HP Data Warehouse

For the Windows ® operating system

Software Version: 9.00

Data Warehouse Admin

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Contents

Getting Started

The Data Warehouse is the repository for key business data that support queries, reports, and populates business analytics.

To set up the Data Warehouse, proceed as follows:

1. Learn about the Data Warehouse, ETLs, the Data Warehouse model and files. For details, see "Working with the Data Warehouse" (on page 14).

2. Define the Data Warehouse settings. For details, see "How to Define Data Warehouse Settings" (on page 20).

3. Integrate the data sources. For details, see "Integrate the Data Sources" (on page 25).

4. Consolidate the data sources entities (advanced). For details, see "Consolidate Entities for Data Sources" (on page 63).

5. Populate the external source and metric spreadsheets. For details, see "Populate the External Source and Metric Spreadsheets" (on page 68).

6. Customize the data to match the XREF views. For details, see "Customize the Data to Match the XREF Views - Optional" (on page 77).

7. Best practices: Use the Audit, Balance, and Control utilities, tracking reports, and ABC commands to audit, balance, and control the Data Warehouse. For details, see "Audit, Balance, and Control" (on page 84).

8. View the Data Model reports. For details, see " Data Model Reports" (on page 104)" Data Model Reports" (on page 104).

9. Administer the Data Warehouse. For details, see "Administer the Data Warehouse" (on page 113).

10. Perform additional maintenance: configure the time zone, tracing and logging, backup, and recovery. For details, see "Additional Maintenance" (on page 127).

Working with the Data Warehouse

The data warehouse is the repository for key business data that support queries, reports, and populates business analytics. The data warehouse acquires, standardizes, enriches, and consolidates data based on the target model designed to satisfy the business analytic requirements. The data warehouse uses SAP BusinessObjects Data Services for IT Executive Scorecard or SAP BusinessObjects Data Services for HP FPA to complete the process that extracts data from one or more source applications.

The content of the data warehouse depends on the related HP applications that generate business data, and the analytic application that presents the data. Data can originate with external applications such as Asset Manager and Project and Portfolio Management. The data warehouse can consolidate similar data from these applications into a meaningful target model that populates relevant business analytics. Enabling multiple source applications to provide input data ensures that the application can produce robust and comprehensive results.

The data warehouse enables data integration and promotes data consolidation by using consistent data models regardless of the disparate data models among different data sources. The data warehouse software relies on common data models that support each phase of ETL. As the data is progressively aligned into a single target model, transformation processes assign common data names and attributes for each entity that appears in the target model.

The data warehouse is scalable, extensible, and modular. It can grow and respond to added Content Packs and processes and an increasing volume of data. It is maintainable with a set of tools that monitor processes, troubleshoot problems, and produce reports.

This section includes the following topics:

ETL

The Extract, Transform, and Load (ETL) process is an end-to-end transfer of external source data through several staging layers and into the target layer of the data warehouse. The source data can reside in a single database or multiple databases. The data warehouse uses the ETL process to extract, consolidate, and transform the source data into a meaningful target model that populates relevant business analytics. The ETL engine is SAP BusinessObjects Data Services.

The ETL process comprises eight primary stages. The stages that process depend on metadata and the nature of the sources.

The overall ETL process is as follows:
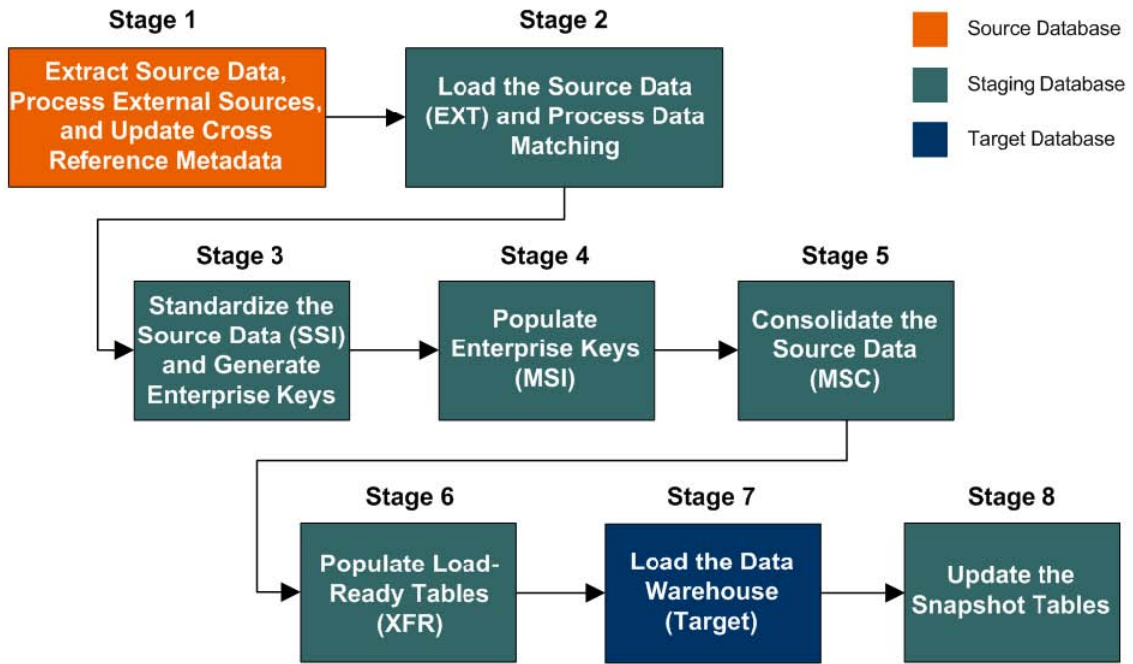
Data Warehouse Model

The data warehouse model is an end-to-end solution for extracting source data and consolidating disparate source data models into a consolidated data model. The data organized to reflect this model resides in target tables that become the source for Executive Scorecard.

The data warehouse relies on an external RDBMS to provide daily maintenance and backup support, SAP BusinessObjects Data Services to assist with ETL, an ABC infrastructure of utilities and processes to govern regularly scheduled ETL jobs, and internal data warehouse utilities to create the data warehouse and maintain data integrity.

The figure below shows the principal data warehouse components and how they interact. Read the following sections for more information about each component, its role, and responsibilities.
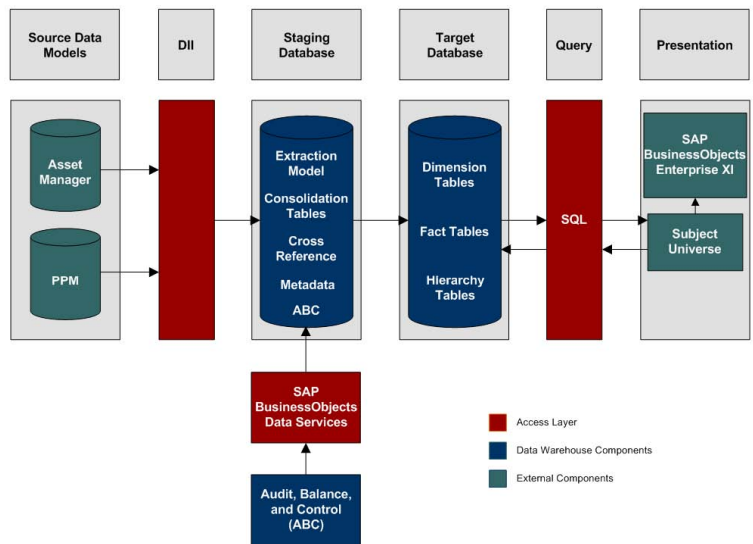
Source Data Models

Source data originates in external application repositories. Data generated by an external application can be rich in business information, but unless you can integrate it with equally important business information generated by other applications, it is difficult to get a complete view of operational information.

The source data models describe the source and extraction format so that the data warehouse can consume this data and integrate it into a common view that you can use to populate comprehensive business intelligence reports and dashboards.
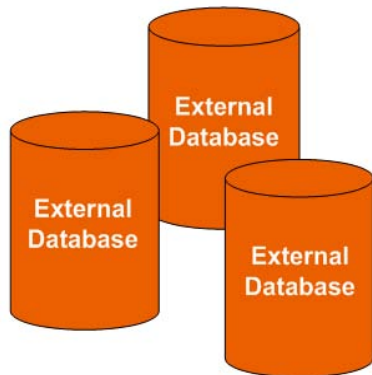
Data Integration Interface

The data integration interface (DII) is the access layer that stands between the source database models and the extraction models in the staging database. The DII uses a mapping model that transforms the source data to fit into extraction work tables. The DII can accommodate minor variations in the source model schemas from one version to another.

Note: This interface requires access to the source systems.

SAP BusinessObjects Data Services

SAP BusinessObjects Data Services is the access mechanism that performs the physical data extraction from the source repository to the staging database. Each stage of the ETL is embodied in a Data Services job, from the extraction of source data to the target database.

Audit, Balance, and Control

Audit, Balance, and Control (ABC) processes ensure that source data is not corrupted in the extraction process, and that the integrity of the extracted data is maintained as it progresses from the initial source extraction through the logical and physical transformation into target tables. SAP BusinessObjects Data Services can move the data but does not evaluate whether the final result is correct. ABC establishes checkpoints and provides feedback on each step to guarantee that each step is valid before the next step begins.

The Audit component ensures consistency during ETL processing. It measures the number of records in and the number of records out for each step and displays these runtime statistics in a collection of audit reports.

Balance verifies that data in the data warehouse matches data in the source system. For example, if the data warehouse stores project dollar amounts then the balance process verifies that the aggregate project dollars in the data warehouse matches the aggregate project dollars in the source application data.

Control governs the order of execution of ETL processes. Control makes sure that there is a proper restart and recovery when a system error occurs. Control also manages job dependencies at runtime.

ABC utilities are applications that you can invoke automatically or manually to run ETL, solve problems, and perform ETL-related tasks.

Staging Database

The staging database contains tables and snapshots that are critical to the ETL process. Metadata describes these tables. Executive Scorecard processes data in the staging database before loading it into the final target tables in the target database.

- Extraction (EXT) tables contain the initial version of source data. EXT tables are used during the stage of ETL when Executive Scorecard loads data from the extract flat files into the staging database.

- Validation (VALF) failure tables are used during the data validation process that ensures all of the data is usable. VALF tables store source data that is rejected by the ETL process due to validation failure. Data validation is part of the process to load the EXT tables.

- Identification (SSI and MSI) tables restructure the diverse source system data into a conformed structure. Executive Scorecard uses SSI and MSI tables to standardize the data and add an enterprise key.

- Consolidation (MSC) tables integrate disparate source data into a consolidated entity. The MSC tables contain the uniform structure that Executive Scorecard uses to load the data into the target tables.

- Transformation (XFR) tables are load-ready tables that match the internal structure of the target tables. Executive Scorecard uses XFR tables while preparing the data to be loaded into the target tables in the target database.

- Lookup (LOOKUP) tables store durable keys and surrogate keys. Executive Scorecard uses these tables to establish dimension-to-dimension references in dimension tables and foreign key references in fact tables.

- Snapshot (TSNP, SSNP, and CSNP) tables are the persistent storage for ETL staging data. These snapshot tables capture the changed data and support the data warehouse recovery process. The data warehouse uses TSNP tables for source extraction staging, SSNP tables for single source integration staging, and CSNP tables for multiple source consolidation staging. The final ETL stage captures the snapshot data.

- Cross Reference (XREF) tables support the data integration processes that combine records from multiple sources into a single record in the consolidation model.

- Cross Reference Generator (XREFGEN) tables support data matching and cross reference inputs for the consolidation models.

- Metadata tables contain a logical model and describe how to translate that model into the physical implementation of tables and views.

ABC tables support the ETL workflow and enable job control and sequencing. They also host audit information to ensure data quality.

Target Database

The target data models describe the format of the data that produces business intelligence

analytics. The instantiated data models are dimension, fact, and hierarchy tables populated with data obtained through ETL processes.

Dimension tables contain the data model to be queried and presented by Executive Scorecard in a variety of reports and analytics.

Fact tables contain data that describes events, transactions, or other granular information.

Fact snapshots tables are fact tables that describe the state of things in a particular instance of time, and usually includes more semi-additive and non-additive facts.

- **Semi-Additive:** Semi-additive facts are facts that can be summed up for some of the dimensions in the fact table, but not the others.

- **Non-Additive:** Non-additive facts are facts that cannot be summed up for any of the dimensions present in the fact table.

Hierarchy tables capture hierarchical relationships among levels of data.

Queries

You can use structured query language (SQL) to create a primary abstraction layer of data from the target tables and use that data to populate reports, dashboards, or resolve business questions. The SAP BusinessObjects Enterprise XI 3.1 suite of business tools simplify accessing this information and storing it in business-oriented views.

Staging Database

Extraction Tables

Validation Tables

Identification Tables

Consolidation Tables

Transformation Tables

Lookup Tables

Snapshot Tables

Cross Reference Tables

Cross Reference Generator Tables

Metadata Tables

Audit, Balance, and Control (ABC) Tables
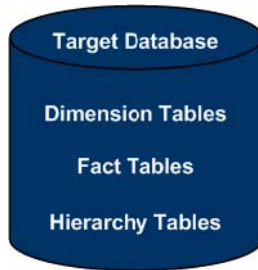
Presentation

SAP BusinessObjects Enterprise XI 3.1 uses a universe abstraction layer to organize data for presentation in out-of-box or user-designed analytics. The universe provides a business oriented view of the data that resides in the data warehouse target tables.

How to Define Data Warehouse Settings

Data Warehouse Settings enables you to define settings for various parts of the data warehouse, according to the following task.

To define the Data Warehouse Settings:

1. Select **Admin** > **DataWarehouse Settings**.

2. Click the relevant field in the **Value** column and enter the value.

3. Click **Save** to save your settings.

For details, see "Data Warehouse Settings Page" (on page 20).

For details on logging to Data Warehouse, see Login in *Executive Scorecard General Admin*.

Data Warehouse Settings Page
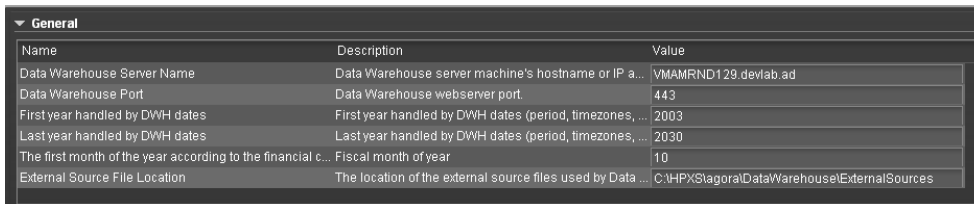
This page enables you to configure the Data Warehouse settings.

To access	Select **Admin** > **Data Warehouse Settings**.
Relevant Tasks	"How to Define Data Warehouse Settings" (on page 20)

Data Warehouse Table

Name	The name of the Data Warehouse feature.
Description	The description of the Data Warehouse feature.
Value	The current Data Warehouse feature value. Click the relevant row and enter a value.

General Parameters

▼ General		
Name	Description	Value
Data Warehouse Server Name	Data Warehouse server machine's hostname or IP a...	VMAMRND129.devlab.ad
Data Warehouse Port	Data Warehouse webserver port.	443
First year handled by DWH dates	First year handled by DWH dates (period, timezones, ...	2003
Last year handled by DWH dates	Last year handled by DWH dates (period, timezones, ...	2030
The first month of the year according to the financial c...	Fiscal month of year	10
External Source File Location	The location of the external source files used by Data ...	C:\HPXS\agora\DataWarehouse\ExternalSources

UI Element	Description
Data Warehouse Server Name	The Data Warehouse server machine hostname or IP address. This field is read-only.
Data Warehouse Port	The Data Warehouse web server port. This field is read-only.
First year handled by DWH dates	The first available year for Data Warehouse dates. This includes period, timezones or DST.
Last year handled by DWH dates	The last available year for Data Warehouse dates. This includes period, timezones or DST.
The first month of the year according to the financial calendar	The first month of the fiscal year. This field is read-only.
External Source File Location	The location of the external source file used by Data Warehouse.

Target Database Parameters

Name	Description	Value
Administrator Username	Target Database Username to access the database ...	sa
Administrator Password	Target Database Administrator Password	*********
Server Name	Target Database Server Name	labm3amrnddb11.devlab.ad
Database Server Port	Target Database-Server Port	1433
MS SQL Server Database Name	Target Database MS SQL Server Database Name	sanity_210_target
Database Username	Target Database Username to access the database ...	dwt
Database Password	Target Database password	*********

UI Element	Description
Administrator Username	The username used to access the target database. This user must have write privileges. This field is read-only.
Administrator Password	The target database administrator password.
Server Name	The target database server name. This field is read-only.
Server Port	The target database server port. This field is read-only.
MS SQL Server Database Name	The target database MS SQL server name. This field is read-only.
Database Username	The target database username. This user must have write permissions. This field is read-only.
Database Password	The target database password.

Staging Database Parameters

UI Element	Description
Time Dimension Granularity	The granularity of time, in minutes, of the time dimension. This field is read-only.
Username	The staging database administrator username. This user must have write permissions. This field is read-only.
Password	The staging database administrator password.
Database Server Name	The staging database server machine hostname or IP address.
Database Server Port	The staging database server port.
Staging Database Name	The name of the staging database on the MS SQL server. This field is read-only.
Database Username	The staging database username. This field is read-only.
Database Password	The staging database password.
Staging Target DB Database Username	The staging target database username. This field is read-only.
Staging Target DB Database Password	The staging target database password.
XREF Database Username	The XREF database username. This field is read-only.
XREF Database Password	The XREF database password.
ABC Database Username	The ABC database username. This field is read-only.
ABC Database Password	The ABC database password.
Metadata Database Username	The metadata database username. This field is read-only.

UI Element	Description
Metadata Database Password	The metadata database password.

SAP BusinessObjects Data Services for HP XS

UI Element	Description
Installation Directory	The absolute path to the SAP BusinessObjects Data Services for IT Executive Scorecard and HP XS installation directory. This field is read-only.
Management Console URL	The SAP BusinessObjects Data Services for IT Executive Scorecard management console URL. This field is read-only.
Management Console Username	The SAP BusinessObjects Data Services for IT Executive Scorecard management console username.
Management Console Password	The SAP BusinessObjects Data Services for IT Executive Scorecard or SAP BusinessObjects Data Services for HP FPA management console password.
BODS Administrator Database Username	The username to access the SAP BusinessObjects Data Services for IT Executive Scorecard or SAP BusinessObjects Data Services for HP FPA database. Must have write permissions.
BODS Administrator Database Password	The user's password to access the SAP BusinessObjects Data Services for IT Executive Scorecard or SAP BusinessObjects Data Services for HP FPA database.
BODS database type/product	The database type: Oracle, SQL Server, DB2, MS SQL, or Sybase ASE. This field is read-only. **Note:** Currently only MS SQL is supported.
BODS Repository Server Name	The SAP BusinessObjects Data Services for IT Executive Scorecard or SAP BusinessObjects Data Services for HP FPA repository server machine's host name or IP address.

UI Element	Description
Repository Database-Server's Port	The SAP BusinessObjects Data Services for IT Executive Scorecardor SAP BusinessObjects Data Services for HP FPA repository database server's port. This field is read-only.
Repository Name	The SAP BusinessObjects Data Services for IT Executive Scorecard or SAP BusinessObjects Data Services for HP FPA repository name. This field is read-only.
Repository Username	The SAP BusinessObjects Data Services for IT Executive Scorecard or SAP BusinessObjects Data Services for HP FPA repository username. This field is read-only.
Repository Password	The SAP BusinessObjects Data Services for IT Executive Scorecard or SAP BusinessObjects Data Services for HP FPA repository password.
Web Services Timeout	The amount of time, in seconds, that Data Warehouse waits for a SAP BusinessObjects Data Services for IT Executive Scorecard or SAP BusinessObjects Data Services for HP FPA to respond to a web services request before a timeout.

Integrate the Data Sources

After you complete the installation, learn about the basic data warehouse structure and the ABC processes, you can synchronize the source databases with the data warehouse.

This section includes the following topics:

Learn About Data Source Management

Data Source Management enables you to manage the integration of data into the data warehouse through the activation of data sources. The available data source content packs are registered in the deployment process and can then be activated in the Data Source Management page.

For details, see .

This section includes the following topics:

Learn about Content Packs

The Data Warehouse can connect to other products (data sources) and gather data about these products. An integration is available for each product (data source). The integration uses a connection or adapter to gather data from the data source and send the data to the Data Warehouse.

The connection from the data source to the DWH is called a content pack. Each content pack requires an adapter in order to extract the data from the specific data source. Content packs contain all the artifacts needed to connect to the relevant data source and gather data from that data source. Content packs include:

- The definition of the data model used for the connection.

- The type of data gathered from the data source.

- The ETL definitions.

- The definition files.

- The configuration files.

- The scripts that help build and define the Data Warehouse.

The mapping between the raw data from the data source and the target database in the Data Warehouse is included in the ETL. The Executive Scorecard runs the KPI engine that reads the data from the target database, creates the relevant KPIs from that data, calculates the value, and status of the KPI and displays the relevant information in the Dashboard.

You must run the Data Source Management wizard, to configure and activate the content packs, depending on the products you want to integrate with.

The out-of-box content packs are:

- CORE content pack. This is the central content pack that is automatically installed during the post-installation process. It includes all the dimensions, and entities of the Data Warehouse. It also provides the organization of definitions and hierarchies. All the other integrations depend on the CORE content pack.

- PPM

- AM

- SM

- BSM

- UCMDB

- Alternate source. This content pack is built for working with an Excel data source. The content pack sends data from the Excel file to the Data Warehouse. This content pack is also automatically installed during the post-install process.

- FPA content pack. This content pack includes the relevant ETL, data model, and more, that is needed to bring data from Asset Manager or Project and Portfolio Management to the Data Warehouse. This content pack is automatically installed only when installing Financial Planning and Analysis (FPA). If you have already installed Executive Scorecard and you are in the process of installing Financial Planning Analysis, you must have:
  a. A completely configured XS environment – this means SAP BusinessObjects Enterprise for IT Executive Scorecard, Data Warehouse, and the Executive Scorecard application must have been completed before installing HP. The Financial Planning Analysis installation fails if this condition is not met.

  b. The FPA ContentPack (FPACP) must installed on the machine where XS DWH is installed.
     i. During the post-install you must select the same management DB as you did for XS.

     ii. Select Use Existing DB for all databases

iii. During the DWH post-install, a user should select Skip DataWarehouse, since it is already installed.

The universe is the result of a semantic layer of metadata that creates a business oriented view of the data. The universe contains a schema of the tables that make up the dimension and measurement objects. The universe is an interface between the data warehouse and the analytics that display the data.

Learn About the ETL Configuration Files

The ETL Configuration files describe the data sources, passwords, and other configuration information modified by your input to the Configuration Tool during installation.

How to Configure Data Source Management

Data Source Management enables you to manage specific data sources according to the following tasks.

Activate a data source:

1. Select **Admin** > **Data Source Management**.

2. Click **Activate** and the Data source activation wizard opens.

3. Enter the relevant details and complete the wizard instructions.

For details, see "Data Source Management Page" (on page 50).

Deactivate a data source:

1. Select **Admin** > **Data Source Management**.

2. Click **Deactivate** and the deactivation warning opens.

3. Click **OK**.

For details, see "Data Source Management Page" (on page 50).

Add a new data source to the integration mechanism:

For details, see "Add Additional Data Sources" (on page 142).

Configure admin tasks using the command line:

For details, see "Data Warehouse Command Reference" (on page 150)

Integrate with AM as a Data Source

The HP Asset Manager (AM) content pack enables you to receive data information from the AM application. AM is a fully integrated suite of modules delivered as part of the Service Management Center software package. AM software manages the physical, virtual, financial, and contractual aspects of assets.

The purpose of the integration of AM as a data source is to bring quality management information into the Data Warehouse.

This section includes the following topics:

- "Integration Description" (on page 28)

- "Activate the Integration" (on page 28)

- "Configure the Consolidation Rules Between Sources" (on page 31)

- "List of Entities" (on page 31)

Integration Description

To integrate	See "Activate the Integration" (on page 28)
Integration Technology	Uses the SAP BusinessObjects Data Services for IT Executive Scorecarddrivers for data store connections.

Activate the Integration

To integrate AM as a data source, proceed as follows:

1. **Prerequisite:**

   The AM data source can have either the Oracle or the SQL Server type.

   If the data source has the Oracle type, you must install the Oracle client and configure its **TNSNames.ora** file.

2. **Important Note: First day of the week**

   In Data Warehouse, the first day of the week is set in the Post- Install wizard, and the Period tool is using is as an input to build PERIOD_DIM days, weeks, months, and more, as well as relevant hierarchies.

   After the administrator has installed Data Warehouse, the administrator selects the cooperation first-day-of-week. If the data source has a different first-day-of-week definition, the administrator should be aware that for weekly periodicity, the linkage to the period key uses the Data Warehouse week definition and not the data source week definition.

3. **Activate the AM Data Source:**

   a. Select **Admin** > **Data Source Management** then click the **Activate** button for the AM data source.

   b. The AM Activation Page opens. Select or enter the relevant information as indicated below. **For the SQL server:**

UI Element	Description
AM Version	Select the relevant AM version. For details, see the *IT Executive Scorecard Compatibility Matrix*.
Time Zone	Select the time zone for the data source.
Data Source Type	AM should be configured to run on an SQL Server.
SQL Version	Select the SQL version for the data source.
Server Name	Enter the name of the server where the data source is installed.

UI Element	Description
Username	Enter your data source username.
Password	Enter your data source password.
Hostname/IP Address	Enter the data source hostname or IP address.
Schema Name	Enter the data source schema name.
Database Name	Enter the database name.

For the Oracle server:

UI Element	Description
AM Version	Select the relevant AM version. For details, see the *IT Executive Scorecard Compatibility Matrix*.
Time Zone	Select the time zone for the data source.
Data Source Type	AM should be configured to run on an Oracle server.
Data Source Version	The version of Oracle.
Username	Enter the data source username.
Password	Enter the data source password.
Hostname/IP Address	Enter the data source hostname or IP address.
Connection Name	Enter the SID or connection name in the **TNSNames.ora** file.
Schema Name	Enter the data source schema name.

c. Click **Next** to proceed to the Data Source Connectivity and Confirmation page.

Note: The system does not support changing the **Data Source Type**, therefore you must select the relevant type, SQL or Oracle, before activation.

For details, see "Data Source Management Page" (on page 50).

4. **Create the Source Data Views**

The Data Warehouse data source activation creates a directory of SQL scripts that you are

required to run to create views for each of your identified source databases. These views contain the key data that you will extract during ETL runs and use to populate analytics.

To create the source data views

a. Open the database client for your AM database and log in.

b. From the database client, navigate to this directory:
    <DWH_installation_directory>\DataWarehouse\generated\sql\interface

c. Verify that you have administrative access to the remote data sources, or identify the database administrator for each data source who can run SQL scripts for you.

d. On the server that hosts the source data, use the appropriate RDBMS client to import the script or scripts in
    <DWH_installation_directory>\DataWarehouse\generated\sq\interface:
    ○ **In SQL:** For AM 5.10, run the **CreateInterfaces_AM5.1-AMVIEW_DS-mssql.sql** script.

    ○ **In SQL:** For AM 5.20, run the**CreateInterfaces_AM5.2-AMVIEW_DS-mssql.sql** script.

    ○ **In Oracle:** For AM 5.10, run the **CreateInterfaces_AM5.1-AMVIEW_DS-oracle.sql** script.

    ○ **In Oracle:** For AM 5.20, run the **CreateInterfaces_AM5.2-AMVIEW_DS-oracle.sql** script.

e. Verify that the script runs successfully. Look for the appropriate RDBMS message. If an error occurs, you must troubleshoot the error, and re-run the script successfully.

5. **Load the Cross-Reference views - optional**

    The installation creates a directory of SQL scripts that create cross-reference views. These views expose appropriate information in the source databases that enable the ETL process to cross-reference an entity in one data source to a corresponding entity in another data source. For example, you may want to link a project identifier from AM with a project identifier from PPM.

    Important: If this data source is used for consolidation with other data sources, it is important to create the relevant cross-reference views.

    To create the cross-reference views:

    a. Open the database client for your AM database and log in.

    b. Verify that you have administrative access to the remote data sources, or identify the database administrator for each data source who can run SQL scripts for you. The installation has a directory of SQL scripts that contain cross-reference views.

    c. From the database client, navigate to the applicable directory and run the appropriate script:

        ○ **In SQL:** For AM 5.10, navigate to **<agora_installation_ directory>\ContentPacks\AM\custom\schema\creation\CrossReference\AM\5.1\mssql** and run the **CreateSourceReferenceInterfaces_AM5.1-mssql.sql** script.

- ○ **In SQL:** For AM 5.20, navigate to **<agora_installation_ directory>\ContentPacks\AM\custom\schema\creation\CrossReference\AM\5.2\mssql** and run the **CreateSourceReferenceInterfaces_AM5.2-mssql.sql** script.

- ○ **In Oracle:** For AM 5.10, navigate to **<agora_installation_ directory> \ContentPacks\AM\custom\schema\creation\CrossReference\AM\5.1\oracle**and run the **CreateSourceReferenceInterfaces_AM5.1-oracle.sql** script.

- ○ **In Oracle:** For AM 5.20, navigate to **<agora_installation_ directory> \ContentPacks\AM\custom\schema\creation\CrossReference\AM\5.2\oracle**and run the **CreateSourceReferenceInterfaces_AM5.2-oracle.sql** script.

Configure the Consolidation Rules Between Sources

You can configure the consolidation rules between sources. For details, see .

The following entities can be consolidated:

- Person
- ORG
- Location
- Actual Cost
- Project
- Budgetline
- Cfgitem
- Service

List of Entities

Dimensions that are filled by XLSs:

- Budget
- Cost Category
- IT Function
- Application
- Program

Entities that are populated from AM:

Populated facts:

- ActualCost FACT
- Asset FACT
- PlannedCost FACT

Populated dimensions:

- BudgetLine DIM

- CfgItem DIM

- Contract DIM

- CostCenter DIM

- Exchange DIM

- Location DIM

- Model DIM

- Org DIM

- Person DIM

- Project DIM

- Service DIM

Integrate with BSM as a Data Source

HP Business Service Management (BSM) can provide valuable information about Key Performance Indicators (KPIs), Service Level Agreements (SLAs), Services and their operational status.

BSM provides comprehensive IT service availability and performance management. BSM directly associates business services with their underlying applications, infrastructure, and network components to help you analyze and report the business service impact of IT problems and reduce the potential costs of IT service downtime and staff inefficiencies.

The purpose of the integration of BSM as a data source is to bring quality management information into the Data Warehouse.

This section includes the following topics:

- "Integration Description" (on page 32)

- "Activate the Integration" (on page 33)

- "Connect to BSM on a Secured Connection" (on page 34)

- "Advanced Configuration" (on page 34)

- "Consolidation Between BSM and uCMDB" (on page 37)

- "Troubleshooting and Limitations" (on page 37)

- "List of Entities" (on page 37)

Integration Description

To integrate	See "Activate the Integration" (on page 33)
Integration Technology	HP BSM Adapter for Data Warehouse Data Warehouse provides a SAP BusinessObjects Data Services for IT Executive Scorecard Adapter that is responsible for integrating with BSM resources (Web Services and RTSM).

Activate the Integration

To integrate BSM as a data source, proceed as follows:

1. **Prerequisite**

   BSM 9.01 including Patch #12.

2. **Synchronize BSM first day of the week with Data Warehouse first day of the week**

   In Data Warehouse, the first day of the week is set in the Post- Install wizard, and the Period tool is using is as an input to build PERIOD_DIM days, weeks, months, and more, as well as relevant hierarchies.

   After the administrator has installed Data Warehouse, the administrator selects the cooperation first-day-of-week. If the data source has a different first-day-of-week definition, the administrator should be aware that for weekly periodicity, the linkage to the period key uses the Data Warehouse week definition and not the data source week definition.

   If the first-day-of-week definition in BSM and in Data Warehouse is different and you want full alignment, it is recommended to change the Infrastructure Settings in BSM and then to run the SLAs re-calculation to align BSM data. For details, see BSM documentation.

   Important Notes:

   - It is strongly recommended to create a dedicated Data Warehouse integration user in BSM.

   - The user default time zone in BSM is expected to match the time zone of BSM server.

   - Changing the user time zone after integration may cause data loss.

3. **Modify the Initial Load - optional**

   By default, when activating the data source, the past 6 months (default) of data is loaded as an initial load.

   To change the default value (6 months):

   a. Access the **<staging database>\TABLES\Dwmetadata.DW_CONFIGURATION** table.

   b. Modify the value of the **dwh.etl.initialloadmonths** property.

   c. Update the database.

4. **Activate the BSM Data Source**

   a. Select **Admin > Data Source Management** then click the **Activate** button for the BSM data source.

   b. The BSM Activation Page opens. Select or enter the relevant information as indicated below.

UI Element	Description
BSM Version	Select the relevant BSM version. For details, see the *IT Executive Scorecard Compatibility Matrix*.
Time zone	Select the time zone for the data source.

UI Element	Description
Data Source Type	Select the relevant data source type.
Username	Enter the BSM username.
Password	Enter the BSM password.
Hostname/IP Address	Enter the hostname or IP address of the server on which BSM is installed.
Port	Enter the server port number.
Is Secured	Select if the server host is secured.
RTSM Username	Enter your Run-time Service Model username for the CMDB component in BSM.
RTSM Password	Enter your Run-time Service Model password for the CMDB component in BSM.

c.   Click **Next** to proceed to the Data Source Confirmation page.

For details, see <u>"Data Source Management Page" (on page 50)</u>.

Note: There is a discrepancy in the status time display between ETL runs when BSM has a different time zone than the BSM server.

Connect to BSM on a Secured Connection

1.   Export the BSM SSL certificate to a file. For details, see the BSM *Hardening Guide*.

2.   Reveal the BSM certificate to Data Warehouse, by importing the SSL certificate trusted by the BSM server into the JDK key store using a tool provided by the JDK called **keytool.exe** by running the command :
    keytool -importcert -alias <alias> -file <file> -keystore C:\HPXS\agora\jdk\jre\lib\security\cacerts -trustcacerts

3.   Select the **Is secured** toggle-button in the activation parameters screen.
    The port should be changed to a secured port (default is 443).

Advanced Configuration

In certain cases, in Enterprise BSM, when including more than 1000 Services, a single daily query can exceed the BSM limit, thus stopping the ETL. You can select one of the several mechanism that are built-in in order to overcome the loss of data that can occur. A symptom for this issue would be an exception which states that the **Query has reached maximum result size**.

To solve the problem, you can either change the Chunk size of each BSM or skip the large Chunks using the BSM adapter, below.

Supporting data-queries for large BSM instances

In BSM, there is a limitation enforced by the FUSE mechanism that stops the transaction after a certain amount of records is returned. By default this number is 50,000. This limitation occurs for BSM UI queries and back-end queries.

To edit the BSM adapter:

1. Open the Data Services designer.

2. Go to the Datastore configuration using the short cut in the server where SAP BusinessObjects Data Services for IT Executive Scorecard or SAP BusinessObjects Data Services for HP FPA is installed.

3. Right-click the **BSMAdapter** and select **Edit**.
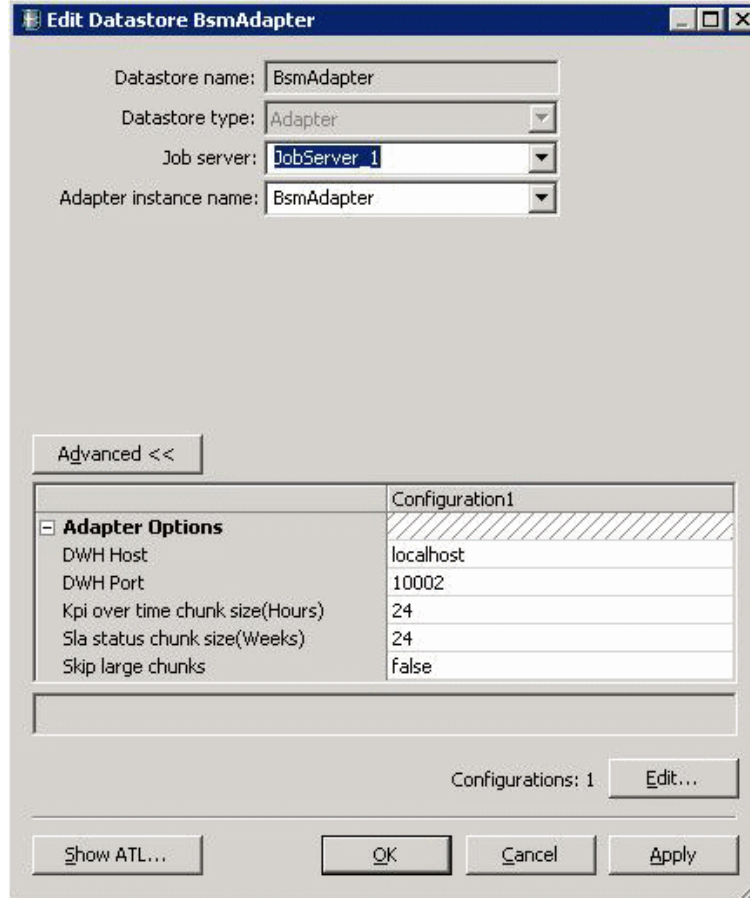
4. The Edit Datastore BSMAdapter dialog box opens, enabling you to troubleshoot various issues.

Symptom	Solution/Workaround
ETL fails on KPIs over time extraction	Change the **Kpi over time chunk size (Hours)** to a smaller number (default is 24).
ETL fails on SLA status extraction	Change the **SLA status chunk size (Weeks)** to a smaller number (default is 24).
	Note: The smaller the number, the more Web-Services are called from

	BSM, affecting BSM performance and the performance of the data extraction process.
Data may be corrupted and you want to skip that data	Change the value of the **Skip large chunks** adapter option to **true**. **Note:** Enabling this option will result in data loss.
More then 50000 rows of data	The following options are available: 1. Increase FUSE value and rerun ETL. 2. Fix corrupted data in BSM and rerun ETL. 3. Change **Skip large chunks** to **True** and rerun ETL. Select this option after decreasing chunk size to minimum, in order not to affect data in BSM.

Get additional types of periods from the SLA-Status query

Sometime the KPI needs to be calculated only for a different time period; for example, if you need to have KPIs calculated for a weekly period, and you also want the raw data to be extracted with a weekly/daily granularity.

This creates more load on the system, but potentially allows the creation of additional reports later on.

1. Access the following file:
   <XS-Install-dir>\agora\glassfish\glassfish\domains\BTOA\config\bsm.properties

2. Select the open periods you want to fetch. The possible values are: **weekToDate**, **monthToDate**, **quarterToDate**, or **yearToDate**.

3. Select the close periods you want to fetch. The possible values are: **day**, **week**, **month**, **quarter**, or **year**.

4. Save.

Use another CI Types in the KPI Over Time query:

By default, the KPI Over Time query queries the Service CI status.

You can customize your system by selecting additional types of CIs. For example, you could create and then query a ProductionService CI Type instead of the Service CI Type.

1. Access the following file:
   <XS-Install-dir>\agora\glassfish\glassfish\domains\BTOA\config\bsm.properties

2. Locate **kpiOverTimeCis=service** and replace Service CI Type with the requested CI type in BSM.

3. Save.

Modify the XLSs

Status and MeasureTypes values are loaded from an XLS which is found in the user-configured external-sources directory. These XLSs can be modified to reflect different values. The XLS already contain data regarding out-of-the box statuses and KPI types supported by BSM. In SLM

and Dashboard applications, if your system uses non- default KPI types or statuses, modify the files to include these values before running your ETL.

Consolidation Between BSM and uCMDB

Business Services and Infrastructure Services are automatically consolidated between BSM and uCMDB during ETL.

Troubleshooting and Limitations

Symptom	Probable cause	Solution/Workaround
The SRC-EXT step of BSM crashes, and the error "Too much data" is issued as the query from BSM exceeds the limit of the BSM.	ETL has not been working for a while. Some malfunction in BSM causing huge amount of defunct records	a. Reduce the Chunk size by half. See the Advanced Steps above. b. Choose the "Skip Large Chunks" option from the adapter.
Extraction from BSM fails consistently	The Proxy for BSM runs on glassfish, that may be down	1. Go to **http://localhost:10002/dw/integrations/bsm/kpis** to see if glassfish is responding. If the browser displays the message **Page 404** proceed to step 2. 2. Run **Start > All programs > HP Executive Scorecard > Administration > Disable HP Executive Scorecard**. 3. Run **Start > All programs > HP Executive Scorecard > Administration > Enable HP Executive Scorecard**.
You are not getting the expected data in the target database or for the KPI.	-	The solution can be generic. See "ABC - Operational Status Report" (on page 93).

Limitations:

- A CI Name should not include the "|" (vertical line) character.
- The data related to a KPI that belongs to a private view in BSM is not extracted by the Data Warehouse. Only data from KPIs in public views is extracted by the Data Warehouse.

List of Entities

Relevant entities that are filled from BSM:

Populated facts:

- ServiceStatus FACT

- SlaStatus FACT

Populated dimensions:

- BUSPROCESS DIM

- BUSPROCSERVICE DIM

- BUSTRANSACTION DIM

- BUSTRANSERVICE DIM

- Service DIM

- SLA DIM

- Status DIM

Integrate with PPM as a Data Source

HP Project and Portfolio Management (PPM) Software provides an integrated platform for planning, staffing and monitoring Agile development projects, as well as managing application quality. PPM Center offers a consolidated view of all IT activities so that management has better visibility into the portfolio, more effective controls, greater flexibility in applying automated processes, and better-defined quality standards.

The purpose of the integration of PPM as a data source is to bring quality management information into the Data Warehouse.

This section includes the following topics:

- "Integration Description" (on page 38)

- "Activate the Integration" (on page 38)

- "Configure the Consolidation Rules Between Sources - Details" (on page 40)

- "List of Entities" (on page 41)

Integration Description

To integrate	See "Activate the Integration" (on page 38)
Integration Technology	Rest Web-services
	Remote TQL query for RTSM component

Activate the Integration

To integrate PPM as a data source, proceed as follows:

1. **Prerequisite:**

   If the data source has the Oracle type, you must install the Oracle client and configure its

TNSNames.ora file.

2. **Important Note: First day of the week**

   In Data Warehouse, the first day of the week is set in the Post- Install wizard, and the Period tool is using is as an input to build PERIOD_DIM days, weeks, months, and more, as well as relevant hierarchies.

   After the administrator has installed Data Warehouse, the administrator selects the cooperation first-day-of-week. If the data source has a different first-day-of-week definition, the administrator should be aware that for weekly periodicity, the linkage to the period key uses the Data Warehouse week definition and not the data source week definition.

3. **Activate the PPM Data Source:**

   a. Select **Admin > Data Source Management** then click the **Activate** button for the PPM data source.

   b. The PPM Activation Page opens. Select or enter the relevant information as indicated below.

UI Element	Description
PPM Version	Select the relevant PPM version. For details, see the *IT Executive Scorecard Compatibility Matrix*.
Time Zone	Select the time zone for the data source.
Data Source Type	PPM can be run only on Oracle.
Data Source Version	Select the Oracle version for the data source.
Username	Enter your username.
Password	Enter your password.
Connection Name	Enter the Oracle connection name.
Schema Name	Enter the data source schema name.

   c. Click **Next** to proceed to the Data Source Confirmation page.

      For details, see .

4. **Create the Source Data Views**

   The Data Warehouse data source activation creates a directory of SQL scripts that you are required to run to create views for each of your identified source databases. These views contain the key data that you will extract during ETL runs and use to populate analytics.

   To create the source data views

a. Open the database client for your PPM database and log in.

b. From the database client, navigate to this directory:
<DWH_installation_directory>\generated\sql\interface

c. Verify that you have administrative access to the remote data sources, or identify the database administrator for each data source who can run SQL scripts for you.

d. On the server that hosts the source data, use the appropriate RDBMS client to import the script in:
<DWH_installation_directory>\generated\sql\interface\generated\sql\interface.

e. Run the **CreateInterfaces_PPM8.0-PPMVIEW_DS-oracle.sql** or **CreateInterfaces_PPM9.1-PPMVIEWDS-oracle.sql** script.

f. Verify that the script runs successfully. Look for the appropriate RDBMS message. If an error occurs, you must troubleshoot the error, and re-run the script successfully.

5. **Load the Cross-Reference views - optional**

The installation creates a directory of SQL scripts that create cross-reference views. These views expose appropriate information in the source databases that enable the ETL process to cross-reference an entity in one data source to a corresponding entity in another data source. For example, you may want to link a project identifier from AM with a project identifier from PPM. HP recommends that you create the XREF views regardless of whether you use one or two data sources.

Important: If this data source is used for consolidation with other data sources, it is important to create the relevant cross-reference views.

To create the cross-reference views:

a. Open the database client for your PPM database and log in.

b. Verify that you have administrative access to the remote data sources, or identify the database administrator for each data source who can run SQL scripts for you.

c. From the database client, navigate to:
<DWH_installation_directory>\ContentPacks\PPM\custom\schema\creation\CrossReference\PPM\8.0\oracle
and run the **CreateSourceReferenceInterfaces_PPM8.0-oracle.sql** script.

Configure the Consolidation Rules Between Sources - Details

You can configure the consolidation rules between sources. For details, see "Consolidate Entities for Data Sources" (on page 63).

The following entities can be consolidated:

- Person
- ORG
- Location
- ActualCost

- Project

- Budgetline

List of Entities

Dimensions that are filled by XLSs:

- Budget

- Cost Category

Entities that are filled from PPM:

Populated facts:

- ActualCost FACT

- PlannedCost FACT

Populated dimensions:

- BudgetLine DIM

- Exchange DIM

- Location DIM

- Org DIM

- Person DIM

- Project DIM

- ProjectObjective DIM

- ProjectTask DIM

Integrate with SM as a Data Source

HP Service Manager (SM) is a comprehensive and fully integrated IT Service Management software suite that enables IT to improve service levels, balance resources, control costs, and mitigate risk exposure to the organization.

The purpose of the integration of SM as a data source is to bring quality management information into the Data Warehouse.

This section includes the following topics:

Integration Description

To integrate	See "Activate the Integration" (on page 42)
Integration Technology	Rest Web-services Remote TQL query for RTSM component

Activate the Integration

To integrate SM as a data source, proceed as follows:

1. **Prerequisite:**

   None.

2. **Important Note: First day of the week**

   In Data Warehouse, the first day of the week is set in the Post- Install wizard, and the Period tool is using is as an input to build **PERIOD_DIM** days, weeks, months, and more, as well as relevant hierarchies.

   After the administrator has installed Data Warehouse, the administrator selects the cooperation first-day-of-week. If the data source has a different first-day-of-week definition, the administrator should be aware that for weekly periodicity, the linkage to the period key uses the Data Warehouse week definition and not the data source week definition.

3. **Activate the SM Data Source:**

   a. Select **Admin > Data Source Management** then click the **Activate** button for the SM data source.

   b. The SM Activation Page opens. Select or enter the relevant information as indicated below. **For the SQL server:**

UI Element	Description
SM Version	Select the relevant SM version. For details, see the *IT Executive Scorecard Compatibility Matrix*.
Time Zone	Select the time zone for the data source.
Data Source Type	SM should be configured to run on an SQL Server.
SQL Version	Select the SQL version for the data source.
Server Name	Enter the name of the server where the data source is installed.
Username	Enter your data source username.
Password	Enter your data source password.
Schema Name	Enter the data source schema name.
Database Name	Enter the database name.

   For the Oracle server:

UI Element	Description
SM Version	Select the relevant SM version. For details, see the *IT Executive Scorecard Compatibility Matrix*.
Time Zone	Select the time zone for the data source.
Data Source Type	SM should be configured to run on an Oracle server.
Data Source Version	The version of Oracle.
Username	Enter your data source username.
Password	Enter your data source password.
Connection Name	Enter the SID or connection name in the **TNSNames.ora** file.
Schema Name	Enter the data source schema name.

c. Click **Next** to proceed to the Data Source Confirmation page.

For details, see "Data Source Management Page" (on page 50).

4. **Create the Source Data Views**

The Data Warehouse data source activation creates a directory of SQL scripts that you are required to run to create views for each of your identified source databases. These views contain the key data that you will extract during ETL runs and use to populate analytics.

To create the source data views

a. Open the database client for your SM database and log in.

b. From the database client, navigate to this directory:
<DWH_installation_directory>\DataWarehouse\generated\sql\interface

c. Verify that you have administrative access to the remote data sources, or identify the database administrator for each data source who can run SQL scripts for you.

d. On the server that hosts the source data, use the appropriate RDBMS client to import the script or scripts in
<DWH_installation_directory>\DataWarehouse\generated\sq\interface:
   ○ **In SQL:** For SM 9.2, run the **CreateInterfaces_SM9.2-SMVIEW_DS-mssql.sql** script.

   ○ **In Oracle:** For SM 9.2, run the **CreateInterfaces_SM9.2-SMVIEW_DS-oracle.sql** script.

e. Verify that the script runs successfully. Look for the appropriate RDBMS message. If an error occurs, you must troubleshoot the error, and re-run the script successfully.

5. **Load the Cross-Reference views - optional**

The installation creates a directory of SQL scripts that create cross-reference views. These

views expose appropriate information in the source databases that enable the ETL process to cross-reference an entity in one data source to a corresponding entity in another data source. For example, you may want to link a project identifier from AM with a project identifier from PPM.

Important: If this data source is used for consolidation with other data sources, it is important to create the relevant cross-reference views.

To create the cross-reference views:

a. Open the database client for your SM database and log in.

b. Verify that you have administrative access to the remote data sources, or identify the database administrator for each data source who can run SQL scripts for you.

c. On the server that hosts the source data, use the appropriate RDBMS client to import the scripts in this folder:
 <agora_installation_directory>\ContentPacks\SM\custom\schema \creation\CrossReference\SM\9.2\mssql

d. Verify that each script runs successfully. Look for the appropriate RDBMS message. If an error occurs, you must troubleshoot the error, and re-run the script successfully.

Configure the Consolidation Rules Between Sources

You can configure the consolidation rules between sources. For details, see .

The following entities can be consolidated:

- Person

- ORG

- Location

List of Entities

Entities that are filled from SM:

Populated facts:

Incident_FACT

Populated dimensions:

- CfgItem DIM

- Incident DIM

- Location DIM

- Model DIM

- Org DIM

- Person DIM

- Service DIM

Integrate with UCMDB as a Data Source

The HP Universal Configuration Management Database (UCMDB) is based on three key elements: a rich data model, visualization, and federation to additional data repositories. UCMDB provides impact analysis, change tracking, and reporting capabilities to transform UCMDB data into comprehensible, actionable information that helps answer critical questions and solve business problems. UCMDB can provide valuable information about services, and their operational status.

The purpose of the integration of UCMDB as a data source is to bring quality management information into the Data Warehouse.

This section includes the following topics:

Integration Description

To integrate	See "Activate the Integration" (on page 45)
Integration Technology	Remote TQL query for RTSM component

Activate the Integration

To integrate UCMDB as a data source, proceed as follows:

1. **Prerequisite:**

   None.

2. **Important Note: First day of the week**

   In Data Warehouse, the first day of the week is set in the Post- Install wizard, and the Period tool is using is as an input to build PERIOD_DIM days, weeks, months, and more, as well as relevant hierarchies.

   After the administrator has installed Data Warehouse, the administrator selects the cooperation first-day-of-week. If the data source has a different first-day-of-week definition, the administrator should be aware that for weekly periodicity, the linkage to the period key uses the Data Warehouse week definition and not the data source week definition.

3. **Activate the UCMDB Data Source:**

   a. Select **Admin > Data Source Management** then click the **Activate** button for the UCMDB data source.

   b. The UCMDB Activation Page opens. Select or enter the relevant information as indicated below.

UI Element	Description
UCMDB Version	Select the relevant UCMDB version. For details, see the *IT Executive Scorecard Compatibility Matrix*.
Time Zone	Select the time zone for the data source.
Username	Enter your username.
Password	Enter your password.
Is Secured	Select if the server host is secured.
Hostname/IP Address	Enter the server hostname or IP address of the server where the UCMDB is installed.

  c. Click **Next** to proceed to the Data Source Confirmation page.

      For details, see <u>"Data Source Management Page" (on page 50)</u>.

4. **Connect to UCMDB on a secured connection - optional**

   You can, optionally,connect to the UCMDB data source using a secured connection. For details, see <u>"Connect to UCMDB on a Secured Connection" (on page 46)</u>.

Connect to UCMDB on a Secured Connection

1. Select the **Is secured** toggle-button in the activation parameters screen.
   The port should be changed to a secured port (default is **8443**).

2. Reveal the UCMDB certificate to Data Warehouse, by importing the SSL certificate trusted by the UCMDB server into the Agora JDK key store using a tool provided by the JDK called keytool.exe by running the command :
   keytool -importcert -alias <alias> -file <file> -keystore
   C:\HPXS\agora\jdk\jre\lib\security\cacerts -trustcacerts
   Note: From UCMDB version 9.0, UCMDB has a self-signed certificate that allows to connect to UCMDB without a certificate import procedure.

Consolidation Between BSM and uCMDB

Business Services and Infrastructure Services are automatically consolidated between BSM and UCMDB during ETL.

List of Entities

Entities that are filled from UCMDB:

Populated dimensions:

- Service_dim table

Consolidated entities:

- Service_dim

Integrate Alternate Sources

The alternate source mechanism (ALT) is a simple mean of uploading data into the Data Warehouse target schema easily using files and without integration to external sources or to other HP products. It can be used to integrate third party data sources.

You can use Excel files as a data source.

Samples of Excel files are available in the **< Installation directory>\agora\ContentPacks\<ALT>\ETL\flatfiles\demodata** directory.

File Structure

Each file has its unique structure. The following is an example of alternate source files:

MD_ BUSINESS_ KEY	SLA_ NAME	SLA_ STATE	SLA_ TYPE	DATE_ START_ LOC	DATE_ END_LOC	DELETE_ FLAG
DUMMY	DUMMY	X	X	1/1/1900 01:00:00	1/1/1900 19:00:00	X
SLA_001	SLA_ 001	Unknown	Corporate Level	1/1/2011 13:00:00	2/1/2011 19:00:00	
SLA_002	SLA_ 002	Unknown	Corporate Level	1/2/2011 13:00:00	2/2/2011 19:00:00	
SLA_003	SLA_ 003	Stopped	Corporate Level	1/3/2011 13:00:00	2/3/2011 19:00:00	
SLA_004	SLA_ 004	Stopped	Corporate Level	1/4/2011 13:00:00	2/4/2011 19:00:00	
SLA_013	SLA_ 013	Running	Corporate Level	1/5/2011 13:00:00	2/5/2011 19:00:00	
SLA_014	SLA_ 014	Running	Corporate Level	1/6/2011 13:00:00	2/6/2011 19:00:00	

The first tab of the Excel file should contain the data.

The second tab of the Excel file includes instructions on how to fill in the fields.

Examples

ALT_PRJOBJECTIVE.xls [Compatibility Mode]

	A	B	C	D	E
1	MD_BUSINESS_KEY	OBJECTIVE_NAME	OBJECTIVE_STATE	OBJECTIVE_PRIORITY	DELETE_FLAG
2	DUMMY	DUMMY	X	0	X
3	Prj Objective 001	Prj Objective 001	Achieved	1	
4	Prj Objective 002	Prj Objective 002	Achieved	1	
5	Prj Objective 003	Prj Objective 003	Achieved	2	
6	Prj Objective 004	Prj Objective 004	Active	2	
7	Prj Objective 005	Prj Objective 005	Active	3	
8	Prj Objective 006	Prj Objective 006	Active	3	
9	Prj Objective 007	Prj Objective 007	Failed	4	
10	Prj Objective 008	Prj Objective 008	Failed	4	
11	Prj Objective 009	Prj Objective 009	Cancelled	5	
12	Prj Objective 010	Prj Objective 010	Cancelled	5	
13					

ALT_PERSON.xls [Compatibility Mode]

	A	B	C	D	E	F	G	H	I
1	MD_BUSINESS_KEY	PERSON_NAME	PERSON_NAME_ALT	DATE_END	DATE_START	DEPT	LOCATION	PARENT	DELETE_FLAG
2	DUMMY	DUMMY	DUMMY ROW - DO	#####	#####	X	X	X	X
3	George	George			#####	ORG A	ANCHORAGE		N
4	John Adams	John	JA		#####	ORG A DEPT 001	AUCKLAND		N
5	Tomas Tomas	Tomas	Tom		#####	ORG A DEPT 002	BARCELONA		N
6	James	James			#####	ORG A DEPT 003	BRISBANE		N
7	James Menro	James	James		#####	ORG B	DALLAS	James	N
8	John Quincy Adams	John Quincy			#####	ORG B DEPT 001	HONOLULU		N
9	Andrew	Andrew	Andrew		#####	ORG B DEPT 002	HOUSTON		N
10	Martin	Martin	Martin		#####	ORG B DEPT 003	LAS VEGAS		N
11	William	William	William	#####	#####	ORG B DEPT 004	LOS ANGELES		N
12	John Taylor	John	John		#####	ORG C	MANILA	John	N
13	James Knox Polk	Knox Polk	Knox		#####	ORG C DEPT 001	MIAMI	James Menro	N
14	Zachary	Zachary	Zachary		#####	ORG C DEPT 001 SUB DEPT A	NEW YORK		N
15	Millard	Millard	Millard		#####	ORG C DEPT 001 SUB DEPT B	OAKLAND		N
16	Franklin	Franklin	Franklin		#####	ORG C DEPT 002	OLYMPIA	George	N
17	Yoshida, Ayako	Yoshida,	Ayako		#####	ORG C DEPT 003	PHILADELPHIA		N
18	Person 1	Person 1	Person 1		#####	ORG C DEPT 004	PORTLAND		N
19	Person 2	Person 2	Person 2		#####	ORG C DEPT 005	ROME	Person	N

Note:

- Each entity is represented by one row in the table. The first row displays the headers of each column. The second row is a sample dummy row to display the structure. The other rows are samples of the data structure and of the type of data that can be entered in the Excel file.

- Do not modify the headers of the table.

- Do not remove the DUMMY row.

- Inline documentation is available in the Instruction tab in the sample files.

- If the situation is a constant data flow, some external mechanism should populate the files with the right-names and manage the removal/archiving of these files.

- When you fill out the Excel spreadsheets with data, all date or time fields are treated as localized (and not in Coordinated Universal Time (UTC)).

Uploading data from the Excel file into the DWH Database

The ALT Content Pack is available in the **< Install directory>\agora\Content Packs\ALT** directory. It is deployed with the Data Warehouse server and is registered in the database.

To activate or deactivate the ALT content pack, you must go through the automation backend tool. For details, see "The Automation Tool" (on page 151).

To upload the data from the Excel file into the DWH Database:

1. Take the sample files from **< Install dir>\agora\Content Packs\ETL\flatfiles\demodata**, create your own and save them in the External sources directory (in C:\EXTERNAL).

2. Run the ETL.

List of Entities with Existing Excel Files

Populated facts:

- ActualCost FACT

- Asset FACT

- PlannedCost FACT

- Revenue FACT

- ServiceStatus FACT

- SlaOutage FACT

- SlaStatus FACT

- SurveyScore FACT

- TimeToMarket FACT

Populated dimensions:

- CfgItem DIM

- Change DIM

- Employment DIM

- Exchange DIM

- Incident DIM

- Interaction DIM

- Location DIM

- MeasureType DIM

- Model DIM

- Org DIM

- Person DIM

- Project DIM

- ProjectObjective DIM

- ProjectTask DIM

- Service DIM

- Status DIM

- Survey DIM

Data Source Management UI TOC

Data Source Management includes the following UI topics:

Data Source Management Page

The Data Source Management page enables you view a list of Integration Content Packs recognized by the data warehouse. Additionally, it enables you to select specific content packs through which the integration to the data sources is activated, as well as manage the connections.
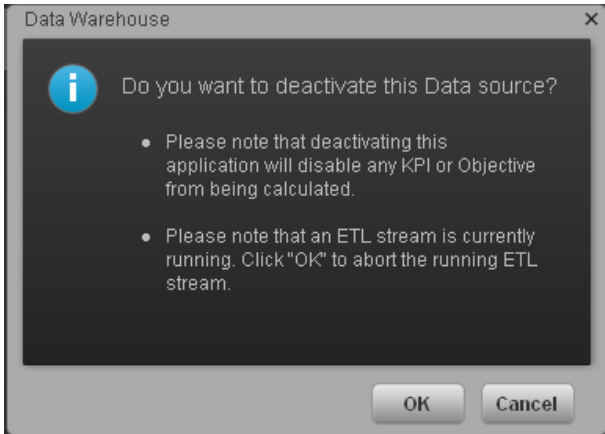
To access	For IT Executive Scorecard: Select **Admin** > **Data Source Management**.
	For Financial Planning Analysis: Select **Admin** > **Data Source Configuration**.
Important information	The following content packs are registered in the deployment process:
	• **AM**
	• **BSM**
	• **PPM**
	• **SM**
	• **UCMDB**
	You must have the required user permissions to activate data source integration. For details, see Learn About Users and Roles in *the General Admin Guide*.

Relevant tasks	"How to Configure Data Source Management " (on page 27)

Source List

User interface elements are described below (unlabeled elements are shown in angle brackets):

UI Element	Description
<Data Sources>	A list of sources currently available for integration in the data warehouse. The current state of the data source is displayed next to the source: ● Activated ● Deactivated ● Error
View Settings	Checks the connection to the data source and displays the read-only configuration of all connection parameters. **Note:** All connection settings are run-time related. You must deactivate the connection to the data source in order to change the settings.
Activate	Opens the relevant data source activation wizard. **Notes:** ● Once the content pack is activated, the ETL is ready to run. For details on how to execute ETL, see "ABC Utilities" (on page 86). ● Do not activate a content pack while ETL is running. For details, see "Audit Reports" (on page 88). ● The activation may take time.
Deactivate	Deactivates the relevant data source. **Note:** Do not deactivate a content pack while ETL is running.

Data Source Activation Wizard

The Data Source Activation wizard enables you to enter information pertaining to activating the selected data source.

To access	Select **Admin** > **Data Source Management** then click **Activate** to activate the integration processes for the corresponding data source.
Important Information	The UI elements differ according to the selected data source, as follows. • AM • BSM • PPM • SM • UCMDB • **Additional Sources:** Additional data sources can be added . For details see "Add Additional Data Sources" (on page 142). For each source, enter the relevant information and click **Next** to proceed to the Data Source Confirmation page. **Note:** If the activation process is taking more than one hour, you can change the status of the CP in the CONTENT_PACK table to "ERROR" and then activate the CP again.
Wizard Map	The Data Source Activation wizard contains: Data Source Activation Page > "Activation Status Page" (on page 61).
Relevant Tasks	"How to Configure Data Source Management " (on page 27)

The following pages are available for each source:

- "AM Activation Page" (on page 52)
- "BSM Activation Page" (on page 54)
- "PPM Activation Page" (on page 56)
- "SM Activation Page" (on page 57)
- "UCMDB Activation Page" (on page 59)

AM Activation Page

The data warehouse is connected to HP Asset Manager through high-level integration processes. A set of database views enables the extraction of the main AM objects. For details see "Create the Source Data Views" (on page 29)"Integrate with AM as a Data Source" (on page 27).

The following is an example of the AM Activation page when HP Asset Manager is installed on an SQL server.

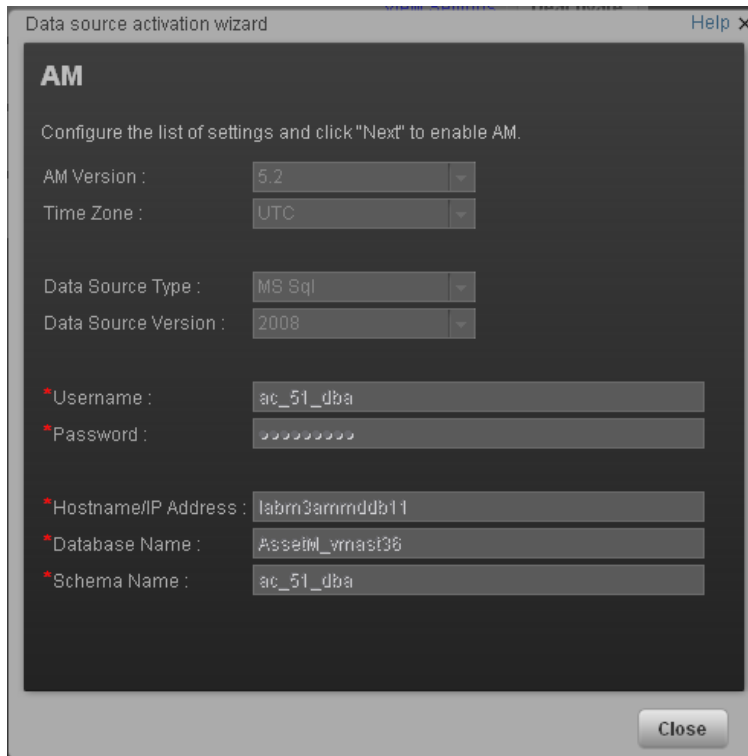| To access	Select **Admin > Data Source Management** then click **Activate** to activate the integration processes for the **AM** data source.
Important Information	Enter the relevant information and click **Next** to proceed to the Data Source Confirmation page.
Wizard Map	The Data Source Activation wizard contains: **AM Activation page** > "Activation Status Page" (on page 61).
Relevant Tasks	"How to Configure Data Source Management " (on page 27)

User interface elements are described below:

For the SQL server:

UI Element	Description
AM Version	Select the relevant AM version. For details, see the *IT Executive Scorecard Compatibility Matrix*.
Time Zone	Select the time zone for the data source.
Data Source Type	AM should be configured to run on an SQL Server.
SQL Version	Select the SQL version for the data source.
Server Name	Enter the name of the server where the data source is installed.

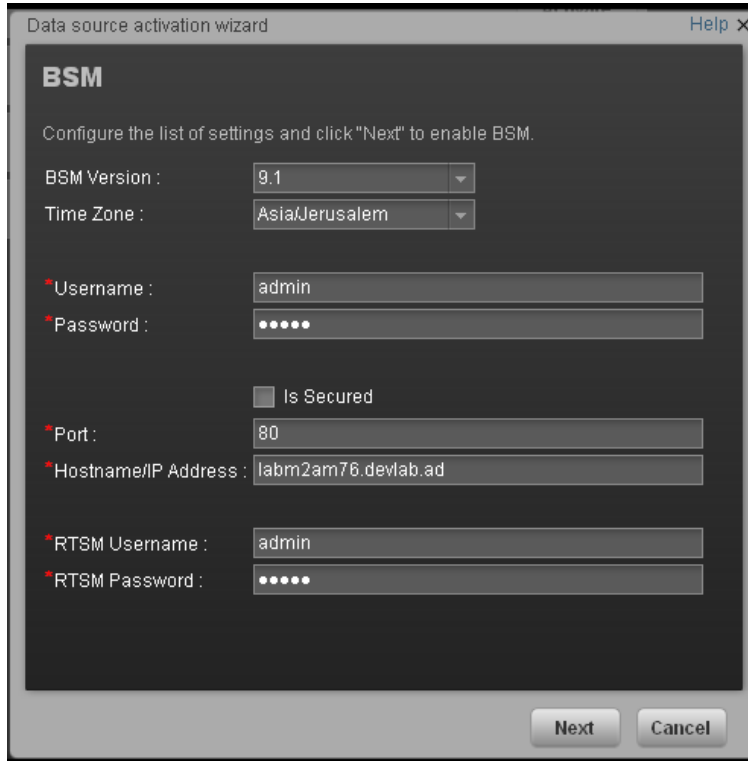| UI Element	Description
Username	Enter your data source username.
Password	Enter your data source password.
Hostname/IP Address	Enter the data source hostname or IP address.
Schema Name	Enter the data source schema name.
Database Name	Enter the database name.

For the Oracle server:

UI Element	Description
AM Version	Select the relevant AM version. For details, see the *IT Executive Scorecard Compatibility Matrix*.
Time Zone	Select the time zone for the data source.
Data Source Type	AM should be configured to run on an Oracle server.
Data Source Version	The version of Oracle.
Username	Enter the data source username.
Password	Enter the data source password.
Hostname/IP Address	Enter the data source hostname or IP address.
Connection Name	Enter the SID or connection name in the **TNSNames.ora** file.
Schema Name	Enter the data source schema name.

BSM Activation Page

HP Business Service Management provides comprehensive IT service availability and performance management. BSM directly associates business services with their underlying applications, infrastructure, and network components to help you analyze and report the business service impact of IT problems and reduce the potential costs of IT service downtime and staff inefficiencies.

The data warehouse is connected to HP Business Services Management through high-level integration processes. A set of database views enables the extraction of the main BSM objects. For details see "Integrate with BSM as a Data Source" (on page 32).

To access	Select **Admin** > **Data Source Management** then click **Activate** to activate the integration processes for the **BSM** data source.
Important Information	Enter the relevant information and click **Next** to proceed to the Data Source Confirmation page. **Note:** If HP Business Services Management does not contain Service CIs, running the BSM ETL fails. If you work with Financial Planning Analysis, this data source is not supported. When you activate this data source, the Financial Planning Analysis application displays **No data**.
Wizard Map	The Data Source Activation wizard contains: **BSM Activation page** > "Activation Status Page" (on page 61).
Relevant Tasks	"How to Configure Data Source Management " (on page 27)

User interface elements are described below:

UI Element	Description
BSM Version	Select the relevant BSM version. For details, see the *IT Executive Scorecard Compatibility Matrix*.
Time zone	Select the time zone for the data source.

UI Element	Description
Data Source Type	Select the relevant data source type.
Username	Enter the BSM username.
Password	Enter the BSM password.
Hostname/IP Address	Enter the hostname or IP address of the server on which BSM is installed.
Port	Enter the server port number.
Is Secured	Select if the server host is secured.
RTSM Username	Enter your Run-time Service Model username for the CMDB component in BSM.
RTSM Password	Enter your Run-time Service Model password for the CMDB component in BSM.

PPM Activation Page

The data warehouse is connected to HP Project and Portfolio Management through high-level integration processes. A set of database views enables the extraction of the main PPM objects.

To access	Select **Admin** > **Data Source Management** then click **Activate** to activate the integration processes for the **PPM** data source.

Important Information	Enter the relevant information and click **Next** to proceed to the Data Source Confirmation page.
Wizard Map	The Data Source Activation wizard contains: **PPM Activation page** > "Activation Status Page" (on page 61).
Relevant Tasks	"How to Configure Data Source Management " (on page 27)

User interface elements are described below:

UI Element	Description
PPM Version	Select the relevant PPM version. For details, see the *IT Executive Scorecard Compatibility Matrix*.
Time Zone	Select the time zone for the data source.
Data Source Type	PPM can be run only on Oracle.
Data Source Version	Select the Oracle version for the data source.
Username	Enter your username.
Password	Enter your password.
Connection Name	Enter the Oracle connection name.
Schema Name	Enter the data source schema name.

SM Activation Page

The data warehouse is connected to HP Service Manager through high-level integration processes. A set of database views enables the extraction of the main SM objects. For details, see "Create the Source Data Views" (on page 43).

The following is an example of the SM Activation page when HP Service Manager is installed on an SQL server.

To access	Select **Admin** > **Data Source Management** then click **Activate** to activate the integration processes for the **SM** data source.
Important Information	Enter the relevant information and click **Next** to proceed to the Data Source Confirmation page. If you work with Financial Planning Analysis, this data source is not supported. When you activate this data source, the Financial Planning Analysis application displays **No data**.
Wizard Map	The Data Source Activation wizard contains: **SM Activation page** > "Activation Status Page" (on page 61).
Relevant Tasks	"How to Configure Data Source Management " (on page 27)

User interface elements are described below:

For the SQL server:

UI Element	Description
SM Version	Select the relevant SM version. For details, see the *IT Executive Scorecard Compatibility Matrix*.
Time Zone	Select the time zone for the data source.
Data Source Type	SM should be configured to run on an SQL Server.

UI Element	Description
SQL Version	Select the SQL version for the data source.
Server Name	Enter the name of the server where the data source is installed.
Username	Enter your data source username.
Password	Enter your data source password.
Schema Name	Enter the data source schema name.
Database Name	Enter the database name.

For the Oracle server:

UI Element	Description
SM Version	Select the relevant SM version. For details, see the *IT Executive Scorecard Compatibility Matrix*.
Time Zone	Select the time zone for the data source.
Data Source Type	SM should be configured to run on an Oracle server.
Data Source Version	The version of Oracle.
Username	Enter your data source username.
Password	Enter your data source password.
Connection Name	Enter the SID or connection name in the **TNSNames.ora** file.
Schema Name	Enter the data source schema name.

UCMDB Activation Page

The Universal Configuration Management Database (UCMDB) is based on three key elements: a rich data model, visualization, and federation to additional data repositories. The Universal CMDB provides impact analysis, change tracking, and reporting capabilities to transform CMDB data into comprehensible, actionable information that helps answer critical questions and solve business problems.

The data warehouse is connected to HP UCMDB through high-level integration processes. A set of database views enables the extraction of the main UCMDB objects.

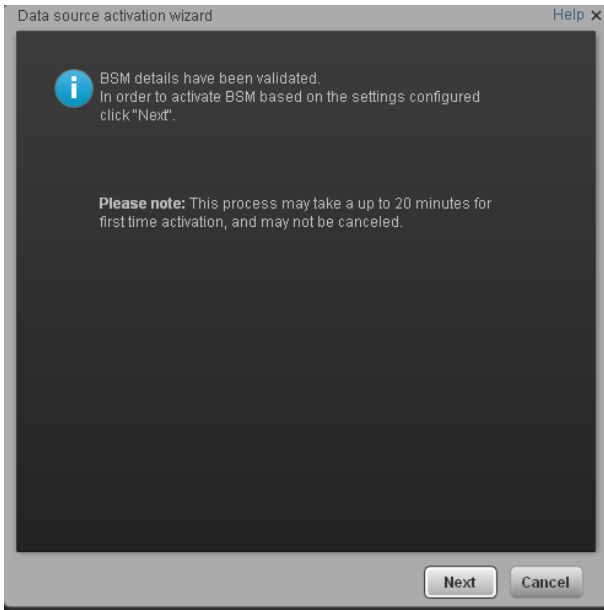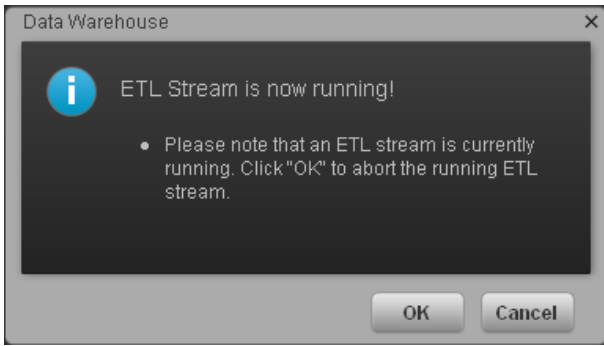|	
To access	Select **Admin > Data Source Management** then click **Activate** to activate the integration processes for the **UCMDB** data source.
Important Information	Enter the relevant information and click **Next** to proceed to the Data Source Confirmation page.
	If you work with Financial Planning Analysis, this data source is not supported. When you activate this data source, the Financial Planning Analysis application displays **No data**.
Wizard Map	The Data Source Activation wizard contains:
	UCMDB Activation page > "Activation Status Page" (on page 61).
Relevant Tasks	"How to Configure Data Source Management " (on page 27)

User interface elements are described below:

UI Element	Description
UCMDB Version	Select the relevant UCMDB version. For details, see the *IT Executive Scorecard Compatibility Matrix*.
Time Zone	Select the time zone for the data source.
Username	Enter your username.

UI Element	Description
Password	Enter your password.
Is Secured	Select if the server host is secured.
Hostname/IP Address	Enter the server hostname or IP address of the server where the UCMDB is installed.

Activation Status Page

This confirmation page displays activation status information pertaining to the selected data source.

Important Information	A message displays the data source status information.
	Click **Finish** to complete the wizard activation process.
Wizard Map	The "Data Source Activation Wizard" (on page 52) contains:
	Data Source Activation page > **Activation Status Page**
Relevant Tasks	"How to Configure Data Source Management " (on page 27)

Troubleshooting	For details on error messages and troubleshooting, see "Troubleshooting"

Consolidate Entities for Data Sources

The consolidation process for data sources enables you to take information from the various sources and consolidate it into a single entity. Information from two or three sources is incorporated in the data warehouse in order to create a new entity.

This section includes the following topics:

Load the Cross-Reference Views

The installation creates a directory of SQL scripts that create cross-reference views. These views expose appropriate information in the source databases that enable the ETL process to cross-reference an entity in one data source to a corresponding entity in another data source. For example, you may want to link a project identifier from Asset Manager with a project identifier from Project and Portfolio Management or Service Manager.

To create the cross-reference views:

1. Navigate to:
   <DWH_installation_directory>\agora\ContentPacks\<content pack name>\custom\schema\creation\CrossReference.

2. Verify that you have administrative access to the remote data sources, or, for each data source, identify the database administrator who can run SQL scripts for you.

3. For each data source, do the following:
   a. On the server that hosts the source data, use the appropriate RDBMS client to import the scripts in this folder:
      <DWH_installation_directory>\agora\ContentPacks\<content pack name>\custom\schema \creation\CrossReference . For a detailed list of views for each source see **Load the Cross-Reference Views** section for each data source.
      - **AM: **

      - **SM: **

      - **PPM: **

   b. Verify that each script runs successfully. Look for the appropriate RDBMS message. If an error occurs, you must troubleshoot the error, and re-run the script successfully.

Configure the Cross-Reference Property Files

In order to consolidate entities, you must select two out of the three available sources (AM, PPM or SM). Complete this task only if you use more than one data source and if you do not want to consolidate data from both sources for all consolidated entities. The out-of-box cross-reference views (*_REF_V) are configured to use data from both sources for all of the consolidated entities. After selecting the sources you want to consolidate, set the views you want to use for consolidation.

To configure the properties file:

1. If the xref.properties file is not already open, navigate to this directory:
   <installation_directory>\agora\ContentPacks\Core\conf

2. Open the xref.properties file with a text editor.

3. When you select the sources, enter **N/A** in place of the source that is not available for this consolidation, as follows:

```
#Maximum number of application sources
MaxSources=3

#sources configurations
SRC1=AM
src1Conn=AM

SRC2=N/A
src2Conn=N/A

SRC3=SM
src3Conn=SM
```

4. Locate the properties section that describes the cross-reference views for each consolidated entity, as follows:

```
PERSON=AM_AMPERSON_REF_V,PPM_KNTA_USERS_REF_V,SM_PERSON_REF_V
LOCATION=AM_AMLOCATION_REF_V,PPM_KNTA_REGIONS_REF_V,SM_LOCATION_
REF_V
ORG=AM_AMORG_REF_V,PPM_KRSC_ORG_UNITS_REF_V,SM_ORG_REF_V
PROJECT=AM_AMPROJECT_REF_V,PPM_PM_PROJECTS_REF_V
BUDGETLINE=AM_AMBUDGLINE_REF_V,PPM_KCST_BUDGET_LINES_REF_V
ACTUALCOST=AM_AMEXPENSELINE_REF_V,PPM_ACTUALCOST_REF_V
```

5. Save and close the file.

To disable an entity consolidation:

1. If the xref.properties file is not already open, navigate to this directory:
   <installation_directory>\agora\ContentPacks\Core\conf

2. Open the xref.properties file with a text editor.

3. Insert a comment character (#) at the beginning of the original line that represents the entity you want to disable. For example:

```
#PERSON=AM_AMPERSON_REF_V,PPM_KNTA_USERS_REF_V,SM_PERSON_REF_V
```

4. Save and close the file.

To consolidate entities from specific data sources:

1. If the xref.properties file is not already open, navigate to this directory:
   <installation_directory>\agora\ContentPacks\Core\conf

2. Open the xref.properties file with a text editor.

3. Remove the appropriate data source from entities that you do not want to consolidate.
   For example: if you were consolidating a person and user, location and region, and organization data from AM, PPM, and SM, the file would look as follows:

   ```
   PERSON=AM_AMPERSON_REF_V,PPM_KNTA_USERS_REF_V,SM_PERSON_REF_V
   LOCATION=AM_AMLOCATION_REF_V,PPM_KNTA_REGIONS_REF_V,SM_LOCATION_
   REF_V
   ORG=AM_AMORG_REF_V,PPM_KRSC_ORG_UNITS_REF_V,SM_ORG_REF_V
   PROJECT=AM_AMPROJECT_REF_V,PPM_PM_PROJECTS_REF_V
   BUDGETLINE=AM_AMBUDGLINE_REF_V,PPM_KCST_BUDGET_LINES_REF_V
   ACTUALCOST=AM_AMEXPENSELINE_REF_V,PPM_ACTUALCOST_REF_V
   ```

   if you want to consolidate your person and user, location and region, and organization data from AM and PPM, but you want to use only PPM data for project, budget, and actual cost, the section would look like this:

   ```
   PERSON=AM_AMPERSON_REF_V,PPM_KNTA_USERS_REF_V,SM_PERSON_REF_V
   LOCATION=AM_AMLOCATION_REF_V,PPM_KNTA_REGIONS_REF_V,SM_LOCATION_
   REF_V
   ORG=AM_AMORG_REF_V,PPM_KRSC_ORG_UNITS_REF_V,SM_ORG_REF_V
   PROJECT=PPM_PM_PROJECTS_REF_V
   BUDGETLINE=PPM_KCST_BUDGET_LINES_REF_V
   ACTUALCOST=PPM_ACTUALCOST_REF_VMEXPENSELINE_REF_V,PPM_ACTUALCOST_
   REF_V
   ```

4. Save and close the file.

To change Service Entity Consolidation:

The Service Entity consolidation can be configured from the following sources: AM,SM,BSM and uCMDB. You can change the configuration, as follows:

1. Edit the following file: <installation_folder>\agora\ContentPacks\Core\conf\xref_
   service.properties.

2. If you do not want to consolidate data from AM or SM (or they are not defined as sources), replace the source name in the **Sources Configuration** with **N/A** and remove the relevant entry in the **Consolidated model View Specification**, as follows.

   ```
   #sources configurations
   SRC1=AM
   src1Conn=AM

   SRC2=SM
   src2Conn=SM

   SRC3=BSM
   src3Conn=STG
   ```

```
#Consolidated model View Specification, one line for one
consolidate model

SERVICE=AM_AMSERVICE_REF_V,SM_SERVICE_REF_V,BSM_SERVICE_REF
```

3. If you are not using entities from both BSM and uCMDB, replace BSM with **N/A** in the **Sources Configurations** and delete the BSM view entry in the **Consolidated model View Specification**.

4. If you are using uCMDB without BSM, replace BSM with UCMDB in both the **Sources Configurations** and in the **Consolidated model View Specification**.

Set Consolidation Priorities

You can change the specific consolidation priority at the entity level or attribute level. At the entity level all the attributes inherit the priorities of the entity. If you set priority at the attribute level, that priority overrides the entity level priority. Before changing the levels, you must copy these files to the external source directory .

To change the entity level priority:

1. Using Windows Explorer, open the **<External_Source_ Folder>\SourceConsPriorityXREF.xls** file
   with Microsoft Office Excel.
2. For each source in the first column, there is a corresponding priority in the third column. You can change the **Name Priority** value for each source, as follows:

Source Instance Name	Consolidated Name	Name Priority
AM	PERSON	1
PPM	PERSON	2
SM	PERSON	3
AM	ORG	1
PPM	ORG	2
SM	ORG	3
AM	LOCATION	1
PPM	LOCATION	2
SM	LOCATION	3
AM	ACTUALCOST	1
PPM	ACTUALCOST	2
AM	PROJECT	1

PPM	PROJECT	2
AM	BUDGETLINE	1
PPM	BUDGETLINE	2

3. Save and close the file.

To change the attribute level priority:

1. Using Windows Explorer, open the **<External_Source_ Folder>\SourceAttrConsPriorityXREF.xls** with Microsoft Office Excel.

2. For each consolidated attribute in column C, there is a corresponding priority in column D. You can change the priority value in column D for each attribute.

3. Save and close the file.

The ETL process uses the priority information in these files to create consolidated views.

Populate the External Source and Metric Spreadsheets

Edit the external source and metric spreadsheets in the external sources folder that you defined. For example, C:\EXTERNAL. For information about how to use the external source and metric spreadsheets, view the **Instructions** tab in each spreadsheet. The Instructions tab includes an example of the type of information you might enter and lists the columns in the spreadsheet with a description of the data that each column should contain. It also lists any formatting requirements or other special instructions. In addition to the rules listed in the Instructions tab, follow these general rules for editing spreadsheets:

- Do not change the format of the spreadsheets.

- Do not change the name of the files.

- Do not add tabs or change the name of the **DATA** tab. The ETL process looks at the DATA tab for the input data.

- Do not remove the header row. In addition, if the spreadsheet has a dummy row under the header row, do not edit or delete the dummy record. This record tells the ETL process what data type to use when processing the column.

- Do not add or remove columns.

- After pasting data into a spreadsheet from other applications, check the spreadsheet for incorrect formatting changes such as reformatted dates. If necessary, select all rows in a column except the header row, then set the cells to the appropriate format for the column.

- For each spreadsheet, be aware of what columns to use for consolidating records across applications. To treat two records from different sources as identical in the data warehouse, make sure that the consolidation columns have identical data, including capitalization and format.

- While multiple source records may map to one consolidated record, one source record MAY NOT map to multiple consolidated records.

- To avoid errors during ETL processing, make sure all of the spreadsheets are closed before ETL runs.

- If the external source data changes, you must edit the affected spreadsheet to add or change the data.

The following entities use external source information that you provide in Microsoft Excel spreadsheets.

- Application

- Budget

- Cost Category

- IT Function

- Program

- Allocation metric (For use with FPA only)

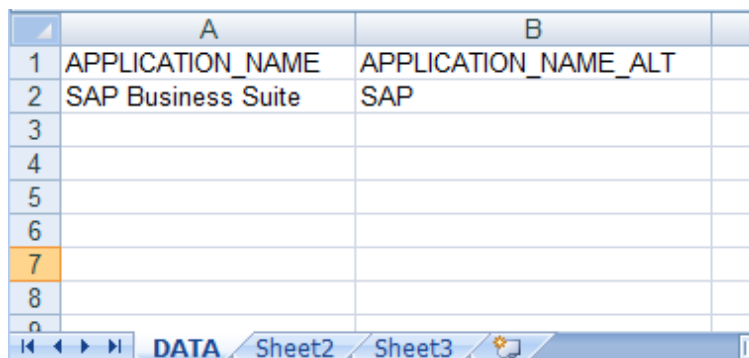This section includes the following topics:

Edit the Applications Spreadsheet

Applications are large scale software implementations that incur costs and generate dependencies. Applications can be a business service such as email which encompasses both hardware and software.

1. Open the APPLICATIONS.xls spreadsheet in the external sources folder that you defined. For example, C:\EXTERNAL.

2. Delete all of the rows that contain sample data. Do not delete the header row.

3. Place your applications data into the spreadsheet. Make sure that you follow the general rules for editing spreadsheets.

Example

You have an enterprise installation of SAP software. Maintenance of the application incurs costs and generates dependencies, and you want to add information about the application to the data warehouse. If you named the application *SAP Business Suite* and the alternate name was *SAP*, your spreadsheet would look like this:

	A	B	
1	APPLICATION_NAME	APPLICATION_NAME_ALT	
2	SAP Business Suite	SAP	
3			
4			
5			
6			
7			
8			

DATA Sheet2 Sheet3

Edit the Budget Spreadsheet

Budgets are high-level containers for planned costs. If you use Asset Manager as a data source, the amBudget table contains the budget data. If you use Project and Portfolio Management, the KCST_BUDGETS table contains the budget data. You can use the data from these tables to populate the budget spreadsheet or you can enter your own data.

1. Open the Budget.xls spreadsheet in the external sources folder that you defined. For example, C:\EXTERNAL.

2. Delete all of the rows that contain sample data. Do not delete the header row.

3. If you want to enter your own budget data and not data from AM or PPM, skip to step 6.

4. If you use AM, open the database client for your AM database and log in. Then run the following query to return the information that you need to populate the spreadsheet columns:

```
Select
lBudgId as SRC_PRIMARY_KEY,
'AM' as SRC_APP,
Name as SRC_BUDGET_NAME,
Name as TGT_BUDGET_NAME
from
itam.amBudget where lBudgId > 0
```

5. If you use PPM, open the database client for your PPM database and log in. Then run the following query to return the information that you need to populate the spreadsheet columns:

```
Select FINANCIAL_SUMMARY_ID as SRC_PRIMARY_KEY, 'PPM' as SRC_APP,
NAME as
SRC_BUDGET_NAME, NAME as TGT_BUDGET_NAME from PPM8.FM_FINANCIAL_
SUMMARY
WHERE
(PARENT_ENTITY_ID IN (526) AND ENTITY_TYPE IN ('FS'))
OR (PARENT_ENTITY_ID IN (526) AND ENTITY_TYPE IN ('SNAPSHOT' ) AND
PLAN_OF_RECORD_FLAG IN ('Y'))
```

6. Place your budget data into the spreadsheet. Make sure that you follow the general rules for editing spreadsheets.

7. Use the consolidation columns to consolidate data as needed. If you find multiple entries that refer to the same item, enter identical values in the consolidation columns for both entries to ensure proper mapping.

8. Save and close the spreadsheet.

Example

The queries return two records from AM and one record from PPM:

SRC_PRIMARY_KEY	SRC_APP	SRC_BUDGET_NAME
1001	AM	Sales 2010
1002	AM	R&D 2010
9999	PPM	Development 2010

After analysis, you decide that the R&D 2010 budget data from AM and the Development 2010 budget data from PPM are the same budget information. You can keep the unique source information for both, but by filling in identical values in the consolidation columns of the spreadsheet the data is not duplicated; it is used correctly. Your spreadsheet would look like this:

	A	B	C	D	E
1	SRC_PRIMARY_KEY	SRC_APP	SRC_BUDGET_NAME	TGT_BUDGET_NAME	BUDGET_NAME_ALT
2	1001	AM	Sales 2010	Sales 2010	
3	1002	AM	R&D 2010	Development 2010	R&D 2010
4	9999	PPM	Development 2010	Development 2010	R&D 2010
5					
6					
7					

DATA

Edit the Cost Category Spreadsheet

Cost Categories describe and sort planned and actual costs. If you use Asset Manager as a data source, the amCostCategory table contains the cost category data. If you use Project and Portfolio Management, the KNTA_LOOKUPS table contains the cost category data. You can use the data from these tables to populate the cost category spreadsheet or you can enter your own data.

1. Open the CostCategory.xls spreadsheet in the external sources folder that you defined. For example, C:\EXTERNAL.

2. Delete all of the rows that contain sample data. Do not delete the header row.

3. If you want to enter your own cost category data and not data from AM or PPM, skip to step 6.

4. If you use AM, open the database client for your AM database and log in. Then run the following query to return the information that you need to populate the spreadsheet columns:

```
Select lBudgCatId as SRC_PRIMARY_KEY, 'AM_BudgetCat' as SRC_APP,
Code as
SRC_COSTCATEGORY_NAME, Code as TGT_COSTCATEGORY_NAME , Name as
TGT_COSTCATEGORY_NAME_ALT
from
itam.amBudgetCategory where lBudgCatId > 0
UNION
Select lCostCatId as SRC_PRIMARY_KEY, 'AM_CostCat' as SRC_APP, Name
as
SRC_COSTCATEGORY_NAME, Name as TGT_COSTCATEGORY_NAME, Name as
TGT_COSTCATEGORY_NAME_ALT
from
itam.amCostCategory where lCostCatId > 0
```

5. If you use PPM, open the database client for your PPM database and log in. Then run the following query to return the information that you need to populate the spreadsheet columns:

```
Select LOOKUP_TYPE || '|' || LOOKUP_CODE as SRC_PRIMARY_KEY, 'PPM'
as
SRC_APP, MEANING as SRC_COSTCATEGORY_NAME, MEANING as
TGT_COSTCATEGORY_NAME from PPM75.KNTA_LOOKUPS where
LOOKUP_TYPE = 'BUDGET_LABOR_CATEGORY' or LOOKUP_TYPE =
'BUDGET_NON_LABOR_CATEGORY'
```

6. Place your cost category data into the spreadsheet. Make sure that you follow the general rules for editing spreadsheets.

7. Use the consolidation columns to consolidate data as needed. If you find multiple entries that refer to the same item, enter identical values in the consolidation columns for both entries to ensure proper mapping.

8. Save and close the spreadsheet.

Example

The queries return two records from AM and one record from PPM:

SRC_PRIMARY_KEY	SRC_APP	SRC_COSTCATEGORY_NAME
1001	AM_CostCat	Travel
1002	AM_BudgetCat	Travel
9999	PPM	Business Travel

Analysis shows that all three items refer to the same category. To preserve the unique source information for each, specify identical values in the consolidation columns. Your spreadsheet would look like this:

	A	B	C	D	E	F
1	SRC_PRIMARY_KEY	SRC_APP	SRC_COSTCATEGORY_NAME	TGT_COSTCATEGORY_NAME	COSTCATEGORY_NAME_ALT	ACCOUNTING_CODE
2	DUMMY	DO NOT REMOVE	NEEDS FOR FOMATTING	WILL BE IGNORED BY ETL	TESTING	
3	1001	AM_CostCat	Travel	Travel	Business Travel	
4	1002	AM_BudgetCat	Travel	Travel	Business Travel	
5	9999	PPM	Business Travel	Travel	Business Travel	
6						
7						
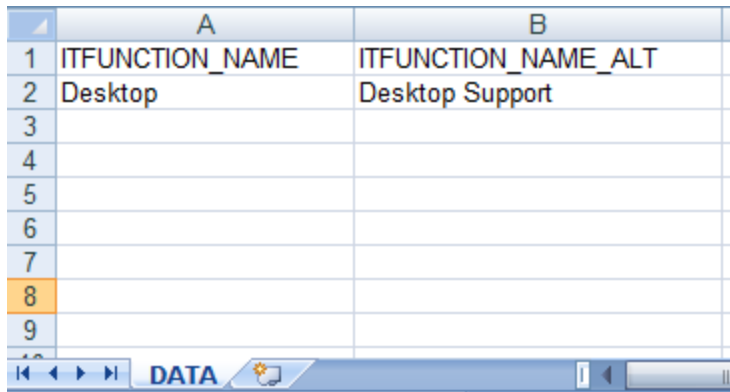
Edit the IT Functions Spreadsheet

IT functional domains are high-level divisions of your IT operations that may be different from traditional divisions, such as departments or locations. For example, your Hardware group might have both Desktop and Server support.

1. Open the ITFUNCTIONS.xls spreadsheet in the external sources folder that you defined. For example, C:\EXTERNAL.

2. Delete all of the rows that contain sample data. Do not delete the header row.

3. Place your IT function data into the spreadsheet. Make sure that you follow the general rules for editing spreadsheets.

4. Save and close the spreadsheet.

Example

You have a Desktop Support IT function that incurs costs and generates dependencies. If you want to add Desktop Support as an IT function in the data warehouse, your spreadsheet might look like this:

	A	B
1	ITFUNCTION_NAME	ITFUNCTION_NAME_ALT
2	Desktop	Desktop Support
3		
4		
5		
6		
7		
8		
9		

DATA

Populate the Alternate Source Spreadsheets

Edit the alternate source spreadsheets in the external sources folder that you defined. For example, C:\EXTERNAL. For information about how to use the alternate source spreadsheets, view the **Instructions** tab in each spreadsheet. The Instructions tab includes an example of the type of information you might enter and lists the columns in the spreadsheet with a description of the data that each column should contain. It also lists any formatting requirements or other special instructions. In addition to the rules listed in the Instructions tab, follow these general rules for editing spreadsheets:

- Do not change the format of the spreadsheets.

- Do not change the name of the files.

- Do not add tabs or change the name of the **DATA** tab. The ETL process looks at the DATA tab for the input data.

- Do not remove the header row. In addition, if the spreadsheet has a dummy row under the header row, do not edit or delete the dummy record. This record tells the ETL process what data type to use when processing the column.

- Do not add or remove columns.

- After pasting data into a spreadsheet from other applications, check the spreadsheet for incorrect formatting changes such as reformatted dates. If necessary, select all rows in a column except the header row, then set the cells to the appropriate format for the column.

- For each spreadsheet, be aware of what columns to use for consolidating records across applications. To treat two records from different sources as identical in the data warehouse, make sure that the consolidation columns have identical data, including capitalization and format.

- While multiple source records may map to one consolidated record, one source record MAY NOT map to multiple consolidated records.

- To avoid errors during ETL processing, make sure all of the spreadsheets are closed before ETL runs.

- If the external source data changes, you must edit the affected spreadsheet to add or change the data.

You can provide alternate source data for the following entities:

- Actual Cost

- Configuration Item

- Change

- Employment

- Exchange

- Incident

- Interaction

- Location

- Model

- Organization

- Person

- Planned Cost

- Project

- Project Objective

- Project Task

- Revenue

- Service

- Service Status

- SLA

- SLA Outage

- SLA Status

- Software Count

- Survey

- Survey Score

- Time to Market

Edit the Programs Spreadsheet

Programs are large collections of resources, projects, and other corporate initiatives. For example, cost cutting might involve licenses, hardware, and contracts.

1. Open the PROGRAMS.xls spreadsheet in the external sources folder that you defined. For example, C:\EXTERNAL.

2. Delete all of the rows that contain sample data. Do not delete the header row.

3. Place your program data into the spreadsheet. Make sure that you follow the general rules for editing spreadsheets.

4. Save and close the spreadsheet.

Example

You have an energy conservation corporate initiative that incurs costs and generates dependencies. If you want to add energy conservation as a program in the data warehouse, your spreadsheet might look like this:

	A	B	
1	PROGRAM_NAME	PROGRAM_NAME_ALT	
2	ENERGYCONS	ENG	
3			
4			
5			
6			
7			
8			
9			

DATA

Edit the Allocation Metric Spreadsheet (FPA Only)

If you use Financial Planning and Analysis (FPA) you can edit the allocation metric spreadsheet.

With metric-based allocation, costs are allocated based on values that change from period to period. For example, an organization's headcount or the number of service tickets a person logs.

The table below contains descriptions of each of the columns in the allocation metric spreadsheet.

Column	Required?	Description	Data validation rules
METRIC_ NAME	Yes	Name of a metric related to the dimension.	Must not be NULL or BLANK.
METRIC_ DESCRIPTION	No	Descriptive name of the metric.	N/A
DIMENSION_ NAME	Yes	Dimension table name without the _DIM extension.	Must be a valid dimension table in the target database.
PERIOD_ DATE_START	Yes	Date the time period begins. The format is Month/Day/Year.	Must match to a valid period in the dwt.PERIOD_DIM table. May not be greater than PERIOD_DATE_END.
PERIOD_ DATE_END	Yes	Date the time period ends. The format is Month/Day/Year.	Must match to a valid period in the dwt.PERIOD_DIM table.
DIMENSION_ VALUE	Yes	Value that matches an attribute of a dimension name or alternative dimension name.	Must be a valid record within the specified DIMENSION_ NAME table.
METRIC_ AMOUNT	Yes	Numeric value relating to the criteria.	Must be greater than zero.

AM and PPM do not include allocation metric data. You must create the data. You do not need to add rows when the METRIC_AMOUNT is 0. For example, if you have 10 organizations and only 3 of them had service requests in a given period, then you only need 3 rows for that dimension/metric/period combination.

To edit the allocation metric spreadsheet

1. Open the AllocationMetric.xls spreadsheet in the external sources folder that you defined. For example, C:\EXTERNAL.

2. Delete all rows that contain sample data except the header row and row 2, a dummy record that provides a workaround for a BusinessObjects Data Services defect.

3. Place your allocation metric data into the spreadsheet. Make sure that you adhere to the data validation rules listed in the table above. Also make sure that you follow the general rules for editing spreadsheets.

4. Save and close the spreadsheet.

Example

In this example, row 3 indicates that the organization represented by ORG_DIM R&D had a head count of 20 in January 2010. Note that you can have multiple records for the same time period and metric name that contain different dimension values and metric amounts.

	A	B	C	D	E	F	G
1	METRIC_NAME	METRIC_DESCRIPTION	DIMENSION_NAME	PERIOD_DATE_START	PERIOD_DATE_END	DIMENSION_VALUE	METRIC_AMOUNT
2	DUMMY - DO NOT	Dummy row	PERSON	10/1/2009	10/31/2009	JSMITH	1
3	HeadCount	Metric for headcount	ORG	1/1/2010	1/31/2010	R&D	20
4	HeadCount	Metric for headcount	ORG	1/1/2010	1/31/2010	Accounting	150
5	ServiceReqs	Metric for services	ORG	2/1/2010	2/29/2010	R&D	5
6	ServiceReqs	Metric for services	ORG	2/1/2010	2/29/2010	Accounting	8
7							
8							
9							

DATA

Customize the Data to Match the XREF Views - Optional

If you want to consolidate Budgetline and Expense Line data from HP Asset Manager (AM) and HP Project and Portfolio Management (PPM), you must customize the structure of the data in your AM database to make sure that it is consistent for cross-referencing.

This section includes the following topics:

Customize your Budgetline data in AM to Match the Cross-Reference Views

In Asset Manager, Budgetline information is in two columns:

- amBudget.Name

- amBudgetCategory.Name

In Project and Portfolio Management, Budgetline information is in three columns:

- FM_FINANCIAL_SUMMARY. NAME

- FM_FORECAST_ACTUAL_LINES.EXPENSE_TYPE_CODE

- FM_FORECAST_ACTUAL_LINES.CATEGORY_CODE.

Because the structure of Budgetline data differs in the two source systems, you must modify the structure of the Budgetline data in Asset Manager to consolidate it with Budgetline data in Project and Portfolio Management. The Budget Category Names in Asset Manager must include the following information:

- Capex/Opex indicator (CAPITAL or OPERATING)

- Category Code

For example, CAPITAL CONTRACTOR or OPERATING EMPLOYEE.

Modify the structure of the Budgetline data in AM to consolidate it with PPM:

1. Open the database client for your AM database and log in.

2. From the Asset Manager client, click **Budgets**.

3. Select a budget that you want to consolidate. This example uses Windows XP.
   Note: Make sure that the name in AM matches the budget name that you want to consolidate in PPM.

4. Click the **Lines** tab.

5. Select **Windows XP-2009 Corporate services/M1**.
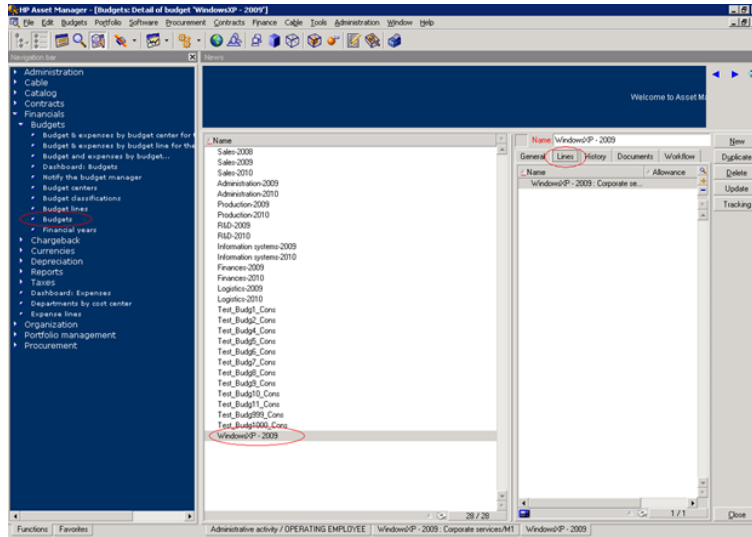
6. Make sure that the Budget Category name has the Capex/Opex indicator and Category Code. In this example, the Capex/Opex indicator is Capital and the Cateory Code is Employee.
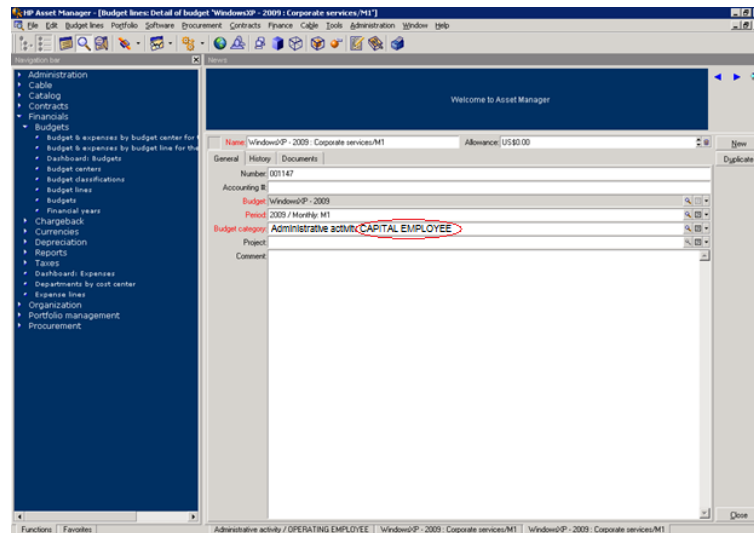
Create Budgetline data in AM that can be consolidated with PPM:

1. Open the database client for your AM database and log in.

2. From the Asset Manager client, make sure that MONTHLY periods are available.

   a. Click **Finance > Financial Years >** *<financial year desired>*

   b. Click **New** to create the monthly division for the year.

3. Click **Finance > Cost Types**, and create a Cost Type that needs to be consolidated. For example, in amCostCategory create CAPITAL EMPLOYEE.

4. Create a Budget Classification.
   a. Click **Finance > Budget Classifications**.

   b. From Budget Categories for Testing Budget Classification, add **CAPITAL EMPLOYEE**.

   c. From the Cost Types tab **CAPITAL EMPLOYEE**, add a link to Cost Type created in step 2.

For example, in amCostCategory create Consolidation Testing Budget Classification:

5. Click **Finance > Budget Centers** and create a Budget Center to store all the budgets for testing.
For example, Test_BudgCtrl_Cons

6. Create a Budget.

   a. When the Budget Center is created, click **Budget** to start the wizard.

   b. From the wizard, select **Create the budget directly**.

   c. Complete these fields:
   - **Name:** <name>

   - **Budget Classification:** use the classification you created in step 3.

   - **Time division**: Monthly.

Customize your Expense Line Data in AM to Match the Cross-Reference Views

The Expense Line data to be consolidated in Asset Manager with Expense Line data in Project and Portfolio Management cannot merge until you add information to the Expense Line records from Asset Manager.

In Asset Manager, Expense Line information is in two columns:

- amExpenseLine.Title

- amExpenseLine.dBilling

In Project and Portfolio Management, Expense Line information is in five columns:

- KCRT_FG_PFM_PROJECT.PRJ_PROJECT_ID or KCRT_FG_PFM_ASSET.REQUEST_ID

- FM_FORECAST_ACTUAL_LINES.CATEGORY_CODE

- FM_FORECAST_ACTUAL_LINES.EXPENSE_TYPE_CODE

- FM_FORECAST_ACTUAL_LINES.LABOR_TYPE_CODE

- FM_FINANCIAL_LINE_CELLS.PERIOD_ID (PPM_FISCAL_PERIODS.START_DATE)

Because the structure of Expense Line data differs in the two source systems, you must modify the structure of the Expense Line data in Asset Manager to consolidate it with Expense Line data in Project and Portfolio Management. The Title for Expense Line records in Asset Manager must include the following:

- Project or Asset ID for the expense

- Category Code

- Capex/Opex indicator (- CAPEX or - OPEX)

- Labor/non-labor indicator (LABOR or NON-LABOR)

For example:
30514 Software - CAPEX NON-LABOR or 30514 Employee - OPEX LABOR.

Modify the structure of the Expense Line data in AM to consolidate it with PPM :

1. Open the database client for your AM database and log in.

2. From the Asset Manager client, click **Finance > Expense lines**.

3. Click an existing expense to be consolidated.

4. Change the **Title** field to match the PPM consolidated expense. For example, 30514 Employee - OPEX LABOR.

5. Change the **Expense date** field to match the PPM consolidated expense. For example, 1/31/2009.

6. Click **Modify**.

Create new Expense Line data in AM that can be consolidated with PPM:

1. Open the database client for your AM database and log in.

2. From the Asset Manager client, click **Finance > Expense lines**.

3. Click **New**.

4. In the **Title** field, enter the ID, Category Code, Capex/Opex indicator, and Labor/non-labor indicator. The records must match those in PPM. For example, 30514 Employee - OPEX LABOR.

5. In the **Expense date** field, enter the date. It must match the PPM date. For example, 1/31/2009.

6. Enter the expense amounts for these required fields:
   - **Credit**
   - **Debit**

7. Click **Create**.

Run Initial Sync or Run ETLs

To run the initial synchronization (or ETLs), proceed as explained in the following sections.

This section includes the following topics:

How to Run the ETLs

This section describes how to run the ETLs

1. **Run the ETLs**

   You run ETLs using the two batch commands:

   - **dw_abc_load_batch.** For creating new ETL work-list for loading new data from sources. For details, see .
   - **dw_abc_run_steps.** For working on the open ETL work-items one by one until completion. For details, see .

   You can then check that the ETL is running as expected using the abc reports. For details, see .

Schedule ETL Run

Follow these steps to load the ETL batch files and schedule a task to run ETL using the GlassFish embedded scheduler. Every time ETL runs, it brings in data from the data sources.

You can schedule ETL to run automatically, or manually run ETL.

To avoid manually loading batch jobs or running job streams, register the utilities to run at regular intervals. You can specify a recurrent interval of time for **dw_abc_run_steps** and both a recurrent interval and a start time for **dw_abc_load_batch**. It is recommended that you register batch jobs to run automatically no more than two times a day and register job steps to run every few minutes. Do not attempt to schedule one instance of the same batch job to run concurrently with another instance of the same batch job. It is recommended that you schedule the Upstream job to run daily and the AllocationMetric job to run weekly (for FPA only).

To create a scheduled task:

1. Open a command line window.

2. Switch to this directory:
   <DWH_installation_directory>\bin

3. Run this command:
    dw_abc_run_steps -register -every nn -streamId Upstream
    meaning a task to start **dw_abc_run_steps.bat** every **nn** minutes.
    Examples

    - To start a specific batch job (Upstream) at 10:30PM, run this command to create the scheduled task:
      dw_abc_load_batch -streamId Upstream -starttime 22:30. This enables an entire ETL run eligible for execution. It is recommended to run "load_batch" once or twice per day.

    - To register a batch job of steps that runs every five minutes:
      This executes the next eligible steps in the loaded ETL runs. Run this command to create the scheduled task:
      dw_abc_run_steps -register -every 5

    - To schedule the allocation metric job to run once every week (for FPA only):
      dw_abc_load_batch -streamId Upstream -register -every 10080

To schedule a job to run at a specific day and time:

You can use the AT command from the Windows command line. For example, to run the allocation metric job every Monday at 8:00PM, use this command (for FPA only):
at 20:00 /every:M "dw_abc_load_batch -streamId allocationmetric"

For details, see "dw_abc_load_batch " (on page 114) or "dw_abc_run_steps " (on page 118) .

Upstream.xml

The out-of-box upstream.xml files contain all the steps, in the proper sequence, to run a full ETL job.

Each Content Pack has its own **Upstream.XML**. This XML is connected to the complete existing stream upon Activation of the ContentPack. For details, see "Learn About Data Source Management" (on page 25).

So every Upstream.xml is partial and specific for that Content Pack only. The format and meaning still stays the same.

Should reference here to the DS-Mng for more info.

To view the upstream.xml:

1. Navigate to this directory:
    <XS_installation_directory>\agora\ContentPacks\<Content Pack>\ABC

2. Open these files with a text editor to learn more about the out-of-box sequencing for ETL job steps. You can trace the execution of the ETL process. These files also provide the step IDs that you need if you run job steps separately.

Note: Do not attempt to customize this file. It is the complete template for extracting data from remote sources and storing that data in the data warehouse. HP recommends that you contact HP Services for assistance if you wish to introduce customizing.

Check the Status of the ETL Job Steps

After running initial sync, and after subsequent ETL runs, use the Data Warehouse Administration Operational reports to check the job stream status and make sure there were no job step warnings or errors during batch processing.

To check the status of the ETL job steps

1. Open the operations reports. For details, see "ABC - Operational Status Report" (on page 93).

2. Check the Status column for any **WARNING** or **ERROR** entries.
   - If the Status column contains **WARNING** for a job, view the Recovery Recommended Action column for instructions about what to change.
      ○ If the Recovery Recommended Action column contains, **Check WARNING metrics**, view the appropriate Audit Report for details. For more information, see "Audit Reports" (on page 88).

      ○ If the Recovery Recommended Action column is empty, log in to the SAP BusinessObjects Data Services Management Console, click **Status**, select the repository, and then select the error to view details.

   - If the Status column contains **ERROR** for a job, view the Recovery Recommended Action column for instructions about what to change.
      ○ If the Recovery Recommended Action column is empty, **NULL**, or **NOT NULL**, log in to the SAP BusinessObjects Data Services Management Console and view the status information for the error.

   - If you see a warning in the **xref_gen ETL** step, view the **dw_xref.log** file for details. For more information, see "XREF_GENERATOR Errors".

For details about the Data Warehouse Administration Reports, see "Data Warehouse Operational Reports ".

Audit, Balance, and Control

Audit, Balance, and Control (ABC) is a set of functions based on data warehousing best practices. Although SAP BusinessObjects Data Services for IT Executive Scorecard or SAP BusinessObjects Data Services for HP FPA manages the ETL workflow, ABC ensures work flow integrity. It controls the overall ETL execution, provides error handling, and collects job progress statistics. Other ABC features are:

- Multiple job stream management

- Command line administration tools

- Generated ABC operational system reports

- Generated ABC historical system reports

This section includes the following topics:

"Audit" (on page 84)

"Balance" (on page 84)

"Control" (on page 85)

"Out of Box Files" (on page 87)

"ABC Command Reference" (on page 87)

"ABC Operational Reports " (on page 88)

"Advanced Utilities" (on page 100)

Audit

ABC Audit collects metric information about the processed data that communicates success, warning, or error statuses. If the audit information shows data loss or inconsistency, an error or warning status tells you that the results of the job are invalid.

When an error occurs, the ABC Audit function locks the subsequent steps in the batch job to prevent possible data corruption and further invalid data processing.

The data warehouse generates audit reports that summarize the number of entities that were extracted from the source systems, processed during ETL and then updated in the data warehouse. You can use these reports to verify that ETL processing works correctly or determine where to make adjustments that improve the work flow.

For details, see "Audit Reports" (on page 88).

Balance

The ABC Balance component enables the administrator to verify that data is synchronized between the source systems and data warehouse. ABC Balance can obtain external reference data to

validate the contents of the data warehouse against other information stores, or enterprise record systems.

Control

The ABC Control feature consists of a data model that describes ETL job stream design, and run-time executables that monitor the sequencing of each ETL step according to the overall ETL design.

ETL workflow is a complex operation that requires precision in the execution order and specific synchronization points. ABC Control adds value to the ETL process by validating the execution status of each step before launching the next step.

ABC Control also leverages audit information to ensure that the data warehouse content is not corrupted by ETL processes.

This section includes the following topics:

"ETL Overview" (on page 85)

"ABC Utilities" (on page 86)

"Scheduling" (on page 86)

ETL Overview

The graphic shows the phases of a typical job stream that runs using SAP BusinessObjects Data Services for IT Executive Scorecard or SAP BusinessObjects Data Services for HP FPA through a SAP BusinessObjects Data Services for IT Executive Scorecard or SAP BusinessObjects Data Services for HP FPA web service.
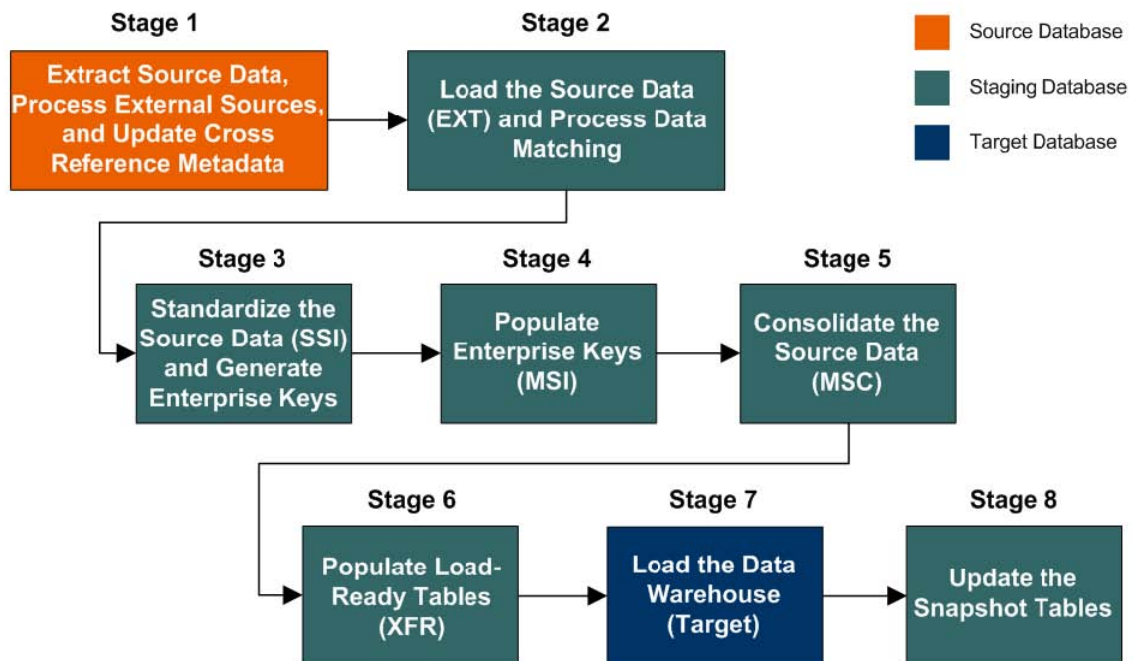
The job stream is a workflow of individual job stream (execution) steps and a description of related dependencies. A job stream can have one or more start steps, one or more end steps, and contain parallel execution branches. Each job stream has an identifier used to reference the job stream.

The job stream step invokes a command line utility or executes a SAP BusinessObjects Data Services for IT Executive Scorecard or SAP BusinessObjects Data Services for HP FPA job. Each job stream contains job stream steps that also have unique identifiers.

Upon activation of a data source Content Pack, ABC:

- Creates the execution ready batch.

- Compiles a list of parallel and sequential execution job steps that are ready to run.

- Launches each job step that is ready for execution.

- Monitors job step dependencies by verifying the successful execution of each step before a dependent step begins.

- Stops any running step that exceeds its maximum execution time and sets its status to Max_ Execution_Time_Exceeded.

- Finds all steps that block the stream execution and reports them.

- Retries any step that terminates with an error but has not exceeded the maximum number of retries.

ABC Utilities

Although SAP BusinessObjects Data Services for IT Executive Scorecard or SAP BusinessObjects Data Services for HP FPA runs the jobs that extract, transform, and load data, ABC manages the actual launch, execution, and sequencing of the steps in these jobs. If you run jobs using SAP BusinessObjects Data Services for IT Executive Scorecard or SAP BusinessObjects Data Services for HP FPA only, there can be conflicts, sequence errors, and data corruption, and run-time statistics can be lost.

The data warehouse provides the out-of-box file (upstream.xml) that contains the required job steps. The primary ABC tasks are to launch ETL batch jobs at regularly scheduled intervals and ensure that the individual job steps run as soon as they are ready. In addition, the ABC Audit and Control reports enable you to view information pertaining to the utilities.

The following ABC utilities govern this process:

- "dw_abc_batch_control " (on page 116)

- "dw_abc_load_batch " (on page 114)

- "dw_abc_run_steps " (on page 118)

- "dw_abc_retry_step " (on page 125)

Scheduling

Although you can load batch job streams and run job steps manually, you should automate the scheduling process on a production system. The ABC engine should run every few minutes, depending on how long ETL job steps take to complete.

Schedule a complete ETL batch job to extract new or updated data from external data sources:

1. Run once or twice a day, the **dw_abc_load_batch** ABC utility.

2. Run manually or automatically using a scheduled task, the **dw_abc_run_steps** ABC utility. The utility should run the job steps within the ETL batch job that are ready.

   Both **dw_abc_run_steps** and **dw_abc_load_batch** have syntax options that enable you to register a recurring job as a scheduled task. For details, see .

Out of Box Files

The data warehouse provides all the tools, workflows, and related supporting files to run an end-to-end ETL process for each supported data source.

ABC Command Reference

This section describes all of the out-of-box ABC command files that are available to administer the ABC functions. The table in the Command Summary section lists the out-of-box files that you can use to accomplish ABC tasks.

Syntax Conventions

Command options in square brackets ([ ]) are optional.

Italicized lowercase expressions are variable values.

If a command option argument is a text string that contains blank spaces, you must enclose it in quotation marks. Otherwise, the text before the blank space is considered the entire argument and the remaining text becomes an undefined option.

Command Summary

The following command script files are available in this directory:
<agora_home_directory>\DataWarehouse\bin

Name	Purpose	Primary User
"dw_abc_batch_control " (on page 116)	Start and stop batch job streams.	Administrator
"dw_abc_load_batch " (on page 114)	Load a batch job stream or register it as a scheduled task.	Administrator
"dw_abc_run_steps " (on page 118)	Run job stream steps (the ABC engine) or register it as a scheduled task.	Administrator
"dw_abc_retry_step " (on page 125)	Restart a job stream step.	Administrator
"dw_abc_job_launcher " (on page 101)	Start or stop job steps within a job stream.	Administrator or ETL developer
"dw_abc_set_status " (on page 101)	Capture the status of job stream steps that are implemented as batch scripts.	Administrator or ETL developer

ABC Operational Reports

ABC operational reports report different aspects of ABC governance of ETL job streams. The objectives of these reports are to display:

- ETL stream definitions, such as catalogs, stream, and stream step information.

- Operational information about ETL batch jobs and processes.

Operational reports include:

- "Audit Reports" (on page 88)

- "Control Reports"

Audit Reports

ABC Audit reports display ETL audit measure and metric information. You can define the length of time included in the audit history by specifying the number of days in the **Batch run history** field. The typical user is the data warehouse administrator or an HP Support engineer. Run the reports after multiple ETL runs produce historical results.

The following Audit reports are available:

"ABC Reports - Consolidation Tables Activity " (on page 88)

"ABC Reports - Source Extraction Tables Activity " (on page 89)

"ABC Reports - Dimension Tables Activity " (on page 91)

ABC Reports - Consolidation Tables Activity

The Job Streams Consolidations Activity report displays volume information ETL consolidation.

To access	In the SAP BusinessObjects InfoView, select **Public Folders** > **DW EN Operations** > **Audit Reports** > **ABC - Consolidation Tables Activity**.
Important information	In the Prompts dialog box, select or enter the number of days of history to appear in the report in the **Batch run history** field. The default value is **1** day. Click **Run Query**.
Relevant Topics	UI: BO Report Component (Display) UI: Web Report Viewer - Configure Component Dialog Box

Report Parameters

UI Element	Description
Measure / Batch per Measure Name tab	Displays a bar chart view of the number of input rows and output rows for each affected consolidation table by batch ID and start time over the specified duration.

UI Element	Description
Measure / Measure Name per Entity tab .	Measures job stream activity for the amount of days selected.

You can navigate between the tabs and select a view of the data by entity if you click the drop-down list box at the top of the report and select **All values**, or a single entity.

ABC Reports - Source Extraction Tables Activity

This report shows the ETL activity on the source data tables.

To access	In the SAP BusinessObjects InfoView, select **Public Folders** > **DW EN Operations** > **Audit Reports** > **ABC - Source Extraction Tables Activity**.
Important information	In the Prompts dialog box, select or enter the number of days of history to appear in the report in the **Batch run history** field. The default value is **2** days. Click **Run Query**.
Relevant Topics	**Note:** If you are using the HP Executive Scorecard see the following references for details: UI: BO Report Component (Display) UI: Web Report Viewer - Configure Component Dialog Box

Report Parameters

UI Element	Description
Measure / Batch per Measure Name tab	Displays a bar chart view of the measures processed from

UI Element	Description
	source tables over the specified duration.
Measure / Batch per Source Table tab	Displays a bar chart view of the number of data rows in source tables processed over the specified duration.
Measure / Measure Name per Source Product tab	Displays a bar chart view of the extraction activity by source over the specified duration.
Measure / Measure Name per Source Table tab	Displays a bar chart view of the extraction activity by source over the specified duration.

UI Element	Description
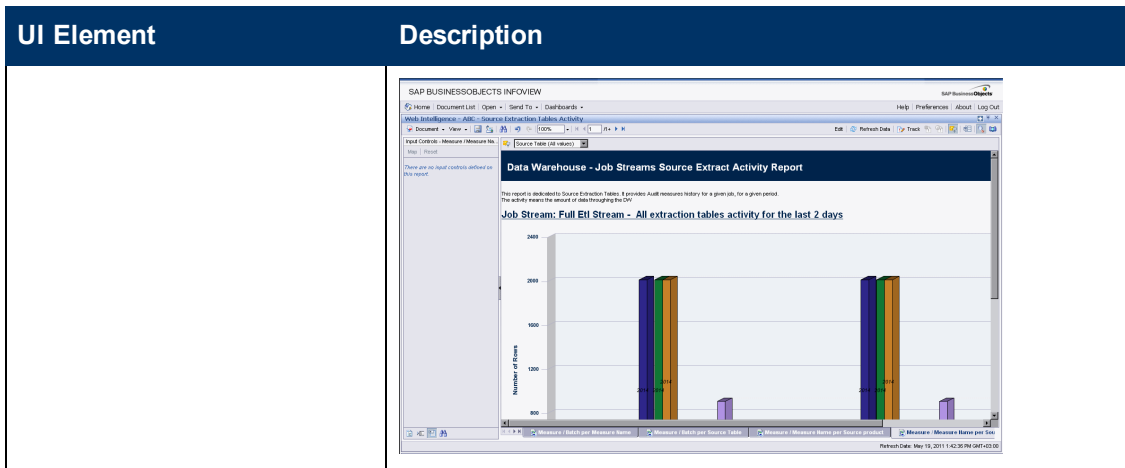
You can navigate between the tabs and select a view of the data by the number of sources. Click the drop-down list box at the top of the report and select **All values**, or a specific number of sources.

ABC Reports - Dimension Tables Activity

This report measures the volume of data processed by the data warehouse.

To access	In the SAP BusinessObjects InfoView, select **Public Folders** > **DW EN Operations** > **Audit Reports** > **ABC - Dimension Tables Activity**.
Important information	In the Prompts dialog box, select or enter the number of days of history to appear in the report in the **Batch run history** field. The default value is **2** days. Click **Run Query**.
Relevant Topics	**Note:** If you are using the HP Executive Scorecard see the following references for details: UI: BO Report Component (Display) UI: Web Report Viewer - Configure Component Dialog Box

Report Parameters

UI Element	Description
Measure / Batch per Measure Name tab	Displays a bar chart view of the number of rows processed for each dimension table by batch ID and start time over the specified duration.

UI Element	Description
Measure / Measure Name per Entity tab	Displays a bar chart view of the number of rows processed by entity over the specified duration.

You can navigate between the tabs and select a view of the data by the number of sources or the entity. Click the drop-down list box at the top of the report and select **All values**, or a specific entity.

Control Reports

Control reports describe historic or operational aspects of the data warehouse. Historic reports contain status information gathered over time for the purpose of analysis and performance improvements. Operational reports contain snapshot information about current jobs and other data warehouse activity. You can edit, save, or export the following ABC Control reports.

Note: If the ABC database runs on a different system than SAP Business Objects Data Services, and these two systems run in different timezones, you may see a discrepancy in the Duration column on the Control reports. For example, if you check a Control report while a step is processing, the report might show that the step has been processing for several hours even though the step has actually been running for only minutes. Once the step terminates, however, the duration becomes accurate.

The following Control reports are available:

ABC - Operational Status Report

The ABC Operational Status report displays the runtime information about the out-of-box Upstream.xml file, which contains all the job stream steps for a complete ETL run.

To access	In the DWH Status page, click the **Select page** arrow and select **DWH Status Page** > **ABC-Op. Status**.
Important information	This is one of three reports displayed in the DWH main page
Relevant Topics	**Note:** If you are using the HP Executive Scorecardsee the following references for details: UI: BO Report Component (Display) UI: Web Report Viewer - Configure Component Dialog Box

Job Stream Status Tab

Displays the performance of ABC job streams and process, as follows:
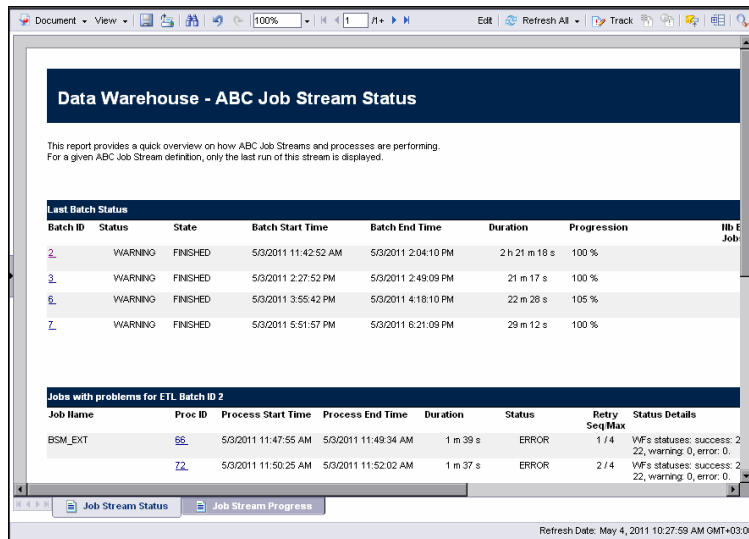
UI Element	Description
Last Batch Status	The status details of the last batch run.
Batch ID .	Click the **Batch ID** value in the first column. A dialog box opens, enabling you to access the ABC Batch Control report. For details, see"ABC - Batch Details Report" (on page 99) .
Jobs With Problems for ETL Batch ID	The job details for each specific batch listed in the **Batch ID** column.

Job Stream Progress Tab

Displays the runtime status of each job stream step , as follows:

UI Element	Description
<Job Name> (<Process Duration s >)	The job name and the length of the job in seconds. Click any ETL job name to display the ETL Job Process Audit report, which shows all audit measures and metrics associated with that Process ID. For details, see "ABC - Job Details Report" (on page 98).
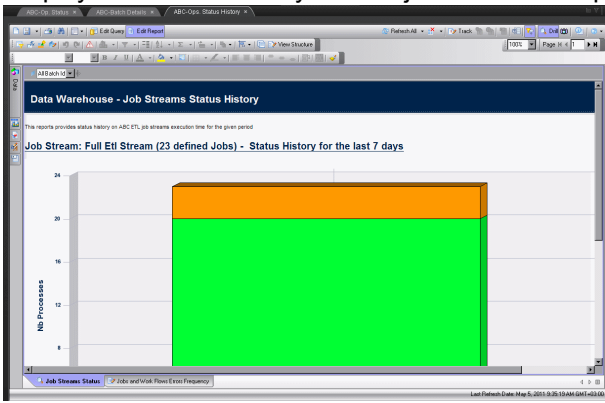
ABC - Operational Status History Report
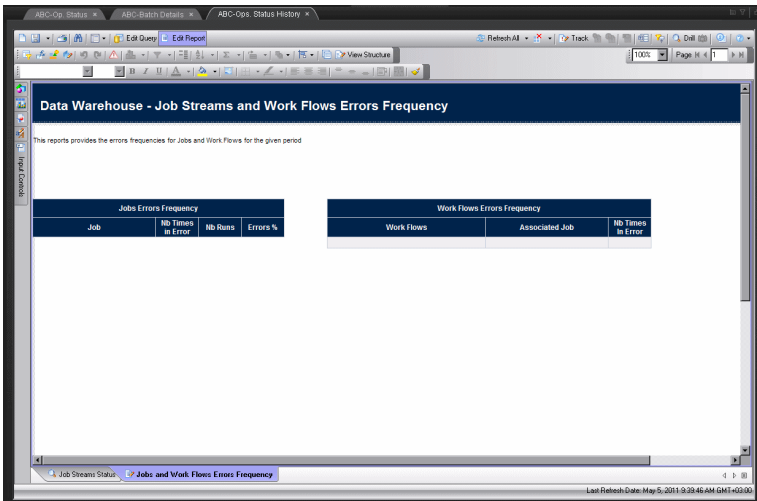
This report displays a batch run history for ABC ETL job streams during a specified period. The report shows run-time duration, status, and error frequency.

To access	In the DWH Status page, click the **Select page** arrow and select **DWH Status Page**>**ABC-Ops. Status History**. In the Prompts dialog box, enter the number of days for the batch history. Click **Run Query**.
Important information	This is one of three reports displayed in the DWH main page. **Status Values:**

- **Success (Green):** The number of jobs with no error condition or inconsistency detected.

- **Warning (Orange):** The number of jobs where a minor error condition exists, although there are no data inconsistencies or corruption detected, and, there is no loss of data.

- **Error (Red):** The number of jobs with a critical error status.

- **Max Time Exceeded (Pink):** Number of jobs that exceed max execution time.

- **Remaining:** Number of jobs that are waiting to be started.

Relevant Topics	**Note:** If you are using the HP Executive Scorecardsee the following references for details: UI: BO Report Component (Display) UI: Web Report Viewer - Configure Component Dialog Box

Report Parameters

UI Element	Description
Job Stream Status History tab	Displays the status history of ABC job streams and process.
Job and Work flows Errors Frequency tab	Displays the job and workflow errors frequency, (in descending order). The reports lists only jobs and workflows that produce error conditions.

UI Element	Description
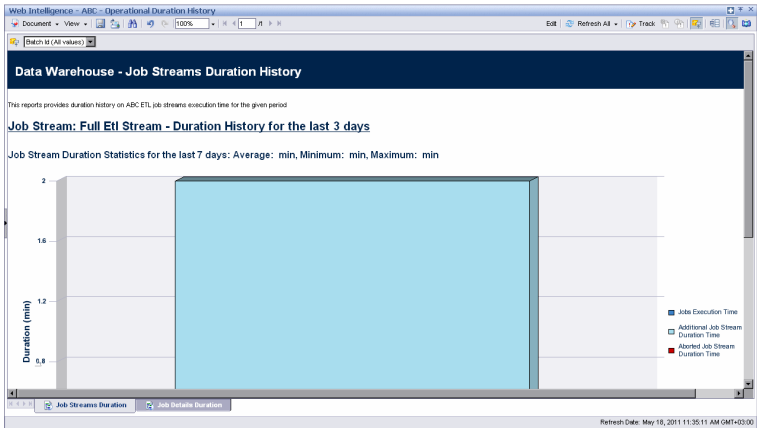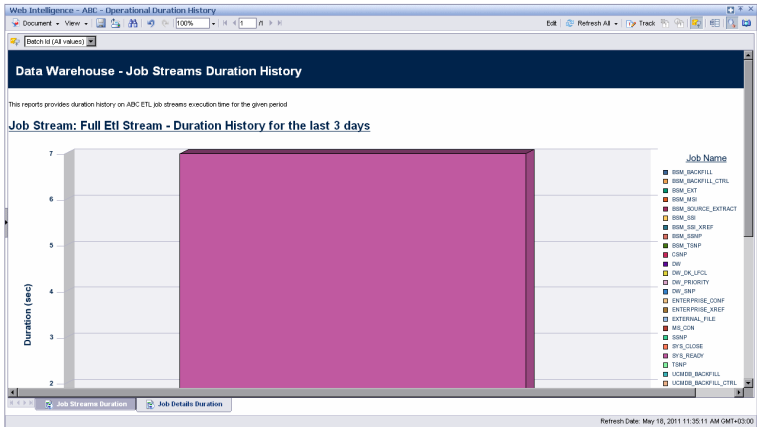
ABC - Operational Duration History Report

This report describes the duration history of job stream batches during a specified period.

To access	In the SAP BusinessObjects InfoView, select **Public Folders** > **DW EN Operations** > **Control Reports** > **ABC - Operational Duration History**.
Important information	In the Prompts dialog box, enter the relevant X and Y values in the following fields: **Batch run history for last X days (Enter X):** **Batch Statistics for last Y days (Enter Y):** Click **Run Query**.
Relevant Topics	**Note:** If you are using the HP Executive Scorecardsee the following references for details: UI: BO Report Component (Display) UI: Web Report Viewer - Configure Component Dialog Box

Report Parameters

UI Element	Description
Job Streams Duration tab	Displays historical job stream information. The aborted job streams are red.

UI Element	Description
Job Details Duration tab .	Displays the amount of time consumed by individual jobs within the job stream.
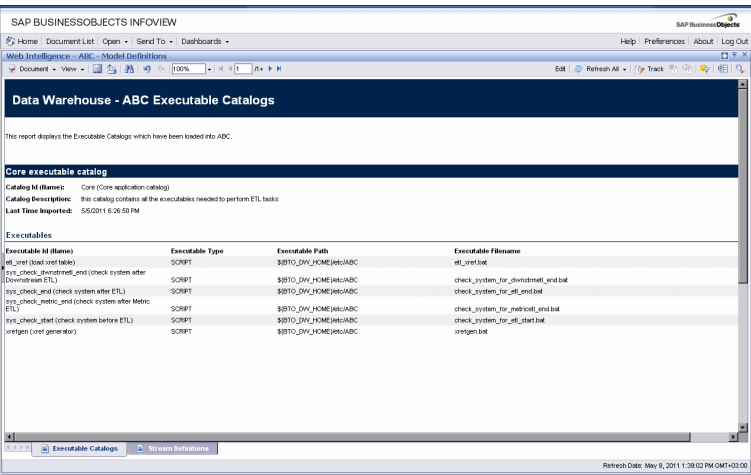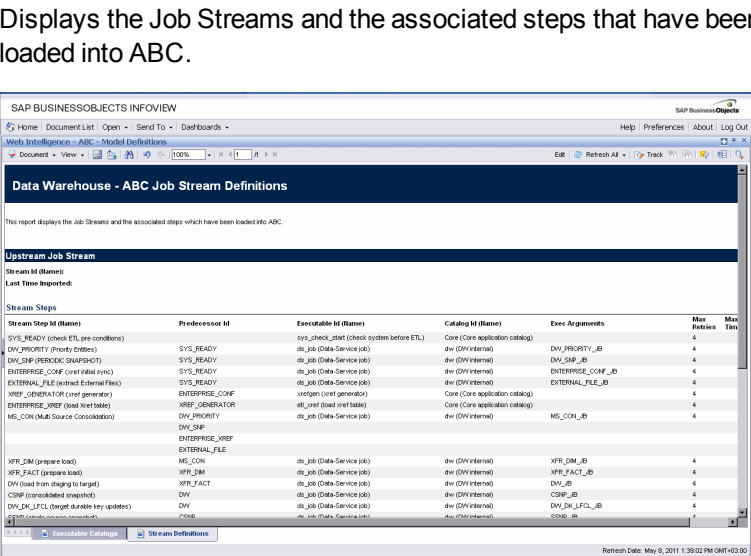
ABC - Model Definitions Report

The ABC Model Definitions report displays the executable catalogs to be processed by ABC.

To access	In the SAP BusinessObjects InfoView, select **Public Folders** > **DW EN Operations** > **Control Reports** > **ABC - Model Definitions**.
Relevant Topics	**Note:** If you are using the HP Executive Scorecardsee the following references for details: UI: BO Report Component (Display) UI: Web Report Viewer - Configure Component Dialog Box

Report Parameters

UI Element	Description
Executable Catalogs tab	Displays the executable catalogs that have been loaded into ABC.

UI Element	Description
Stream Definitions tab .	Displays the Job Streams and the associated steps that have been loaded into ABC.

ABC - Job Details Report

The ABC Job Details report displays operation information, such as the Stream Step ID and workflow information.

To access	In the SAP BusinessObjects InfoView, select **Public Folders** > **DW EN Operations** > **Control Reports** > **ABC - Job Details**.
Important information	In the Prompts dialog box, select one or more **Process Ids** from the left list box or enter a **Process Id** value and click 🔍 **Search**. Click the **Right arrow** to move it into the **Enter the Process ID** list. Click **Run Query**. You can also view this report by clicking the link in the "ABC - Batch Details Report" or the "ABC - Operational Status Report" (on page 93).

Relevant Topics	**Note:** If you are using the HP Executive Scorecardsee the following references for details: UI: BO Report Component (Display) UI: Web Report Viewer - Configure Component Dialog Box

Report Parameters

UI Element	Description
Control Details tab	Displays operational information related to job process IDs.
Audit Details tab .	Displays audit information related to specific jobs. For details, see "ABC - Batch Details Report" (on page 99).
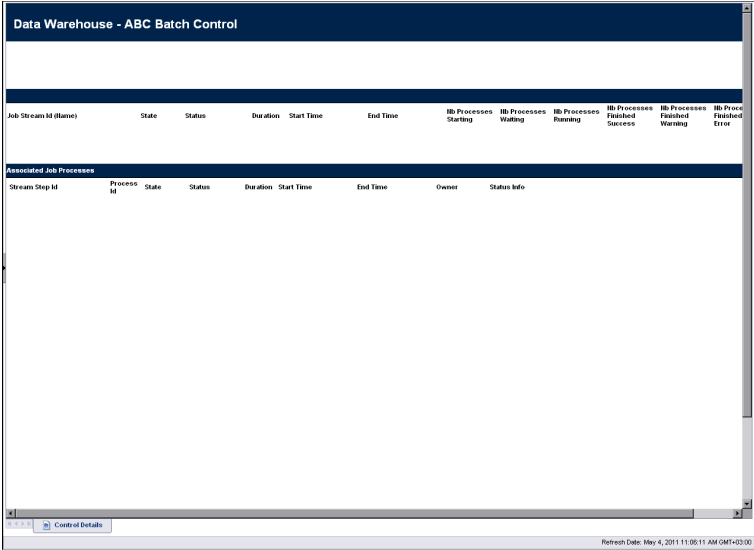
ABC - Batch Details Report

This report displays control information for a batch job. It reports the defined Upstream and allocationmetric (for FPA) job streams.

To access	In the DWH Status page, click the **Select page** arrow and select **DWH Status Page**>**ABC-Batch Details**.

Important information	In the Prompts dialog box, select one or more **Batch Ids** from the left list box or enter an **Batch Id** value and click 🔍 **Search**. Click the **Right arrow** to move it into the **Select Batch Id** list.
	Click **Run Query**.
	This is one of three reports displayed in the DWH main page
Relevant Topics	**Note:** If you are using the HP Executive Scorecardsee the following references for details:
	UI: BO Report Component (Display)
	UI: Web Report Viewer - Configure Component Dialog Box

Report Parameters

UI Element	Description
ABC Batch Control tab	Displays the various batch jobs.
Process ID	Click a value and the ABC Job Process Audit opens to display all audit measures and metrics associated with that Process ID.
	For details, see "ABC - Job Details Report" (on page 98).

Advanced Utilities

The Data Warehouse enables you to run advanced ABC utilities.

This section includes the following topics:

dw_abc_job_launcher

Use this script to start or stop specific SAP BusinessObjects Data Services for IT Executive Scorecard or SAP BusinessObjects Data Services for HP FPA jobs.

User

Administrator or ETL developer

Syntax

```
dw_abc_job_launcher -jobname <string>
                    [-stop]
                    [-help]
```

Options

Option	Required?	Description
-jobname *job_name*	Y	Name of the job that you want to run.
-stop *job_name*	N	Stop job execution.
-help	N	Display command syntax.

If you omit the -process option, you must set an environment variable %DW_PROCESS_ID% that contains the value of the process ID.

Example

- **dw_abc_job_launcher -jobname DW_JB**

- **dw_abc_job_launcher -stop -jobname DW_JB**

dw_abc_set_status

Use this script to set the status of job stream steps that are implemented as batch scripts.

User

Administrator or ETL developer

Syntax

```
dw_abc_set_status (-error | -final | running | -success | -warning)
                  [-info <string>]
                  [-help]
```

Options

Option	Required?	Description
Choose one of the following status parameters:		
• -error	N	If an error occurs, update the data warehouse with the error status.

• -final	N	If an error occurs, update the data warehouse with the most severe status.
• -running	N	If an error occurs, update the data warehouse with the run status.
• -success	N	If successful, update the data warehouse with the success status.
• -warning	N	If a warning status occurs, update the data warehouse with the warning status.
-help	N	Display command syntax.

The -info "message_text" is optional free text that you can display.

This script requires the DW_PROCESS_ID environment variable to be set with the value of the process ID before you run this script.

Example

dw_abc_set_status -error -info "Job failed"

dw_abc_stream_assembler

Use this script to merge and load source Independent and source dependent ABC definition files (streams) into the ABC metadata repository.

User

Administrator or ETL developer

Syntax

```
dw_abc_stream_assembler (-tempDir <tempDir> | -mainCP <mainCP>|
                         childCPs <childCPs>)
                         [-help]
```

Options

Option	Required?	Description
Choose one of the following status parameters:		
-mainCP <mainCP>	N	Load the XML file into the metadata repository.
-childCP <childCP>	N	Merge the child CPs ABC XML files into the mainCP ABC stream.
-tempDir <tempDir>	N	The temporary directory to which ABC artifacts are persisted before they are loaded into the repository.
-help	N	Print the help message.

The command returns:

- 0 for success

- 1 for error(s)

For example:

dw_abc_stream_assember.bat -mainCP

- C:\<installation directory>\agora\ContentPacks\Core\ABC childCPs

- C:\<installation directory>\agora\ContentPacks\AM\ABC -tempDir ..\tempDir

Data Model Reports

DWH Data Model reports provide:

- An overview of the current status of the DWH configuration.

- Detailed model definition descriptions.

- Generated schema descriptions.

The typical user of the Data Model reports is the DWH administrator, developer, or anyone interested in gathering information about the current state of the data warehouse.

The following Data Model reports are available:

"Data Model Overview" (on page 104)

"Extraction Model Details " (on page 105)

"Consolidation Model Details " (on page 106)

"Dimension Model Details " (on page 107)

"Fact Model Report " (on page 108)

"Source Model Details " (on page 108)

"Aggregation Model Details " (on page 109)
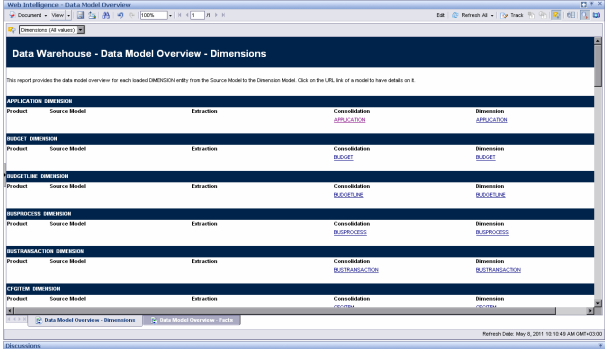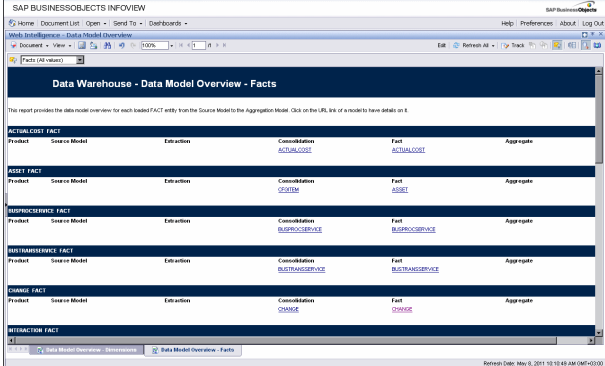
"Platform Physical Schemas " (on page 110)

Data Model Overview

This query produces a complete view of extraction path for every fact and dimension entity. Run this report after you deploy a new application. It is the entry point for all data model reports. The links in the report enable you to link to reports that provide more detail.

To access	In the SAP BusinessObjects InfoView, select **Public Folders** > **DW EN Administration** > **Data Model Reports** > **Data Model Overview**.
Important information	Select the relevant tab.
Relevant Topics	**Note:** If you are using the HP Executive Scorecardsee the following references for details: UI: BO Report Component (Display) UI: Web Report Viewer - Configure Component Dialog Box

Report Parameters
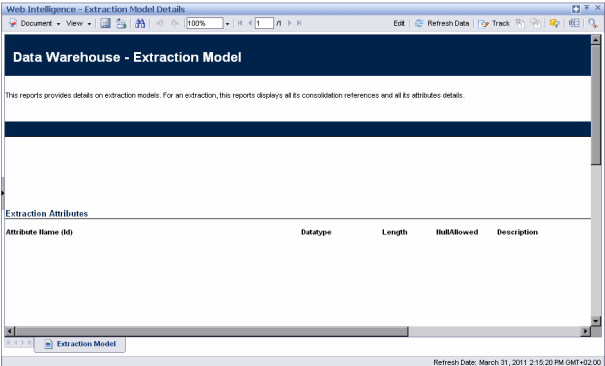
UI Element	Description
Data Model Overview - Dimensions tab	Displays the dimension data model for the specific entities when extracted from multiple sources and consolidated into a target dimension.
Data Model Overview - Facts tab .	Displays the data model overview for each loaded FACT entity from the Source Model to the Aggregation Model.

Extraction Model Details

The report shows the extraction model for a selected extraction model.

To access	In the SAP BusinessObjects InfoView, select **Public Folders** > **DW EN Administration** > **Data Model Reports** > **Extraction Model Details**.
Important information	In the Prompts dialog box, select one or more **Extraction Ids** from the left list box or enter an **Extraction Id** value and click 🔍 **Search**. Click the **Right arrow** to move it into the **Select Extraction Model** list. Click **Run Query**.
Relevant Topics	**Note:** If you are using the HP Executive Scorecardsee the following references for details: UI: BO Report Component (Display) UI: Web Report Viewer - Configure Component Dialog Box

Report Parameters

UI Element	Description
Extraction Model tab	Displays details on extraction models.

Consolidation Model Details

This report provides details on consolidation models. For a consolidation, this reports

Consolidation Model Details shows the final attributes for the selected entity, including the data type, length, and whether null values are permitted.

To access	In the SAP BusinessObjects InfoView, select **Public Folders** > **DW EN Administration** > **Data Model Reports** > **Consolidation Model Details**.
Important information	In the Prompts dialog box, select one or more **Consolidation Ids** from the left list box or enter a **Consolidation Id** value and click 🔍 **Search**.Click the **Right arrow** to move it into the **Select Consolidation Model** list. For example, select **PERSON**. Click **Run Query**.
Relevant Topics	**Note:** If you are using the HP Executive Scorecardsee the following references for details: UI: BO Report Component (Display) UI: Web Report Viewer - Configure Component Dialog Box

Report Parameters

User interface elements are described below (unlabeled elements are shown in angle brackets):

UI Element	Description
Consolidation Model tab	Displays all its target references, attributes details, and consolidation relationship attributes.

UI Element	Description

Dimension Model Details

When you select a dimension, the Dimension Model Details report displays the dimension attributes, hierarchies, and associated dimensions.

To access	In the SAP BusinessObjects InfoView, select **Public Folders** > **DW EN Administration** > **Data Model Reports** > **Dimension Model Details**.
Important information	In the Prompts dialog box, select one or more **Dimension Ids** from the left list box or enter an **Dimension Id** value and click 🔍 **Search**. Click the **Right arrow** to move it into the **Select Dimension Model** list. For example, select **PERSON**. Click **Run Query**.
Relevant Topics	**Note:** If you are using the HP Executive Scorecardsee the following references for details: UI: BO Report Component (Display) UI: Web Report Viewer - Configure Component Dialog Box

Report Parameters
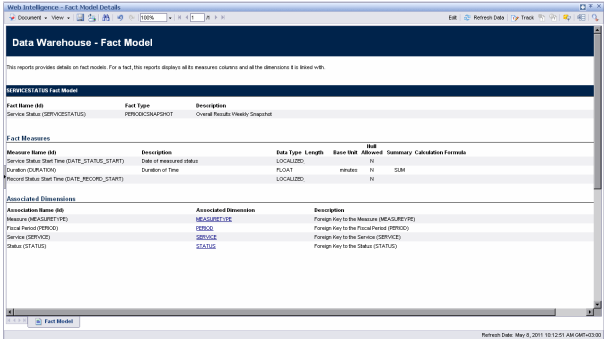
UI Element	Description
Data Model Overview - Dimensions tab	Provides details on dimension models. Displays all its attributes, associated hierarchies, and all of the dimensions it is linked with..

Fact Model Report

The report shows the details for a selected fact model.

To access	In the SAP BusinessObjects InfoView, select **Public Folders** > **DW EN Administration** > **Data Model Reports** > **Fact Model Details**.
Important information	In the Prompts dialog box, select one or more **Fact Ids** from the left list box or enter an **Fact Id** value and click 🔍 **Search**.Click the **Right arrow** to move it into the **Select Fact Model** list. For example, select **SERVICESTATUS**. Click **Run Query**.
Relevant Topics	UI: BO Report Component (Display) UI: Web Report Viewer - Configure Component Dialog Box

Report Parameters

UI Element	Description
Fact Model	Displays fact measures and the dimensions they are linked to.
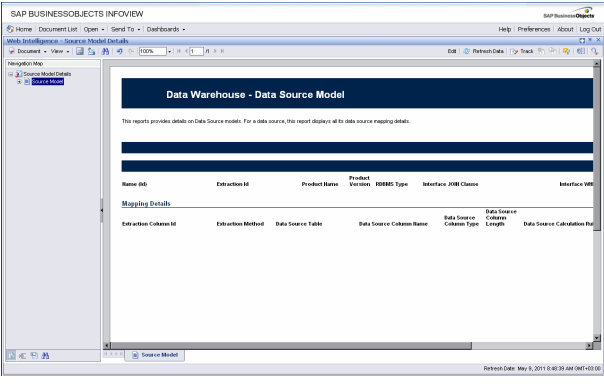
Source Model Details

This report provides details on Data Source models as well as Data Source mapping details.

To access	In the SAP BusinessObjects InfoView, select **Public Folders** > **DW EN Administration** > **Data Model Reports** > **Source Model Details**.
Important information	In the Prompts dialog box, select one or more **Source Model Ids** from the left list box or enter an **Source Model Id** value and click 🔍 **Search**.Click the **Right arrow** to move it into the **Select Source Model** list. Click **Run Query**.
Relevant Topics	UI: BO Report Component (Display) UI: Web Report Viewer - Configure Component Dialog Box

Report Parameters

UI Element	Description
Source Model tab	Displays the data source model details.
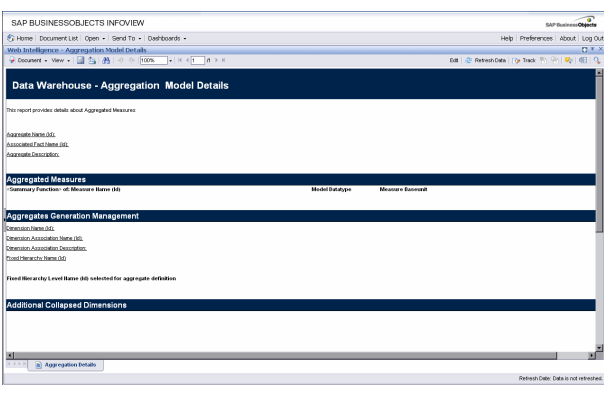
Aggregation Model Details

This report shows aggregation model details in a summary format that is organized by aggregate details.

To access	In the SAP BusinessObjects InfoView, select **Public Folders** > **DW EN Administration** > **Data Model Reports** > **Aggregation Model Details**
Important information	In the Prompts dialog box, select one or more **Aggregate Ids** from the left list box or enter an **Aggregate Id** value and click 🔍**Search**. Click the **Right arrow** to move it into the **Select Aggregation Model** list. Click **Run Query**.
Relevant Topics	**Note:** If you are using the HP Executive Scorecardsee the following references for details: UI: BO Report Component (Display) UI: Web Report Viewer - Configure Component Dialog Box

Report Parameters

UI Element	Description
Aggregation Details tab	Displays details about aggregated measures.

UI Element	Description

Platform Physical Schemas

This report enables you to diagnose whether the ETL staging or target models are aligned with the metadata. The Platform Physical Schemas report has five information tabs:
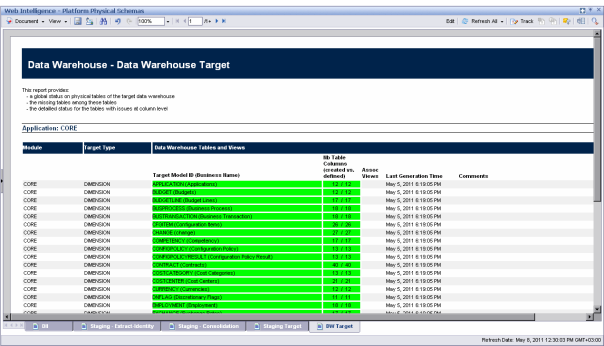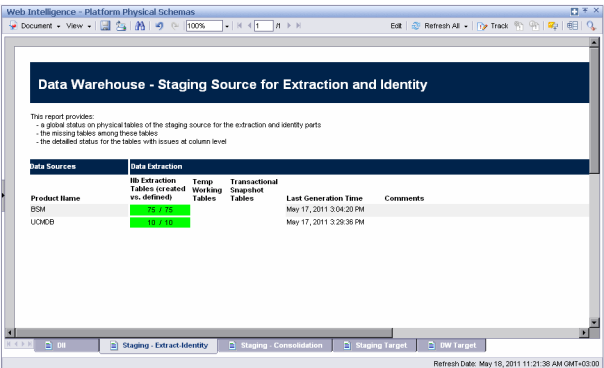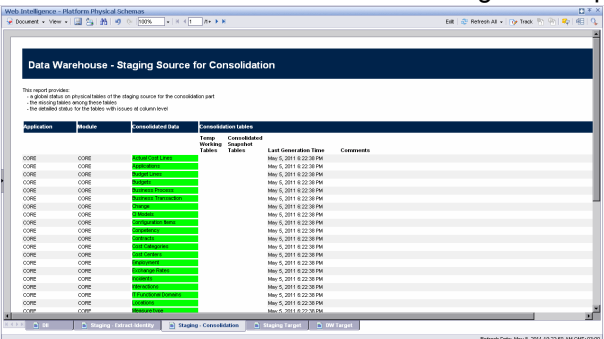
- **Data Integration Interface (DII).** Shows connection information for the data sources and status of the generated views.

- **Staging Source - Extract Identity.** For each data source, shows the status of the extraction process, including the number of extraction tables created and defined.

- **Staging Source - Consolidation.** Shows the status of the consolidation tables by application.

- **Staging Target.** Shows the status of the data warehouse target staging tables organized by application.

- **DW Target.** Shows the status of the target data warehouse tables and views.
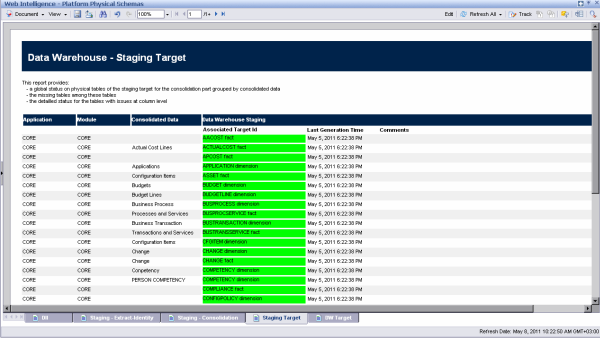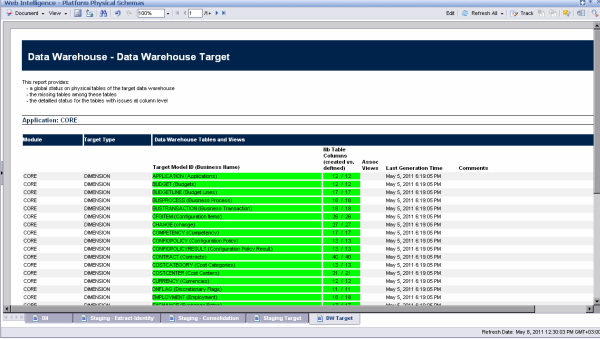
Red and green color cues help you locate problems and issues quickly. Run this report after you deploy a new application. An HP Support engineer can diagnose the platform state after a model customization.

To access	In the SAP BusinessObjects InfoView, select **Public Folders** > **DW EN Administration** > **Data Model Reports** > **Platform Physical Schemas**.
Important information	This report may take up to 20 minutes to load.

Report Parameters

UI Element	Description
DII tab	This report displays: - Global status of the SQL script generation process for DII database views. - Detailed information about any error condition that might have been detected during the generation process.

UI Element	Description
	Note: This tab is not relevant for non database data sources, for example, BSM and uCMDB.
Staging Extract Identity- tab .	Displays the number of extraction tables created and defined for each data source and whether table errors occurred during the ETL process.
Staging - Consolidation tab	This report displays: • Global status on physical tables of the staging source for the consolidation part. • The missing tables among these. • The number of extraction tables created and defined for each data source and whether table errors occurred during the ETL process.

UI Element	Description
Staging - Target tab	This report displays • Status of the ETL staging tables. • The missing tables among these. • The detailed status for the tables with issues at column level.
DW Target tab	This report displays: • Global status on physical tables of the target data warehouse. • The missing tables among these. • The detailed status of the tables with issues at column level.

Administer the Data Warehouse

This section describes some of the main commands required to operate and control the DWH processes. DWH also provides a set of reports that provide the administrator with awareness and insight into the DWH processes.

Some of the tools available to the administrator are batch jobs and ABC Job Streams.

This section includes the following topics:

Learn About the Data Warehouse Files

The data warehouse contains out-of-box .xml files in this directory:
<agora_home_directory>\DataWarehouse\conf

Configurable Log Files

ABC utilities have customizable log files. For more information, see "Tracing and Logging" (on page 130).

How to Load a Batch Job

The dw_abc_load_batch.bat is used to mark an ABC stream as ready to be started.

To load a batch job:

1. Switch to this directory:
   <DWH_installation_directory>\bin

2. For Upstream ETL, run this command:
   dw_abc_load_batch -streamId <streamId>

For details, see "dw_abc_load_batch " (on page 114).

dw_abc_load_batch

Use this script to load a batch job stream or register it as a scheduled task.

The **dw_abc_load_batch** utility is responsible for starting an ABC ETL track. You can run this utility manually at the command line, or scheduled it to run at scheduled intervals.

Batch job streams can run concurrently if each job stream is independent of other job streams; however, if two concurrent batch jobs invoke the same job stream, they cannot run successfully. If the **dw_abc_load_batch** utility successfully loads a batch job, as long as that batch job is running, any attempt to load a second instance of the same batch job will fail. Running the out-of-box upstream.xml job stream in overlapping batches produces errors.

The **dw_abc_load_batch** utility initializes the ABC stream and prepares the stream steps for execution.

The **dw_run_steps** utility looks for these steps that are ready and starts each one individually. The batch job manages the details of extracting entities from source databases.

All the job steps in the batch job reference the same batch ID. The initial state of the batch is Active. The initial state of all of the pending processes (job steps) is Waiting.

For details, see "How to Load a Batch Job" (on page 113) .

User

Administrator

Syntax

```
dw_abc_load_batch -streamId <string>

[-register (-every <string> |-starttime <string>)]

                [-unregister]

                [-list]

                [-help]
```

Options

Option	Required?	Description
Choose one of the following options:		
-list	No	List tasks scheduled to run.

-list _streamId <streamId>	Yes	Identify the stream ID value that is specified in the stream file parameter dwid="xxxx".
-register	No	Create a scheduled task to run dw_abc_load_batch at regular intervals.
-unregister _streamId <streamId>	No	Unregister all the events for the specified streamId stream.
-starttime *hh:mm*	No	Start the task to load the batch where the value for hh is 00–24 and the value for mm is 00–59.
-streamid *stream_id*	Yes	Identify the stream ID value that is specified in the stream file parameter dwid="xxxx".
-help	No	Display command syntax.

Examples

- **dw_abc_load_batch -streamId streamId**

- **dw_abc_load_batch -streamId streamId -register -every 720**

- **dw_abc_load_batch -streamId streamId -register -starttime 22:30**

- **dw_abc_load_batch -unregister -streamId streamId**

- **dw_abc_load_batch -list -streamId streamId**

- **dw_abc_load_batch -unregister**

- **dw_abc_load_batch -list**

How To Start and Stop Batch Jobs

Batch jobs can start manually or can be scheduled. You can control a batch run with commands to suspend, resume, or abort the run.

To start or stop a batch job:

1. Open a Windows command line window.

2. Switch to this directory:
   <HP XS>\agora\DataWarehouse\bin

To suspend a batch run (Upstream):

Run this command:
dw_abc_batch_control -suspend -streamid Upstream

To resume a batch run (Upstream):

Run this command:
dw_abc_batch_control -resume -streamid Upstream

To terminate a batch run (Upstream):

Run this command:
dw_abc_batch_control -abort -streamid Upstream

For details, see .

dw_abc_batch_control

Use this script to start and stop batch job streams. The dw_abc_batch_control utility enables you to:

- Suspend an active batch job stream

- Resume a suspended batch job stream

- Abort a running batch job stream

For details, see .

User

Administrator

Syntax

DWH_Admin

```
dw_abc_batch_control (-abort | -resume | -suspend)
                     (streamID <streamid> | -all)
                     [-help]
```

Options

Option	Required?	Description
Choose one of the following options:		
-commandName all	No	Complete the named command action on all loaded job streams.
-abort	No	Terminate -all or a specific streamID where the streamID value is the catalog parameter value for dwid="xxxx".
-abortAndKillJobs	No	Abort the specified stream and kill all currently running SAP BusinessObjects Data Services for IT Executive Scorecard or SAP BusinessObjects Data Services for HP FPA jobs (if any currently running).
-resume	No	Re-start -all or a specific streamID where the streamID value is the catalog parameter value for dwid="xxxx".
-suspend	No	Temporarily stop -all or a specific streamID where the streamID value is the catalog parameter value for dwid="xxxx"

Choose one of the following options:		
• -streamId *streamId*	No	The streamID value is the catalog parameter value for dwid="xxxx" found in the xml file that describes the stream: <Installation Directory>\agora\Content Packs\Core\ABC\upstream.xml
• -all	No	All streams currently executing.
-help	No	Display command syntax

Examples

- **dw_abc_batch_control -suspend -streamid Stream1**

- **dw_abc_batch_control -resume -all**

How to Run Job Steps

The dw_abc_run_steps.bat utility assesses the readiness of candidate job steps and runs them at the appropriate time. It runs the ABC steps that are currently ready to be executed according to their state and the state of the steps they are dependent on.

To run job steps:

1. Open a Windows command line window.

2. Switch to this directory:
   <DWH installation>\bin

3. To run a specific job stream (Upstream), run this command:
   dw_abc_run_steps -streamId Upstream
   where **-streamId** and its value **Upstream** are required.

The **dw_abc_run_steps** utility determines which step to run next. When the current step ends, the job stream waits until **dw_abc_run_steps** restarts to launch the next sequential step. If the next step does not start when launched, the **dw_abc_run_steps** utility tries **maxretries** times to run the job step. For example, the following is located in **<Installation Directory>\agora\Content Packs\Core\ABC\upstream.xml**:

```
<ns1:JobStreamStep dwid="EXTERNAL_FILE" businessname="extract External
Files" ... maxretries="4"/>
```

HP recommends that you create a scheduled task to run any pending job steps at frequent intervals. For more information, see .

For details, see .

dw_abc_run_steps

Use this script to run job stream steps or register the action as a scheduled task.

The command verifies the successful execution of each step before a dependent step begins. It also compiles a list of parallel and sequential execution steps that are ready to run, then launches each step that is ready for execution. The command:

- Determines which steps are ready to run and starts them.

- Creates processes for each step in a batch job stream.

- Reports execution state for each process, then updates a final execution status for the batch.

- Sets a status of Max_Execution_Time_Exceeded if a step exceeds its maximum execution time.

- If Max_Execution_Time_Exceeded occurs, stops job step execution.

- Finds all steps that are blocking the execution of a job stream and reports them.

- Retries any step that terminates with an error and has not exceeded the specified maximum number of retries.

You can specify a maximum number of retries when an error occurs, and a maximum execution time for each step in the job stream definition file. Because they are optional parameters, they have default values of no retries and unlimited execution time. For details see "How to Change the Number of Retries" (on page 119).

For details, see "How to Run Job Steps" (on page 117).

User

Administrator

Syntax

```
dw_abc_run_steps [-streamId <string>]

                 [-every <interval>]

                 [-register]

                 [-unregister]

                 [-list]

                 [-help]
```

Options

Option	Required?	Description
-every *nnn*	No	Start the batch load task every nnn minutes.
-list	No	Display a list of the registered events for all the stream Ids.

-list _streamId <streamId>	No	Display a list of the registered events for the specified streamId.
-register	No	Create a scheduled task to run **dw_abc_run_steps** at regular intervals.
-unregister _streamId <streamId>	No	Unregister all the events for the specified streamId stream.
-streamId *stream_id*	No	Stream ID value for the step to restart.
-help	No	Display command syntax for this command.

Examples:

- To run all possible steps with a ready status:
  dw_abc_run_steps -streamId Upstream

- To create a scheduled task that executes the dw_abc_run_steps command every 60 minutes:
  dw_abc_run_steps -register -every 60 -streamId Upstream

- To remove a scheduled task that starts the dw_abc_run_steps:
  dw_abc_run_steps -unregister -streamId Upstream

- To list a scheduled task that starts the dw_abc_run_steps:
  dw_abc_run_steps -list -streamId Upstream

- To remove all scheduled tasks that starts the dw_abc_run_steps:
  dw_abc_run_steps -unregister

- To list all scheduled tasks that starts the dw_abc_run_steps:
  dw_abc_run_steps -list

How to Validate Catalog and Stream Definitions

ABC utilities automatically validate xml syntax and perform more sophisticated validation, such as loop detection in a job stream and valid catalog references to the job stream (dwid=Upstream).

If an error occurs, you can review the ABC Operational Status report to see where the process failed.

How to Change the Number of Retries

The job stream batch file has a job stream step for each required task in the end-to-end ETL process and for each data source. Each job stream step has a parameter value that specifies the number of retries allowable before the job step terminates with an error. You can manually edit this value to increase or decrease the number of retries.

To change the number of retries:

1. Navigate to the installation directory structure to locate the following file:
   <Installation_Directory>\agora\contentpacks\{$CP}\ABC\${stream name}.xml,
   (depending on the ${CP})

2. Save a backup copy of the file before you proceed.

3. Open upstream.xml with a text editor. There is a sequential list of job stream steps that manage the entire ETL process.

```
<ns1:JobStreamSteps>
<ns1:JobStreamStep dwid="SYS_READY" businessname="check ETL pre
conditions" ... maxretries="4"/>
<ns1:JobStreamStep dwid="EXTERNAL_FILE" businessname="extract
External
Files" ... maxretries="4"/>
<ns1:JobStreamStep dwid="PPM_SOURCE_EXTRACT" businessname="extract
PPM
to FF"... " maxretries="4"/>
<ns1:JobStreamStep dwid="AM_SOURCE_EXTRACT" businessname="extract AM
to
FF" ... maxretries="4"/>
<ns1:JobStreamStep dwid="ENTERPRISE_XREF" businessname="load Xref
table" ... maxretries="4"/>
<ns1:JobStreamStep dwid="PPM_EXT" businessname="load PPM FF" ...
maxretries="4"/>
<ns1:JobStreamStep dwid="AM_EXT" businessname="load AM FF" ...
maxretries="4"/>
<ns1:JobStreamStep dwid="PPM_SSI" businessname="PPM Single Source
Identity" ... maxretries="4"/>
<ns1:JobStreamStep dwid="AM_SSI" businessname="AM Single Source
Identity" ... maxretries="12"/>
<ns1:JobStreamStep dwid="PPM_SSI_XREF" businessname="PPM SSI Xref"
...
maxretries="4"/>
<ns1:JobStreamStep dwid="AM_SSI_XREF" businessname="AM SSI Xref" ...
maxretries="4"/>
<ns1:JobStreamStep dwid="PPM_MSI" businessname="PPM Mutiple Source
Identity"... maxretries="4"/>
<ns1:JobStreamStep dwid="AM_MSI" businessname="AM Mutiple Source
Identity" ... maxretries="4"/>
<ns1:JobStreamStep dwid="PPM_BACKFILL_CTRL" businessname="PPM
backfill
keys" ... maxretries="4"/>
<ns1:JobStreamStep dwid="AM_BACKFILL_CTRL" businessname="AM backfill
keys" ..." maxretries="4"/>
<ns1:JobStreamStep dwid="XREF_BACKFILL_CTRL" businessname="Xref
backfill" ... maxretries="4"/>
<ns1:JobStreamStep dwid="PPM_BACKFILL" businessname="PPM backfill"
...
maxretries="4"/>
<ns1:JobStreamStep dwid="AM_BACKFILL" businessname="AM backfill" ...
maxretries="4"/>
<ns1:JobStreamStep dwid="PPM_CON" businessname="PPM Consolidation"
...
maxretries="4"/>
```

```
<ns1:JobStreamStep dwid="AM_CON" businessname="AM Consolidation"
...maxretries="4"/>
<ns1:JobStreamStep dwid="MS_CON" businessname="Multi Source
Consolidation" ... maxretries="4"/>
<ns1:JobStreamStep dwid="XFR_DIM" businessname="prepare load" .../
maxretries="4">
<ns1:JobStreamStep dwid="XFR_FACT" businessname="prepare load"
...maxretries="4"/>
<ns1:JobStreamStep dwid="DW" businessname="load from staging to
target" ...maxretries="4"/>
<ns1:JobStreamStep dwid="CSNP" businessname="consolidated snapshot"
...maxretries="4"/>
<ns1:JobStreamStep dwid="SSNP" businessname="single source snapshot"
...maxretries="4"/>
<ns1:JobStreamStep dwid="TSNP" businessname="transactional snapshot"
.../maxretries="4">
<ns1:JobStreamStep dwid="SYS_CLOSE" businessname="check ETL post
condition"...maxretries="4"/>
</ns1:JobStreamSteps>
```

4. Locate the job stream step that you want to modify and change **maxretries="4"** to **maxretries="nn"** where **nn** is the number of retries before the job step terminates.

5. Save and close the file.

6. In order to activate the new ABC definitions, you must activate the changed CP ABC definitions.
   a. If the ABC definitions were modified in the CORE content pack, any change to the content packs state would update the change.

   b. If the ABC definitions were modified in any of the Integration Content packs, you must re-activate the content pack to import the new definitions.

7. Open the Data Source Management user interface, and re-activate the modified CP of which definitions you modified. For details, see Data Source Management.

How to Change Data Warehouse Passwords

The installation and configuration process gathers all data warehouse and SAP BusinesObjects passwords, encrypts them, and stores them in the Data Warehouse platform settings management.

To change a password:

1. Stop any ETLs that are running, or abort a job stream if it is running.

2. On the RDBMS server, change the password for a specific Login Name.

3. Click **Admin > Data Warehouse Settings**, and update the relevant Login with the new password from step 2.

   Note: Changing the password in the Data Warehouse Settings user interface does not modify the password in the database servers. It is preferable to rely on the user performing the password update manually.

4. The Data Warehouse creates a database link which then uses the Data Warehouse and SAP BusinessObjects Enterprise for IT Executive Scorecard passwords. The Linked Server is created in the following situations:

   a. The staging and target databases are installed on different servers.

   b. The populated database server name in the post-install is different than the database host name on the system server for server id_0.

   In these situations, if you reset DWH user passwords (for dwabc, dwmetadata, dws, dwst, or, dwt), go to **Linked Servers** in the Microsoft SQL Server Management Studio, and change the relevant passwords in the **Security** tab of the **Linked Server Properties**, as follows.
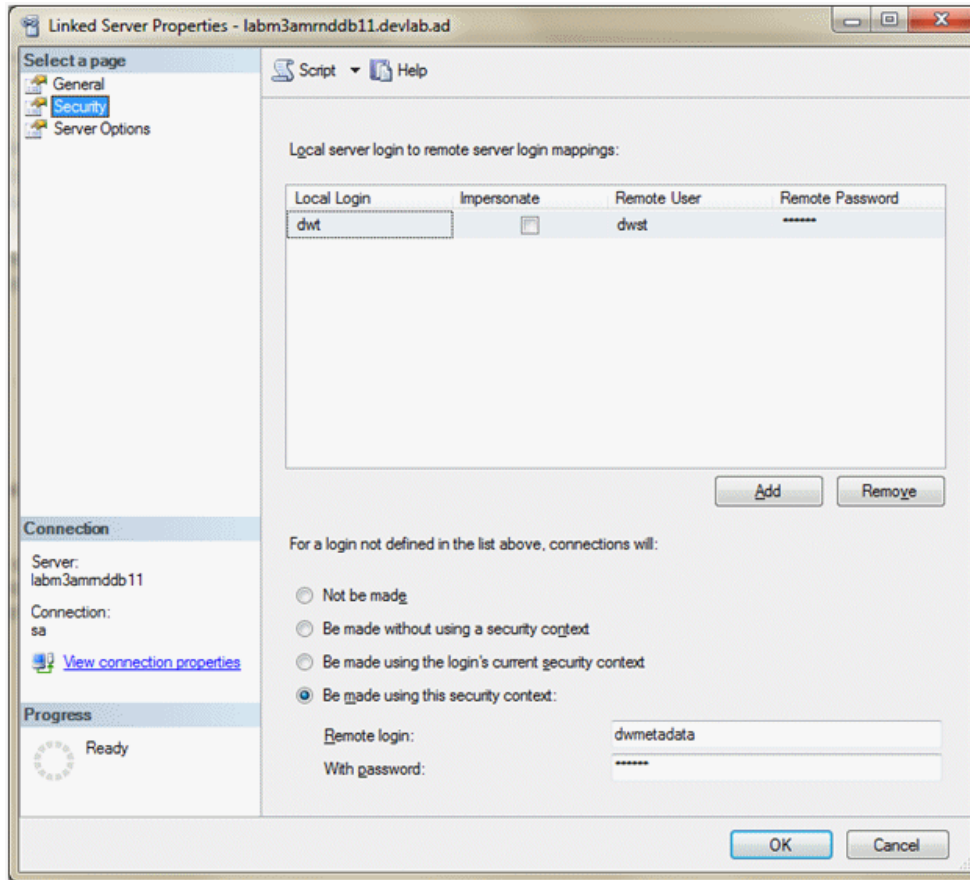
5. When you change the passwords in the Data Warehouse Settings user interface as well as the database server you must run the following:

   ▪ **<DWH root dir>\bin\dw_ds_gen.bat -outputdir \tmp\datastores -datastore all**

   ▪ **<DWH root dir>\bin\ds_ds_import -inputdir \tmp\datastores**

6. Reload the batch using **dw_abc_load_batch.bat**.

7. Run ETL.

8. Note that a reboot is recommended after passwords change.

Note: It is recommended to avoid using localhost as the server database name.

How to Improve Performance

Normal procedures require database administrators to set up aggregation, indices, and partitions that can enhance performance.

Enhancing and tuning overall database performance also improve the data warehouse performance.

Because the end-to-end ETL process involves accessing remote source databases and network connections, you may want to evaluate where performance degradation occurs and apply tuning strategies to these external connections.

How to Check the Runtime Status of Batch Jobs

The data warehouse produces operational and administrative reports that contain information about job status and other critical data warehouse activities.

When you view the ABC Operational Status report, you can see the global status and state of each ETL job stream and a snapshot of the runtime status of each job stream step.

For details, see ABC - Operational Status in "Control Reports" (on page 92)"Control Reports" (on page 92).

How to Resolve an ETL Error

ETL jobs contain stream steps that you can restart.

If the stream step is ready for processing, the next scheduled execution of abc_run_steps.bat will restart the stream step automatically.

If there is another impediment, such as source database or connection issues, you must resolve that issue before the step can complete successfully.

For details, see "dw_abc_retry_step " (on page 125)

How to Monitor and Tune the Data Warehouse

The overall health of the data warehouse depends on the administrative skill of the RDBMS administrator.

The Microsoft SQL Server 2008 database administrator uses standard operating procedures for daily database operations.

The data warehouse is governed by these same processes and procedures.

For monitoring and tuning details, see the Microsoft SQL Server 2008 documentation.

How to Purge Validation Tables

There is no automated process to purge these tables on a regular schedule.

Because organizations require audit and validation information to be retained for varying amounts of time, you should verify what the appropriate retention period is in your organization.

Use the following SQL script to delete all records in each of the validation tables that are older than the defined retention period.

```
CREATE OR REPLACE PROCEDURE sp_del_valf_info AS
--declare variables
BEGIN
--Delete All Required records in selection
DELETE FROM *.VALF
WHERE --trunc(Date) &lt; '09-FEB-06'
);
COMMIT;
END sp_del_valf_info &gt;
```

How to Upgrade Content Packs

Use the following to upgrade Content Packs: dw_ds_automation.bat -task Upgrade -cp [cp name] -newContentPackPath [path of the new cp]

The following steps are automatically included in the upgrade tool:

1. Deactivate all Integration Content Packs that are activated. It is recommended to stop ETL running and cancel all scheduling.

2. Zip the original Content Pack directory.

3. Delete the original Content Pack directory.

4. Copy the new Content Pack folder.

5. Upgrade the Content Pack.

6. Activate the Core Content Pack as well as the remaining Content Packs.

7. Update the content_pack table according to the new manifest, cp_manifest.properties, a list of attributes located in the root folder of the Content Pack being upgraded.

For activation and deactivation details, see "Data Source Management Page" (on page 50).

Note the following usage limitations:

- The new Content Pack folder should be available outside the Content Packs folder.

- ETL Stream should not be in a running mode - all streams must be aborted.

- The new CP folder must be a valid CP folder.

- CP should not be in **Installed** state, Integration Content Packs should be activated at least once before upgrade.

- If Core is being upgraded, it must be in the **Activated** state.

Note the following upgrade limitations:

- Deleting of tables or columns is not supported.

- Renaming of tables or columns is not supported.

- Column type change is not supported.

- New columns should be nullable or have a default value.

- You can only add workflows to existing containers.

- Deleting or renaming a reference to a workflow in a container that is not supported.

- To change a workflow implementation, use the old name.

- To delete a workflow, you must provide a mock workflow to replace the old one.

- Renaming or deleting of existing ABC Catalog executables is not supported.

Note: In order to avoid upgrade failure, do not change the executables in the ABC catalog.

How to Restart a Job Step

The **dw_abc_retry_step** utility manually restarts a job step after the **dw_abc_run_steps.bat** utility exceeds the **maxretries** value for a job step.

To restart a job step:

1. Open a Windows command line window.

2. Switch to this directory:
   <DWH installation>\bin

3. Run this command:
   dw_abc_retry_step -streamId Upstream -stepId *step_id*
   where **step_id** is the job step identifier in the **upstream.xml** file.

Example:

To restart job step **EXTERNAL_FILE** in the upstream.xml job stream, type this command:
dw_abc_retry_step -streamId Upstream -stepId EXTERNAL_FILE

For details, see "dw_abc_retry_step " (on page 125).

dw_abc_retry_step

Use this script to restart a job stream step.

The **dw_abc_retry_step** utility re-starts a job step. When you specify a maximum number of retries, the ABC engine blocks the job stream when that number is exceeded.

For more information, see "How to Restart a Job Step" (on page 125).

User

Administrator

Syntax

```
dw_abc_load_batch -streamId <string>
                  -stepId <string>
                   [-help]
```

Options

Option	Required?	Description
-stepId *step_id*	Y	Step ID value for the step to restart.
-streamId *stream_id*	Y	Stream ID value for the step to restart.
-help	N	Display command syntax.

Example

dw_abc_retry_step -streamId Upstream -stepId step_id

Additional Maintenance

This section includes the following topics:

Configure the Time Zone

This section includes the following topics:

Learn About Time Zone configuration

The data warehouse contains data extracted from external sources. The original data sources can be repositories in disparate locations. It is important that the data warehouse maintain accurate date and time stamps that normalize the differences between the source time zones and the current time of the data warehouse location. These differences include both Coordinated Universal Time (UTC) offset and daylight savings time (DST) variations.

The data warehouse foundation has transparent internal functions that convert a source time zone value to a UTC value, and convert the UTC value to the data warehouse local time zone during the ETL process.

How to Configure Time Zone Management

The data warehouse foundation contains tools and configuration files that help you manage time zone issues. For each data source, there are two time zones to track: the data source time zone and the data warehouse time zone. You must also collect the DST information for the time zone associated with the data source.

The following time zone scenarios are discussed:

- "Update the Data Warehouse DST Time Zone Information" (on page 128)
- "Change the Data Source time zone settings" (on page 128)
- "Update a Time Zone" (on page 128)

Update the Data Warehouse DST Time Zone Information

The administrator must make sure that time zone information is current on the server hosting the Data Warehouse. Although the definition of time zones and DST rules are fairly static, changes can occur, for example, when moving the DST conversion date on a country-wide basis.

You can synchronize these changes to the Olson Timezone Database by obtaining and running the Java TZUpdater Tool that is available on the Sun Developer Network (SDN). For more information, visit the Java SE Timezone Updater Tool home page.

To update the Data Warehouse DST time zone.

1. Download and run the TZUpdater tool.

2. To update Data Warehouse Server tables, run the dw_tz_update_dst as described in "Update a Time Zone" (on page 128).

Change the Data Source time zone settings

1. In the Executive Scorecard application, click **Admin** > **Data Source Management**, and for the relevant Content Pack, click **Activate** to open the relevant activation page.

   Note: If the content pack is already activated, you must deactivate, and then reactivate the content pack .

2. Change the Time Zone for the relevant data source, and click **Next**.

   The TimeZoneInfo table which is part of the Staging database is automatically updated.

   Note: There is a discrepancy in the status time display between ETL runs when BSM has a different time zone than the BSM server.

Update a Time Zone

The dw_tz_update_dst utility updates the Data Warehouse DST time zone information.

Run the dw_tz_update_dst utility as follows:

1. At a Windows command prompt, switch to the **<XS Installation directory>\Agora\Data Warehouse\bin** directory.

2. Run this command:
   dw_tz_update_dst

   For details, see "dw_tz_update_dst" (on page 157).

dw_tz_update_dst

Load or update the time zone information for a data source and the data warehouse.

Run this utility whenever you deploy new source data or when you manually change the time zone.

Time zone is expressed in GMT format: GMT +\-nn:nn.

Syntax

```
dw_tz_update_dst.bat
                [-help]
```

```
[-verbose]
```

Options

Option	Required?	Description
-help	N	Display command syntax.
-verbose	N	Produce more detailed output.

Return codes:

0 – Success

1 – Success with warnings

>1 – Errors

Example

dw_tz_update_dst -verbose

Troubleshooting Date Conversion

If time zone conversion errors occur, verify that none of the following apply:

- The ETL process uses special dates like 01/01/1900 00:00:01. All dates prior to 1900 are ignored for conversion purposes.

- If you do not update DST information, the ETL attempts date calculation for unmanaged years. The conversion function creates an exception that is caught by the containing workflow, and propagated to the SAP BusinessObjects Data Services for IT Executive Scorecard or SAP BusinessObjects Data Services for HP FPA job by ABC. The exception appears in the ABC reports. It is an error that locks batch execution.

- For global time zones that convert to DST, the return to standard time occurs at 2 AM. Clocks reset backwards one hour to 1 AM. When a data change occurs between 1 AM – 2 AM while you are still on DST, the time stamp is the same as a data change that occurs between 1 AM – 2 AM after the clock resets back to standard time (ST).

  You can have two data events with the same time stamp, but one occurs before the clock turns back and one occurs after the clock turns back. Source data repositories may not clearly specify whether the data event occurred pre- or post-DST conversion. This issue occurs only during that one overlapping hour from 1 AM – 2 AM during the year. When a data event occurs within this window, the data warehouse time zone management feature assigns the time stamp after the conversion to standard time.

  - It is recommended that administrators suspend ETL processing during this interval to avoid conflicts.

Change the Data Warehouse Period Dimensions

This procedure should be followed when expanding the Data Warehouse First and Last Year period dimension range.

It is highly recommended that once you enter First and Last Year period dimensions in the Executive Scorecard Configuration wizard, any future changes should take the following into account:

1. The First Year period dimension should only be changed downwards, thereby including the current First Year period dimension. For example if the First Year dimension is currently set to 2005, any change should be a year lower than 2005. Entering a year higher than 2005 can cause some data inconsistencies.

2. The Last Year period dimension should only be changed upwards, thereby including the current Last Year period dimension. For example if the First year dimension is currently set to 2025, any change should be a year higher than 2025. Entering a year lower than 2025 can cause some data inconsistencies.

To change Data Warehouse period dimensions:

1. In the Executive Scorecard application, click **Admin** > **Data Warehouse Settings** , under **General**, make the required changes in the **First year handled by DWH dates** and **Last Year handled by DWH dates** settings, and click **Save**.

2. From a command prompt, navigate to
   <XS Install directory\Agora\DataWarehouse\Bin

   Run **dw_period_dim_generator**.

Delete this text and replace it with your own content.

Tracing and Logging

This section describes the Data Warehouse logging and tracing mechanism. Data warehouse scripts have different types of output log files:

One log file for each data warehouse batch utility, using the Java application Log4J.

One log file for each SQL command.

This section includes the following topics:

The Java Logging Mechanism

The data warehouse generates one log file for each batch utility, and stores it in the following directories:
<installation directory>\agora\DataWarehouse\logs and
<installation directory>\agora\glassfish\glassfish\domains\BTOA\logs

For example:

- **dw_initdb.log**

- **dw_generateschemas.log**

Configure the Logs

For data warehouse utilities, you can customize logging behavior by editing a related log configuration file with this naming convention: **xxx-log4j.xml**. For example, importdefs-log4j.xml. The log configuration files are in this directory:
<installation directory>\agora\DataWarehouse\conf

Open the related **xxx-log4j.xml** file with a text editor to choose the trace levels and to change other parameter values. If you make changes, save the file before you close it.

For ABC utilities, (abc-xxxx) there is a single log configuration file: abc-log4j.xml. The values that you specify in this file apply to all log files generated by any ABC utility.

Trace Levels

You can choose one of the following trace levels to control the amount of information stored in the logs:

- **trace**

- **debug**

- **info**

- **warn**

- **error**

- **fatal**

The default value is **info**. You can experiment with different levels to see how much information that you want to display or suppress.

Other Log Parameters

The logging mechanism allows each new block of log information to be appended to the existing log until it reaches the maximum size of 1 MB. At that point, new logging information is stored in a backup file. There can be a maximum of five log files for a single script. You can change the log file name, size, and maximum number of backup files.

Sample Log Information

The following examples show the type of information you can find in these log files. The first example shows that a fatal error has occurred.

```
2008-07-02 13:33:10,652 INFO [com.hp.bto.dw.sqlbatch.SqlBatch] -
Checking database options...
2008-07-02 13:33:10,949 FATAL
[com.hp.bto.dw.dbcreate.DbCreateCommandLine] - Problem during DB
options check:
An error that can be corrected by the user has been found. Check the
log file to correct the problem.
```

```
Check the error log file
'C:\...\\foundation\log\mssql_check_db_options_LastRun.log', line
number 2
008-07-02 13:33:10,949 FATAL
[com.hp.bto.dw.dbcreate.DbCreateCommandLine] - Exit code: 6
```

The second example shows successful execution.

```
2008-07-02 13:36:27,136 INFO
[com.hp.bto.dw.dbmetadatatool.DbMetadatatool]
Creating Date and Time stored procedures and populating the dimension
tables...
2008-07-02 13:36:30,511 INFO
[com.hp.bto.dw.commons.dblogparser.LogParserStatus] - Command
successfully executed.
```

It is possible to change the format of the reported information by changing the corresponding configuration files.

SQL Command Logging Mechanism

All the SQL commands that are executed at the direction of the data warehouse software are redirected to simple log file. You can view the log file to trace the execution of all SQL commands. All log files are in the following directory:
${hpxs}\agora\Datawarehouse\conf

- **mssql_TablesAndSeqsResult.log**

- **mssql_create_dw_schema_LastRun.log**

The prefix of the log file name is the RDBMS type: mssql. The suffix of the log file name is _ LastRun. This suffix indicates that the file contains the last run output of the SQL command.

To simplify interpreting SQL errors, the data warehouse applications parse the SQL server log files to report the most critical SQL error to the user. For more information, you can review the entire log file. Because the data warehouse appends log information in a history format in certain log files, you can review prior errors. Other log files retain only the history of the most recent execution. These files always have the _LastRun suffix. For example:

- **mssql_check_db_options_LastRun.log**

- **mssql_create_dw_schema_date_time_dim_LastRun.log**

These history log files contain the date and time the SQL command runs, the date and time it completes, and the returned status of the SQL command. For example:

```
----------------------------------------------------------------------
Start of command: sqlcmd -S localhost -d BTODW -U dwmetadata -P **** -
i
"C:\...\\foundation\etc\sql\mssql\create_dw_staging_resources.sql" -o
"C:\...\\foundation\log\mssql_create_dw_staging_resources_LastRun.log"
At: Wed Jul 02 13:35:59 PDT 2009
----------------------------------------------------------------------
1:
2: ********** Creating staging resources **********
----------------------------------------------------------------------
```

```
End of command: sqlcmd -S localhost -d BTODW -U dwmetadata -P **** -i
"C:\...\\foundation\etc\sql\mssql\create_dw_staging_resources.sql" -o
"C:\...\\foundation\log\mssql_create_dw_staging_resources_LastRun.log"
At: Wed Jul 02 13:35:59 PDT 2009
Returned code is: 0
------------------------------------------------------------------------
-
```

SAP BusinessObjects Enterprise for IT Executive Scorecard or SAP BusinessObjects Enterprise for HP FPA Logs

SAP BusinessObjects Data Services for IT Executive Scorecard or SAP BusinessObjects Data Services for HP FPA produces many run-time logs. You can locate these logs in the relevant directory
structure:

C:\<installation directory>\BO\bods\BusinessObjects Data Services\log

The **\log** folder has sub-directories to further organize the SAP BusinessObjects Data Services for IT Executive Scorecard or SAP BusinessObjects Data Services for HP FPA logs.

Data Warehouse Log Files

You can access the Data Warehouse Log files in:

- **datawarehouse\logs**

- **C:\<Installationdirectory>\agora\glassfish\glassfish\domains\btoa\logs\server.log**

All information in the Data Warehouse log files is automatically sent to the Windows Event Viewer Application log.

To access Data Warehouse log information:

1. On the Windows taskbar, click **Start > Administrative Tasks > Event Viewer**.

2. Expand Windows Logs, right-click **Application**, and then click **Filter Current Log**.

3. Select the relevant Event Levels, select the relevant **Event Sources**, and then click **OK**.

Note: All the Data Warehouse Event Sources begin with DWH.

Learn About Data Warehouse Backups

It is critical that you backup Data Warehouse so that you can rebuild your Data Warehouse infrastructure and content in disaster scenarios such as the following:

- In a total disaster recovery scenario

- The RDBMS server failed but all Executive Scorecard component servers are fully functioning.

- When the Data Warehouse server failed, but the RDBMS server and it's databases are intact.

- When a Data Warehouse database is corrupt.

- When an ETL is deleted.

- When an ETL job fails.

This section includes the following topics:

-
-
-

What to Back Up

It is strongly recommended that you back up the following resources that may be used if one of the above scenarios occurs.

1. Microsoft SQL Server 2008 enterprise SP2 databases
   a. Staging database

   b. Target database

   c. SAP BusinessObjects Data Services database

   d. SAP BusinessObjects CMS database, and if necessary the Audit database.

   e. Management database

   f. Executive Scorecard database

      Note: The host and database names can be found in the Management database configured in the Executive Scorecard Configuration wizard.

2. It is highly recommended that you keep the passwords for the Staging, Target and SAP BusinessObjects Data Services database login users in a safe place for usage in disaster recovery situations.

3. External source files that can be found in the external source file location configured in the Executive Scorecard Configuration wizard.
   a. If the default external source file location was configured in the wizard, the Content Pack flat files created during the ETL process can be found in:
      < Install dir>\agora\DataWarehouse\ExternalSources\<Content pack name>

      For example the BSM content pack flat file would therefore located in the following directory:
      <Install dir>\agora\DataWarehouse\ExternalSources\BSM

4. Data Warehouse Configuration files. For more information, see "Files to Back Up" (on page 135).

General Backup Guidelines

It is recommended that you use the following backup and restore guidelines:

- A best practice for data warehouse administrators is to back up critical data on a regular basis.

- Database backups should consist of a weekly full database backups, and daily differential backups.

- Backups should be periodically verified by restoring a copy onto a test system.

- External source files and Data Warehouse configuration files should be backed up as required.

- Although out of scope for this document, regular backups should be taken of all source databases.

- Start scheduled backups before running the daily ETLs.

- Use backup compression.

- Perform full backups in off-peak times.

Maintain the External Source Directory

In the <ExternalSource> directory , there are folders that contain extracted data from each data source.

This data is infinitely accumulated and is never cleaned by the DWH. You are required to periodically backup and remove old files from those folders in order to free disk space if available disk space is low on the DWH platform machine.

Files to Back Up

The contents of the following directories and their sub-directories should be included in the backup schedules:

Directory Name	Backup Frequency	Description of files
<install Dir>\Agora\DataWarehouse\<ExternalSourceslocation>	Daily	.xls, and the ETL flat files
<install Dir>\Agora\DataWarehouse\Conf	When configuration changes are made	Configuration files
<install Dir>\Agora\DataWarehouse\etc	After the installation, and when configuration changes are made. **Note**: When you recover from a Data Warehouse server failure, it is important that this directory and it's sub-directories are restored.	Configuration files
<install Dir>\Agora\DataWarehouse\log	Daily	Log files
<install Dir>\Agora\ContentPacks	Before activating or deactivating a content pack in the Executive Scorecard Admin application, or when changes are made to content packs	Content pack configuration files

Learn About Data Warehouse Recovery

This section is a reference for the data warehouse recovery process. The recovery process for your environment may vary according to your business needs and may require customization. Verify that the following processes are consistent with your architecture and environment before you proceed with real data.

When you start the recovery process, you must have complete backups of the Data Warehouse databases and configuration files that are readily available. It is possible that you will lose historical data.

These following scenarios are independent from the external data sources and entities. Recovering from a scenario means that the data warehouse returns to a stable state.

This section includes the following recovery scenarios:

-

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The RDBMS server failed but all Executive Scorecard component servers are fully functioning

Scenario: The RDBMS server has become unusable, for example the hard disk has crashed. The following procedure describes how to recover a failed RDBMS server.

1. Reinstall a RDBMS server with Microsoft SQL 2008 Enterprise with SP2, configured with mixed mode and using the TCP/IP protocol.

2. Restore the HP Executive Scorecard databases on the RDBMS server using the weekly full and the relevant differential backup.

   Note: The RDBMS server, database and login names must be identical to those used in the initial installation for the Data Warehouse recovery to succeed. This information can be found in the Management database.

3. Once you have restored the relevant databases, create logins, and associate the database users and logins by running the following scripts on the RDBMS server.

   For the staging database:

   EXEC sp_change_users_login 'Auto_Fix', 'dws', NULL, 'password' where password is the old password for the dws login.

   EXEC sp_change_users_login 'Auto_Fix', 'dwst', NULL, 'password' where password is the old password for the dwst login.

   EXEC sp_change_users_login 'Auto_Fix', 'dwmetadata', NULL, 'password' where password is the old password for the dwmetadata login.

   EXEC sp_change_users_login 'Auto_Fix', 'dwabc', NULL, 'password' where password is the old password for the dwabc login.

   EXEC sp_change_users_login 'Auto_Fix', 'xrefgen', NULL, 'password' where password is the old password for the xrefgen login.

   For the target database:

EXEC sp_change_users_login 'Auto_Fix', 'dwt', NULL, 'password' where password is the old password for the dwt login.

For the SAP BusinessObjects Data Services database

EXEC sp_change_users_login 'Auto_Fix', 'login name', NULL, 'password' where login name is the new login name you created when you created the SAP BusinessObjects Data Services database, and password is the password you assigned to that login name.

4. On the Executive Scorecard and Data Warehouse servers, disable and then enable HP Executive Scorecard as follows:
   a. On the Windows taskbar, click **Start** > **All Programs > HP Executive Scorecard** > **Administration** > **Disable HP Executive Scorecard**.

   b. On the Windows taskbar, click **Start** > **All Programs > HP Executive Scorecard** > **Administration** > **Enable HP Executive Scorecard**

5. For more information on re-installing the SAP BusinessObjects for HP XS and Executive Scorecard components, see the Executive Scorecard General Admin Guide.

The Data Warehouse server is unusable, but the RDBMS server and its databases are intact.

Scenario: The Data Warehouse server has become unusable, for example the hard disk has crashed. The following procedure describes how to recover a Data Warehouse server.

1. Install a new Data Warehouse server running Microsoft Windows 2008 R2.

   The server must conform to the relevant hardware and software requirements described in the Executive Scorecard Installation and Configuration Guide.

2. Enter the Executive Scorecard DVD and progress in the Installer wizard. On the **Select Features** page, select **HP Data Warehouse Components**, and continue the installation.

3. When the Installer Wizard completes and you see the Introduction page of the Configuration Wizard, if changes were made to the core content packs, before continuing, restore **<XS Install Directory>\agora\ContentPacks** from the latest backup.

   Note: If this is single server installation, you should edit the SETTINGS_MANAGEMENT table in the management database and change the value of the **bo.engine.is.installed** parameter to **false**.

4. Continue the Configuration Wizard. When you reach the **Data Warehouse** section, on the **Configure Data Warehouse** page, select **Reinstall Data Warehouse**, and then click **Next**.
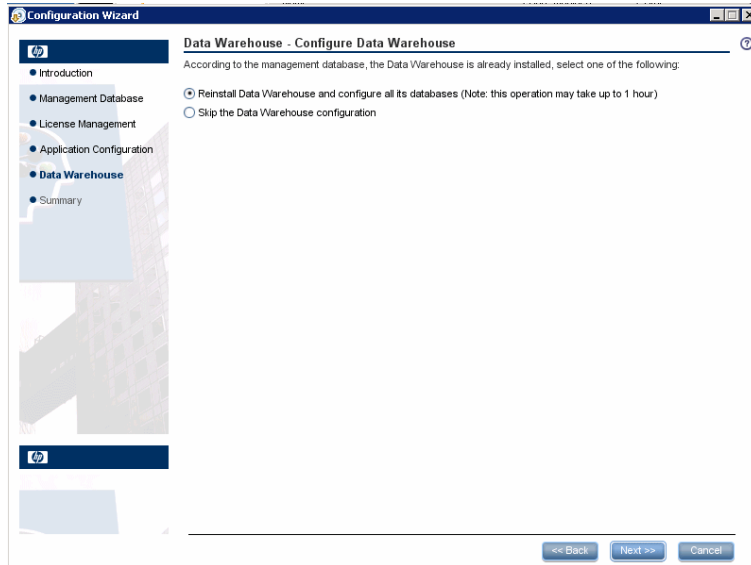
The Data Warehouse server is re-installed.

After the rerun process is complete, the **Configuration Status** page appears

5. Restore any other required configuration files as described in "Learn About Data Warehouse Backups" (on page 133), and "Files to Back Up" (on page 135).

Note: Ensure that the **<install Dir>\Agora\DataWarehouse\etc\abc** directory exists on the restored Data Warehouse server, and that it contains **check_system_for_etl_start.bat**, and **check_system_for_etl_start.bat**.

Note: If required, restore the contents of your External source file location from a backup.

Recovering When the Staging or Target Databases are Corrupt

Scenario: The Staging or TargetStaging or Target Database Corruption databases are corrupted. In such a scenario, it is important that both the Staging and Target databases are recovered. The following procedure describes how to recover from a corrupt database.

1. Restore the Staging and Target databases from backups taken at the same time. (Where an ETL process was not run between backing up the Target and Staging databases.) Restore using the full weekly backup and the relevant differential backup.

Note: The RDBMS server, database and login names must be identical to those used in the initial installation. This information can be found in the Management database. If you cannot remember the passwords for the Staging, Target and SAP BusinessObjects Data Services databases, in the Executive Scorecard application, click **Admin** > **Data Warehouse Settings**. On the settings page, type in new user passwords and then ensure that the RDBMS login names are assigned the same password.

2. Once you have restored the relevant databases, create logins, and associate the database users and logins by running the following scripts on the Data Warehouse server.
   - **For the staging database:**
     - **EXEC sp_change_users_login 'Auto_Fix', 'dws', NULL, 'password'** where password is the old password for the dws login.

- ○ **EXEC sp_change_users_login 'Auto_Fix', 'dwst', NULL, 'password'** where password is the old password for the dwst login.

- ○ **EXEC sp_change_users_login 'Auto_Fix', 'dwmetadata', NULL, 'password'** where password is the old password for the dwmetadata login.

- ○ **EXEC sp_change_users_login 'Auto_Fix', 'dwabc', NULL, 'password'** where password is the old password for the dwabc login.

- ○ **EXEC sp_change_users_login 'Auto_Fix', 'xrefgen', NULL, 'password'** where password is the old password for the xrefgen login.

- ■ **For the target database:**
  - ○ **EXEC sp_change_users_login 'Auto_Fix', 'dwt', NULL, 'password'** where password is the old password for the dwt login.**For the SAP BusinessObjects Data Services database**

  - ○ **EXEC sp_change_users_login 'Auto_Fix', 'login name', NULL, 'password'** where login name is the new login name you created when you created the SAP BusinessObjects Data Services database, and password is the password you assigned to that login name.

A Failed ETL job, or Invalid Data in the Target Database

Scenario: When the ETL job produces an intermediate warning or non-critical error, the job completes successfully but the target data appears to be incorrect.

It is assumed that:

1. There is a backup of the last steady state of the Data Warehouse available.

2. The source data is correct or has been corrected.

3. It is acceptable to lose the history between the last steady state backup and the current date.

The following procedure describes how to recover from a failed ETL job, or invalid data in the Target Database.

1. Restore the Staging and Target databases from backups taken at the same time. (Where an ETL process was not run between backing up the Target and Staging databases.) Restore using the full weekly backup and the relevant differential backup.

   Note: The RDBMS server, database and login names must be identical to those used in the initial installation. This information can be found in the Management database. If you cannot remember the passwords for the Staging, Target and SAP BusinessObjects Data Services databases, in the Executive Scorecard application, click **Admin** > **Data Warehouse Settings**. On the settings page, type in new user passwords and then ensure that the RDBMS login names are assigned the same password.

2. Once you have restored the relevant databases, create logins, and associate the database users and logins by running the following scripts on the Data Warehouse server.
   - ■ **For the staging database:**
     - ○ **EXEC sp_change_users_login 'Auto_Fix', 'dws', NULL, 'password'** where password is the old password for the dws login.

- ○ **EXEC sp_change_users_login 'Auto_Fix', 'dwst', NULL, 'password'** where password is the old password for the dwst login.

- ○ **EXEC sp_change_users_login 'Auto_Fix', 'dwmetadata', NULL, 'password'** where password is the old password for the dwmetadata login.

- ○ **EXEC sp_change_users_login 'Auto_Fix', 'dwabc', NULL, 'password'** where password is the old password for the dwabc login.

- ○ **EXEC sp_change_users_login 'Auto_Fix', 'xrefgen', NULL, 'password'** where password is the old password for the xrefgen login.

- ▪ **For the target database:**
  - ○ **EXEC sp_change_users_login 'Auto_Fix', 'dwt', NULL, 'password'** where password is the old password for the dwt login.

  - ○ **For the SAP BusinessObjects Data Services database**

  - ○ **EXEC sp_change_users_login 'Auto_Fix', 'login name', NULL, 'password'** where login name is the new login name you created when you created the SAP BusinessObjects Data Services database, and password is the password you assigned to that login name.

3. In the Executive Scorecard application, click **Admin** > **Data Source Management**, and confirm that the relevant data sources are Activated.

4. On the Data Warehouse server open a Windows command prompt.

5. Switch to the following directory:

   <Installation_Directory>\Agora\DataWarehouse\Bin

6. For Upstream ETL run the following command:

   dw_abc_load_batch -streamId Upstream

7. Run the following command:

   dw_abc_run_steps.bat -streamId Upstream -register -every 2

An ETL workflow is deleted

Scenario: An ETL workflow has been deleted.

1. Restore the HP Executive Scorecard SAP BusinessObjects Data Services for IT Executive Scorecard or SAP BusinessObjects Data Services for HP FPA database on the RDBMS server using the weekly full and the relevant differential backup.

2. **Note**: The RDBMS server, database and login names must be identical to those used in the initial installation for the Data Warehouse recovery to succeed. This information can be found in the Executive Scorecard application, under **Admin** > **Data Warehouse Settings**.

3. Once you have restored the SAP BusinessObjects Data Services database, create logins, and associate the database users and logins by running the following scripts on the RDBMS server.
   For the SAP BusinessObjects Data Services database

EXEC sp_change_users_login 'Auto_Fix', 'login name', NULL, 'password' where login name is the new login name you created when you created the SAP BusinessObjects Data Services database, and password is the password you assigned to that login name.

4. On the Executive Scorecard and Data Warehouse servers, disable and then enable HP Executive Scorecard as follows:
   a. On the Windows taskbar, click **Start** > **All Programs > HP Executive Scorecard** > **Administration** > **Disable HP Executive Scorecard**.

   b. On the Windows taskbar, click **Start** > **All Programs > HP Executive Scorecard** > **Administration** > **Enable HP Executive Scorecard**

5. For more information on re-installing the SAP BusinessObjects for HP XS and Executive Scorecard components, see the Executive Scorecard General Admin Guide.

Customize Data Warehouse

This section includes the following topics:

"How to Change the Data Source Configuration Definition" (on page 142)

"Add Additional Data Sources" (on page 142)

How to Change the Data Source Configuration Definition

You can change data source configuration information only after you deactivate and then re-activate the specific data source.

Change the data source configuration:

1. Select **Admin** > **Data Source Management**.

2. Click **Deactivate** to deactivate the relevant data source.

3. Click **Activate** to open the relevant activation page.

4. Enter the relevant configuration details.

For details, see "Data Source Management Page" (on page 50).

Add Additional Data Sources

You can add additional Content Packs to the data warehouse that can then be activated or deactivated.

To add additional data sources:

1. Copy the Content Pack file into the CP directory: **<installation directory\agora\Content Packs**.

2. Run the following batch file: **dw_cp_register.bat -name <new CP>**. The name entered must match the Content Pack file name.

3. Activate the data source using the Data Source Management page. For details, see "Data Source Management Page" (on page 50).

Data Warehouse Naming Conventions

The following describes table and field naming conventions.

Type	_Value	Description
Table Name Suffixes	_DIM	Dimension or bridge table.
	_FACT	Fact table.
	_MS	Monthly snapshot table that shows the last known value for the data at the end of a month.
	_HIER	Hierarchy table.
	_ AGG	Aggregate roll up table.
Field Name Prefixes	MD_	Metadata.
	SRC_	Used for all fields that exist just for data warehouse internal processes. Source. Used for all field drawn from the source for ETL purposes only (not pushed to the target).
	PK_	Primary key.
	FLAG_	A binary field: Y/N.
	DATE_	A date type.
	DURATION_	A measure representing a length of time.
	COUNT_	A measure representing a raw count.
	AVG_	A measure representing an average roll up.
	MAX_	A measure representing a maximum roll up.
	MIN_	A measure representing a minimum roll up.
	PCT_	A measure representing a percentage.
Field Name Suffixes	_ID	A surrogate key field that is primary or foreign.
	_BASE	A financial amount, currency, or exchange rate in the default currency of the data warehouse.
	_ UTC	A date expressed in the UTC time zone. For dates: a date expressed in the default display time zone for the data warehouse. For money: a financial amount, currency, or exchange rate in the original currency of the source data.
	_LOC	A date expressed in the local time zone.

This section also includes the following topics:

Target and Staging Databases Naming Conventions

The first character of the Target and Staging databases name must begin with an alpha character. The init_db utility fails if you use database names that begin with numbers.

SAP BusinessObjects Data Services for IT Executive Scorecard or SAP BusinessObjects Data Services for HP FPA Naming Conventions

This section describes the naming conventions used by tables that are part of the SAP BusinessObjects Data Services for IT Executive Scorecard or SAP BusinessObjects Data Services for HP FPA ETL process.

This section includes the following topics:

Datastore

Description	Naming Convention and Examples
Connection to database with source application views	Datastore names have a prefix with the datastore name and a suffix of _DS. **Format:** <SOURCE APP>_DS

	Examples: • AMVIEW_DS • PPMVIEW_DS • SMVIEW_DS
Connection to transactional entity staging database	SRCSTAGING_DS
Connection to target entity staging database	DWSTAGING_DS
Connection to data warehouse database	DW_DS

Datastore Alias

Description	Naming Convention and Examples
Name of Datastore for the specific source in BODS	Alias names have a prefix with the source application name and a suffix of _ALIAS. **Format:** <SOURCE APP>_ALIAS **Examples:** AMVIEW_ALIAS
Alias user for transactional entity staging database	SRCSTAGING_ALIAS
Alias user for target entity staging database	DWSTAGING_ALIAS
Alias user for data warehouse database	DW_ALIAS

Project

Description	Naming Convention and Examples
Allows you to group jobs that have dependent schedule or belong to the same application	Project names have a prefix with the source application name or purpose of the project and a suffix of _PJ. **Format:** <DESCRIPTION>_PJ **Examples:** FPA_PJ

Job Names

Description	Naming Convention and Examples
BODS job which is a group of objects that you can schedule and execute together	Job names have a prefix with the name of the source application. An internal segment can describe the job purpose. There is a suffix of _JB. **Format:** <SOURCE APP>_<PURPOSE>_JB or <PURPOSE>_JB **Examples:** • AM_SOURCE_EXTRACT_JB • DW_JB

Workflows

Description	Naming Convention and Examples
Defines a decision making process to execute a dataflow	Workflow names have a prefix with the source or target name. A SUB-CATEGORY segment describes the ETL phase. There is suffix of _WF. **Format:** <SRC NAME/TARGET NAME>_<SUB-CATEGORY>_WF **Examples:** • AM_AMRIGHTSUSESCOUNT_EXT_WF • AM_MSI_CONTAINER_WF

Dataflows

Description	Naming Convention and Examples
Data flows extract, transform and load data	Dataflow names have a prefix with the source or target name. A SUB-CATEGORY segment describes the ETL phase. There is a suffix of _DF. **Format:** <SRC NAME/TARGET NAME><SUB_CATEGORY>_<ACTION>_DF **Examples:** AM_AMRIGHTSUSESCOUNT_EXT_DF AM_SWAUDITDETAIL_MSI_DF

Variables - Global - Local Variables - Parameters

Description	Naming Convention and Examples

Variables defined in a job Variables defined in a job/ workflow Parameters in a workflow/ dataflow	Variable names have a dollar sign ($) and prefix to identify the type of variable (G for global, L for local, or P for parameter). The suffix identifies the purpose or identifying parameter name.
	Format:
	$G_<PURPOSE> or $L_<PURPOSE> or $P_<PURPOSE>
	Examples:
	● $G_BATCH_ID
	● $L_STARTDATE
	● $P_STATUS

Custom Functions

Description	Naming Convention and Examples
Script functions in Data Integrator scripting language	Custom function names have a prefix that describes the purpose of the function.
	The suffix is _FN.
	Format:
	<PURPOSE>_FN
	Example:
	STARTJB_FN

Scripts

Description	Naming Convention and Examples
Scripts created in jobs or work flows. Description can refer to function the script is performing or the name of the table the script is loading	Script names have a prefix that describes the data source or target name. A SUB-CATEGORY segment describes the ETL phase. The suffix is _SC.
	Format:
	<SRC NAME/TARGET NAME> or <SUB_CATEGORY>_SC.
	Example:
	: AM_ AMRIGHTSUSESCOUNT_ EXT_FAIL_SC

Try/Catch

Description	Naming Convention and Examples
Specify alternative workflows if errors occur while executing a job	Try/catch names have a prefix that describes the data source or target name. A SUB-CATEGORY segment describes the ETL phase. The suffix is _TRY or _CATCH. **Format:** <SRC NAME/TARGET NAME><SUB_ CATEGORY>_TRY or <SRC NAME/TARGET NAME><SUB_ CATEGORY>_CATCH **Examples:** • AM_AMRIGHTSUSESCOUNT_EXT_TRY • AM_AMRIGHTSUSESCOUNT_EXT_CATCH

Conditionals

Description	Naming Convention and Examples
Conditionals are single-use objects used to implement if-then-else logic in a work flow	Conditional names have a prefix that describes the data source or target name. A SUB-CATEGORY segment describes the ETL phase. The suffix is _COND. **Format:** <SRC NAME/TARGET NAME><SUB_ CATEGORY>_COND **Example:** AM_AMRIGHTSUSESCOUNT_EXT_ COND

Flat File Targets

Description	Naming Convention and Examples
Flat file extracts of source view	Flat file target names have a prefix that describes the datastore name. Segments describe the source table name, batch ID, and A SUB-CATEGORY segment describes the ETL phase. The suffix is .txt. **Format:** <DATASTORENAME (without _DS)>_<SOURCETABLENAME_BATCHID> _<SUB-CATEGORY>.txt **Example:**

	AMVIEW_AMRIGHTSUSESCOUNT_' ||$G_Batch_ID||' _EXTRACT_FF.TXT AMVIEW_AMRIGHTSUSESCOUNT _' ||$G_Batch_ID||'_EXTRACT_DELETE_FF.TXT

Data Warehouse Command Reference

This section is a syntax reference for the out-of-box scripts that are available to ETL designers and developers.

The table in the Command Summary section lists the out-of-box scripts that you can use to accomplish command line tasks. These scripts produce specific results. Changing them may produce unpredictable results when they run. For details, see "Command Summary" (on page 150).

This section includes the following topics:

Syntax Convention

The syntax conventions used in the command descriptions are as follows:

- Command options in square brackets ([ ]) are optional.

- Italicized lowercase expressions are variable values.

- If a command option argument is a text string or path that contains blank spaces, you must enclose it in quotation marks. Otherwise, the text before the blank space is considered the entire argument and the remaining text becomes an undefined option.

Command Summary

The following command script files are available in this directory:
<agora_home_directory>\DataWarehouse\bin

Data Warehouse Script Files

Name	Purpose	Primary User
"dw_ds_gen" (on page 153)	Generate the metadata repository.	ETL developer
"dw_ds_import" (on page 153)	Import source files into the metadata repository	ETL developer
"dw_etl_export" (on page 154)	Export the SAP BusinessObjects Data Services for IT Executive Scorecard or SAP BusinessObjects Data Services for HP FPA jobs, workflows, and other ETL components.	ETL developer
"dw_etl_import" (on page 154)	Import the SAP BusinessObjects Data Services for IT Executive Scorecard or SAP BusinessObjects Data Services for HP FPA jobs, workflows, and other ETL components.	ETL developer
"dw_etl_update_containers" (on page 155)	Build an ETL workflow container.	ETL developer
"dw_foundation_setup" (on page 155)	Build the data warehouse foundation	Installer
"dw_generateschemas" (on page 157)	Generate schemas and tables.	ETL developer
"dw_initdb" (on page 156)	Initialize the data warehouse database schema	Administrator
"dw_tz_update_dst" (on page 157)	Update time zone information	Administrator

The Automation Tool

The automation tool is built and designed to simplify the different tasks of Data Source Management.

It contains Data Source Management back-end tools that simplify the usage, add some necessary validations, and set the different statuses. The tool is used by the Data Source Management user interface but also provides a command line interface so it can be used outside the application server. For details, see .

Command Line Interface Functionality Exposed by the CLI

The following Command Line Interface is available for Data Source Management functionality outside the UI:

ConfigureInitial

Usage:dw_ds_automation.bat -task ConfigureInitial -cp xxx -xmlFilePath [Path to datasources.xml file]

Description:

- Configure the CP connection settings before the CP has been initialized.

- Use prior to iCP initialization (Deploy).

Configure

6. **Usage:** dw_ds_automation.bat -task Configure -cp xxx -xmlFilePath [Path to datasources.xml file]

7. **Description:** Configure the CP connection settings and regenerate the datastore of the product. Can be used only after the CP has been successully initialized.

8. **Deploy**

   Usage: dw_ds_automation.bat -task Deploy -cp xxx

   Description: Initialize the CP and set the CP status as **Initialized**.

9. **Activate**

10. **Usage:** dw_ds_automation.bat -task Activate -cp xxx

    Description: Activate the CP using the stream Assembler and set the CP status as Activated. Activating the CP causes its ABC stream to be merged with the Main (Core) CP stream. Activated CP stream steps will be executed during the execution of the Main (Core) ABC Stream.

    Deactivate

    Usage: dw_ds_automation.bat -task DeActivate -cp xxx

    Description: Deactivate the CP using the stream assembler and set the CP status as **Non-Activated**. Deactivate performs the opposite action from Activate. Deactivate subtracts the deactivated CP ABC Steps from the Main ABC Stream Steps.

    AutoActivate

    Usage: dw_ds_automation.bat -task AutoActivate

    Description: Deploy and activate all CPs with "autostart" flag according to the order set by "autostartpriority" in the manifest
    used by the post- install tool. The manifest found in cp_manifest.properties, is a list of attributes located in the root folder of the Content Pack.

dw_ds_gen

Use this script to generate one or more datastores. SAP BusinessObjects Data Services for IT Executive Scorecard or SAP BusinessObjects Data Services for HP FPA imports these datastores to enable SAP BusinessObjects Data Services for IT Executive Scorecard or SAP BusinessObjects Data Services for HP FPA jobs to connect to the database.

User

ETL developer

Syntax

```
dw_ds_gen -datastore <dws|dwst|dwt|dwabc|PPM|AM|SM|all>
          -outputdir <directory>
          [-verbose]
          [-help]
```

Options

Option	Required?	Description
-datastore	Y	Generate the specified data source (dws, dwst, dwt, dwabc, PPM or AM). Specify all to generate all sources.
-outputdir *directory_name*	Y	Path and name of the target directory where the data source files are to be generated.
-verbose	N	Produce more detailed output.
-help	N	Display command syntax.

Examples

dw_ds_gen -datastore all -outputdir c:\datastores dw_ds_gen -datastore PPM -outputdir c:\datastores\PPM

dw_ds_import

Use this script to import source files from a named directory into the metadata repository. For example, to import a collection of files into the datastore directory.

User

ETL developer

Syntax

```
dw_ds_import -inputdir directory
             [-help]
```

Options

Option	Required?	Description

-inputdir *directory_name*	Y	Path and name of the directory where the data source files are to be imported.
-help	N	Display command syntax.

Example

dw_ds_import -inputdir "c:\datastore\Source Files"

dw_etl_export

Use this script to export Data Services jobs, workflows, data flows, and functions to a zip file.

User

ETL developer

Syntax

```
dw_etl_export -zip <zipfile>
                     [-help]
```

Options

Option	Required?	Description
-zip *zip_file_name*	Y	Export to the specified archive file.
-help	N	Display command syntax.

Example

dw_etl_export -zip c:\etlFiles.zip

dw_etl_import

Use this script to import Data Services jobs, workflows, data flows, and functions to a zip file.

User

ETL developer

Syntax

```
dw_etl_import [-atl <atlFile>]
                 -topdir <directory>
                [-zip <zipfile>]
                [-help]
```

Options

Option	Required?	Description
-atl *atl_file_name*	N	Import the specified .atl file.
-topdir *directory_name*	Y	Import all .atl files under a specified directory and subdirectory.

-zip *zip_file_name*	N	Import the contents of the archive file.
-help	N	Display command syntax.

Examples

dw_etl_import -topdir c:\etlFiles

dw_etl_import -topdir "c:\ETL Files"

dw_etl_import -zip c:\etlFiles.zip

dw_etl_import -atl c:\functions.atl

dw_etl_update_containers

This script loads .atl files during the installation process.

User

ETL developer

Syntax

```
dw_etl_update_containers -topdir <directory>
                                 [-verbose]
                                 [-help]
```

Options

Option	Required?	Description
-topdir *directory_name*	Y	Name of the directory that contains all application-specific .atl files.
-verbose	N	Produce more detailed output.
-help	N	Display command syntax.

Return codes

0 – Success
1 – Success with warnings
>1 – Errors

Examples

dw_etl_update_containers -topdir "c:\My Application"

dw_etl_update_containers -topdir c:\MyApplication

dw_foundation_setup

Use this script to call the scripts that initialize the data warehouse, or load the metadata for data source connections into the database.

Syntax

```
dw_foundation_setup [-args <taskArguments>]
```

```
             -taskName <taskName>
[-verbose]
[-help]
```

Options

Option	Required?	Description
-args *task_argument*	N	Name of the task argument.
-taskName *task_name*	Y	Name of the requested task.
-verbose	N	Produce more detailed output.
-help	N	Display command syntax.

You can see the individual tasks and associated arguments called by dw_foundation_setup if you open this file with a text or xml editor:

<agora_home_directory>\DataWarehouse\etc\xml\dw_foundation_setup.xml

Return codes

0 – Success
1 – Success with warnings
>1 – Errors

dw_initdb

Use this script to initialize data warehouse foundation database schemas.

Syntax

```
dw_init.bat [-confdir <directory>]
            [-schema <schemaname>]
             -sqldir <directory>
            [-help]
```

Options

Option	Required?	Description
-confdir *directory*	N	Name of the directory that contains the .properties file for the designated schemaname.
-schema *schemaname*	N	Name of the schema, such as dwmetadata, dws, dwst, or dwt.
-sqldir *directory*	Y	Name of the directory that contains the schema and .properties file.
-help	N	Display command syntax.

Examples

dw_init.bat -sqldir c:\myDbDirectory
dw_init.bat -sqldir c:\myDbDirectory -schema dwmetadata -confdir "c:\my Config Directory"

dw_tz_update_dst

Load or update the time zone information for a data source and the data warehouse.

Run this utility whenever you deploy new source data or when you manually change the time zone.

Time zone is expressed in GMT format: GMT +\-nn:nn.

Syntax

```
dw_tz_update_dst.bat
                [-help]
                [-verbose]
```

Options

Option	Required?	Description
-help	N	Display command syntax.
-verbose	N	Produce more detailed output.

Return codes:

0 – Success

1 – Success with warnings

>1 – Errors

Example

dw_tz_update_dst -verbose

dw_generateschemas

Use this script to generate schemas and tables.

Syntax

```
dw_generateschemas [-aggregates]
                   [-application <application>|all]
                   [-autoloadingmode true|false]
                   [-interface]
                   [-noninteractive]
                   [-product <product>|all]
                   [-staging]
                   [-target]
                   [-verbose]
                   [-help]
```

Options

Option	Required?	Description
-aggregates	N	Generate or update the aggregation tables.

-application *application_ name* | all	N	Load the named application or load all applications. All is the default if you are in non-interactive mode.
-autoloadingmode	N	Specify true or false. True is the default value.
-interface	N	Generate the SQL script files to create the interface.
-noninteractive	N	Run this script without prompting for user input. Use all default values.
-product *product_name* | all	N	Load the specified product. All is the default value.
-staging	N	Generate or update the staging tables.
-target	N	Generate or update the target tables.
-verbose	N	Produce more detailed output.
-help	N	Display command syntax.

Interfaces will always be written to a file, whether autoloadingmode is on or not. Each interface for a Data Source Connection is written to a separate file. If you do not specify a specific phase, all phases execute.

Example

dw_generateschemas -application myApp -autoloadingmode true -target

Glossary

ABC

Audit, Balance, and Control (ABC). ABC is an application that triggers the ETL processes. Audit ensures consistency during ETL processing. It measures the number of records in and the number of records out for each step and displays these runtime statistics in a collection of audit reports. Balance verifies that data in the data warehouse matches data in the source system. For example, if the data warehouse stores project dollar amounts then the balance process verifies that the aggregate project dollars in the data warehouse matches the aggregate project dollars in the source application data. Control governs ETL processes. Control makes sure that there is a proper restart and recovery when a system error occurs. Control also manages job dependencies at runtime.

ABC Batch

An instantiated ABC job stream built from the job stream definition. The execution is sequential: one batch must finish execution before a new batch for the same job stream can start. In the case where there is both upstream and downstream ETL, an upstream batch and a downstream batch can run concurrently. Each executable batch has a unique ID.

ABC Job stream

A flow of individual execution (job stream) steps and a description of related dependencies. A job stream can have one or more start steps, one or more end steps, and execute several parallel branches. A stream ID value identifies the individual stream. The ABC job stream contains one-to-many job stream steps.

ABC Job stream step

An individual step that invokes a command line utility or executes an SAP BusinessObjects Data Services job. An ABC job stream step is unique within an ABC job stream.

Ad hoc query

Ad hoc queries are spontaneous requests for information that are normally formulated and run a single time. Ad hoc queries are constructed with a SQL statement or by using a data access tool.

Aggregation

Aggregation is the accumulation of related data into a single table.

Allocation engine

The allocation engine is a process that communicates with the Financial Planning & Analysis (FPA) web application. It provides status information about allocations when changes are made to stages or rules. It selects costs, updates relationships, and splits costs across the data model. 208 By using allocation scenarios, stages, and rules, financial analysts can allocate the costs to compare planned versus actual costs and use the results for proper cost and budget management.

Allocation scenario

An allocation scenario is a tool that enables you to analyze planned costs and actual costs by categorizing them. You can use categorized costs to compare planned (budgeted) costs to the actual costs.

Allocation stage

Allocation stages are a required component of the allocation engine. They identify a dimension that is associated with a Cost fact table. You can define Actual Cost and Planned Cost stages.

Analytic

Analytics are reports that summarize or aggregate data. Analytics help managers to identify trends, analyze volumes of data, plan, forecast, and make business or strategic decisions.

Analytic application

Analytic applications produce a series of logically integrated interactive reports, including dashboards and scorecards. These reports support management decisions that usually involve demographic analysis, trend analysis, pattern recognition, drill-down analysis, and profiling. For example, Financial Planning & Analysis (FPA), IT Performance Analytics (ITPA), and IT Financial Management (ITFM) are analytic applications.

Application Content Pack

Assignment groups

Assignment groups are lists of users who are responsible for an incident. When an incident opens or escalates, a notification mechanism alerts the users in the group. Example: A service desk operator receives a request to fix a disabled workstation. The operator creates an

incident and assigns it to the IT assignment group. The IT technician determines that the hard drive must be replaced. Because the drive must be purchased, the technician updates the incident and assigns it to a Materials Management assignment group for acquisition. If the hard drive purchase is delayed, and the incident cannot be closed in a reasonable amount of time, a pre-defined process can escalate the incident to the operations manager for intervention. Incident category definitions can include a default assignment group for all incidents in that category. For example, the hardware category can list IT as the assignment group if the IT department is always the first group to handle hardware incidents.

B

Backfill record

Backfill records are used to complete partial data entities in the change data capture (CDC) records for a given cycle. Backfill records are used to ensure that completed data is loaded into the target environment.

Business driver

1 Business drivers are the tasks, information, and people that support and promote the goals of the enterprise. 209 2 Business drivers are the requirements that describe the business goals, for example, more quality data and faster response to queries. 3 Business drivers are problems that are important enough to mean the difference between success and failure for an organization.

Business impact analysis report

A business impact analysis report describes potential risks to the organization. A good business impact analysis report should identify the cost of outages in terms of lost revenue,

replacement of equipment, salaries, and other opportunity costs.

Business intelligence

Business intelligence describes the result of in-depth analysis of detailed business data, including database and application technologies and analysis practices. Business intelligence is sometimes used synonymously with decision support but is much broader, potentially encompassing knowledge management, enterprise resource planning, data mining, and other practices.

Business process

Business processes are a set of business services that support a single corporate purpose.

Business service

A business service is the combination of one or more business applications plus the supporting configuration items that enable delivery of the business service to the customer. The products that IT offers its customers are internal and external business services. A business service supports zero-to-many organizations, and a business service incident usually impacts associated organizations. An organization can rely on one-to-many business services; however, an incident that affects the organization may not always affect the associated business service. Enterprise resource planning (ERP) is a good example of a business service. ERP is a business management system that integrates all facets of the business, including planning, manufacturing, sales, and marketing. There can be many component business applications such as inventory control, order tracking, customer service, finance, and human resources.

Business service downtime impact

Business service downtime impact (BSDI) is a metric that quantifies the cost of service downtime in monetary terms, including productivity and business opportunity impact.

C

Catalog

A list of declared available executables.

Change data capture

BTO Analytics uses the change data capture (CDC) technique to detect inserts and updates from source data based on the previously extracted change timestamp for each entity. Delete records are detected using a full key compare against the Transactional Snapshot (TSNP).

Composite key

Composite keys are primary keys that consist of more than one column. Composite keys are also known as concatenated keys or aggregate keys.

Configuration item

Configuration items (CI) are components of your infrastructure or a business service. CIs are catalogued in your Configuration Management Database (CMDB). A CI can be a hardware component in a larger hardware system, a software application, or any other identifiable item that supports a business service. For example, a CI can be items such as operating systems, monitors, accounting applications, routers, and telephones.

Configuration Management Database

A well-designed Configuration Management Database (CMDB) is a critical building block that stores configuration, asset, and incident data.

The CMDB integrates information about assets, incidents, problems, change requests, and configuration items (CIs). BTO Analytics uses the data in the CMDB to run scenarios and produce analytics that suggest how to tune your business services and IT infrastructure. Historical information about assets and CIs, and how well they meet performance commitments, helps you make decisions about future IT investments and cost-saving strategies. The more robust your data, the more precise these scenarios and analytics will be. A well-tuned CMDB can relate assets to CIs, provide information about asset class availability and CI performance cost, and relate asset and service availability to business service performance.

Conformed dimension

A conformed dimension is used in more than one cube and has the same meaning and data regardless of the fact table that references it.

Consolidated model

BTO Analytics uses the consolidated model. During the ETL process, BTO Analytics gathers information from one or more source systems and conforms the data into a single consolidated entity before loading it into the data warehouse.

Content Packs

Set of artifacts that can be deployed upon the run time platform (DWH or Application) in a dynamic manner, thus extending its capabilities.

Core Content Pack

The Schema and ETLs that are common to all data sources and build the target Data Warehouse.

Core model

In the core model, data marts are architected to share the same master set of conformed dimensions and standardized facts across the enterprise.

Corporate information factory

Corporate information factories are the framework that surrounds the data warehouse. Corporate information factories typically contain an operational data store, a data warehouse, data marts, decision support systems applications, exploration warehouses, data mining warehouses, alternate storage, and other data management systems. BTO Analytics uses the Ralph Kimball methodology.

Crosstab

Crosstab (cross tabulation), also known as a contingency table, is a combination of two or more variable tables. A contingency table analyzes whether the value of one variable is associated with or contingent on another.

CSNP

Consolidated Snapshot.

Cube

Cubes are groups of related dimensions and measures that are used for data analysis.

D

Dashboard

Dashboards are reporting tools that consolidate, aggregate, and arrange measurements and metrics on a single screen so information can be monitored at-a-glance.

Data architecture

1 Data architecture is the framework design used to organize data resources for collection and future access. 2 Data architecture is the data, processes, and

technologies that an organization uses to create and operate information systems.

Data flow

Data flow is a reusable object that contains steps to define the transformation of data from source to target. Data flows are called from inside a work flow or job. You can pass information into or out of data flows using parameters. You can store data flows inside work flows, but you cannot store data flows inside other data flows. Source: SAP® Business Objects. SAP Help Portal (http://help.sap.com).

Data integration

Data integration consolidates records with similar information to produce a single version of data in the data warehouse. Data integration includes the steps from acquisition through publication, such as extraction, cleansing, consolidation, removing duplication, key generation, transformation, and aggregation, of source data before loading to the target table.

Data mart

Data marts are highly focused versions of a data warehouse. They are data stores that contain data for a specific business function within an organization, for example, finance or sales.

Data mining

Data mining is the process of analyzing data to identify relationships, trends, or patterns in the data.

Data model

Data models describe the source, extraction, consolidation, and target components for a single entity.

Data quality

Data quality is the degree of data excellence. For example, the data is stored according to data type, it is consistent, complete, not redundant, follows business rules, and corresponds to established domains. The data should be timely, well understood, and satisfy the needs of the business. The user should be satisfied with the validity of the data and the information derived from that data.

Data warehouse

Data warehouses are a repository of integrated information that is available for queries and analysis. Users can run queries against a database without having to know anything about the underlying data structures in the database.

Dimension

1 Dimensions are entities that describe, qualify, or otherwise add meaning to facts in a star schema fact table. Dimensions are the items in the analysis of facts by product, market, time, and period, for example. 2 Dimensions describe the measurements (facts) that business users want to analyze.

Downstream

Downstream ETL is a process that retrieves data from the data warehouse and passes it to a consumer application.

E

Efficiency and effectiveness

Efficiency describes how well IT meets customer expectation with minimal resources, expense, or unnecessary effort. Effectiveness measures the degree of success in achieving a given goal. Unlike efficiency, effectiveness does not measure the resources

expended, the expense incurred, or the effort, but only the degree of success. IT can be effective without being efficient. BTO Analytics enables you to construct scenarios that alter resources, expenses, or other efficiency components to improve effectiveness.

Enterprise key

The enterprise key is used to generate the durable key in the target entities.

ETL

The Extract, Transform, and Load (ETL) process is an end-to-end transfer of external source data through several staging layers and into the target layer of the data warehouse. The source data can reside in a single database or multiple databases. The data warehouse uses the ETL process to extract, consolidate, and transform the source data into a meaningful target model that populates relevant business analytics.

Executable

A program that executes an ETL task: • Any custom script or program that complies with the data warehouse ABC API. • An SAP BusinessObjects Data Services job that complies with the data warehouse ABC utilities.

EXT

Extract Staging

Extract (ETL)

The extract process extracts delta data from the source systems and writes it to delimited flat files on the file system. The data warehouse uses the Change Data Capture (CDC) technique for extracting data from the source tables. BTO Analytics extracts data if the last modification date is greater than or equal to the maximum last modification date value.

F

Fact table

Fact tables are the central tables in star schemas. Facts are information about the business that are typically numeric and additive. Fact tables contain the measures that the business users wish to analyze to find new trends or to understand the success or failure of the organization.

Financial Planning & Analysis

Financial Planning & Analysis (FPA) is a component of BTO Analytics that helps organizations make better IT financial decisions by reducing the effort involved with managing IT finance and giving business the financial transparency it demands. FPA does this by consolidating and allocating planned and actual costs from HP Asset Manager and HP Project and Portfolio Management to help IT manage those costs more effectively.

Foreign key

A foreign key is the field in a table that refers to the primary key of another table in the same data source. Every relationship in the model must be supported by a foreign key. Foreign keys enforce referential integrity by completing an association between two entities.

G

Governance

Governance is a structures process or group used to control change and provide oversight. Governance groups are commonly used to control changes in data models, data modeling practices, and architecture standards.

Granularity

Granularity is the level of the measures within a fact table represented by the lowest level of the dimensions.

H

Hierarchy

Hierarchies use ordered levels to organize data. For example, in a time dimension, a hierarchy might be used to aggregate data from the month level to the quarter level to the year level.

Historical data

Historical data is data from previous time periods. It is used for trend analysis and for comparisons to other time periods.

I

Impact analysis

Impact analysis is the process of analyzing the effect if a business process fails or loses efficiency.

Impact rules

Impact rules define the effect of an incident on a business service, application, or the organization. Impact rules are associated with these characteristics: • Incident type, such as degraded performance, limited capacity, corruption, an outage, or a request for information. • Scope of the impact. For example, the impact might affect one user, an entire department, a business unit, or the entire enterprise. • A schedule that defines when the rule applies. An outage at midnight might not be as expensive as an outage during normal business hours. • Fixed amount, fixed rate, or stepped rate impact calculation. These variables make each rule unique. As you expand the number of impact rules to cover different scenarios, your

impact calculations become more precise. For example, if all variables are the same except for the scope, the impact cost is exponentially greater as a larger segment of the organization is affected. Different rules also enable you to calculate the impact of an outage at these levels: • Business service level, which has immediate impact. • Organization level, which extends the impact to include customer good will, lost revenue, and more. BTO Analytics uses impact rules to calculate the impact of historical events as well as hypothetical scenarios.

Integration Content Pack

The dynamic deployable part of a Content Pack that allows to integrates to a specific data source.

ITIL best practices

BTO Analytics users need to adhere to the best practices advocated by the IT Infrastructure Library (ITIL). When you adhere to the ITIL best practices and processes for problem, change, and service level management, you have a business maturity model that is compatible with BTO Analytics processes and objectives. To validate the benefits of ITIL best practices, you can evaluate comparative industry process metrics to confirm the improved efficiency and effectiveness of your internal processes. BTO Analytics follows ITIL version 3 guidelines for naming conventions and to categorize analytics.

J

Join

Tables from a single data source where one table is considered the parent or primary table are consolidated with a join. In a join, all records from the parent table are imported, and records that have a

matching foreign key are imported from child tables.

L

Load (ETL)

The load process adds new records, updates existing records, and flags deleted records in the data warehouse target layer fact and dimension tables.

Log

A log displays an alert that an issue occurred during execution. The information in the execution log can become an alert when configured by the alert system.

M

Measure or Measurement

A value collected by the executable during execution, such as the number of rows processed during an ETL job, or an amount extracted from a table that describes expenses in a source application. The ABC application does not make any assumptions about the business tasks performed by the executable or impose any semantic requirements on computed measure values. The ABC application provides an interface for the executable to store measures. The ABC reports provide drill-down capabilities into the stored measures.

Merge

Tables that exist across multiple data sources and where reconciliation is done are consolidated with a merge. In a merge, all records from all tables are imported, and reconciliation is done where appropriate. Merges join tables where they overlap and also import all other records.

Metadata

1 Metadata includes a description of data models, a description of the layouts used in database design, the definition of the system of record, the mapping of data from the system of record to other places in the environment, and specific database design definitions. 2 Metadata usually refers to agreed-upon definitions and business rules stored in a centralized repository to ensure that business users across departments and systems use common terminology for key business terms. Metadata can include information about data currency, ownership, source system, derivation (such as profit equals revenues minus costs), or usage rules. Metadata prevents data misinterpretation and poor decision making due to limited understanding of the true meaning and use of corporate data. Source: SAP® Business Objects. SAP Help Portal (http://help.sap.com).

Metric

1 Metrics measure quality. They establish and collect measurements of success or failure. 2 The executable that collects the measures and generates the status. The ABC application provides an interface for the executable to store metrics.

MSC

Multiple Source Consolidated.

MSI

Multiple Source Identity.

Multi-dimensional

Multi-dimensional is the aggregation of data by the dimensions of the business. For example, sales by region by product by time.

N

Near-real-time

Near-real-time provides users with rapid updates from transactional systems.

O

OLAP

Online analytical processing (OLAP) is an application that enables multidimensional analysis and visualization of data.

Organization

Organizations are parts of your business that provide a product or service to an internal or external customer. It can be an entire business unit, a cost or profit center, or a functional department. It is an entity that adds value directly or indirectly to your customer community.

P

Predictive analysis

Predictive analysis uses data mining techniques to predict future behavior, probability, and trends. The more historical data that you have, the more accurately you can predict the likelihood of future events. For example, auto insurance companies use safety predictors such as age, gender, and driving record when they issue car insurance policies. Mortgage underwriters use financial predictors such as income, debt ratio, and payment history when they issue home mortgages.

Primary key

Primary keys are the field or fields that make up the unique value for each record. In the source application, this is represented by the business key. In the data warehouse, it is the surrogate key.

Prioritization

When the number of services required exceeds your capacity, you must establish rules to organize open incidents into a work queue. The most urgent incidents are at the beginning of the queue; incidents with lower priority are at the bottom of queue.

Process

A process is an execution of a job stream step in a specific batch. A single job stream step may lead to multiple processes in cases of retries.

R

Real-time

Real-time reporting is on demand reporting versus scheduled, prebuilt reporting.

Reconciliation

Data reconciliation helps ensure the quality of the data.

Report

Reports are pre-defined documents that target a specific audience or user.

Report library

Report libraries are sets of programs that have been created, fully tested, quality assured, documented, and made available to the user community. The programs in these libraries are called canned, predefined, parameterized, or skeleton queries. They are launched by a user who enters only a variable such as a date, region number, range of activity, or some other set or sets of values the program needs to generate a query or report.

Resource allocation

The challenge for IT is to reduce costs without compromising services.

Reducing personnel can reduce costs, but may seriously affect services that require high service levels and minimal outages. BTO Analytics enables you to plan for resource needs, the cost of reducing head count, and validate that resources levels are correct for your service requirements. For example, increased revenues may mean increased demand for services and more unplanned outages. How much budget do you need to assign enough technicians to cover expected demand?

Risk

Risk is the possibility of loss that is measurable in monetary terms. Risk can also be an intangible opportunity cost. The business service owner must define the level of risks, such as the amount of acceptable downtime or economic impact. IT must set expectations for how it will support the applications and infrastructure of business service and mitigate risks. Examples of risks include a corrupt database, a power outage, or a natural disaster. The list of business risks is large. Some are common to all enterprises, like a natural disaster; some are specific to your organization or line of business.

S

Slowly changing dimension

A slowly changing dimension (SCD) is a dimension that contains data that changes over time. For SCD type 1 changes, the new data overwrites the original data. For SCD type 2 changes a new record is generated. BTO Analytics makes a copy of the record and flags the original record as historical. Both the new and old record share the same durable key, indicating that they are the same piece of data.

Snowflake schema

A snowflake schema is a data model that has a centralized fact table that references multiple dimension tables, and the dimension tables reference multiple related tables.

SSI

Single Source Identity.

SSNP

Single Source Snapshot.

Staging

Staging areas are collection areas where data is transformed for presentation, integration, or enhancement. For example, data might be staged until all relevant components are in place.

Star schema

Star schemas are simpler than snowflake schemas. A star schema is a data model that has one or more centralized fact tables that reference a single layer of dimension tables. The dimension tables do not reference other tables.

Stream step detail

A sub-task of the executable job stream step. There are no assumptions about the content of the executable; therefore, the stream step detail is not modeled. The ETL designer is responsible to define the job stream step details.

Surrogate key

A surrogate key is a primary key for the dimension tables. It is the field that makes up the unique value for each record in the data warehouse. Surrogate keys are numeric and are controlled by the ETL process.

T

Transform (ETL)

During the transformation process, BTO Analytics transforms data into the format of the target tables and populates the load-ready target staging tables. The Transformation layer contains load-ready tables that match the internal structure of the data warehouse target tables.

TSNP

Transactional Snapshot.

U

Union

Tables that occur in either single or multiple data sources and have records that are assumed to be equal and independent are consolidated with a union. In a union, all records from all sources are imported but are not reconciled. They are simply added to the rowset.

Universe

The universe is the result of a semantic layer of metadata that creates a business oriented view of the data. The universe contains a schema of the tables and joins that make up the universe and dimension and measurement objects. The universe is an interface between the data warehouse and the analytics that display the data. The universe contains analytic views that enable you to see published and up-to-date allocation cost and planned cost data as well as unpublished data or published data that is not up-to-date. The views also ensure the consistency of data warehouse quality by showing only data that is successfully extracted, transformed, and loaded. Analytic views provide the mechanism to reduce the dependencies of analytic semantic models to data warehouse physical models.

Upstream

Upstream ETL retrieves data from one or more external applications, consolidates it into a target data model, and stores it in the data warehouse.

W

Work flow

A work flow is a reusable object containing steps to define the order of job execution. Work flows call data flows but cannot manipulate data. You can call work flows from inside other work flows or jobs and can pass information into or out of work flows using parameters. You can reuse work flows by dragging existing ones from the object library. Source: SAP® Business Objects SAP Help Portal (http://help.sap.com)

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Dimensional Transform.