

VOLUME

1

SAP Technical Delivery

Jude Lobo

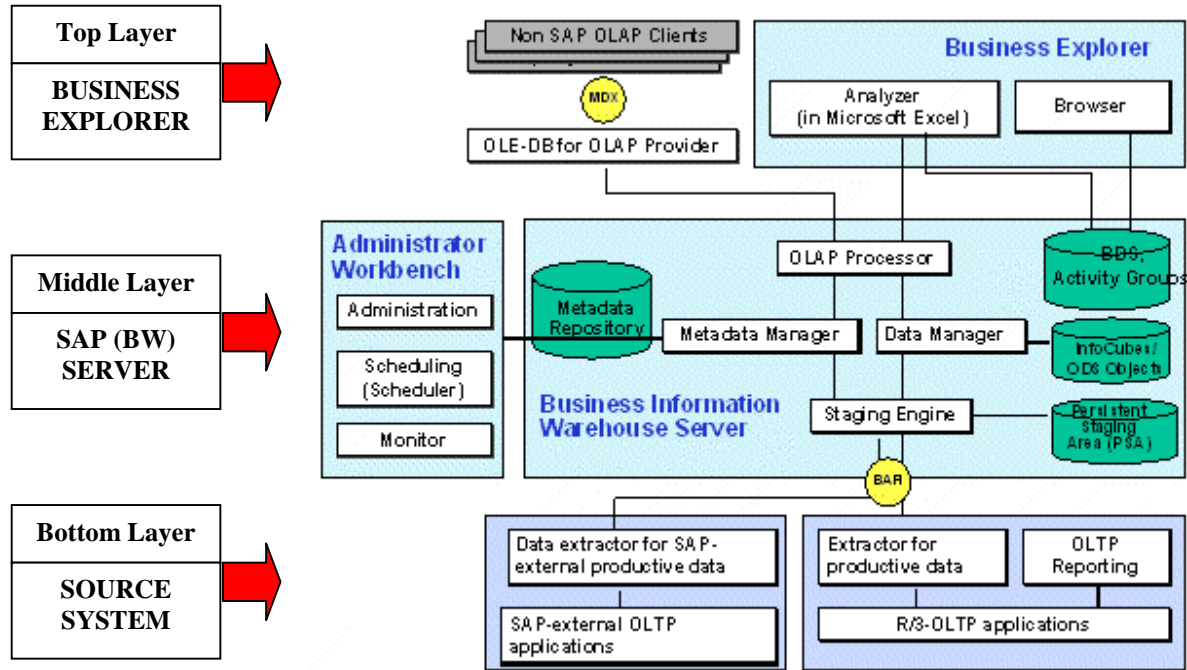
MySAP.com
Business Information Warehouse
Cookbook

SAP Business Information Warehouse

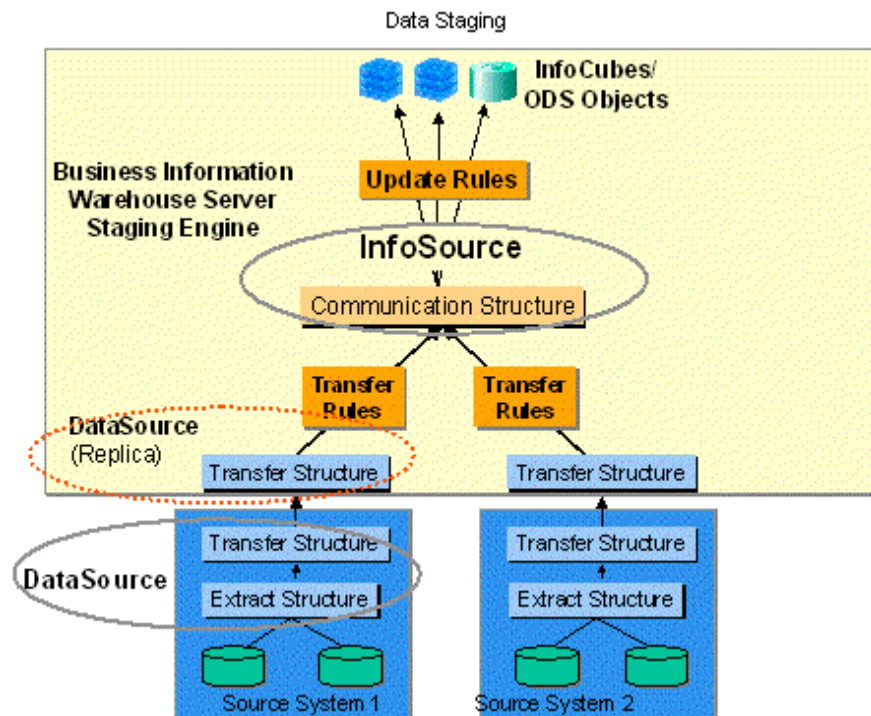
Overview

The SAP Business Information Warehouse enables Online Analytical Processing (OLAP) to format the information of large amounts of operative and historical data. OLAP technology enables multi-dimensional analyses according to various business perspectives. The preconfigured **Business Information Warehouse Server** for core areas and processes ensures information views within the entire enterprise.

Architecture



Integration



SAP (R/3) Source System

Definition

All systems that provide the SAP (BW) with data are described as source systems.

- R/3 systems from Release 3.0D
- R/3 systems before Release 3.0D
- SAP (BW) systems
- Flat files, Metadata is maintained manually, and transferred into BW via a file interface
- External systems, Data and Metadata is transferred using staging BAPI's

Components

SAP (R/3) Source System Extractors

Extractors are SAP (R/3) Source System ABAP Programs that enable the SAP (BW) System to extract data from the SAP (R/3) Source System DataSets into the Extract Structure of a DataSource.

- Standard Extractor (Application Specific)
- Non-Standard Extractor (Generic)

SAP (BW) System

Definition

The SAP (BW) System is an enterprise-wide information hub, which allows you to analyse data from R/3 and non-R/3 application and present it in an Excel-Based user interface.

Components

Administrator Workbench

The Administrator Workbench is the tool for controlling, monitoring and maintaining all of the processes connected with data staging and processing in the SAP (BW) System.

Business Explorer (BEx)

The Business Explorer is the reporting tool for the Business Information Warehouse and consists of

- Business Explorer Analyser
- Business Explorer Browser

DataSource

- Data that logically belongs together is stored in the SAP (R/3) Source System in the form of DataSources.
- A DataSource contains a number of fields in a flat structure used to transfer data into SAP (BW) System.
- A DataSource is an object that, at the request of SAP (BW) System, makes data available in one of its predetermined structures.

There are 2 Categories of DataSource

- Standard DataSource (Application DataSource)
- Non-Standard DataSource (Generic DataSource)
 - DataSources for transaction data
 - DataSources for master data
 - Attributes
 - Text
 - Hierarchies

The components of a DataSource are

- Extract Structure
- Transfer structure

Extract Structure

In the Extract Structure, data from a DataSource is staged in the SAP (R/3) Source System.

The Extract Structure contains the amount of fields that are offered by an Extractor in the SAP (R/3) Source System for the data loading process

Transfer Structure

The Transfer Structure is the structure in which the data is transported from the SAP (R/3) Source System into the SAP (BW) System. In the Transfer Structure maintenance, you determine which Extract Structure fields are to be transferred to the SAP (BW) System. When you activate the DataSource of the SAP (R/3) Source System from the SAP (BW) System, an identical Transfer Structure like the one in the SAP (R/3) Source System is created in the SAP (BW) System.

InfoSource

Data that logically belongs together is stored in the SAP (BW) System in the form of InfoSources.

An InfoSource contains a number of InfoObjects which structure the information needed to create InfoCubes / ODS Objects in the SAP (BW) System.

An InfoSource is an object that, at the request of SAP (BW) System, makes data available to the InfoCubes / ODS Objects.

There are 2 Categories of InfoSource

- InfoSource For Transaction Data
- InfoSource For Master Data

The component of an InfoSource is

- Communication Structure
- InfoObject

Communication Structure

In the Communication Structure, data from an InfoSource is staged in the SAP (BW) System. The Communication Structure displays the structure of the InfoSource. It contains all of the InfoObjects belonging to the InfoSource of the SAP (BW) System. Data is updated in the InfoCubes from the Communication Structure.

InfoObject

InfoObjects are the basic information providers of BW. They structure the information needed to create InfoCubes/ODS Objects.

Types Of InfoObjects

- Key Figures : Data part of an InfoObject. They are quantifiable values. (Eg. Quantity Sold, Revenue)
- Characteristics : Objects that are used to calculate and present Key Figures. (Eg. Sales Office, Customer)
- Time Characteristics : Characteristics that are assigned to the dimension of time. (Eg. Fiscal Year, Period)
- Technical Characteristics : Only of structural use within BW.
- Units : Units for the Key Figures

InfoArea

Logical collections of data that are based on data models and business rules that are derived from the enterprise model of the SAP (R/3) System. SAP (BW) Systems store data in InfoAreas which can contain ODS Objects and InfoCubes

DataTarget (InfoCube)

The central objects upon which reports and analyses in BW are based, are called InfoCubes. An InfoCube is a multidimensional data structure.

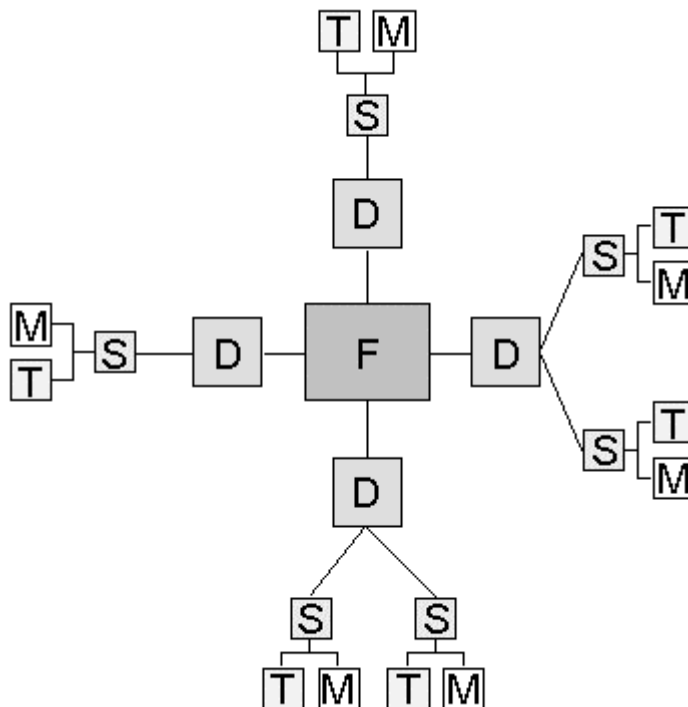
An InfoCube is a set of relational tables that contains InfoObjects.

An InfoCube consists of a Fact Table and a set of n Dimension Tables that define the axes of its multiple dimensions.

Structure Of InfoCube : Snowflake Schema

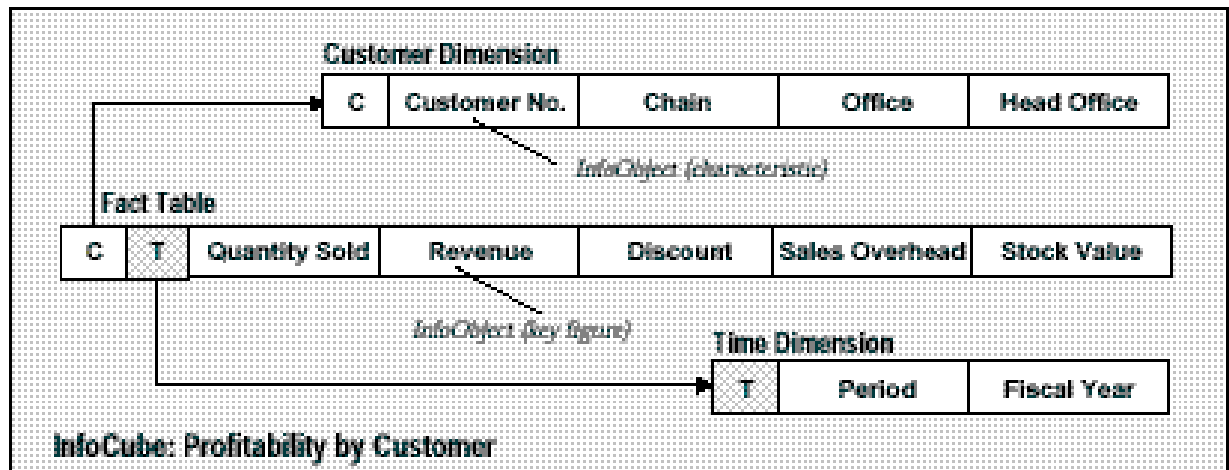
An InfoCube consist of the following structure

- 1 fact table
- n dimension tables
- n surrogate ID (SID) tables
- n text tables
- n master data tables



- Fact table** : Contains the key figures, which are quantifiable values.
- Dimension tables** : Contain the characteristics that are used to analyse and report on the key figures.
- Sid tables** : Specify tables in the SAP (BW) System that contain surrogate ids. Sid tables link the master and hierarchy tables outside the dimensions of a star schema.
- Text tables** : Contain descriptive text that might be time or language dependent.
- Master tables** : Contains attributes that are used for presenting and navigating reports in SAP (BW) System. They can, however, be extended to include other data. Master tables are also time-dependent and can be shared by multiple InfoCubes.

Example Of InfoCube



3 Types of InfoCubes

- BasicCube** : "Data containers", on which reports and analyses in BW are based. BasicCubes are supplied with data from one or several InfoSources. The BasicCube is filled using the Scheduler, provided that the Update Rules are maintained.
- MultiCube** : A MultiCube is a superior InfoCube that combines data from several BasicCubes / RemoteCubes, and brings it together into one context. The MultiCube itself does not contain any data; its data comes exclusively from the BasicCubes it is based on.
- RemoteCube** : A RemoteCube is an InfoCube whose transaction data is not managed in the Business Information Warehouse but externally. Only the structure of the RemoteCube is defined in BW. The data is read for reporting using a BAPI from another system.

Update Rules

The update rules specify how the InfoObjects (Key Figures, Time Characteristics, Characteristics) are updated in the DataTargets from the Communication Structure of an InfoSource. You are therefore connecting an InfoSource with an InfoCube/ODS object.

Transfer Rules

In the transfer rules maintenance, you determine whether the communication structure is filled with fixed values from the transfer structure fields, or using a local conversion routine.

From 3 types of transfer rules, you are only ever allowed to enter one:

InfoObject: The fields are transferred from the transfer structure and are not modified.

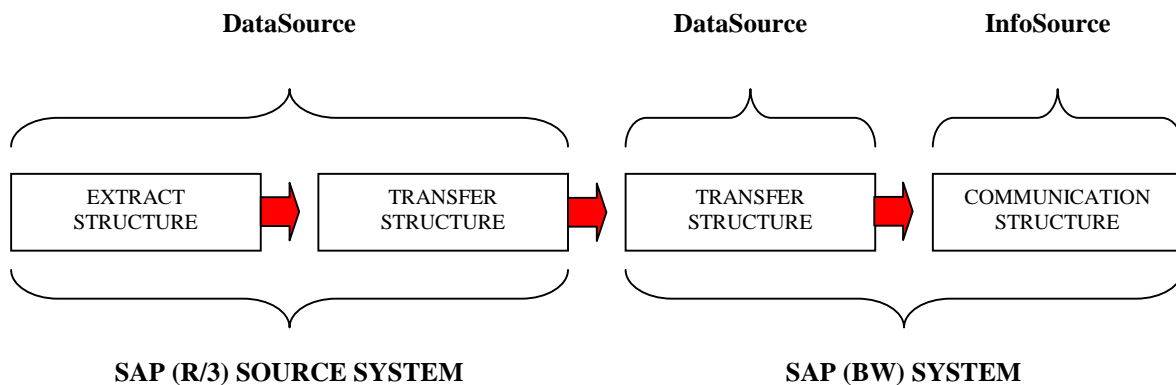
Execute the function *Default transfer rules* to assign fields of the transfer structure to those of the communication structure.

Constants: An InfoObject is filled by a fixed value.

You could, for example, assign the fixed value 01 to the InfoObject 0COUNTRY.

Routine: Conversion routines are ABAP programs that you can create yourself. The routine always refers to just one InfoObject of the transfer structure.

Data is transferred 1:1 from the Transfer Structure of the SAP (R/3) Source System into the Transfer Structure of the SAP (BW) System, and is then transferred into the SAP (BW) System Communication Structure using the Transfer Rules.



Creating SAP (R/3) Source System And Establishing Connection To SAP (BW) System

Settings In SAP (R/3) Source System

STEP 1. Install Plug-In

Plug-In for SAP (R/3) Systems which need to be installed before making it a Source System

PIA2000 } Only for SAP (BW) Business Content added

PIA2001 }

PI2000 } SAP (BW) and SAP (CRM) Business Content added

PI2001 }

On installing the Plug-In, the following components are added

- System Functions
- Extractors
- DataSources

STEP 2. Define Source System ('Logical System' identify the system within a network)

STEP 3. Assign Client To 'Logical System'

Settings In SAP (BW) System

STEP 1. Define Source System ('Logical System' identify the system within a network)

STEP 2. Assign Client To The Logical System

STEP 3. Create an RFC Destination From SAP (BW) System To SAP (R/3) Source System

STEP 4. Create a Link To The SAP (R/3) Source System

Note

The User 'BWALEREMOTE' should exist in both the SAP (R/3) Source System and the SAP (BW) System

Data Extraction From SAP (R/3) Source System To SAP (BW) System

Configuration In SAP (BW) System

- STEP 1. Logon to the SAP (R/3) Source System either from the SAP (BW) System using the Administrator Workbench or from the SAP (R/3) Source System using Transaction SBIW.
- STEP 2. Maintain a Non-Standard DataSource (Generic DataSource – DataSource For Transaction Data) in the SAP (R/3) Source System.
- STEP 3. MetaData Upload - Replicate the Non-Standard DataSource (Generic DataSource) into SAP (BW) System.

Note

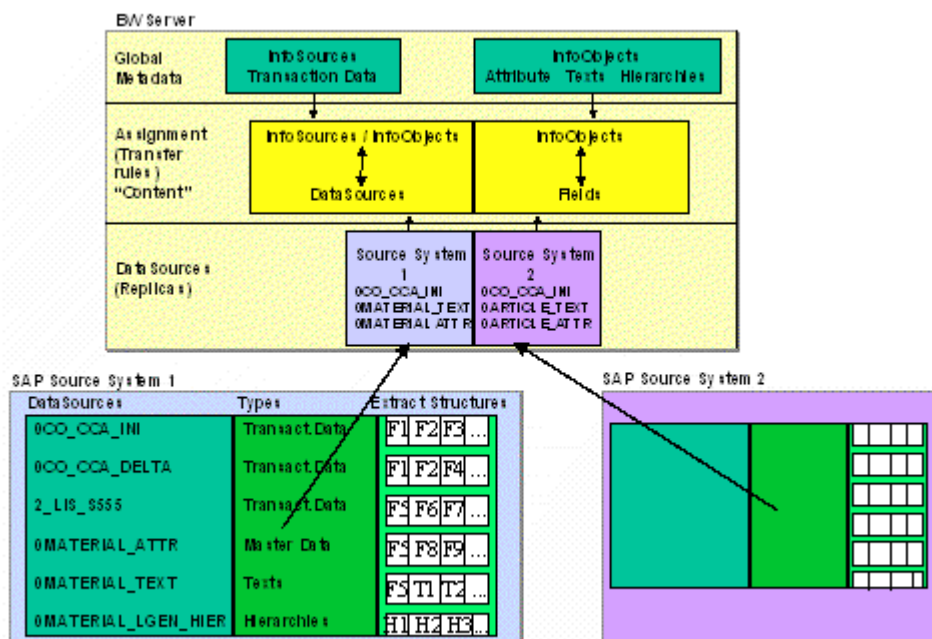
When you activate the DataSource of the SAP (R/3) Source System from the SAP (BW) System, an identical Transfer Structure like the one in the SAP (R/3) Source System is created in the SAP (BW) System.

MetaObjects in the SAP (BW) System

- InfoObjects
- InfoCubes
- ODS Objects
- Queries
- Update rules
- Transfer rules
- DataSources

MetaObjects in the SAP (R/3) Source System

- DataSources



- STEP 4. Assign DataSource To InfoSource And Fields To InfoObjects (Create a Transaction Data InfoSource)
- STEP 1. Select the DataSource replicated in the SAP (BW) System
 - STEP 2. Enter the name and the description of the InfoSource to be created and assign it to the DataSource
You can also use an existing InfoSource as a template.
 - STEP 3. Assign Fields to InfoObjects
 - STEP 4. Maintain the Communication Structure
 - STEP 5. Maintain the Transfer rules
- STEP 5. Transferring Data From The InfoSource To The DataTargets (ODS Objects / InfoCubes) In The SAP (BW) System