with address region are:

- Address Region (All)
- Address Identifier

Location in the target model: Address Region

### Filter

There is no filter associated with the address region dimension.

### Dimension Role Play

The dimension role plays related to address region are:

- Address Region (Ship To)
- Address Region (Bill To)

## Address Region Hierarchy

This dimension contains the region hierarchy corresponding to an address. A typical region hierarchy would be Country or Region (Territory) > State > City > Zip Code.

### Dimension Hierarchy

The dimension hierarchy related to address region hierarchy is Address Region Hierarchy.

The levels associated with address region hierarchy are:

- Address Region Hierarchy

  The levels associated with address region hierarchy are:
  - Address Region Hierarchy (All)
  - Region Identifier
- Region Hierarchy (Address)

  The levels associated with region hierarchy (Address) are:

- Region Hierarchy (Address) (All)
- Top Level Address Region
- Second Level Address Region
- Third Level Address Region
- Fourth Level Address Region
- Fifth Level Address Region

Location in the target model: Address Region Hierarchy

### Filter

The filter associated with the address region hierarchy dimension is Region Hierarchy.

### Dimension Role Play

The dimension role plays related to address region hierarchy are:

- Address Region Hierarchy (Ship To)
- Address Region Hierarchy (Bill To)

## Document Type

This dimension contains the document type. Document type is a kind of document defined by a specific XML template that has been designed to support a specific transaction set or business process. The document type defines possible processes and system behaviors that occur as the document goes through its life cycle.

### Dimension Hierarchy

The dimension hierarchy related to document type is Document Type.

The levels associated with document type are:

- Document Type (All)
- Document Type Code

Location in the target model: Document Type

### Filter

The filter associated with the document type dimension is Document Type Code.

## User Ranges

This dimension contains different range types and their possible range values. Customers can extend this dimension to define their own range type and analyze based on the defined range type.

### Dimension Hierarchy

The dimension hierarchy related to user ranges is User Ranges.

The levels associated with user ranges are:

- User Ranges (All)
- Range Identifier

- RangeType Code
- Range (Days)

Location in the target model: User Ranges

### Filters

There is no filter associated with the user ranges dimension.

## Calendar

This dimension contains the default year, quarter, month, and day for the Gregorian calendar. The dimension hierarchy related to calendar and its role play's are:

- Calendar

  The levels associated with Calendar are:
  - Calendar YMD
  - Calendar YQMD
- Calendar (Charge Date)

  The levels associated with Calendar (Charge Date) are:
  - Calendar (Charge Date) YMD
  - Calendar (Charge Date) YQMD
- Calendar (Modify Date)

  The levels associated with Calendar (Modify Date) are:
  - Calendar (Modify Date) YMD
  - Calendar (Modify Date) YQMD
- Calendar (Hold Date)

  The levels associated with Calendar (Hold Date) are:
  - Calendar (Hold Date) YMD
  - Calendar (Hold Date) YQMD
- Calendar (Actual Ship Date-SO Line)

  The levels associated with Calendar (Actual Ship Date-SO Line) are:
  - Calendar (Actual Ship Date-SO Line) YMD
  - Calendar (Actual Ship Date-SO Line) YQMD
  - Calendar (Actual Ship Date-SO Line) YWD
- Calendar (Released Date)

  The levels associated with Calendar (Released Date) are:
  - Calendar (Released Date) YMD
  - Calendar (Released Date) YQMD
- Calendar (Confirmed Date)

  The levels associated with Calendar (Confirmed Date) are:
  - Calendar (Confirmed Date) YMD
  - Calendar (Confirmed Date) YQMD
  - Calendar (Confirmed Date) YWD
  - Calendar (Confirmed Date) MD
- Calendar (Actual Ship Date-Shipment Line)

  The levels associated with Calendar (Actual Ship Date-Shipment Line) are:
  - Calendar (Actual Ship Date-Shipment Line) YMD

  - Calendar (Actual Ship Date-Shipment Line) YQMD
  - Calendar (Actual Ship Date-Shipment Line) MD
  - Calendar (Actual Ship Date-Shipment Line) YWD
- Calendar (Expected Shipment Date)
  The levels associated with Calendar (Expected Shipment Date) are:
  - Calendar (Expected Shipment Date) YMD
  - Calendar (Expected Shipment Date) YQMD
- Calendar (Promised Ship Date)
  The levels associated with Calendar (Promised Ship Date) are:
  - Calendar (Promised Ship Date) YMD
  - Calendar (Promised Ship Date) YQMD
- Calendar (Transaction Date)
  The levels associated with Calendar (Transaction Date) are:
  - Calendar (Transaction Date) YMD
  - Calendar (Transaction Date) YQMD
- Calendar (Execution Date)
  The levels associated with Calendar (Execution Date) are:
  - Calendar (Execution Date) YMD
  - Calendar (Execution Date) YQMD
- Calendar (Month)
  The levels associated with Calendar (Month) are:
  - Calendar (Month) YM
  - Calendar (Month) YQM
- Calender (Received Date)
  The levels associated with the (Received Date) are:
  - Calendar (Received Date)YMD
  - Calendar (Received Date)YQMD

Location in the target model: Calendar

### Filter

There is no filter associated with the calendar dimension.

## Sales Person

This dimension contains the information about the field sales person.

### Dimension Hierarchy

The dimension hierarchy related to sales person is Sales Person.

The levels associated with user ranges are:
- Sales Person (All)
- Login Id
- Organization Code

Location in the target model: Sales Person

### Filters

The filter associated with the sales person dimension is Owner Sales Person.

## Sales Team

This dimension contains the sales team information of a sales person. Therefore, the Sales Team dimension out triggers from the Sales Person dimension.

### Dimension Hierarchy

The dimension hierarchy related to sales team is Sales Team.

The levels associated with sales team are:

- Sales Team (All)
- Team Id
- Organization Code

Location in the target model: Sales Team

### Filters

The filter associated with the sales team dimension is Owner Sales Team.

## Return Reason

This dimension will contain all the reasons due to which the product was returned.

### Dimension Hierarchy

The dimension hierarchy is Return Reason.

The levels associated with Return Reason are:

- Enterprise Code
- Reason Code

### Filter

There is no filter associated with the Return Reason dimension.

# Parameter Maps for IBM Sterling Business Intelligence

Parameter maps are objects that store key-value pairs. Use parameters to create conditional query subjects that allow for substitutions when a report is run. Parameter maps are similar to data source look-up tables. Each parameter map has two columns, one for the key and one for the value that the key represents.

Following are the parameter maps for Sterling Business Intelligence:

- Calendar Quarter Start Date
- Calendar Quarter End Date
- Product Category Hierarchy
- Sales Order Hold
- SO Hold
- Payment

- Dimension Perspective
- Low Date Map
- Locale Code Map
- SO Payment
- AA_Prompts_Map
- Relative Time Prompt Map
- Product Category Tree
- Shipment Line
- Sales Order Modification
- CurrentDateMap
- SO Modification
- Customer Rating Weightage

# Chapter 9. Troubleshooting

You may encounter the following issues when using Sterling Business Intelligence. Use the information provided here to solve some of the specific problems that you may encounter.

For additional troubleshooting tips, it is recommended that you refer to the *IBM Cognos Adaptive Warehouse User Guide*, the *IBM Cognos Adaptive Analytics User Guide*, and the *IBM Cognos Analytic Applications Installation and Configuration Guide*.

## Load Management Process is Stalled

The load management process is stalled when the load process is restarted after the previous run is terminated abnormally.

On analyzing the aw-etl<timestamp>.log file, it has been found that, queries such as SELECT count(*) FROM PWP_ETL_LOCKTABLE WHERE WAREHOUSE_OBJECT_ID = '420f9506-93a3-11de-b501-9a43165eb0f8'are repeated periodically.

### Resolving the Problem

The lock rows must exist only for the duration of a build, after the load management process, system will release them. If there is an abnormal termination of this process, the lock rows remain in the table. The application then truncates the PWP_ETL_LOCKTABLE table.

If job streams are manually halted, or the application fails for some reason, then the PWP_ETL_LOCKTABLE table must be truncated manually. You must ensure that no application activity is taking place when truncating the table manually.

## Report Execution Displays an RSV-BBP-0022 Error

When reports are executed in Microsoft Internet Explorer, an RSV-BBP-0022 error is displayed stating the following:

The absolute affinity request 'asynchWait_Request' fails, the requested session does not exist.

### Resolving the Problem

Ensure that the IBM Cognos URL (http://<hostname>/cognos8/cgi-bin/cognos.cgi) has not been added to the Restricted sites list in the Internet Explorer Options dialog box **(Tools > Internet Options > Security > Restricted sites**).

## Schema Not Displayed When Creating an IBM Cognos Adaptive Warehouse Project

When creating an Cognos Adaptive Warehouse project, after selecting the Sterling Data Source project, no target schema is displayed. You will thus not be able to create the Cognos Adaptive Warehouse project.

### Resolving the Problem

Launch IBM Cognos Configuration and click **Save**.

## ETL Script Running in CLI Stalls in an IBM AIX Environment

The aw-<timestamp>.log file contains two entries that are similar to Running script <script_name> EEM-INFO-0001 Running script: <script_name>.

When executing a load with Cognos Adaptive Warehouse Runtime on IBM AIX® 5.3, the load management is not executed and no error is displayed.

### Resolving the Problem

Download and install the December 2007 IBM XL C/C++ runtime program temporary fix (PTF) from the IBM Web site. Run the ETL script after you have installed the PTF.

## ETL Process Does Not Load All the Data into the Data Mart

Orders created in the online transaction processing (OLTP) database after the last ETL process, is not loaded to the data mart, despite being in the change data capture (CDC) time window.

### Resolving the Problem

Check if the system time of IBM Cognos Server is ahead of OLTP DB Server. If this is the case, you must ensure that all servers are time synched using services like Network Time Protocol (NTP) to a single clock source. Restart the ETL process by resetting the CDC Time Interval. In case the Platform considerations do not allow for time synchronization, the IBM Cognos server should run one minute slower than the OLTP server.

## Configure Indexes to Improve ETL Performance

While executing ETL Scripts for long running jobs using Cognos Adaptive Warehouse Runtime on Linux or Solaris fails. This is because Cognos Adaptive Warehouse Runtime deletes a temporary package file, causing the ETL to fail.

### Resolving the Problem

Add the following content in the `<AAF_Install_DIR>\ap\configuration\aaf.ini` file:

```
<Section Name="DebugInfo">
<PackagePersistence>true</PackagePersistence>
</Section>
```

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