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Leveraging Data Processing Engine for ISV: Building, Packaging, and Distributing Industry - Specific Solutions

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Abstract: ***The Salesforce Data Processing Engine (DPE) is a tool that doesn't require coding and is made to handle data transformation and analysis in different Salesforce Industry Cloud data more efficiently. It simplifies data processing operations by using adjustable nodes, for extracting and transforming data without needing a lot of custom programming. For ISV partners specifically DPE provides a chance to create and share industry tailored data transformation solutions on the Salesforce AppExchange platform. This document delves into the structure of DPE and its practical applications along, with explaining how ISVs can create and share solutions based on DPE using Salesforces Second generation Packaging effectively. To leverage DPE enables ISVs to provide effective solutions that optimize data centric workflows for their customers across different sectors.***

Keywords: Salesforce DPE, data transformation, ISV partners, AppExchange platform, data processing

1. Introduction

The Salesforce Data Processing Engine (DPE) is a robust solution specifically developed to manage extensive data conversions performed in Salesforce Industry Cloud deployments. It allows enterprises to efficiently process, modify, and rewrite data in real - time. For Independent Software Vendors (ISVs), Data Processing Engineering (DPE) offers a distinct chance to create industry - specific solutions that automate intricate data processing processes without the need for considerable proprietary code. Independent Software Vendors (ISVs) can utilize Data Processing Engineering (DPE) to provide comprehensive and adaptable solutions that cater to essential requirements in operations, financial services, and customer loyalty management.

This article explores how ISV partners can build, package, and distribute DPE solutions through Salesforce AppExchange. It delves into the architecture of DPE, key nodes used in data processing, and best practices for packaging DPE solutions. By tapping into DPE's capabilities, ISV partners can create customizable, high - performance solutions that help businesses transform raw data into actionable insights.

Data Processing Engine

Salesforce Data Processing Engine (DPE) is a high - performance data transformation tool for performing various ETL functions across Salesforce standard objects, custom objects, and CRM Analytics datasets. DPE is part of the Salesforce no - code platform, hence it helps customers to automate complex data processing without extensive custom coding making it accessible to administrators and business users. Using a series of configurable nodes, DPE allows users to define data sources, apply transformations such as joins, filters, aggregations, and formulas, and write back the processed data into Salesforce objects.

DPE is part of Salesforce Flow for Industries, formerly known as Digital Process Automation. Flow for Industries is available only for Salesforce Industry Cloud customers, such as Manufacturing Cloud and Financial Services Cloud. DPE is not available for Salesforce standard Sales, Service, or platform features. Omnistudio and Business Rule Engine (BRE) are some of the other features available in Flow for Industries.

DPE in Salesforce Industry Clouds

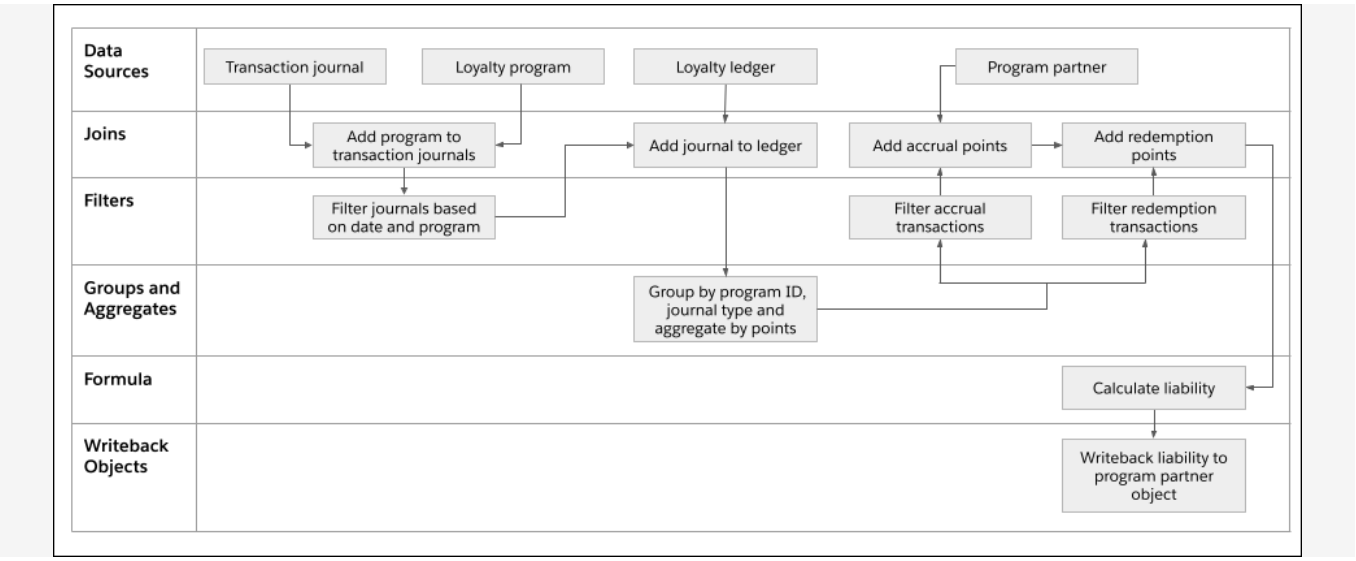
Before we understand the architecture or technical details of DPE, we need to understand the use cases for DPE in the Salesforce Industry Cloud. Let us take a look at two specific indursy clouds for this.

DPE in Manufacturing Cloud

Manufacturing Cloud features like Advanced Account Based Forecasting and Sales Agreement Actuals calculation used DPE. In Advanced Account Forecasting, DPE is used to create various forecast data. DPE reads data from multiple sources like opportunities, orders, accounts, and external data from CRM Analytics Datasets and calculates the forecast based on the forecast set definition in the Manufacturing Cloud. The Manufacturing Cloud provides a few DPE templates for customers, but customer often create their own DPE definitions or use a DPE definition provided by an ISV partner through AppExchange.

DPE in Loyalty Management

The Salesforce Loyalty Management module uses DPE to calculate customer loyalty points or credit. DPE data source extracts data from the Transaction Journal, Loyalty Program, Loyalty Ledger, and Program Partner objects. Based on the configuration in the Loyalty program. The loyalty points are calculated, and finally, the points or credit information are written back to the program partner object.



DPE Architecture
Even though Salesforce admin or business analysts create DPE through Salesforce setup pages, DPE execution or runtime is not the Salesforce platform. There are two runtimes for DPE.

CRM Analytics Runtime
The CRMA Analytics platform provides data manipulation features by utilizing the functionalities embedded in the CRMA framework. In CRMA runtime, the CRMA dataset or Salesforce standard and custom objects can be used as DPE data sources. These nodes are available in CRMA runtime data source, writeback object, join, filter, group and aggregate, formula, append, hierarchy, slice, and forecast.

Data Cloud Runtime
The Data Cloud runtime handles a large data volume compared to the CRMA runtime. It will be a suitable choice if the data source includes the Data Cloud and core Salesforce objects models. These nodes are available in Data Cloud runtime data source, writeback, formula, join, filter, and group and aggregate.

The Data Pipeline is a prerequisite for the Data Processing Engine. So, the customer admin should enable Data Pipeline in the customer org to create DPE. There are specific permission sets available for Data Pipeline and DPE. The users should have assigned those user permissions to manage and run DPE.

Data Processing Engine Nodes
Nodes are fundamental building blocks of DPE that define how data flows and is processed. Each node performs a specific operation, from extracting data to transforming it through joins, filters, and aggregations. Below is an overview of the key nodes:

Data Source Node
The Data Source node identifies and selects the object from which data will be extracted. For instance, if you are working with the Contract object, all fields related to the object, such as Account or Owner, can be selected.

Join Node
Joins allow the combination of datasets. There are four types of joins:

- **Left Outer Join**: Retains all data from the first dataset and the matched data from the second.
- **Right Outer Join**: Retains all data from the second dataset and the matched data from the first.
- **Outer Join**: Combines all data from both datasets, regardless of matches.
- **Inner Join**: Combines only matching fields from both datasets.

Filter Node
Filters are essential for sifting through large datasets, allowing the refinement of results based on conditions. A filter can have up to 50 conditions and is often used in conjunction with input variables to dynamically adjust data selection.

Append Node
The Append node unites data from multiple nodes, assuming the fields in each node match in number, name, and type. It helps in merging different datasets that need to be processed together.

Group and Aggregate Node
This node groups datasets based on a common field or aggregates data from multiple fields, which is useful for summarizing data (e. g., calculating totals). Users can group by text, date, or date/time fields.

Formula Node
Formulas allow users to create new fields by deriving values from existing data. For example, a formula can calculate the total cost of a transaction based on quantity and price.

Writeback Node
After data has been processed, the Writeback node ensures the final transformed data is written back to Salesforce. This can be used for creating, updating, or upserting records into Salesforce objects.

Input Variables
Input variables store data that may change over time. These are used to dynamically adjust filter conditions and formulas within the DPE definitions.

Data Processing Engine for ISV Partners
Independent Software Vendors (ISVs) who develop and distribute applications through AppExchange can build DPE definitions and package them as managed packages. ISV use cases depend on the industry they are primarily serving. For example, an ISV partner who manages inventory for manufacturing companies can provide a DPE definition that calculates an inventory summary for each warehouse for the manufacturer. They can also give the same information to the forecasting framework.

DPE Development & Packaging

Packagability is critical for all ISV partners. ISV partners package their solutions and distribute them through AppExchange. DPE definitions are packageable through Salesforce's Second - Generation and First - Generation packaging. Depending on the Industry Cloud features, some are not packable through Second - generation packaging, for example, the Manufacturing Cloud Advanced Forecasting framework. ISV partners can decide their packaging strategy based on the dependent industry feature. Otherwise, Salesforce recommends Second - generation packaging for all new features in AppExchange.

Second - generation packaging uses a Scratch org for development. Here is an example of a Scratch Org definition file that will help the ISV partners create a Scratch org for DPE development. ISV partners can follow the standard package creation process for creating DPE packages.

Scratch Org Definition File
This scratch org definition file will enable the Data Processing Engine, Data Pipeline, and Salesforce Data Cloud in the scratch org. Depending on the DPE runtime. The ISV partner can avoid some of the settings.

- ***Data Processing Engine***: This feature enables the Data Processing Engine. This is mandatory for all DPE scratch Orgs.
- ***Development Wave & Analytics Admin Perms***: This enables CRM Analytics development and Data Piple. This is also mandatory for all.
- ***Customer Data Platform & Marketing User***: This enables Data Cloud features. This is required only for Data Cloud as runtime.

Some other best practices for ISV partners while packaging DPE are using the template functionality in DPE. A developer can mark a DEP as a template. Suppose we keep a DPE definition as a template. The customer admin can close the DPE rule and make changes if the ISV partner wants to protect the IP of the DPE. Salesforce recommends it to keep it as a non - template DPE definition. So, the customer admin won't be able to view or modify the DPE definition.

2. Conclusion

The Salesforce Data Processing Engine (DPE) presents a significant advantage for ISV partners, enabling them to build, package, and distribute data transformation solutions tailored to specific industry needs. Through its no - code, modular framework, DPE simplifies complex data manipulations and helps streamline processes across Manufacturing Cloud, Loyalty Management, and other Salesforce Industry Clouds. By leveraging Second - Generation Packaging, ISV partners can deliver ready - to - use DPE templates or definitions via AppExchange, allowing customers to easily customize and implement these solutions. As data volumes and complexity increase, the scalability and flexibility of DPE make it a powerful tool for ISVs to create impactful, high - performance solutions that align with modern business needs.

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