

HP IT Executive Scorecard

For the Windows® operating system

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Content Extension Guide for XS IDE Version 9.31.00

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Develop New Content Using the Integrated Development Environment

The Integrated Development Environment (IDE) allows you to develop content and DWH models, as well as develop new entities and extend existing content using the Architect and Engineer contexts. Once the entities are defined and mapped, they are run through the ETL Generator to produce the metadata and workflows. You can then package the data into Content Packs for use in the Data Warehouse.

Tasks

The following describes the various IDE processes:

["Getting Started with Content Extension" on next page](#)

["Design and Analysis Phase" on page 12](#)

["Content Packs and Data Modeling" on page 13](#)

["IDE Main Page and End-to-End Flow" on page 18](#)

["Discover Data Evidence" on page 22](#)

["Import Existing Content" on page 22](#)

["Define New Content Pack Project" on page 24](#)

["Define the Target Model" on page 29](#)

["Perform Architect Context IDE Tasks" on page 30](#)

["Perform Engineer Context IDE Tasks" on page 40](#)

["Delete an Entity Permanently" on page 51](#)

["Manage Validation" on page 53](#)

["Generate Content" on page 57](#)

["Package and Deploy Content" on page 58](#)

["Advanced Development" on page 59](#)

["Next Steps" on page 77](#)

Getting Started with Content Extension

This document assumes basic data warehouse modeling knowledge, understanding of the ETL concepts, good familiarity with databases, as well as SAP Business Objects Data Services (BODS). When creating or extending content make sure that you have set up Executive Scorecard as well as installed the contents of the IDE DVD. For IT Executive Scorecard installation and administration details, see the *Administrator Guide*.

IDE Terms

IDE: Integrated Development Environment

The Eclipse workspace where you can create or extend content using modeling tools in relevant contexts.

KPI: Key Performance Indicator

KPIs reflect how well the organization is doing in areas that most impact financial measures valued by shareholders, such as profitability and revenues.

API: Application Programming Interface

A specification intended to be used as an interface by software components to communicate with each other.

ETL: Extract, Transform, Load

An end-to-end transfer of external source data through several staging layers and into the target layer of the data warehouse. 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.

UDM: Unified Data Model

Provides a bridge between the user and the data sources.

DWH: Data Warehouse

The data warehouse 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.

XS: Executive Scorecard

An application that enables executives to continuously improve their business by measuring what happened and what is happening, analyzing that information, and planning new strategies using the gathered information.

File Based Integration (FBI) Extractor

FBI enables you to extract data from a specific data source according to a set of instructions. It consists of a pluggable extractor framework for each data source. The extractor gathers data according to the specific instructions it receives, placing it into a relevant txt flat file. If you want to develop your own extractor for use with extended content, see the *FBI Extractor SDK Guide*.

Connecting to the integration: The ETL Generator templates in the back-end generate integration templates which utilize File Based Integration (FBI). Load the Source metadata to the IDE and then map it to the correct consolidation entity in the relevant fields.

Entity

An entity is an object of interest included in the data model.

Context

A context in the IDE is the model you create in order to perform content extension and definition. It is a collection of certain entities that may share some relevancy in common. The IDE supports the Architect and Engineer Contexts.

Content Packs

A content pack is a set of entities from a certain type. There are three types of content packs:

Source: Contains all of the artifacts needed to connect to the relevant data source and pull data from that data source.

Integration: Integrates the information from the source, using the DWH schema and loading process in order for the data to be brought to the Target tables. Takes the schema and entities of the source data and transforms it into usable data.

Target: Defines the content of the Data Warehouse as well as the look of the target tables according to the Unified Data Model (UDM).

IDE Requirements

Required for DWH Architects

- Understanding of Business Intelligence tools, data warehouse modeling and database design principles.
- XS DWH Target schema.

Required for DWH ETL Engineers

- Understanding ETL principles.
- Experience with BODS.
- Familiarity with the source schema.

Required for DWH Integration Engineers

- Java programming skills

Prerequisite knowledge for performing content development tasks:

- HP Unified Data Model (UDM).
- Target Model: The existing supported model of the DWH
- Basic architecture of the data warehouse and the advantages of the templates.
- Basic familiarity with the Integrated Development Environment (IDE).
- BODS and data modeling.

General Prerequisite

The IDE only supports the usage of UTF-8 (Latin) characters.

IDE Set up

The IDE can be downloaded from HP Live Network (<https://hpln.hp.com/group/executive-scorecard>) and contains:

- **IDE:** Unzip the file and double-click **eclipse.exe** to run the IDE Eclipse application.
- **IDE Content:** Contains the OOTB Content Packs.

Content Extension process

The development of new content comprises the following steps:

1. Data Evidence: Understanding and analyzing what data needs to be included, based on your information needs and objectives.
2. Import existing content for extension or new Content Pack folders if required.
3. Modeling: The architect creates the Target model.
4. Data Source Integration: The engineer maps the data from the Source to Target.
5. ETL development and generation.
6. ETL orchestration and management.
7. Consolidation
8. Context (universe) building and adjustments.
9. KPIs additions and modifications.

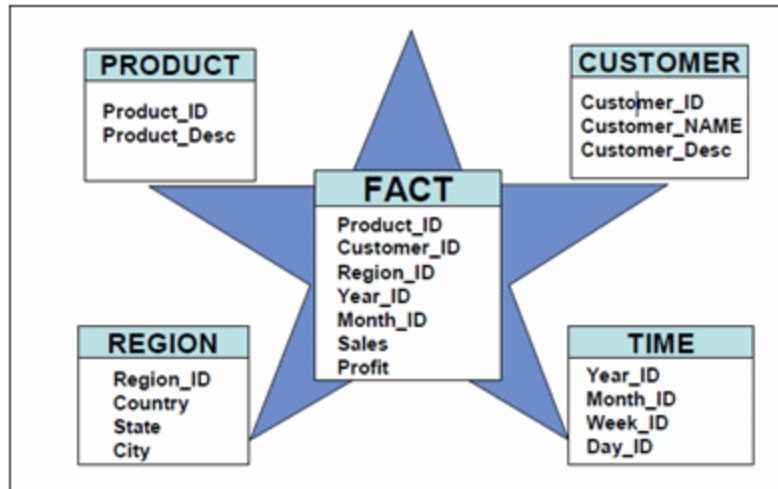
Design and Analysis Phase

The information design and analysis phase includes the following process:

- **Business Discovery:** Determine your organization's objectives and information needs. Business discovery contains the following steps.
 - User Analysis: Define personas and their business requirements.
 - Decision Based Analysis: Includes Executive Scorecard KPIs, reports, metrics, and dashboards.
 - Information Availability: Identify the Source systems that support the business requirements.
 - Assign Priorities
- **Information Discovery:** Discover the data in the organization that supports the business requirements and synchronizing the available information, the means of extracting it with information required. This is the Data Evidence process. Information discovery includes the following steps.
 - Source Contact Point: Select an expert to lead the information discovery process.
 - Source Extraction Method: DB query, API, Web services.
 - Source Table Identification: Identify configuration tables to populate Dimensions, and transactional tables to populate Facts.
 - Source to Target Mapping: Identify Source column mapping to Target columns and define data-processing requirements.
- **Architecture:** Comprised of a star schema, which is a design method of dimensional modeling, in which the data is organized into Facts and Dimensions. A star schema is designed by surrounding each fact with its associated dimensions.

- **Fact:** An event that is counted or measured, such as a sale or login. Table Structure contains business measurements (numeric or time based) and Dimensional Intersection Point.
- **Dimension:** Reference information about the fact, such as period, product, or customer. Common Table Structure contains descriptive attributes.

Sample Star Schema



Content Packs and Data Modeling

Content packs contain all the artifacts needed to connect to the relevant data source and gather data from that data source. The mapping between the raw data from the data source and the target database in the Data Warehouse is included in the ETL. 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.

Content Pack Types

- **Target Content Pack:** Responsible for the transfer of data from consolidation to the target database. The Target CP defines the content of the Data Warehouse as well as the look of the target tables.
- **Integrated Content Pack (i-CP):** The i-CPs are responsible for bringing the data from the specific data sources and transforming it to the consolidation level. From there, the Target CP transfers the data to the target. The i-CPs integrate the information from the source, using the DWH schema and loading process in order for the data to be brought to the target tables.

Content Packs contain the following folders:

- **ABC:** Contains files that define the ETL stream, and the general flow of steps of SAP BusinessObjects Data Services jobs. The files list the order of the steps as well as the link between the parent and child steps. These files are necessary if you have to add a step to the ETL process.
- **Custom:** Contains SQL scripts that are not part of the standard ETL processes. For example, if you want to include a staging table that will help the ETL, the script is placed in the Custom folder.
- **Data Model:** Contains the xml files that define the target schema.
- **ETL:** Contains the jobs and workflows of the ETL and defines how data goes through the processes.
- **cp_manifest.properties:** The manifest file provides additional information to the Content Pack to allow the system to perform sets of validations.
- **dw_app.properties**
- **dw_app.xml:** Files that are created automatically when you add a new CP.

Data Model Types

Data models describe the source, extraction, consolidation, and target components for a single entity:

Target Entity

Fact or Dimension: Entity name and column names defined according to the Star-Schema architecture.

Source Entity

The actual representation of an entity extracted from the source. Generated automatically according to the integration entity design.

Integration Entity

Entity name, column names, and data types defined according to source table design.

Column Mapping

Source to Target column mapping.

Logical Data Models

DWH supports the following types of logical data models:

- **Target Data Models:**
 - **Target Model – Dimension or Fact:** 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.
- **i-CP Data Models:**

- **Extraction Model:** ETL processes obtain the data in native format and stages it in intermediate tables that conform to the extraction data model for that entity. Extraction also validates the data to ensure that it is usable.
- **Source Model:** The source entity models represent the design of DII (Data Integration Interface).

Physical Data Models

DWH logical Data Models generate multiple physical tables that support the ETL processing logic.

- **Source entity models:** The source entity models are the data produced by an external application. Used for a specific version of the product, for example ALM 10/MSSQL, ALM 11 Oracle.
- **Extraction models:** ETL processes obtain the data in native format and stage it in intermediate tables that conform to the extraction data model for that entity. Extraction also validates the data to ensure that it is usable.
- **Consolidation models:** Consolidation models transform the data further by merging extracted data from diverse sources into meaningful data required by applications.
- **Target models:** The target models describe the final version of the data that adheres to the design required by applications.

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.

Each table contains both designed columns and static columns, also known as metadata columns, so that the administrator can have the visibility of ETL processing over the entity's data.

Data Warehouse Internal Fields

The following are the internal Data Warehouse fields, in addition to those in the IDE, that are added to the model.

Field Name Prefixes	Description
MD_BATCH_ID	ETL stream ID displayed on all Physical Models.
MD_PROCESS_ID	ETL Process ID running the specific job.
MD_DURABLE_KEY	Entity's unique identifier populated with MD_ENTERPRISE_KEY value. Displayed only in Target Physical Models
MD_ENTERPRISE_KEY	Entity's unique identifier in the DWH system. Displayed only in Consolidation Physical Models
MD_BUSINESS_KEY	Entity's unique key as it comes from the source systems. Displayed only in Consolidation and Extraction Physical Models
MD_TRANSLASTIND	Indicator whether the line is the last transaction of a specific MD_DURABLE_KEY. Displayed only in Target Physical Models
MD_ACTIVESTATUSIND	Indicator whether the line is active (simulates delete operation). Displayed only in Target Physical Models
MD_TRANSENDDATE	Transaction end date. Displayed only in Target Physical Models
MD_DELETEDDATE	Delete date (date record was marked as inactive). Displayed only in Target Physical Models
MD_CREATEDDATE	Date record was created. Displayed only in Target Physical Models
MD_LASTMODDATE	Date record was last modified and updated. Displayed only in Target Physical Models
MD_FLAG	Flag that indicates whether row is new, updated, or requires a delete. Displayed only in Consolidations and Extractions Physical Models
MD_PF_FLAG	Flag that indicates whether row is pre-filled or not. Displayed only in Extractions Physical Models

Field Name Prefixes	Description
MD_QUALIFIER	Unique identifier of an Entity across all Sources, that allows consolidations (like "Consolidation Rule"). For example, "NODE" entity qualifier is FQDN Node name.
MD_CP_ID	Source instance ID

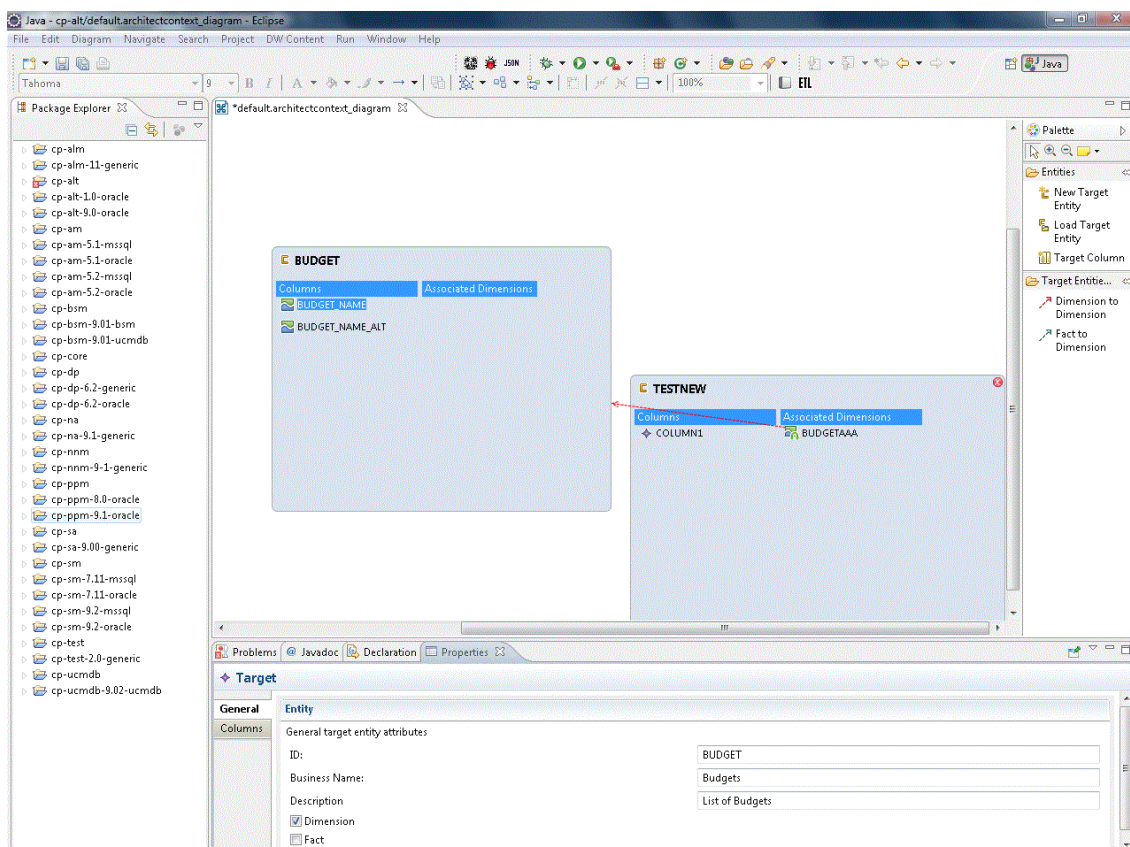
IDE Main Page and End-to-End Flow

The IDE main page enables you to create contexts for the purpose of extending content to entities. The following describes the IDE main page and icons as well as the tasks and flow of the IDE process.

The IDE Eclipse Main Page





The IDE requires basic knowledge of Eclipse and its capabilities. The following describes the IDE layout and icons. Select **Window > Show View** to add to and change the view of the various tabs and areas.

IDE Workspace: Main area where all IDE functions are located.















User interface elements are described below (when relevant, unlabeled elements are shown in angle brackets>):

UI Element	Description
Package Explorer	A list of all of the available loaded Content Packs and Contexts.
Canvas	Displays model diagram.

UI Element	Description
Problems	Displays validation errors and warnings.
Properties	Displays property tabs according to the selected entity in the context.
Error Log	Reports system errors.
Data Source Explorer	Enables you to connect to a specific data source and browse the database.
	ETL Generation. Appears when a context is open. Click to perform the ETL process and generate the artifacts and create a new Content Pack. For details, see "Generate Content" on page 57 .
	BODS Export. Click to perform BODS export process. For details, see "Export from BODS" on page 60 .
	Save. Click to validate and save your mappings and configurations.
	Report a Bug. Click to gather information for a bug report packaged in a ZIP file.

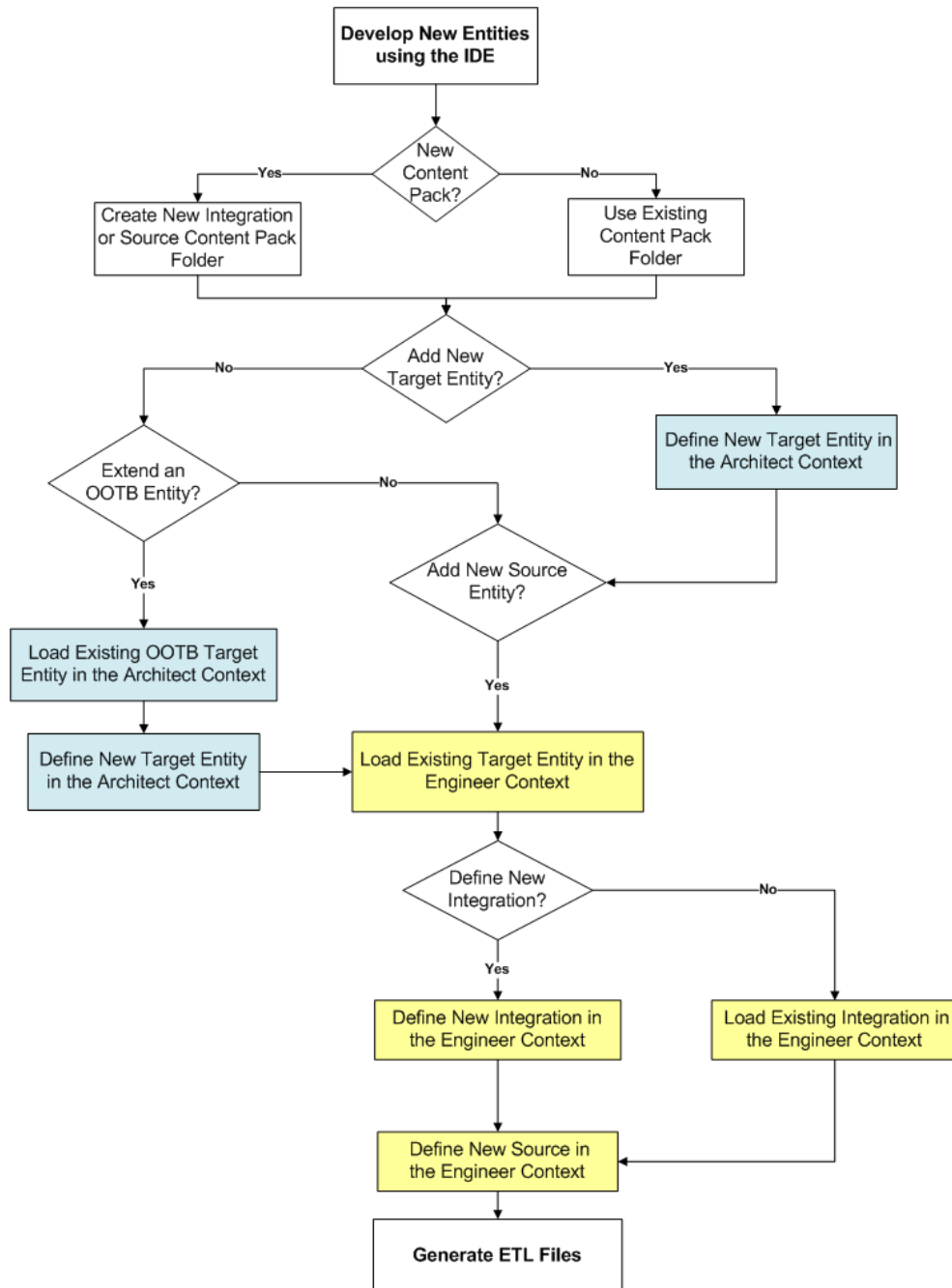
IDE Icons

Icon	Description
	Indicates a Target entity.
	Indicates an Integration entity.
	Indicates a Source entity.
	Indicates a Integration entity column.
	Indicates a Fact entity column.
	Indicates a Dimension entity column.
	Indicates an association between Fact and Dimension entities.
	Indicates an association between Dimension entities.

Icon	Description
	Indicates a column which exists both as a Fact and as a Dimension.
	Indicates a consolidation column.
	Warning that appears when you save a problematic change to a model that might cause an error at a later stage in the process. You can view the details by hovering over the icon on the model or in the Problems tab.
	Error that appears when there is a design problem with your model in a context. For example, the length of a column is too long. You can view the details by hovering over the icon on the model or in the Problems tab. Right-click an error to check if Quick Fix has been enabled for the problem. For details, see "Manage Validation" on page 53 .

The IDE End-to-End Flowchart

The following illustrates the typical tasks and procedures in the IDE. The tasks correspond to the relevant tasks in the Architect and Engineer contexts.



Discover Data Evidence

It is necessary to understand and be familiar with the new data you want to develop. When there is a new source system involved, you must first understand how the data from the source appears and operates.

Data Evidence can be done as follows:

1. Understand how to extract the data.
2. Take sample files extracted from the source.
3. Examine different fields that this source provides: It is important to recognize the fields and data which come from the source and to define the names of the fields as the source tables.
4. Define and plan in advance which extractors provide data for specific entities.
5. Understand variety, different lists of values, end-cases.
6. Observe data behavior over time:
 - a. Understand what happens with data across time – is it the same file, only different dates?
 - b. Sizes of rows and volumes by types of customers.
 - c. Identify how this data correlates with existing data in the Data Warehouse.

At the end you should have a good sense of what this data looks like and how to develop extraction code for it.

7. Identify:
 - a. What is the required data to be available in the Target schema to support required KPIs.
 - b. What is the data that can come from the source (depending on technology).
 - c. Where do they meet in the middle, so eventually we have the outcomes of the extracted data and the DWH Target model.
 - d. For which columns do you want to preserve history.

After mapping between the Source and the Target, the design process is complete.

Import Existing Content

When you extend your existing content using the IDE, you must import the relevant content packs you want to work with.

Note: You must import the Target Content Pack (cp-core) in order to extend or create content in the IDE.

1. Navigate to **File > Import > General > Existing Projects into workspace** and click **Next**.
2. Browse for the cp-core folder and click **OK**, click **Finish** to import the project.

3. Import all of the relevant content packs you need to work with.
4. Proceed to creating the Architect and Engineer contexts.

Define New Content Pack Project

The IDE comes with out of the box Content Packs which you can import to add and extend content. You can also create projects based on data from new content folders, which you must manually add and define.

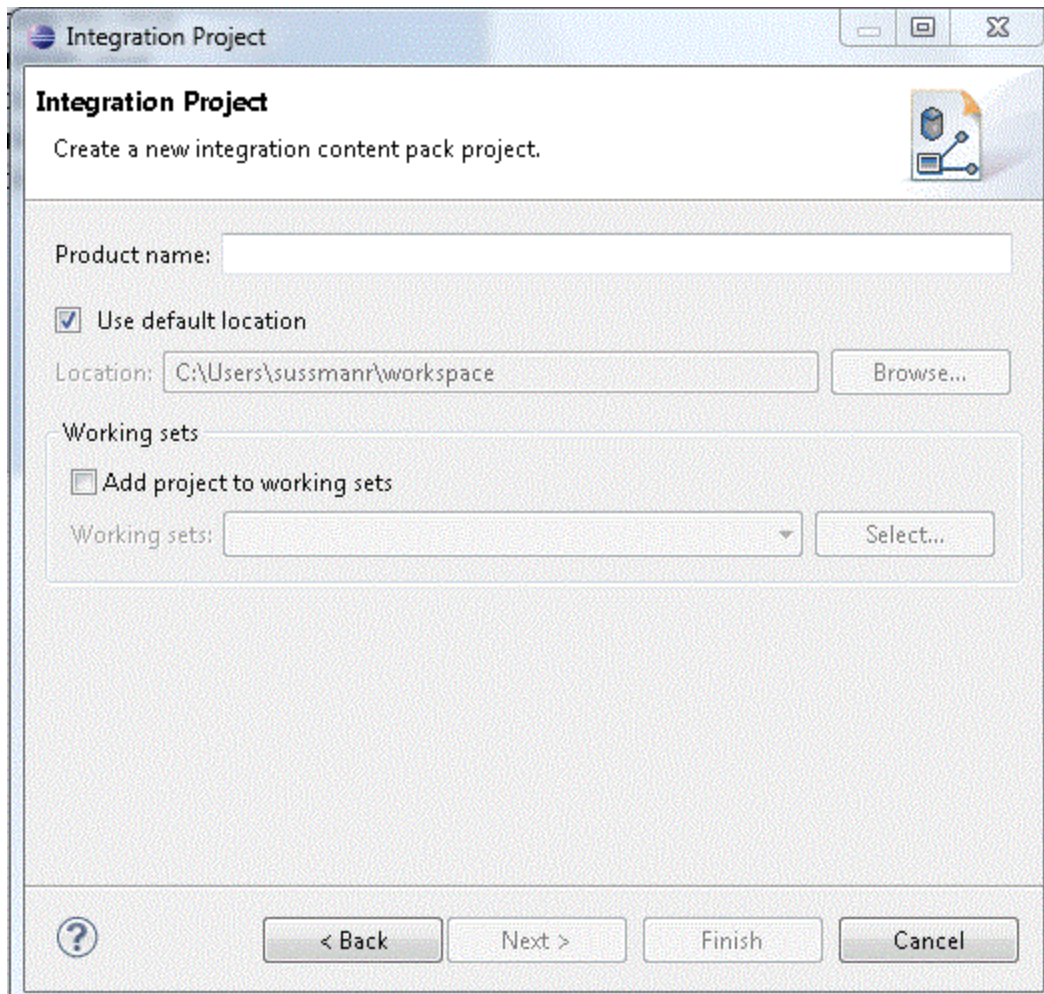
Note: You must import the Target Content Pack (cp-core) in order to extend or create content in the IDE.

To create new projects from content folders:

1. Select **File > New > Other > DWH IDE > Content Pack**.
2. Select the type of project: **Source**, or **Integration**.
3. Enter the relevant details for the project and click **Next**.
4. Select the relevant Content Pack reference for the project:
 - For new Integration CP select the Target Content Pack for the project.
 - For new Source CP select the Integration Content Pack for the project.
5. Click **Finish**.
6. Proceed with defining the Architect and Engineer context projects. For details, see "[Perform Architect Context IDE Tasks](#)" on page 30 and "[Perform Engineer Context IDE Tasks](#)" on page 40.

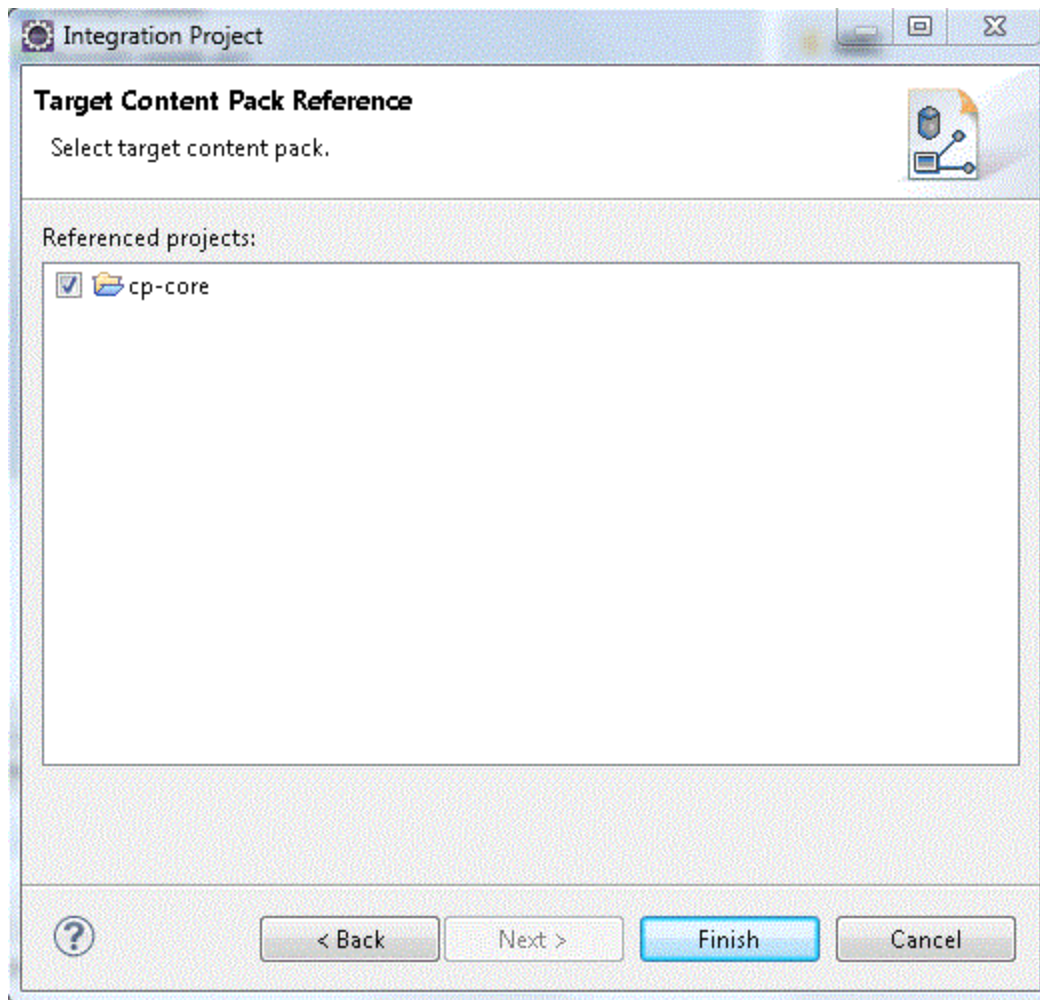
UI Description

Integration



User interface elements are described below:

UI Element	Description
Product Name	Name of the source product. Make sure that after you define the product name, you can view the file under the Integration project icp.dwmodelappintegration file.
Use Default Location	Select to use the displayed location for your new project.
Location	Browse to the location of the content folder.
Add project to working sets	Select to add this project to the current set of projects.
Working Sets	Select new working sets.



Select the Target Content pack for the new Integration project and click **Finish**.

Source

Source Project
Create a new source content pack project.

Product Name

Version

Product Type

☒ Use default location

Location:

Choose file system:

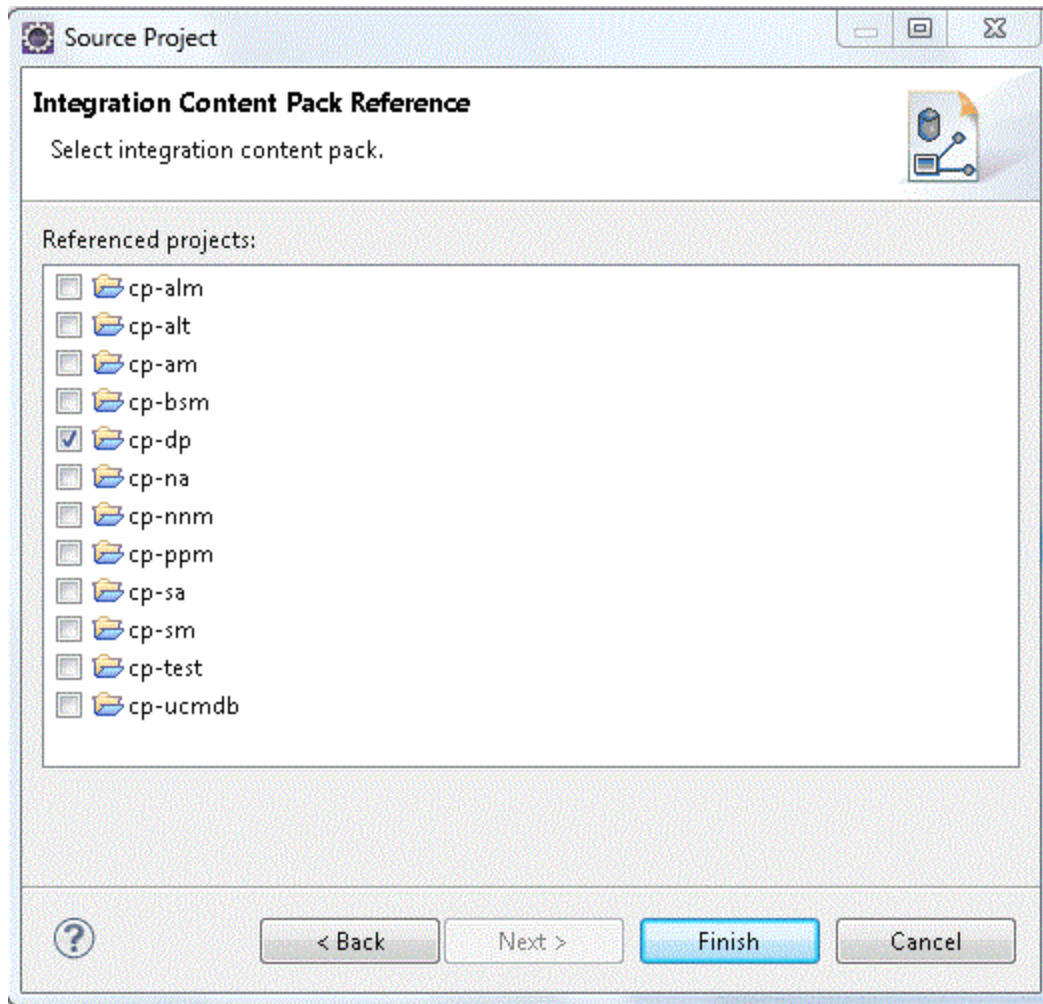
Working sets

☐ Add project to working sets

Working sets:

User interface elements are described below:

UI Element	Description
Product Name	Name of the source product. Make sure that after you define the product name, you can view the file under the Source project scp.dwmodelappsource file.
Version	Enter the data source version.
Product Type	Enter the data source type.
Use Default Location	Select to use the displayed location for your new project.
Location	Browse to the location of the content folder.
Add project to working sets	Select to add this project to the current set of projects.
Working Sets	Select new working sets.



Select the Integration Content pack for the new Source project and click **Finish**.

Define the Target Model

Before working with a specific context, you should define the Target model and the related associations and mappings. The Target model describes the final version of the data that adheres to the design required by applications. Each table in the model contains both designed columns and static columns, which comprises the metadata, so that the administrator can have the visibility of ETL processing over the entity's data.

Target Model – Dimension or Fact: 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.

In the Architect context you define the target model containing the entities and links between them.

Perform Architect Context IDE Tasks

The Architect context enables you to define a Target entity as well as link associations. Each Target entity in the Architect context contains columns of fact, or dimension (or both) and associations to other Target entities.

Architect contexts can contain one or more Target entities. Usually each Architect context includes several entities that are related to the same subject (context). Target entities can be included in several Architect contexts.

Note: It is recommended to create a separate general project in the Package Explorer for the Architect context files.

Learn More

The Architect Context enables the following:

- Create a new entity metadata which is translated into the Target model.
- Load an existing Target entity.
- Add columns which affect entity generation.
- Add associations between entities.
 - Link a Fact to Dimension
 - Link a Dimension to Dimension

Tasks

This section includes:

"Create a new Architect Context in the IDE:" below

"Define a new Target entity:" on next page

"Load an existing Target entity:" on next page

"Add a column: " on next page


"Link a Dimension to a Dimension:" on next page

"Link a Fact to a Dimension:" on next page


Create a new Architect Context in the IDE:

1. In the IDE main page, select **File > New > Other > DWH IDE Wizards > Architect Context** and click **Next**.
2. Select the parent folder and enter the file name for the context diagram and click **Next**.
3. Select the relevant Target Content Pack directory and click **Finish**.

Define a new Target entity:


1. In the Architect Context, in the palette area, select **New Target Entity** and click on the canvas.
2. Name the entity.
3. Add relevant columns to the entity.
4. Click  **Save**.

Load an existing Target entity:

1. In the Architect Context, in the palette area, select **Load Target Entity** and click on the canvas. The Resource Selector dialog box opens.
2. Expand the target folder and select an entity. The entity is displayed with all of the previously added columns and dimensions.
3. Add relevant columns to the entity. You can then edit and configure columns in the Properties view.
4. Click  **Save**.

Add a column:

1. In the Architect Context, in the palette area, select **Target Column**.
2. Click in the Column area of your entity and enter the Column ID in the text box.

The column is added to the entity. You can then edit and configure columns in the Properties view.
3. Click  **Save**.

Link a Dimension to a Dimension:

1. In the Architect Context, in the palette area, click **Dimension to Dimension**.
2. Drag the arrow from a Dimension to the Dimension you want it linked to.
3. The New Dimension to Dimension dialog box opens. The default name is displayed and can be edited. This relation links a Dimension entity to another Dimension.

Note: If you link to an entity from an existing association, you can connect using the arrow without naming the Associated Dimension.

The default Associated Dimension name is the Target entity.

4. Click  **Save**.

Link a Fact to a Dimension:

1. In the Architect Context, in the palette area, click **Fact to Dimension**.
2. Drag the arrow from the Fact entity to the Dimension you want it linked to.
3. The New Fact to Dimension dialog box opens. The default name is displayed and can be

edited. This relation links a Fact entity to another Dimension.

Note: If you link to an entity from an existing association, you can connect using the arrow without naming the associated Dimension.

The default associated dimension name is the Target entity.

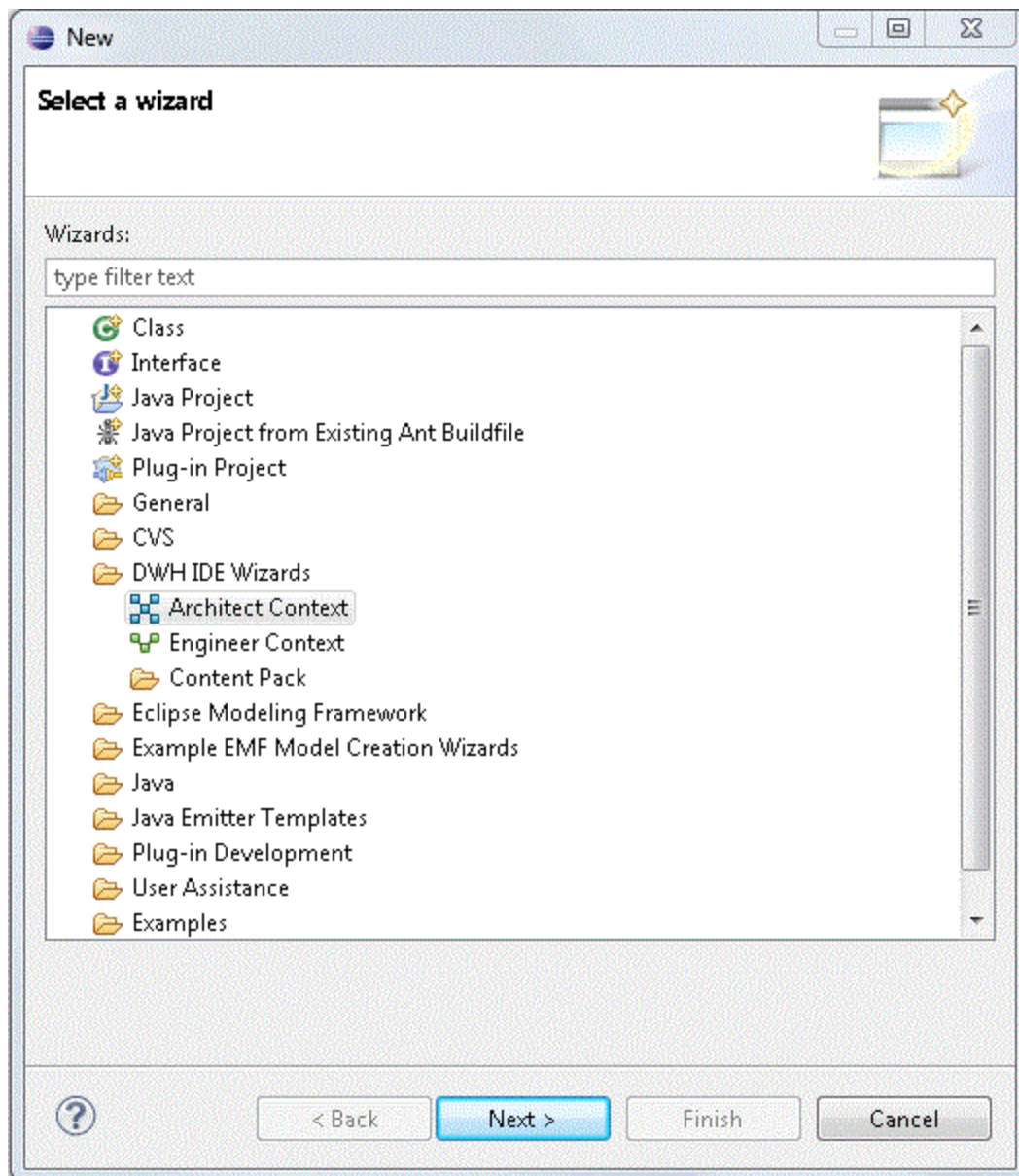
4. Click  **Save**.

UI Description

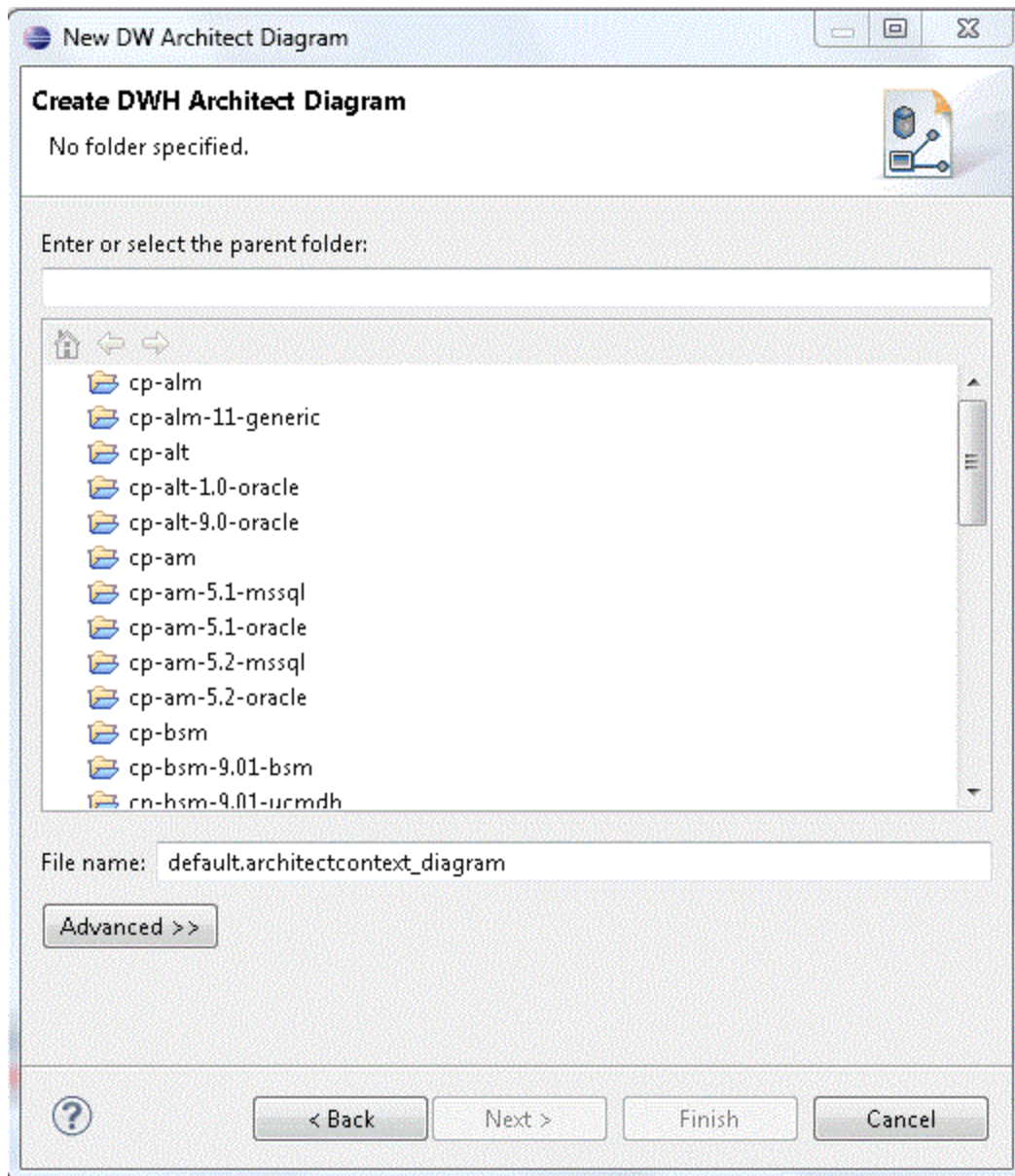
To access:

In the IDE main page, select **File > New > Other > DWH IDE Wizards > Architect Context**.

Architect Context Wizard

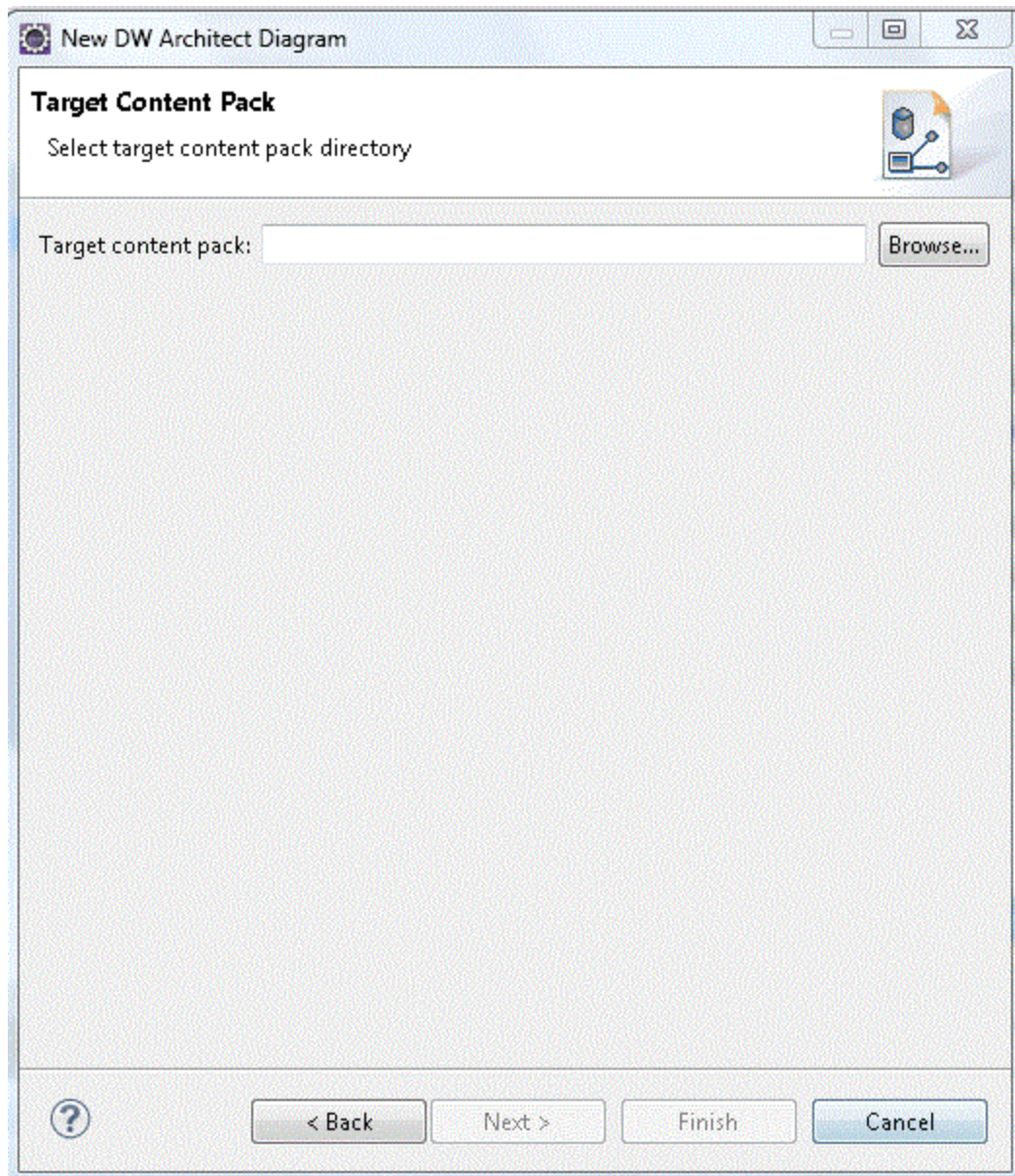


New DW Architect Diagram



User interface elements are described below:

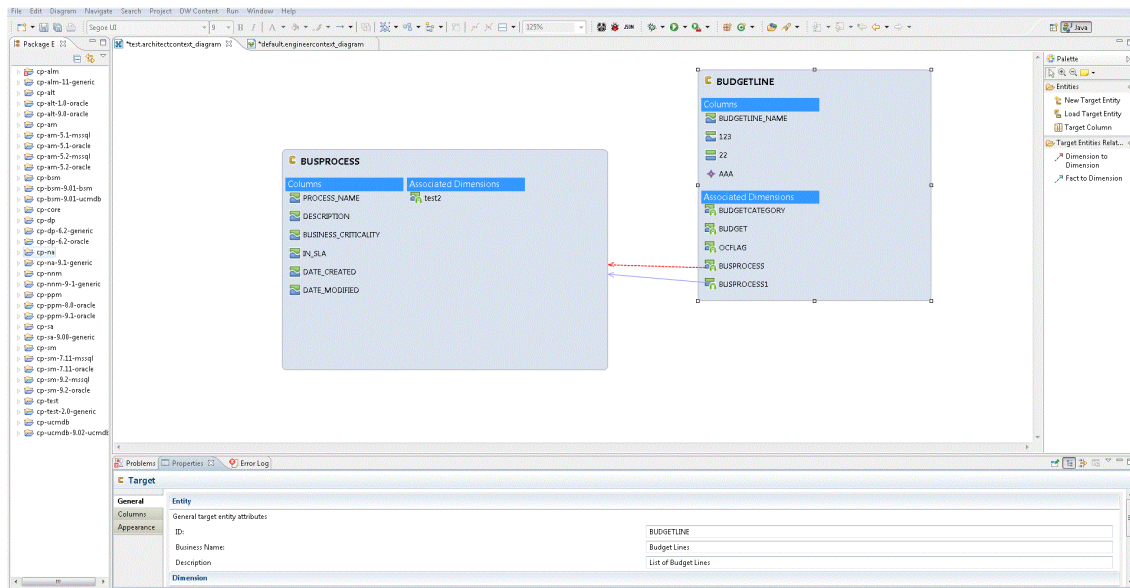
UI Element	Description
Enter or select the parent folder	Select the folder in which this context will be contained, from the folder list.
File Name	Enter a file name for your context diagram.

Target Content Pack selection

User interface elements are described below:






UI Element	Description
Target Content Pack	Select or browse for the Target Content Pack directory.

Architect View



User interface elements are described below (when relevant, unlabeled elements are shown in angle brackets>):

Palette Area

UI Element	Description
Entities	<p>Contains the following Target entity options:</p> <ul style="list-style-type: none">  New Target Entity. Creates a new Target entity. Entity type can be defined in the Properties tab. To view the Properties tab, right-click on the specific entity and click Show Properties View.  Load Target Entity. Opens the Resource Selector dialog box. Select the relevant entity for your model. <div data-bbox="451 609 1047 1010" data-label="Image"> </div> <ul style="list-style-type: none">  Target Column. Adds columns to entities. Column properties, for example column type, can be edited in the Properties tab. <p>Each added attribute impacts the relevant entity generations.</p>
Target Entities Relation	<p>Click a link to create connections for building the model.</p> <ul style="list-style-type: none">  Dimension to Dimension. Link from one Dimension to another Dimension. A red arrow is displayed between the entities.  Fact to Dimension. Link from a Fact to a Dimension. This type of relation requires that the fact type was defined in the entity properties. A blue arrow is displayed between the entities.

Properties tab for Target entity and specific fields

To view the Properties tab, right-click on the specific entity and click **Show Properties View**.

You first configure the Target entity properties, and then the properties for each specific column.

UI Element	Description
General tab	<p>Displays the Entity, Dimension and Fact attributes for the target entity.</p> <p>General Target entity attributes:</p> <ul style="list-style-type: none">• ID: The ID of the entity.• Business Name: The complete business name.• Description: Enter a description of the entity.• Dimension/Fact Checkbox: Select one or both for the entity. <p>If you change the selection, a dialog opens, warning that you may lose information previously entered in the Columns tab.</p> <p>Note: Make sure to select the required option connected to the relevant Fact or Dimension column properties.</p>
Columns tab	<p>Displays information for each column in the Target entity. Column property options are displayed according to the entity selection of Fact or Dimension in the General tab.</p> <ul style="list-style-type: none">• ID. The ID of the entity.• Business name. The complete business name.• Description. Enter a description of the entity.• Data Type. Varchar, Int 16, Int 32, Float, Localized Date Time• Length. Only for Varchar data type. The length of a Varchar column must be more than 0 and less than 4000.• Null Allowed. Select if the field can have the value NULL.• SCD Type. Slowly Changing Dimension type can be either 1 or 2. Only for Dimension. SCD1: For update. SCD2: For preserving history.• Measure. Select only for Fact.• Calculation Formula. The calculation of the measure. (Optional)• Summary. Select SUM, MIN, MAX, or AVG. (Optional)
Appearance tab	<p>Displays font and appearance information.</p>

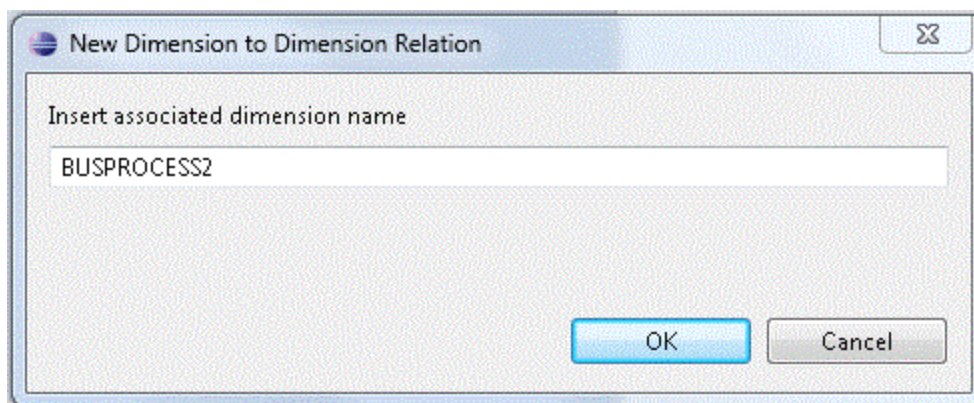
Properties tab for Associated Dimensions

To view the Properties tab, right-click on the specific entity and click **Show Properties View**.

UI Element	Description
Associations tab	Displays Dimension association information: <ul style="list-style-type: none">• ID. The ID of the entity.• Business Name. The complete business name.• Description. Enter a description of the entity.• Type. Select Dimension, Fact, or Both.• SCD Type. For Dimension only.• From Target. The Target entity.• To Target. The Associated Dimension
Appearance tab	Displays font and appearance information.

New Associated Dimension Dialog Box

When you link to an unlinked Dimension, the following dialog box opens.



Edit an Associated Dimension name. The default is the Target entity name.

Perform Engineer Context IDE Tasks

The Engineer context enables you to define the integrations and how they are transformed and connected. This view defines the mapping relations for the entity from the source to the target. You can create new integrations based on graphical diagrams, using the Engineer context in the IDE tool.

Learn More

The Engineer context enables you to extend and add content from the Integration and Source Content Packs into the target model. Using a new or existing Target entity, you can add new or existing content from the Integration and Source entities. You then perform SSI and Source Integration mapping for new and pre-loaded entities. The Source, Integration and Target entities are mapped using the SSI Mapping connector, which creates a new SSI mapping entity. All further mapping is done to the new entity in order to complete the Target model.

Note: All Source entities must be connected to an Integration entity.

Entities in the Engineer context are mapped as follows:

- **Source Entity:** Mapping to the correct source, meaning the version the data is extracted from.
- **Integration Entity:** Contains the mapping of all fields.
- **Target Entity:** Several consolidation entities can be consolidated into one entity.

It is recommended to map from the Source to the Target.

Source Extractors:

OOTB set of existing supported extractors are:

- **Generic Extractors**
 - **DB Extractor:** Supports MSSQL, Oracle and MySQL databases.
 - **File Extractor:** Supports general CSV file.
- **Source Specific Extractor**
 - **BSM API Extractor:** Supporting both GDE and REST calls.
 - **DP CLI Extractor**
 - **SA SDK Extractor**
 - **NNM Optimized file Extractor:** Holds mass volumes of NNM files.

Connecting to the integration:

ETL Gen templates in the back-end generate integration templates which utilize File Based Integration (FBI). Load the Source metadata to the IDE and then map it to the correct consolidation entity in the relevant fields. To create a custom FBI extractor, see the *FBI Extractor SDK Guide*.

Important Information

Note: Creating new Target entities with Associated Dimensions can only be done in the Architect context.

Tasks

This section includes:

"Create a new Engineer Context in the IDE:" below

"Define a new Target entity:" below

"Load an existing Target entity:" below

"Define a new integration entity:" on next page

"Load an existing integration entity:" on next page

"Define a new source entity:" on next page

"Load an existing source entity:" on next page


"Add a column:" on next page

"Map from the Integration to Target:" on page 43

Create a new Engineer Context in the IDE:

1. In the IDE main page, select **File > New > Other > DWH IDE Wizards > Engineer Context** and click **Next**.
2. Enter or select the parent folder and enter the file name for the context diagram and click **Next**.
3. Select the Target, Integration, and Source Content Pack directories and click **Finish**.

Define a new Target entity:


1. In the Engineer Context, in the palette area, select **New Target Entity** and click on the canvas.
2. Name the entity.
3. Add relevant columns to the entity.
4. Click  **Save**.

Load an existing Target entity:

1. In the Engineer Context, in the palette area, select **Load Target Entity** and click on the canvas. The Resource Selector dialog box opens.
2. Select an entity. The entity is displayed with all of the previously added columns and dimensions.
3. Add relevant columns to the entity. You can then edit and configure columns in the Properties view.

4. Click  **Save**.


Define a new integration entity:

1. In the Engineer Context, in the palette area, select **New Integration Entity** in the Integration section and click on the canvas. An integration entity is displayed.
2. Enter a name. The name can be up to 44 characters. An Integration entity is created.
3. Click **Integration Column** to add a column to the entity.
4. Perform mapping if required.
5. Click  **Save**.

Load an existing integration entity:

1. In the Engineer Context, in the palette area, select **Load Integration Entity** in the Integration section and click on the canvas. The Resource Selector dialog box opens.
2. Select an entity. The entity is displayed with all of the previously added mappings.

Define a new source entity:


1. In the Engineer Context, in the palette area, select **New Source Entity** in the Source section and click on the canvas. A Source entity is displayed.
2. Click **Source-Integration Relation** and drag the display arrow from the Source entity to an Integration entity. All columns from the Integration entity are copied to the Source entity with default values.
3. Click  **Save**.

Note: The Source-Integration Relation tool only enables you to link Source entities to Integration entities of the same product (content pack). For example, a Source entity from cp-bsm-9.01-bsm can only be linked to Integration entities from cp-bsm and not cp-ppm.

Load an existing source entity:

1. In the Engineer Context , in the palette area, select **Load Source Entity** in the Source section and click on the canvas. The Resource Selector dialog box opens.
2. Select an entity. The entity is displayed with its mapped integration entity.

Add a column:

1. In the Engineer Context, in the palette area, select **Target Column** or **Integration Column**.
2. Click in the Column area of your entity and enter the Column ID in the text box.
The column is added to the entity.
3. Click  **Save**.

Note: Source data is replicated from the integration entity. If you add or delete columns from the Integration, however, it is not automatically done in the Source.


To add: Once you have added the column, delete the mapping link and re-map from the Source to Integration.

To delete: Right-click the deleted column, delete the mapping link and re-map from the Source to Integration.

Alternatively, you can use the Quick Fix mechanism on the error that appears in the Problems tab. For details, see ["Manage Validation" on page 53](#).

Map from the Integration to Target:

Once you have added columns to the Integration entity you can perform SSI mapping.

1. In the Engineer Context, in the palette area, click **Column Mapping** in the Relations section to map the Integration to the Target entity.
2. Drag the arrow from the Integration column to the Target column.
3. After you have performed the first SSI mapping, a transformation SSI entity is created to which you can perform further mapping. Any integration entity from the same CP that should be mapped to this Target, must be mapped to the transformation entity.
4. Click  **Save**.

Note: If an Integration column is already mapped to a Target column, you cannot perform further mapping from the same Content Pack.

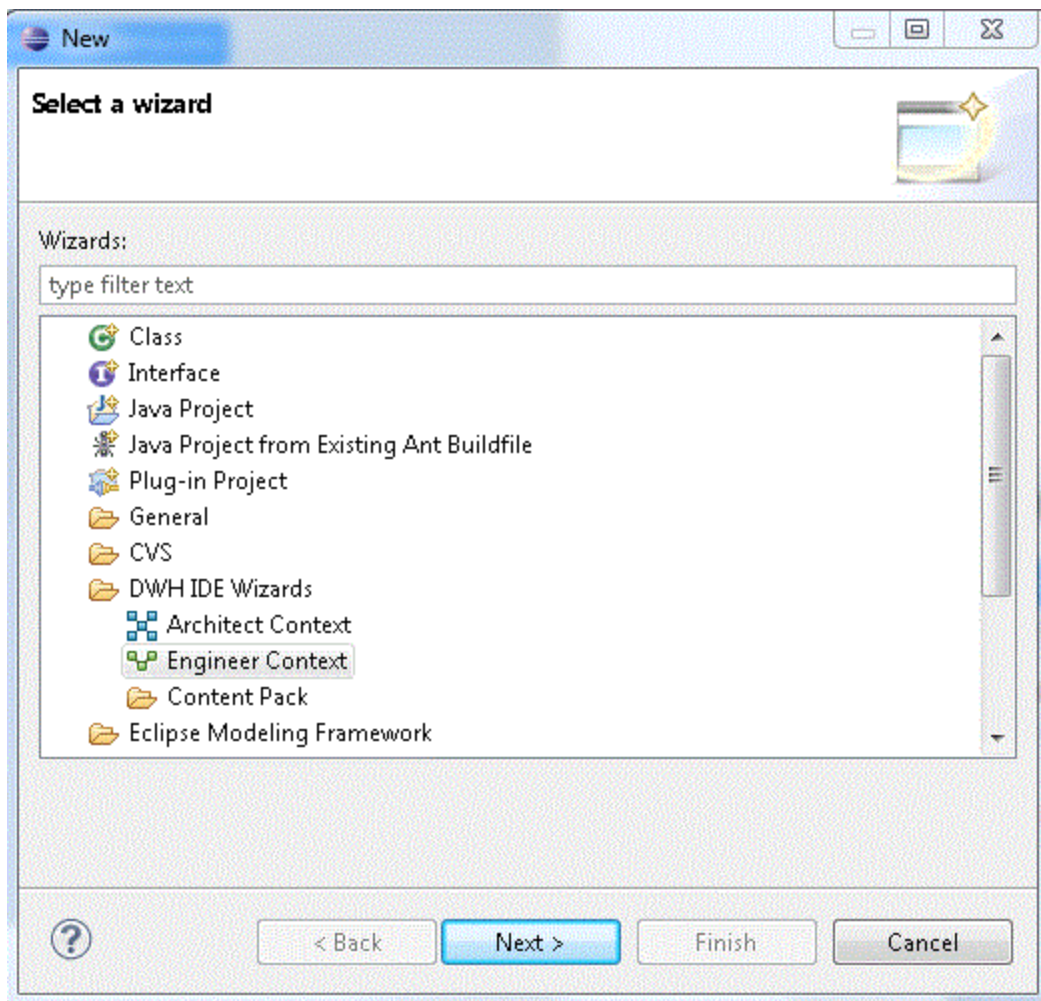
Two Integration entity columns from the same Content Pack cannot be mapped to the same Target entity column.

UI Description

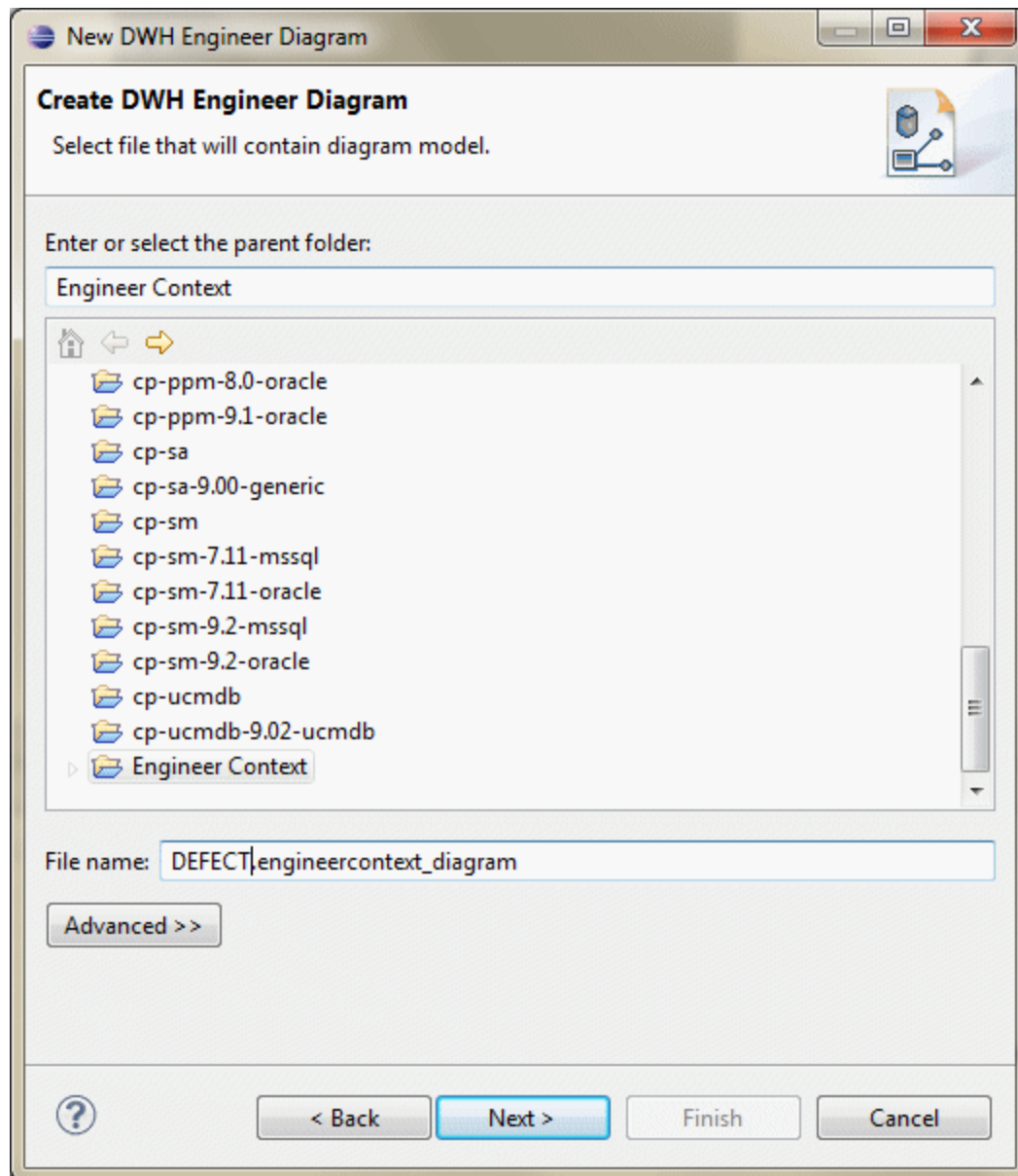
To access:

In the IDE main page, select **File > New > Other > DWH IDE Wizards > Engineer Context** .

Engineer Context Wizard

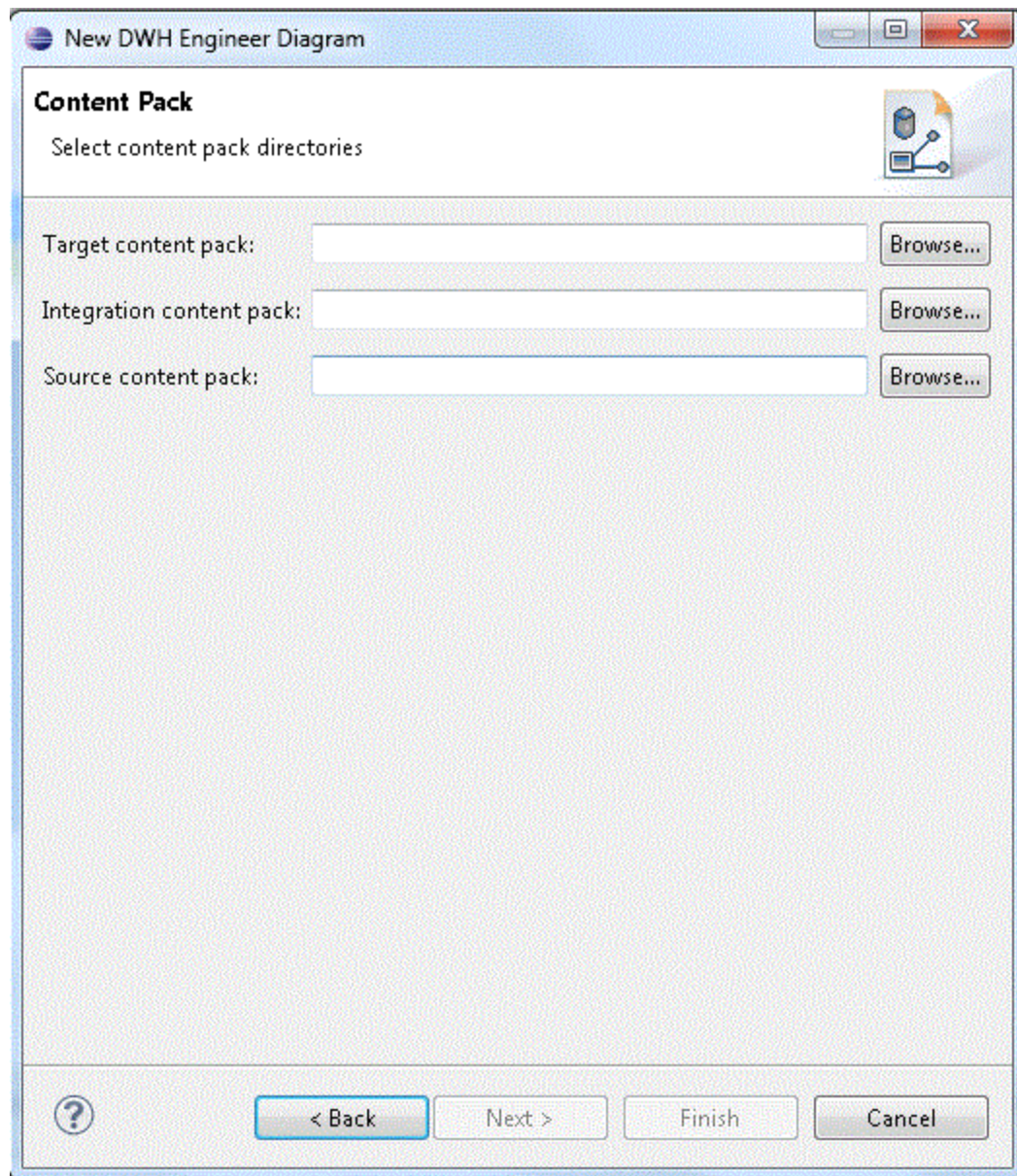


New DW Engineer Diagram



User interface elements are described below:

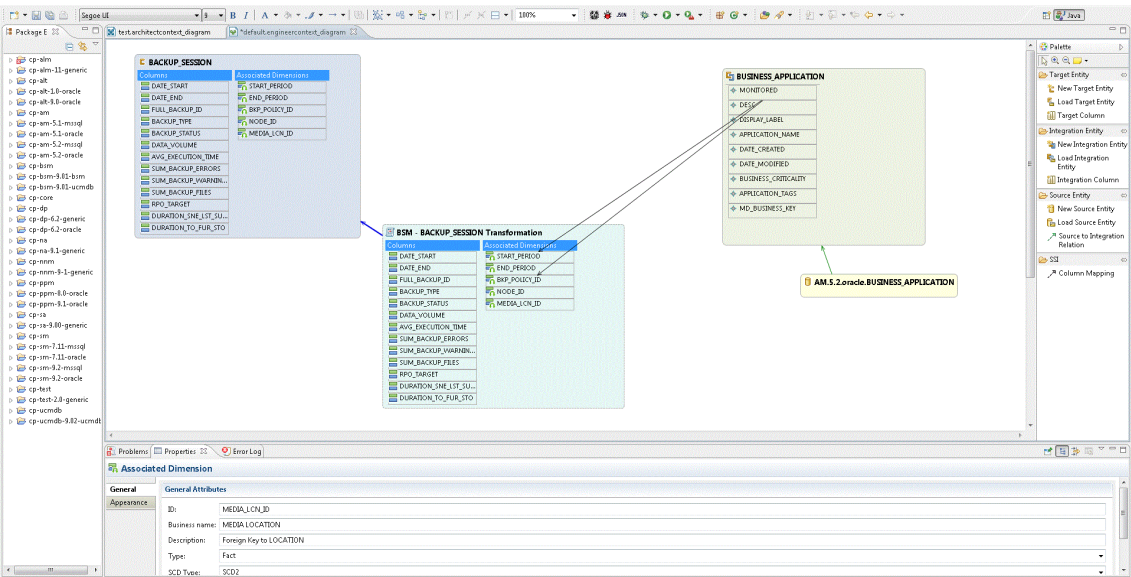
UI Element	Description
Enter or select the parent folder	Enter or select the folder from the folder list.
File Name	Enter a file name for your context.

Content Pack selection

User interface elements are described below:



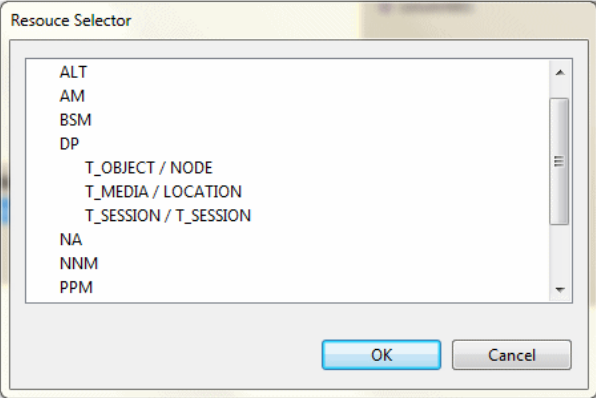



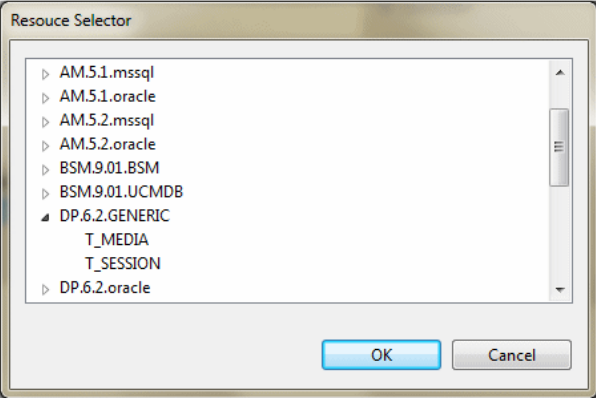

UI Element	Description
Select Target CP Directory:	Browse for the Target Content Pack directory.
Select Integration CP Directory:	Browse for the Integration Content Pack directory.
Select Source CP Directory:	Browse for the Source Content Pack directory. The selected Source Content Pack must relate to the selected Integration Content Pack.


Engineer Context



Palette Area

UI Element	Description
Target Entity	<ul style="list-style-type: none"> New Target Entity. Select to display a new Target entity. Load Target Entity. Opens the Resource Selector dialog box. Select the relevant entity for your model. <div><p>Resource Selector</p><p>CORE</p><ul style="list-style-type: none">ABC / ABCACTUALCOST / Actual Cost LinesAPPLICATION / ApplicationsBACKUP_POLICY / Backup PolycysBACKUP_SESSION / Backup SessionBUDGET / BudgetsBUDGETLINE / Budget LinesBUSINESS_APP_STATUS / Business Application StatusBUSPROCESS / Business Process<p>OK Cancel</p></div> <ul style="list-style-type: none"> Target Column. Adds columns to entities. Column properties, for example column type, can be edited in the Properties tab. <p>Each added attribute impacts the relevant entity generations.</p>

UI Element	Description
Integration Entity	<p>Contains the following Integration entity options:</p> <ul style="list-style-type: none">  New Integration Entity. Select to display a new Integration entity.  Load Integration Entity. Opens the Resource Selector dialog box. Select the relevant entity for your model.  <ul style="list-style-type: none">  Integration Column. Adds columns to entities. Column properties, for example column type, can be edited in the Properties tab. <p>Each added attribute impacts the relevant entity generations.</p>
Source Entity	<p>Contains the following Source entity options:</p> <ul style="list-style-type: none">  New Source Entity. Select to display a new Source entity.  Load Source Entity. Opens the Resource Selector dialog box. Select the relevant entity for your model.  <ul style="list-style-type: none">  Source to Integration Relation. The Source must be mapped to the Integration in order to map to the Target. A green arrow is displayed between the entities.

UI Element	Description
SSI	<p>Click to map the displayed entities.</p> <ul style="list-style-type: none">  Column Mapping. Mapping between the Integration and Target columns. First time mapping is done from the Integration column to the Target column. A black arrow is displayed between the entities. <p>First-time mapping creates a new entity for SSI Transformation. Subsequent mappings are done to the new SSI Transformation entity.</p>

Properties tab for Integration

To view the Properties tab, right-click on the specific entity and click **Show Properties View**.

Note: Properties data is replicated in the Integration and Source columns. If you add or delete columns from the Integration, however, it is not automatically done in the Source.

To add: Once you have added the column in the properties tab, delete the mapping link and re-map from the Source to Integration.

To delete: Right-click the deleted column, delete the mapping link and re-map from the Source to Integration.

UI Element	Description
General tab	Displays the General entity attributes.
Columns tab	<p>Displays column information:</p> <ul style="list-style-type: none">• ID. The ID of the column. It is taken from the mapped integration column and is read-only.• Business name. The complete business name.• Description. Enter a description of the entity.• Data Type. Varchar, Int 16, Int 32, Float, Localized Date Time• Length. Only for Varchar data type. The length of a Varchar column must be more than 0 and less than 4000.• Null Allowed. Select if the field can have the value NULL. If you specify a Business Key, at least one of the columns must not Null Allowed.• Business Key. Primary key of the Integration field order. Select a number for the order of columns for placement. When no number has been assigned, you can only select 1. Subsequently you can assign any number to a column. If you change a number, all other assigned columns are automatically shifted down a spot in the order. For example, if you change the Business Key of a column to 1, the one that was specified previously as 1 becomes 2.• Last Modified. The last date that the source has been changed. Select the button if you want a query from a certain date and not all possible data.

Properties tab for Source

To view the Properties tab, right-click on the specific entity and click **Show Properties View**.

UI Element	Description
General tab	<p>General attributes:</p> <ul style="list-style-type: none"> • ID. The entity ID. • Content Pack. The Source Content Pack information. <p>Data Source SQL Clauses:</p> <ul style="list-style-type: none"> • Group by. The section in the SQL Query for the aggregation. • Table Name/Join Condition. Default is Integration entity name. If you change the table name, you must also change it in the columns. Enter the Join Condition for an SQL query with join. • Where. Where to extract for the SQL query for filtering data from the source.
Columns tab	<p>Displays column information. The Source entity receives all of the Integration entity properties.</p> <ul style="list-style-type: none"> • ID. The ID of the column. It is taken from the mapped integration column and is read-only. • Type. Select Fixed, Direct, or Rule. If you select Fixed, you must enter a Fixed Value. If you select Rule, you must enter the Calculation Rule. • Not Applicable. • Table Name. Based on table name entered in the General tab. Relevant only if Direct type is selected. • Column Name. The field name. Must be what appears in the Source entity. • Fixed Value. The fixed value of the column. Relevant only if Fixed type is selected. • Calculation Rule. The calculation rule of the column. Relevant only if Rule type is selected. The IDE does not support non UTF-8 characters in the Calculation Rule field.

For details on the Properties for Target entities, see ["Properties tab for Target entity and specific fields" on page 38](#)

For details on the Properties tab for Associated Dimensions, see ["Properties tab for Associated Dimensions" on page 39](#).

Delete an Entity Permanently

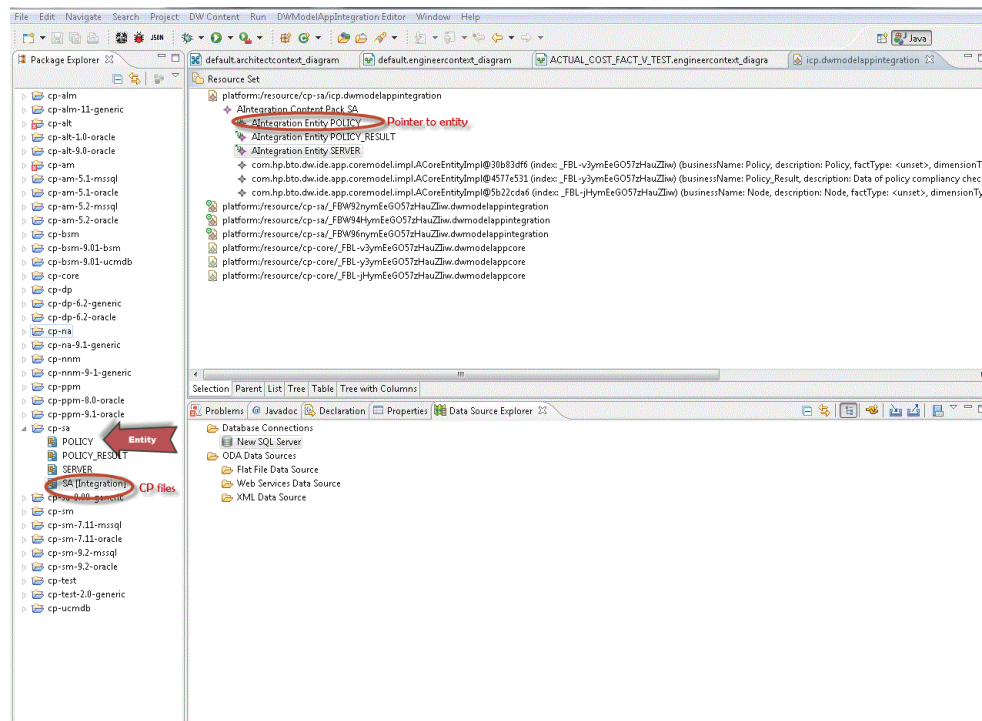
The IDE enables you to permanently delete an entity that is not needed or supported, from the file system.

Note: When you right-click a selected entity and click **Delete From Model**, the entity is only removed from the current context and not from the file system.

To permanently delete an entity:

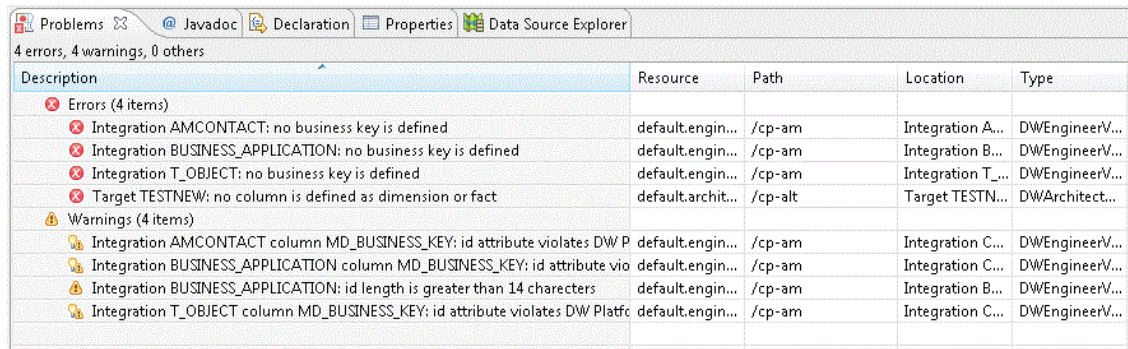
1. Delete the relevant entity from the canvas.
2. In the Package Explorer, expand the content pack that contains the entity you want to delete, for example **cp-sa**.
3. In the content pack, select the content pack file, for example **SA [INTEGRATION]**. The files are listed in the canvas.
4. Expand the content pack files, and delete the pointer to the specific entity, for example **AIIntegration Entity POLICY**.
5. Save the file.
6. Delete the actual entity, for example **POLICY**, from the Package Explorer.

The CP files, pointer to entity, and entity shown below:



Manage Validation

The IDE performs validations on the entities created in the Architect and Engineer contexts. After you save your changes, click the Problems tab, below, to view the errors and warnings that occurred during content development. Additionally, IDE provides a Quick Fix solution option to enable you to make the required fixes for validation. All validations are performed only after you have saved your changes to the contexts.



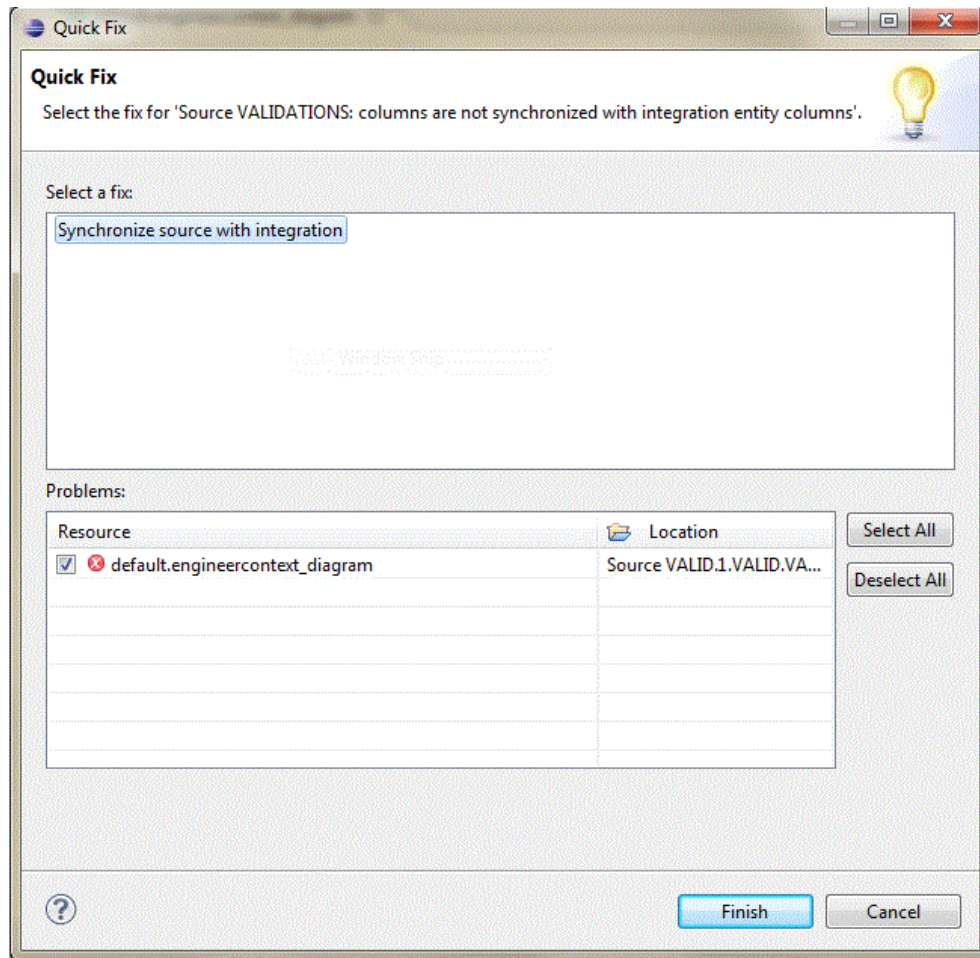
Description	Resource	Path	Location	Type
Errors (4 items)				
Integration AMCONTACT: no business key is defined	default.engin...	/cp-am	Integration A...	DWEngineerV...
Integration BUSINESS_APPLICATION: no business key is defined	default.engin...	/cp-am	Integration B...	DWEngineerV...
Integration T_OBJECT: no business key is defined	default.engin...	/cp-am	Integration T_...	DWEngineerV...
Target TESTNEW: no column is defined as dimension or fact	default.archit...	/cp-alt	Target TESTN...	DWArchitect...
Warnings (4 items)				
Integration AMCONTACT column MD_BUSINESS_KEY: id attribute violates DW P	default.engin...	/cp-am	Integration C...	DWEngineerV...
Integration BUSINESS_APPLICATION column MD_BUSINESS_KEY: id attribute vio	default.engin...	/cp-am	Integration C...	DWEngineerV...
Integration BUSINESS_APPLICATION: id length is greater than 14 charecters	default.engin...	/cp-am	Integration B...	DWEngineerV...
Integration T_OBJECT column MD_BUSINESS_KEY: id attribute violates DW Platf	default.engin...	/cp-am	Integration C...	DWEngineerV...

Quick Fix


The validation process also includes a Quick Fix validation which provides recommendations for solutions for validation problems displayed in the Problems tab.

To use the Quick Fix option:

1. In the **Problems** tab, under the **Warnings** or **Errors** list, right-click a warning or error and select **Quick Fix** to open the Quick Fix dialog box.



2. Select the fix for the specific warning and click **Finish**.

3. Click  **Save** and the error is removed.

Validation Table

Make sure all entities have been configured properly according to the following validations. An error or warning appears in the Problems tab once you have made the problematic change, and saved it. Note the validations that have the Quick Fix option available.

Validation	Source	Integration	Target	Quick Fix
Length of column names	Up to 60 characters	Up to 60 characters	Up to 60 characters	
Length of entity names	Up to 60 characters	Up to 44 characters	Up to 50 characters	
Backslash (\) is not permitted in any field text.	x	x	x	x

Validation	Source	Integration	Target	Quick Fix
Prevent the option to generate the ETL before the column type is defined (attribute/measure)			x	
Prevent the option to generate the ETL before the join/union table defined	x			x
Cannot use special characters in the Integration names and in the columns	x	x	x	x
Length identifier and suffixes must be up to 60 characters.	x	x	x	
Make sure Data Type is defined for all Target columns.			x	
Make sure when a Target entity is defined as a Dimension that SCD Type is defined for at least one column.			x	x
Make sure when a Target entity is defined as a Fact that Measure is selected for at least one column.			x	x
Make sure a Target entity is defined as a Fact, or Dimension, or both. The entity type cannot be left unselected.			x	
Make sure that when a Target entity is defined as a Dimension and a Fact, that at least one column in the entity is defined accordingly for each type. Note: If the Target entity contains only associated Dimensions, this validation is not performed.			x	x
Integration names and in the columns first character must be a letter: [a-z][A-Z].	x	x	x	x
Integration names and in the columns next characters should be a letter, a digit, or '_', '\$', or '#'.	x	x	x	x
Integration names and in the columns must not start with one of the DW Platform reserved prefixes: MD_ or DI_.	x	x	x	x

Validation	Source	Integration	Target	Quick Fix
Make sure that the Business Key is specified. In case of more than one Business Key, they must be in order (1, 2, 3) without spaces in the numbering.		x		
Make sure Null Allowed is not selected for at least one of the Business Keys.		x		x
Make sure that the column ID is unique.		x	x	
If a Source column has Type set as Direct, then make sure Table Name and Column Name are not empty.	x			
If a Source column has Type set as Fixed, then make sure Fixed Value is not empty.	x			
If a Source column has Type set as Rule, then make sure Calculation Rule is not empty.	x			
If a Source column has Type set as Direct, then make sure Column Name does not contain special characters. This validation runs only if the Product Type in the source Content Pack is the database type of either MSSQL, Oracle or MySQL.	x			x
Make sure that the Source entity has a Join Condition and Table Name specified.	x			
Make sure that a Source entity is mapped to an Integration entity.	x	x		
Make sure that the Source and Integration entities are synchronized.	x	x		
Make sure all mapped Integration columns are mapped accordingly to the Target or have been assigned a data type.		x		
Make sure that the length of a Varchar column is more than 0.		x	x	
Make sure that the length of a Varchar column is less than or equal to 4000.	x	x	x	x
Make sure each entity has an ID defined.	x	x	x	
Make sure the defined column name does not contain a reserved word. For details, see MSDN Microsoft SQL Server reserved keywords list.	x	x	x	

Generate Content

The IDE can generate the relevant schemas and ETLs that are required for the integration.

The ETL Generator generates the required artifacts based on the modeling in the previous steps. The artifacts contain BODS workflows that are imported into the BODS repository as well as the data models and XML files that are imported into the Data Warehouse metadata repository. Once the metadata has been loaded, the schema generation mechanism performs the schema changes in the target and the staging databases.

To access:

When a context is open, the ETL button is displayed in the top right toolbar in the IDE workspace. If it is not displayed, navigate to **Window > Customize Perspective** and make sure **ETL Gen** is selected.

Click **ETL** to begin the ETL Generator.

Content Pack Creation Tool

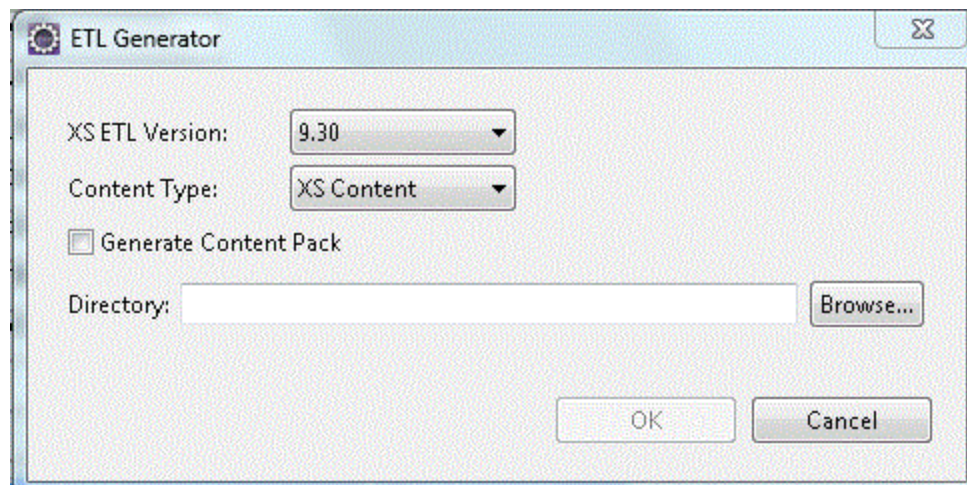
The Content Pack Creation Tool enables you to create a new Content Pack structure using existing source content packs. This allows you to use the IDE to extend content as well as develop entirely new Content Packs for use in the Data Warehouse and Executive Scorecard.

The ETL Generator action is relevant to the selected context (Architect or Engineer). The ETL button is only displayed when a context is open.

Tasks

To create a new entity and a new Content Pack with the ETL Generator:

1. Click **ETL** in the toolbar on the top right of the IDE workspace to begin the ETL Generator. The ETL Generator dialog box opens.



2. Select the **XS ETL Version** number, **9.30** or **9.31**.

3. Select the **Content Type: XS Content** or **Custom Content**. This field designates a path in BODS for the specific content type you are extending or creating.
4. Select the **Generate Content Pack** checkbox if you are creating a new Content Pack (not extending content). This creates a new content pack structure along with the generated ETL files. This capability is only available when generating the ETL files in the Engineer context.

Note: The Generate Content Pack checkbox is not available when generating the ETL files from the Architect context.

When you generate the ETL files from the Engineer context, the **Generate Content Pack** checkbox is disabled if there are no source entities in the context.

5. Browse to the directory where you want the generated Content Pack to be placed. Click **OK**. The process may take some time.
6. Proceed to package and deploy your content.

Package and Deploy Content

After you have run the ETL Generator and saved the Content Pack, you must package your new or extended content solution.

Copy the generated files to the Content Packs folder on the DWH server. Use the automation tool to deploy the changes in content.

- For Content Packs with added or extended entities:
 - The Target CP is deployed when changes are added to the target schema. Re-deploy the Target CP by running the command **dw_ds_automation.bat -task Redeploy -cp Core**.
 - The Integration CP is deployed when changes made to an Integration or Source entity. Re-deploy the i-CP by running the command **dw_ds_automation.bat -task Redeploy -cp <CP_NAME>**.
- For new Integrated Content Packs: Make sure your new CP is packaged in the correct folder structure by selecting the **Generate Content Pack** checkbox in the ETL Generator, and then copied to the ContentPacks folder in your DWH installation.
 1. Run the dw_cp_register.bat tool to register the new Content Pack: dw_cp_register.bat -name <CP_NAME> -type integration.
 2. Configure the datasource.xml file and run command: dw_ds_automation.bat -task ConfigureInitial -cp <CP_NAME>.
 3. Run dw_ds_automation with deploy task: dw_ds_automation.bat -cp <CP_NAME> -task Deploy.
 4. Run dw_ds_automation with activate task: dw_ds_automation.bat -cp <CP_NAME> -task Activate.

Advanced Development

Following the ETL Generator process, you can optionally access the following features and processes for advanced content development.

"Export from BODS" on next page

"Data Source Explorer" on page 62

"Generate Entities Automatically" on page 70


"Data Source Extraction Customization" on page 76

Export from BODS

The artifacts generated by the ETL contain BODS workflows that are deployed and imported into the BODS repository. Once the workflows have been changed in BODS, you can then export them automatically to a directory folder. The BODS export action is based on the selected context, and exports the same workflows that were generated by the ETL Gen for that same context.

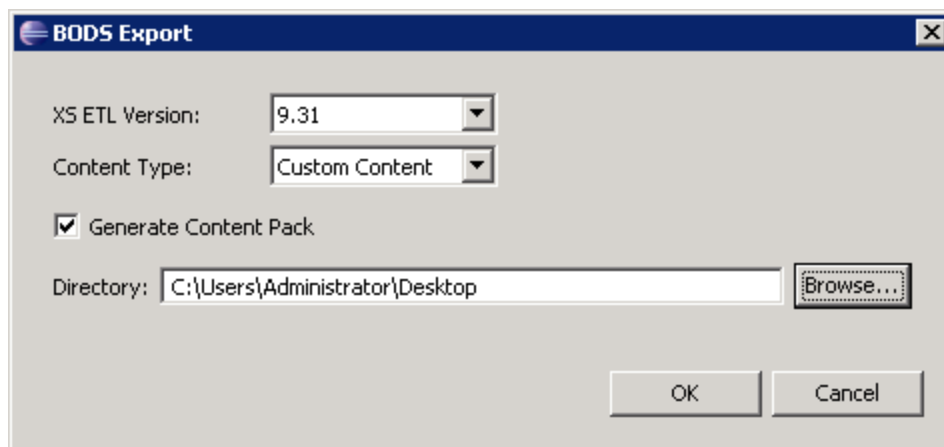
Note: BODS Export can be accessed only when IDE and BODS are installed and running on the same server.

To access:

When a context is open, the  button is displayed in the top right toolbar in the IDE workspace. If it is not displayed, navigate to **Window > Customize Perspective** and make sure **BODS Export** is selected.

To export the workflows from BODS:

1. Click  to begin the BODS export process. The BODS Export dialog box opens.



2. Select the **XS ETL Version** number.
3. Select the **Content Type**: **XS Content** or **Custom Content**. This field designates a path in BODS for the specific content type you are extending or creating.
4. Select the **Generate Content Pack** checkbox if you are creating a new Content Pack (not extending content). This creates a new content pack structure along with the generated ETL files. This capability is only available when generating the ETL files in the Engineer context.

Note: The Generate Content Pack checkbox is not available when generating the ETL files from the Architect context.

When you generate the ETL files from the Engineer context, the **Generate Content Pack** checkbox is disabled if there are no source entities in the context.

5. Browse to the directory where you want the exported workflows to be saved. Click **OK**. The

process may take some time.

Note: If you place the workflows in the same folder that the ETL Generator artifacts were saved, the previous files will be replaced. If you save to a different location, note that you will need the ETL Generator artifacts (data model and xml files) to add to the exported workflows, for use in the Data Warehouse.

6. Copy the ETL artifacts and exported workflows to the Content Packs folder in the Data Warehouse.

Data Source Explorer

The IDE provides a Data Tool Platform plug-in which enables you to connect to a specific data source and browse the database. The Data Source Explorer enables connection to the data sources through the SQL, Oracle and MySQL drivers. You can then browse the database tables, make queries, and view the data source information.

Tasks

To create a new database connection in the Data Source Explorer:

1. Navigate to **Window > Show View > Other > Data Management > Data Source Explorer**. The Data Source Explorer tab is displayed.
2. Right-click **Database Connections** and then right-click **New**.
3. Select **Oracle**, **SQL Server**, or **MySQL** and click **Next**.
4. Enter the **Database**, **Host**, **Port number**, **Username** and **Password**.
5. Click **Test Connection** to check for errors with the connection to the database.
6. Click **Finish** to enable the connection to the database.

You can change the driver definitions or create another driver.

To modify driver definitions:

1. Navigate to **Window > Preferences > Data Management > Connectivity > Driver Definitions**.
2. Select the driver you want to change, or click **Add** to add an additional driver.

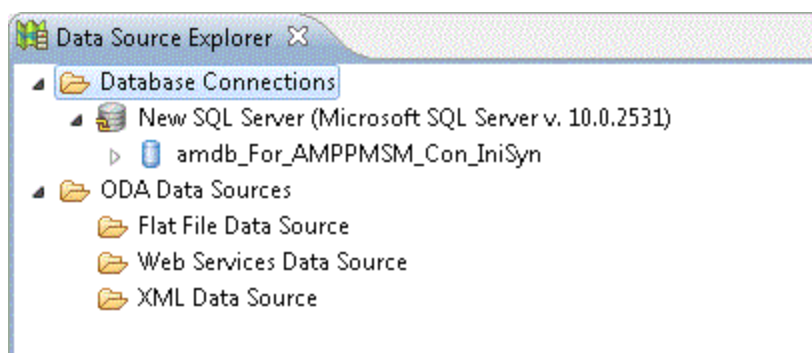
For details on the Data Tool Platform, see the Eclipse DTP tutorials.

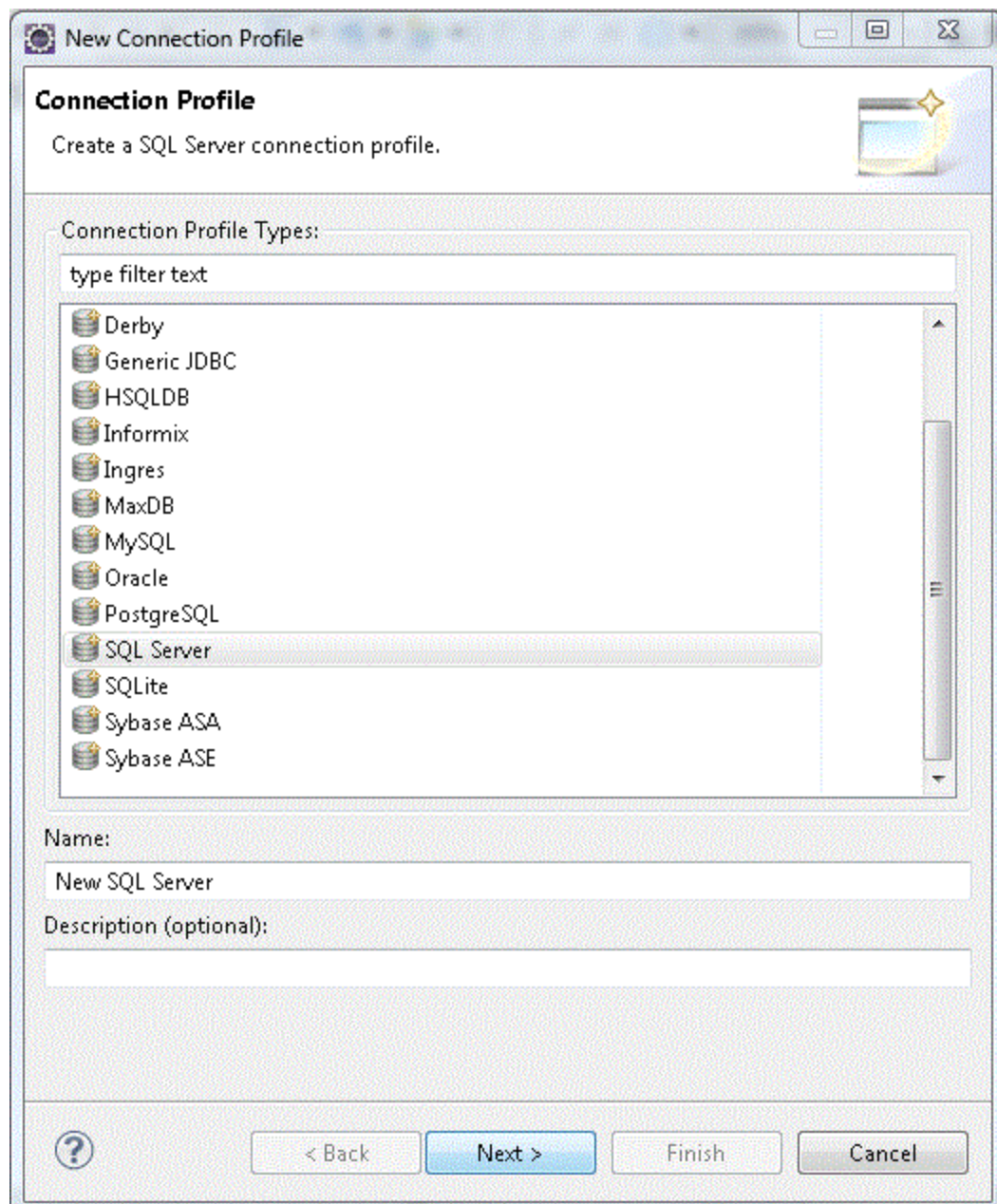
UI Description

Note: IDE provides out-of-the-box drivers for MSSQL, Oracle, and MySQL.

To access:

In the IDE main page, select **Window > Show View > Other > Data Management > Data Source Explorer**, right click **Database Connections** and right-click **New**.



Data Source Connection Profile

User interface elements are described below:

UI Element	Description
<Driver List>	Select SQL , Oracle , or MySQL Server .

Specify a Driver and Connection Details

MSSQL Server

New Connection Profile

Specify a Driver and Connection Details

Enter a user name.

Drivers: Microsoft SQL Server 2008 JDBC Driver

Properties

Database: pubs

Host: localhost

Port number: 1433

☐ Use integrated authentication

User name:

Password:

☒ Save password

Connection URL: jdbc:sqlserver://localhost:1433;databaseName=pubs

☒ Connect when the wizard completes



☐ Connect every time the workbench is started

Test Connection

< Back Next > Finish Cancel

User interface elements are described below:

UI Element	Description
Database	Enter the specific database name.
Host	Enter the host server.

UI Element	Description
Port number	Enter the database port.
User name	Enter the database username.
Password	Enter the database password.
	New Driver Definition. Click to configure new driver definitions. For details, see the Eclipse DTP tutorials.
	Edit Driver Definition. Click to edit the current driver definitions. If you receive an error for the driver, check that the correct path is displayed in the driver files of the JAR list.

Oracle Server

New Connection Profile

Specify a Driver and Connection Details

Enter a user name.

Drivers: Oracle 11 Thin Driver

Properties

General Optional

SID: db

Host: server

Port number: 1521

User name:

Password:

☒ Save password

Connection URL: jdbc:oracle:thin:@server:1521:db

Catalog: User



☒ Connect when the wizard completes

☐ Connect every time the workbench is started

Test Connection

< Back Next > Finish Cancel

UI Element	Description
SID	Enter the Server ID, the unique name of the database.
Host	Enter the host server.
Port number	Enter the database port.

UI Element	Description
User name	Enter the database username.
Password	Enter the database password.
	New Driver Definition. Click to configure new driver definitions. For details, see the Eclipse DTP tutorials.
	Edit Driver Definition. Click to edit the current driver definitions. If you receive an error for the driver, check that the correct path is displayed in the driver files of the JAR list.

MySQL Server

New Connection Profile

Specify a Driver and Connection Details

Select a driver from the drop-down and provide login details for the connection.

Drivers: MySQL JDBC Driver

Properties

General **Optional**

Database: database

URL: jdbc:mysql://localhost:3306/database

User name: root

Password:

☒ Save password



☒ Connect when the wizard completes

☐ Connect every time the workbench is started

Test Connection

? < Back Next > Finish Cancel

UI Element	Description
Database	Enter the specific database name.
URL	Enter the database URL.
User name	Enter the database username.

UI Element	Description
Password	Enter the database password.
	New Driver Definition. Click to configure new driver definitions. For details, see the Eclipse DTP tutorials.
	Edit Driver Definition. Click to edit the current driver definitions. If you receive an error for the driver, check that the correct path is displayed in the driver files of the JAR list.

Generate Entities Automatically

You can generate entities from the source database tables or views. This enables you to automatically create Source, Integration or Target entities. Using the Data Source Explorer, you can connect to the source database and navigate to the source table or view. The entities are created based on the specific table, or view metadata. MSSQL, Oracle, and MySQL source databases are supported. You can then load the entity to a new context located in an existing project. The entity is then displayed in the new Architect or Engineer context.

Tasks

To automatically generate entities from database tables or views:

Note: You can generate Source, Integration or Target entities using the Entity Generator wizard.

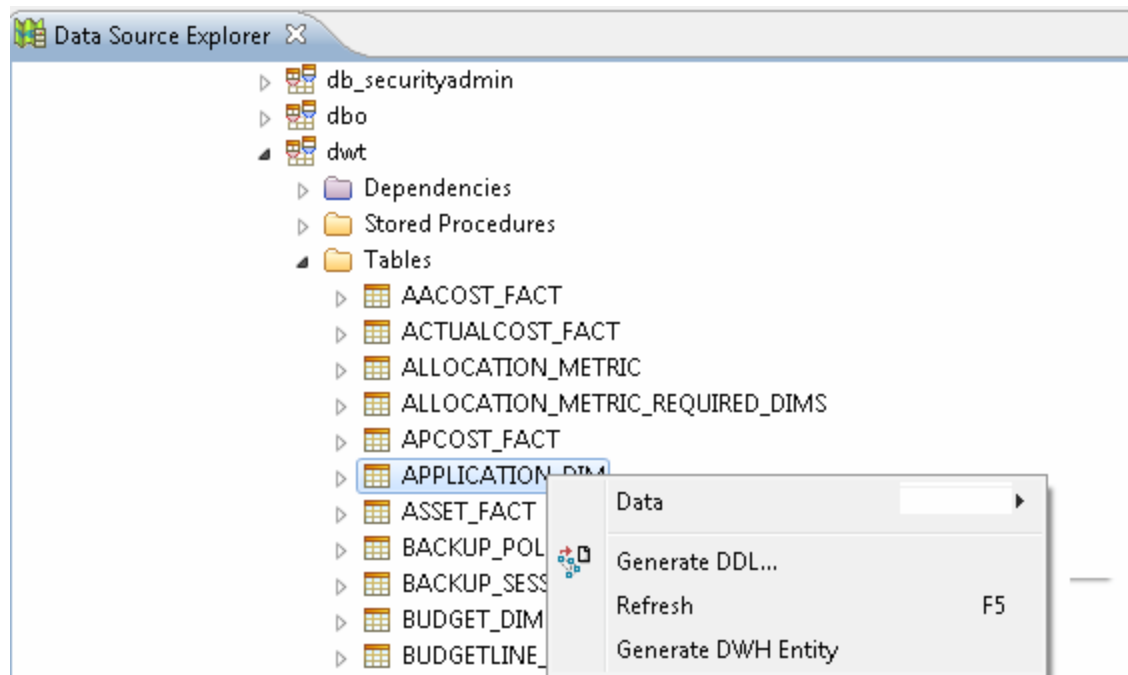
1. Navigate to **Window > Show View > Other > Data Management > Data Source Explorer**. The Data Source Explorer tab is displayed.
2. Select either an SQL, Oracle, or MySQL Database and connect to the database.
3. Navigate to **Tables** or **Views** and right-click the relevant table or view from which you want to generate the entity and select **Create DWH Entity**.
4. In the Scenario page, select the entity type content pack, either Source, Integration or Target.
5. For Source or Integration, select the relevant content pack. When you select the Source CP the Integration CP is automatically displayed.
For Target, select whether the entity is defined as a **Fact** or **Dimension**.
6. Click **Next**.
7. In the Load to Context page, select to either load the entity to a **New Context**, or **No Context**.
8. If you selected **New Context**, select from the drop down list, the project where you want the specific context to be located.
9. Click **Finish** to complete the wizard and create the entity. The new entity is now displayed in the IDE Package Explorer, and if relevant, loaded in the assigned context canvas.

UI Description

Entity Generator Wizard

To access: In the relevant **Data Source Explorer** database, expand **Tables** or **Views** and right-click an entity to select **Generate DWH Entity**.

Note: When you generate an entity from an Oracle database, make sure that if you use reserved words, they are placed in quotation marks, for example, "NUMBER".



Scenario page

Entity Generator

Scenario
Select required entity generator scenario

ID:

☒ Source Content Pack

☒ Integration Content Pack

☒ Target ☒ Dimension ☐ Fact

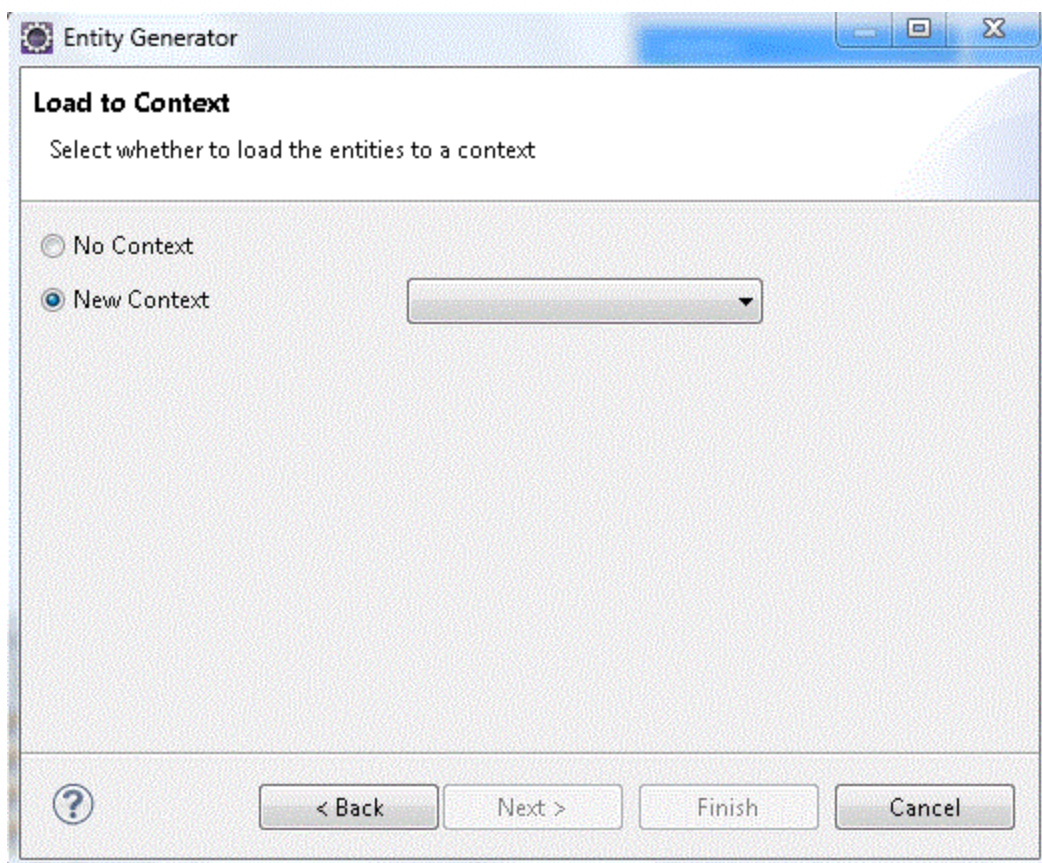
< Back Next > **Finish** Cancel

Note: If you select to generate Integration and Target entities, **SSI Column Mapping** is automatically performed and displayed in the relevant context.

UI Element	Description
ID	Enter entity name. The current table or view name is the default.
Source Content Pack	<p>Select the checkbox and the Source content pack for the specific entity. This generates a Source entity and automatically selects the relevant Integration content pack.</p> <p>Notes:</p> <ul style="list-style-type: none">• If there is only one Source content pack in the workspace it is entered automatically and cannot be changed.• This checkbox is disabled if there is no Source content pack in the workspace.

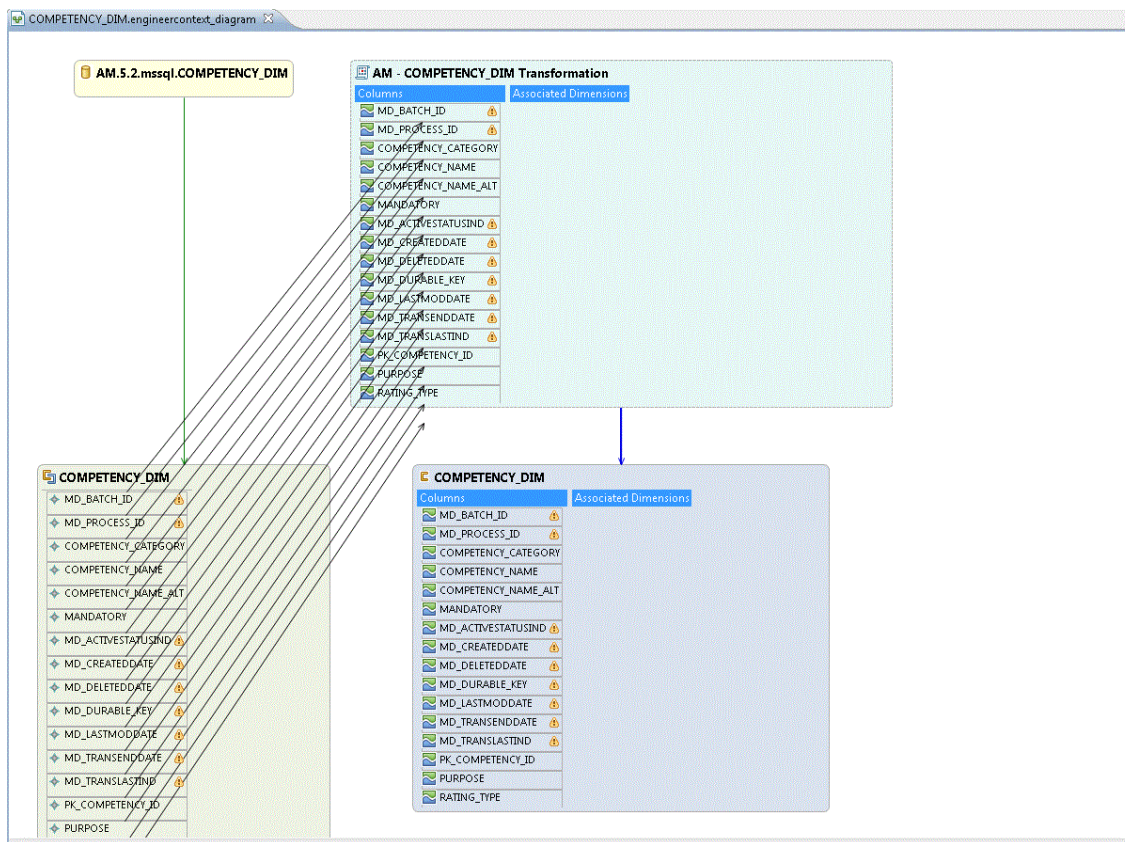
UI Element	Description
Integration Content Pack	<p>Select the checkbox and the Integration content pack for the specific entity. The Integration content pack is automatically populated when the Source CP is selected.</p> <p>Notes:</p> <ul style="list-style-type: none">• If there is only one Integration content pack in the workspace it is entered automatically and cannot be changed.• If only Integration Content Pack is selected, the Next button is disabled, and the entity cannot be loaded to context.• This checkbox is disabled if there is no Integration content pack in the workspace.
Target	<p>Select the checkbox and whether the Target entity is defined as a Dimension or Fact. The entity is placed in the core-cp.</p> <p>If only Target is selected, the entity is loaded to the Architect context.</p>

Load to Context page



UI Element	Description
No Context	Select the checkbox and the generated entity is not displayed in a context canvas.
New Context	<p>Select the checkbox for the generated entity to be displayed in a context canvas.</p> <p>Select an existing project from the drop down list where the context will be located.</p> <p>Note: If a Target entity was generated then the entity is loaded into an Architect context only. For Source and Integration entities, they are loaded into an Engineer context.</p>

Complete Entity Generation with SSI mapping displayed in Engineer Context:



IDE Data Types

The follows shows Database Data Types and the conventions used for them in the IDE entity columns.

Database Data Type	IDE Data Type
BIGINT	Int32
INTEGER(INT), SMALLINT, NUMERIC, NUMBER	Int16

Database Data Type	IDE Data Type
FLOAT, DOUBLE_PRECISION	Float
CHARACTER, NVARCHAR, VARCHAR, VARCHAR(2), CHARACTER_VARYING, CHARACTER_VARYING	VarChar (size)
CHARACTER_LARGE_OBJECT, CLOB, TEXT	VarChar (4000)
RAW16	No IDE Data Type. User must select a data type or delete the column.
IMAGE	No IDE Data Type. User must select a data type or delete the column.
BLOB	No IDE Data Type. User must select a data type or delete the column.

Data Source Extraction Customization

Integration with data sources is performed using File Based Integration (FBI). In order to generate the query executed for the data source, the ETL indicates to the FBI module which source entity to extract. The FBI then extracts the correlating metadata definitions, and uses them in order to formulate a query.

To customize the Source Model:

You can customize the generated query by modifying the source entity xml file. This updates the source metadata in the Data Warehouse and matches it to the customized source.

1. Modify the xml and load it into the Data Warehouse metadata repository, use dw_import_defs.bat.
2. Change the SQL query from the FBI log and run the query on the source database make sure the query is correct and can run without errors.
3. Identify all of the changes.

There are various types of customizations to the source models supported by the DWH. This document emphasizes cases where the data source that you extract information from is based on RDBMS, and entities which are already modeled in the DWH have had field names or table names changed in the data source's structure.

The Data Source's source model metadata xml files are located under:

<Installation

Direc-

tory>\agora\ContentPacks\<CPname>\dataModel\dataIntegration\source\<CPName>\<product_version>\<DB_type>\<entity_name>.xml

For example:

C:\HPXS\agora\ContentPacks\SM\dataModel\dataIntegration\source\SM\9.2\oracle\SM_INCIDENTSM1_SRC.xml

To make changes in a field name:

- Open the entity xml source model file and update the source field names in the datasourcecolumnname property in the ColumnMapping tag:

Example:

```
<ns1:ColumnMapping extractioncolumnidentifier="<identifier>" notapplicable="N" >
<ns1:DataSourceMapping datasourcetablenameoraliasname=" <name>"
datasourcecolumnname=" source field name" datasourcecolumnntype="XXXXX"/>
</ns1:ColumnMapping>
```

To make changes in a table name:

1. Open the entity xml source model file and update the DataSourceJoin and DataSourceWhere tags with the changes.

Examples:

```
<ns1:DataSourceJoin>table name</ns1:DataSourceJoin>  
  
<ns1:DataSourceWhere>field name=1</ns1:DataSourceWhere>  
  
<ns1:DataSourceJoin>table1 A LEFT JOIN table2 B ON A.AAAAA =  
B.BBBBB</ns1:DataSourceJoin>  
  
<ns1:DataSourceWhere>A.AAAAAAA IS NOT NULL</ns1:DataSourceWhere>
```

2. Change the datasourcetablenameoraliasname property in the ColumnMapping tag to the new value.

Example:

```
<ns1:ColumnMapping extractioncolumnidentifier="XXXX" notapplicable="N" >  
  
<ns1:DataSourceMapping datasourcetablenameoraliasname=" A" datasourcecolumnname="  
XXXX" datasourcecolumnname="XXXXX"/>  
  
</ns1:ColumnMapping>
```

To update the data warehouse metadata:

1. Run the command on the source model xml update file: C:\<Installation Directory>\agora\DataWarehouse\bin>\dw_importdefs.bat -topdir <SOURCE MODEL XML FILE DIR>
2. Start the ETL again using the DW ABC Streams Management UI. For details, see [DW ABC Streams Management User Interface](#) in the *Administrator Guide*.

Next Steps

Following the IDE content development and extension process, you have created additional Content Packs for use in the Data Warehouse. This provides data to Executive Scorecard. Using the tools of Executive Scorecard, you can customize and modify your data, in order to access and display it according to specific formulas and parameters. The process includes:

- **Create a custom FBI Extractor:** Enables you to develop and modify an extractor for use with new content. For details, see the FBI Extractor SDK Guide.
- **Manage the Data Sources:** Enables you to manage the integration of extended or new data into the data warehouse through the activation of data sources.

To access: In Executive Scorecard, select **Admin > Data Source Management**. For details, see [Perform Tasks for Data Source Management](#) in the *Administrator Guide*.

- **Manage the ETL:** Enables you to perform the essential tasks related to ETL and stream functionality. It displays the state of active streams, and enables you to schedule and control stream activity. It also allows you to view the historical data and the archived stream definitions. All ETL management and functionality is accessed and performed through this UI.

To access: In Executive Scorecard select **Admin > ETL Management**. For details, see [Perform Tasks for ETL Management](#)

- **Create your Context in the Context Designer:** Enables you to create and manage Contexts (universes). The universes can be based on your target schema tables or on .CSV files that can be uploaded to the target schema using the Context Designer.

To access: In Executive Scorecard, select **Admin > Semantic Layer > Semantic Layer**. The Context Management page opens. For details, see [Semantic Layer - Create and Manage Contexts Using Context Designer and Upload Data Using Data Loader](#)

- **Create KPIs in the Studio:** Enables you to create and manage all of the displayed KPI elements (based on your content), as well as their interactions with each other: wiring, drill downs, and other features.

To access: In Executive Scorecard, select **Studio**. For details, see [Create the Executive Dashboard Contents in the Studio](#) in the *Business Analyst Guide*.

- **Create Executive Pages in the XS Dashboard:** Enables you to set up pages that include components that are of interest to specific users or groups of users. For each page, the administrator defines the layout of components on the page, and the interaction of the page components with one another.

To access: In Executive Scorecard, select **Studio**. For details, see [Prepare the Dashboard Display](#) in the *Business Analyst Guide*.

- **Create CAPs:** Enables you to create Content Acceleration Packs that include Scorecards, KPIs, Dashboard pages that display the Scorecards and KPI components, Contexts (universes), and .CSV files.

To access: In Executive Scorecard, select **Admin > Context Management > CAP Management**. For details, see [Create Content Acceleration Packs](#) in the *Administrator Guide*.

