



TIBCO® Offer and Price Engine

Concepts

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About This Product

TIBCO® Offer and Price Engine is a cloud-native, in-memory omnichannel server of offers and prices for digital service providers. It answers requests from a digital service provider's customer-facing channels for offers and prices, subject to business rules such as customer eligibility and product compatibility.

TIBCO Offer and Price Engine is the next generation of, and partially replaces, TIBCO® Fulfillment Order Management. To better align the direction of TIBCO Fulfillment Order Management with market demand, the product's capabilities have been reorganized into two new products:

- TIBCO® Order Management
- TIBCO® Offer and Price Engine

Customers who are currently on maintenance for TIBCO Fulfillment Order Management are entitled to upgrade to both TIBCO Order Management and TIBCO Offer and Price Engine. TIBCO will continue to support TIBCO Fulfillment Order Management, and there is currently no plan to retire TIBCO Fulfillment Order Management. New capabilities will be developed in TIBCO Order Management and TIBCO Offer and Price Engine.

Overview

TIBCO® Offer and Price Engine is a cloud-native, in-memory omnichannel server that answers requests from a digital service provider's customer-facing channels for commercial offers and prices, while using business rules such as customer eligibility and product compatibility.

Why is TIBCO Offer and Price Engine important? It offers:

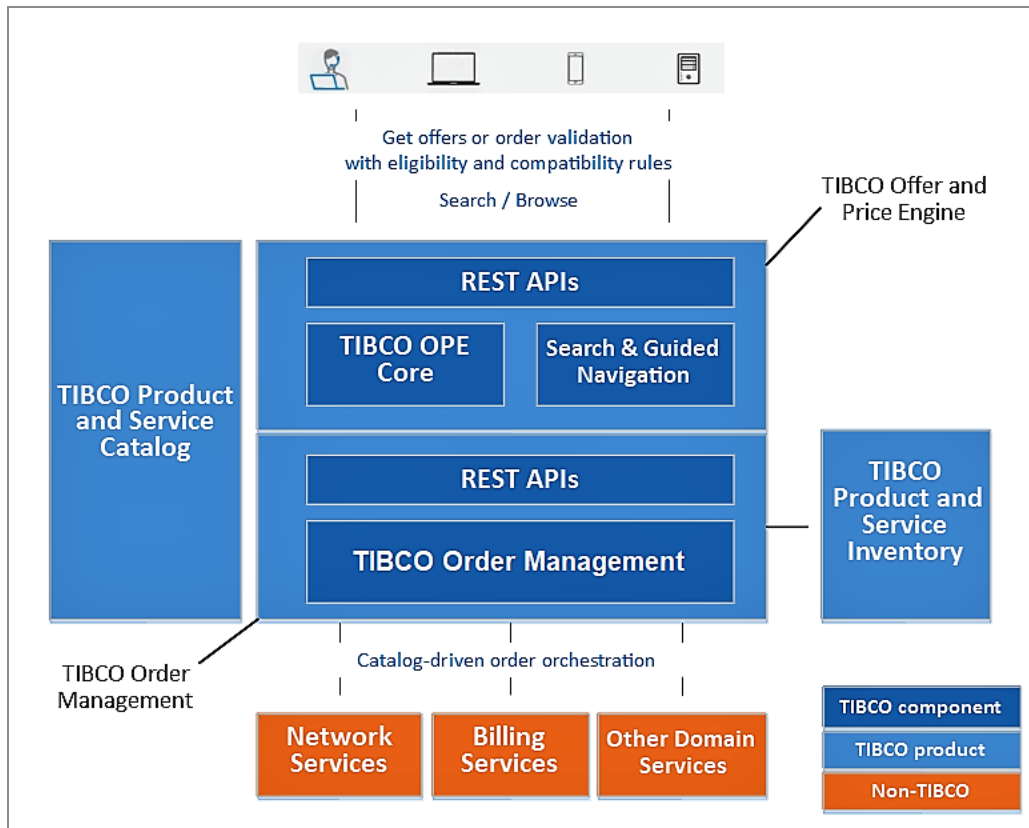
- high-velocity offering,
- agility to launch new offers,
- independence from any CRM system,
- data privacy compliance,
- fast response with in-memory architecture,
- high scalability that lets you easily deploy new nodes as demand increases
- independent APIs that are native to TIBCO's commercial catalog and order management.

TIBCO Offer and Price Engine is used extensively by digital services providers, such as telecom and media companies. Within those companies, TIBCO Offer and Price Engine is used by the Business Support Systems (BSS) and Operational Support Systems (OSS) departments to model products in the TIBCO® Product and Service Catalog, as well as design eligibility and compatibility rules to present the appropriate products to customers.

TIBCO Offer and Price Engine is one of the four products that comprise the TIBCO® Fulfillment Orchestration Suite:

- TIBCO Product and Service Catalog
- TIBCO Order Management
- TIBCO® Product and Service Inventory
- TIBCO Offer and Price Engine

TIBCO Fulfillment Orchestration Suite



TIBCO Product and Service Catalog

The TIBCO Product and Service Catalog includes the Offer and Price Designer, which is a web GUI application used to model products. Two types of products are defined in the catalog:

- **Customer-facing products** - These types of products are called *offers*. Offers have prices attached to them. These are the products that customers can order through one of the available channels: via a call center, browser or website, smartphone, or automatically generated Value Added Services (auto-VAS).
- **Resource-facing products** - These are products that are modeled for network services, which are not applicable in the context of TIBCO Offer and Price Engine.

The customer-facing product models in the catalog can be designed as *single offers*, for example, a smartphone, or DSL. They can also be modeled as *bundled offers*, for example, a package of products and services, such as a landline, DSL, and a smartphone. The catalog can help model a hierarchy of products from the customer-facing offers to the resource-facing services.

The customer-facing products are offered to customers via TIBCO Offer and Price Engine, based on eligibility and compatibility rules, and possibly specified search criteria.

For more information, see [Key Concepts of TIBCO Offer and Price Engine](#).

TIBCO Offer and Price Engine

The TIBCO Offer and Price Engine is used to present *offers*, that is, products that have been modeled in the TIBCO Product and Service Catalog, to customers, based on eligibility and compatibility rules, and possibly specified search criteria.

TIBCO Offer and Price Engine provides REST APIs that can be used to get offers, and validate orders.

For more information, see [Key Concepts of TIBCO Offer and Price Engine](#).

TIBCO Order Management

After products and services are presented to customers, and they make selections and submit an order, the order goes into TIBCO Order Management for processing. TIBCO Order Management uses product models as defined previously in the TIBCO Product and Service Catalog to orchestrate the services that are needed to completely fulfill the order. These can include services such as scheduling installation, activating the service, begin billing for the service, and so on.

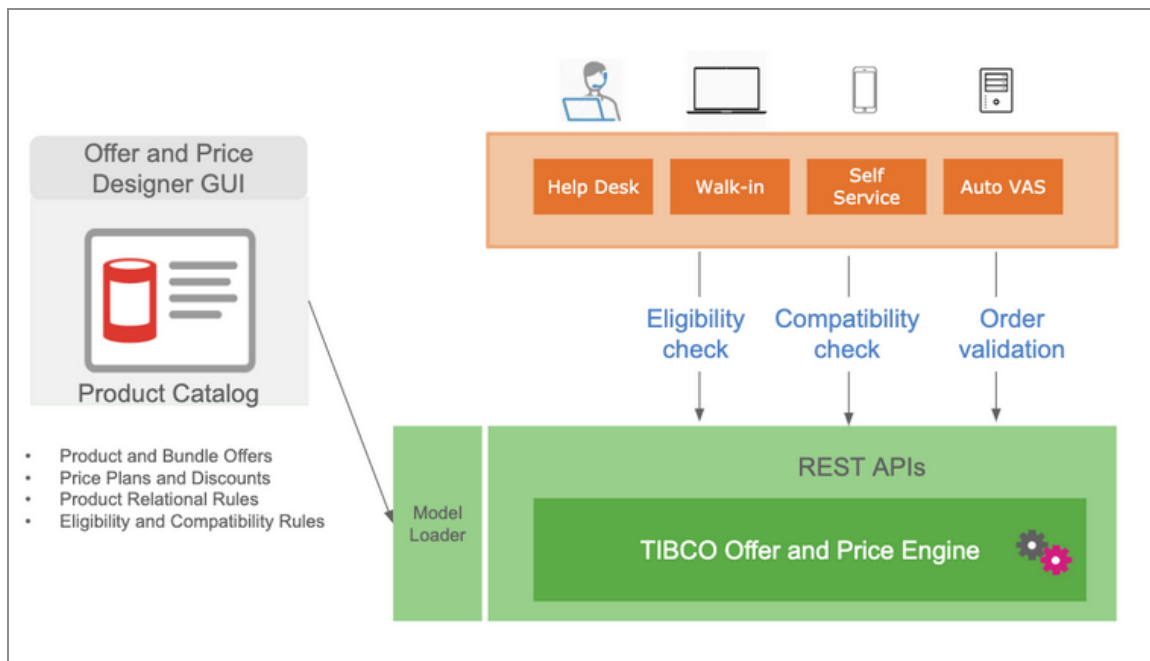
TIBCO Product and Service Inventory

After an order has been fulfilled, products that have been sold and services that have been activated are recorded in TIBCO Product and Service Inventory. This information is used for future interactions with the customer, for example, to feed compatibility and eligibility rules.

Key Concepts of TIBCO Offer and Price Engine

To understand how TIBCO Offer and Price Engine works and how to use it, it is important to understand certain key concepts. Those concepts are generic and are used extensively throughout the documentation.

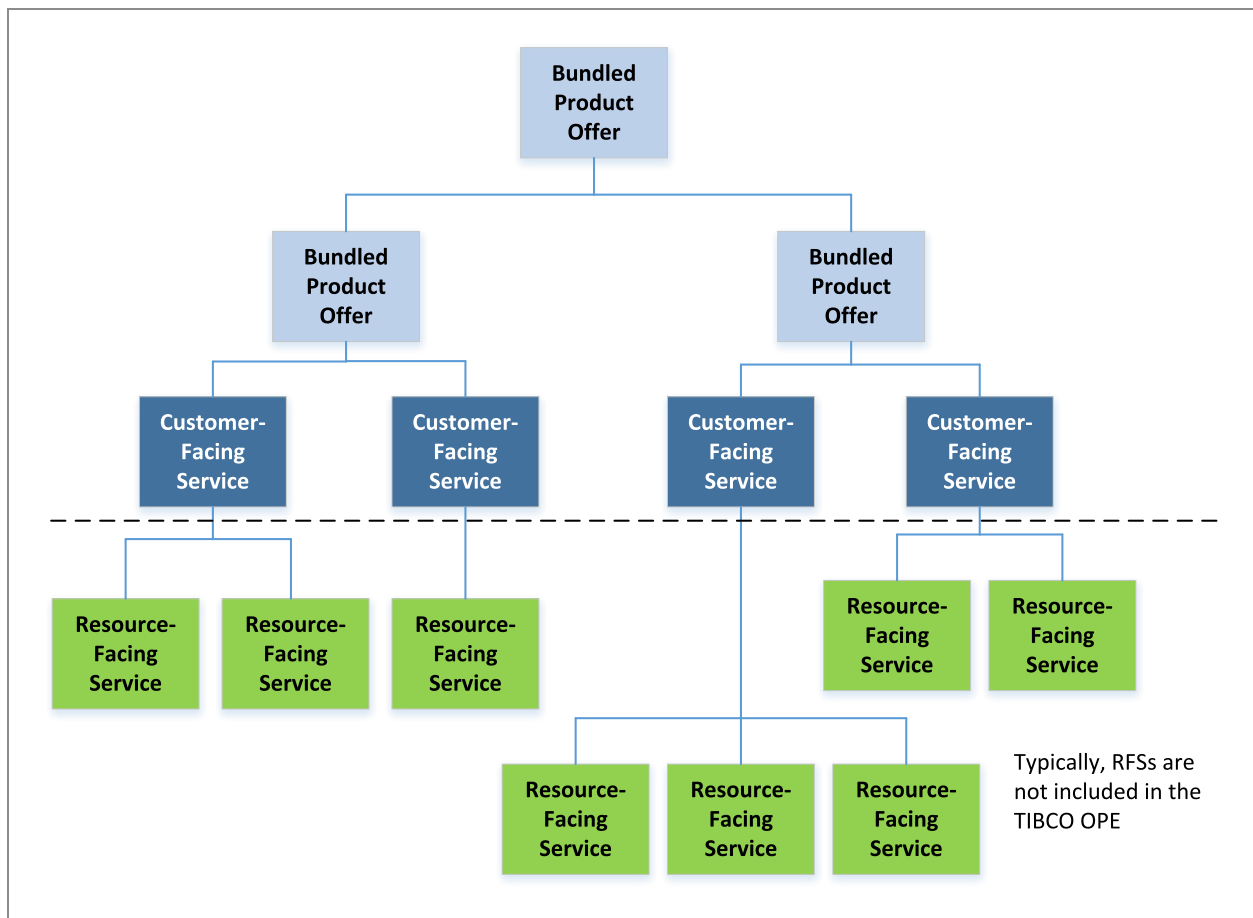
TIBCO Offer and Price Engine



Product Model

Product models are defined in the product catalog, such as the TIBCO Product and Service Catalog, with the Offer and Price Designer module. The following image shows a typical product hierarchy of a communications service provider:

Typical Product Hierarchy



The following describes some of the key elements of a product model:

- **Product** - In the TIBCO Fulfillment Orchestration Suite ecosystem, a product is a generic class that is used to describe both customer-facing offers (products with prices) and technical services.
- **Offer** - An offer is a product that can be sold, that is, a product with a price. In TIBCO Fulfillment Orchestration Suite environment, a product is a generic class that is used to describe both offers (products with prices) and technical services. An offer can consist of either of the following:
 - Single Product Offer (SPO) - A single product with a price.
 - Bundled Product Offer (BPO) - An offer that consists of other product offers. A hierarchy of products can be modeled if it is a bundled product.

- **Service** - A service is a product that does not have a price, therefore it cannot be sold directly to the customer. There are two levels of services:
 - **Customer Facing Services (CFS)** - CFSs are services that your customers can see, but there is not a separate charge for. An example is voice mail.
 - **Resource Facing Services (RFS)** - RFSs are services that your customers cannot see. These are services that support the CFSs. Using the example of voice mail as a CFS, its supporting RFSs could be services such as encryption, storage, and so on that are required to support voice mail service.
- **Category** - A category model containing a category hierarchy is used for guided browsing and narrowing down a search query. A product can belong to no category, one category, or many categories.
- **Characteristics** - Characteristics describe the features of a product. For example, a handset has an SMS characteristic. Characteristics often contain values that describe the extent of the characteristic. Such values may be:
 - defined once (for example, 500 free minutes),
 - user or system input at time of order (MSISDN = ?), or
 - instanced per product offer, for example, a Sales Package has the Free Minutes Characteristic. The value of Free Minutes for the Sales Package = 1000.
- **Groups** - Groups allow the selection of products by users, and there can be a minimum and a maximum associated with them. For example:
 - A user can choose a minimum of 1 and a maximum of 3 from a group of 10 products.
 - A user can choose a minimum of 1 and a maximum of 1 from a group of 5 products.

Price Model

TIBCO Offer and Price Engine uses *price models* to configure prices in the TIBCO Product and Service Catalog, and correlates these prices to a given product based on relationship. Price models can be loaded in the engine using the offline or the online integration, or both online and offline integration, with TIBCO Product and Service Catalog. Some concepts of price models are:

- **Price Type** - These can consist of:

- One-time price - This type specifies a non-recurring (one-off) charge.
- Recurring price - This type specifies recurring charges.
- Usage price - This type specifies usage-based charges.
- Composite price - A composite price scheme is used when you want to assemble different types of prices or charges. For example, a bundled product offer can have:
 - an up-front setup price of \$100
 - recurring monthly price of \$50
 - early exit penalty of \$200 if the contract is canceled within two years
- Price comprised of - This price scheme is used when you want to assemble prices or charges of the same type. For example, an offer can have:
 - a recurring monthly price of \$25 for the first year
 - a recurring monthly price of \$50 beginning the second year
- **Discounts** - Discount models are used to get the discounts configured in the discount catalog and correlate these discounts to a given price plan based on relationships.

Rules

In addition to product relationship rules inherent in the product model, TIBCO Offer and Price Engine uses eligibility/ineligibility and incompatibility rules to evaluate offers and products based on the conditions, characteristics, or segments set for each rule type. The rules are created under the Rules Editor section in the Offer and Price Designer (the web-based UI product component part of the TIBCO Product and Service Catalog), or directly in the TIBCO Product and Service Catalog itself. The following are some aspects of rules that can be configured:

- **Segment** - A segment is a group of customers with certain characteristics that are eligible for certain products. A segment contains a list of reference entities that may impact the eligibility of products or the application of different pricing rules. For example, a product may be available only to corporate customers; pricing may be calculated differently based on the higher credit risk of a particular customer segment.
- **Segment Eligibility** - Segment eligibility is configured in the product catalog. One or many segments can be eligible for a product. TIBCO Offer and Price Engine returns

eligible offers in response to a list of segments on the request message. For each segment specified in the request, there must be an exact match on the product for it to be returned. The product might have additional segments and still be eligible. The list of products matching the specified segments is then returned, adjusted by the specified filters. This method is suitable for all order management environments. It also reduces the number of relationships to be configured in the catalog.

An example is a customer who wants to upgrade to a new smartphone model but is not eligible because it has been less than two years since they purchased the current model. In this case, a segment whose subscription is less than two years is defined.

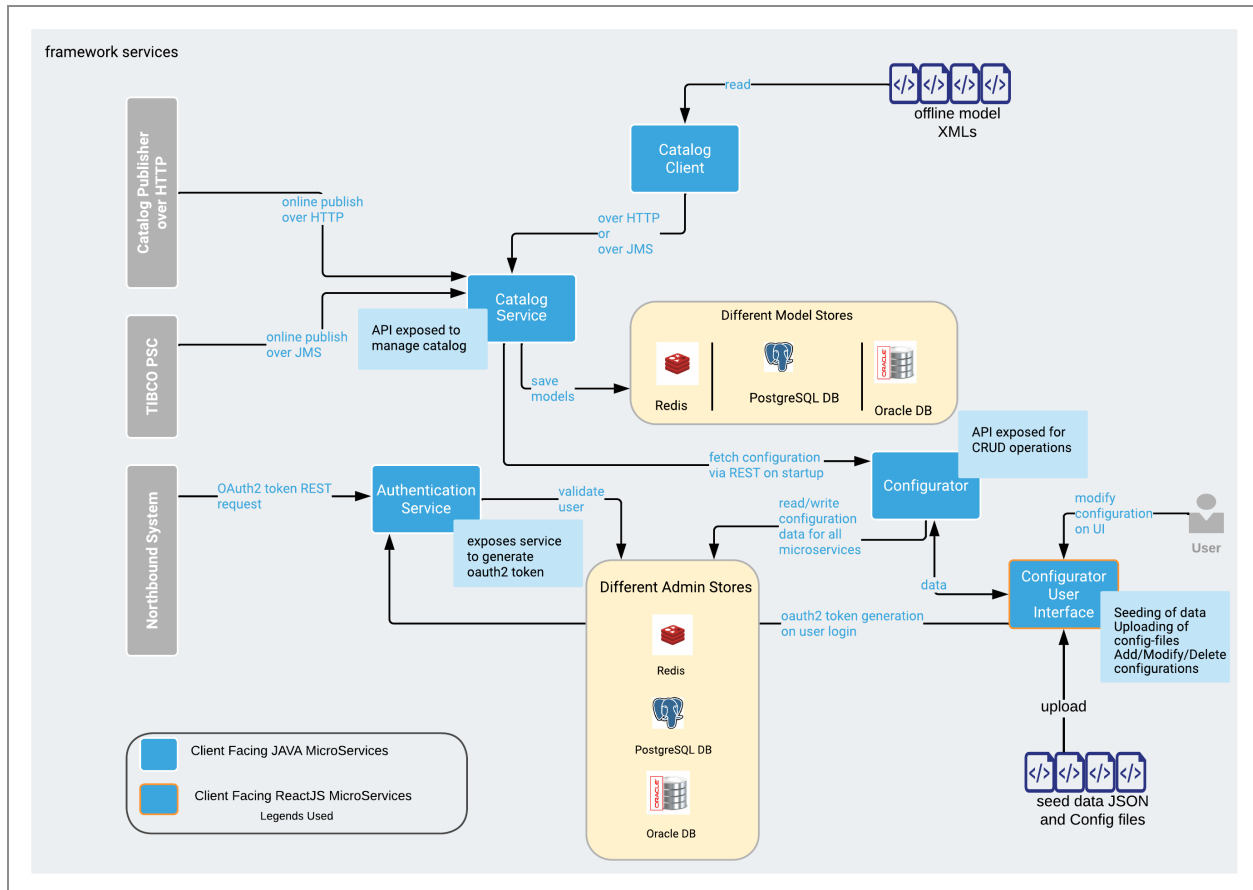
- **Compatibility** - This rule type defines the compatibility between products. All products in the offer must be compatible with all the products in the order. If no explicit incompatibility is defined, the product is compatible.

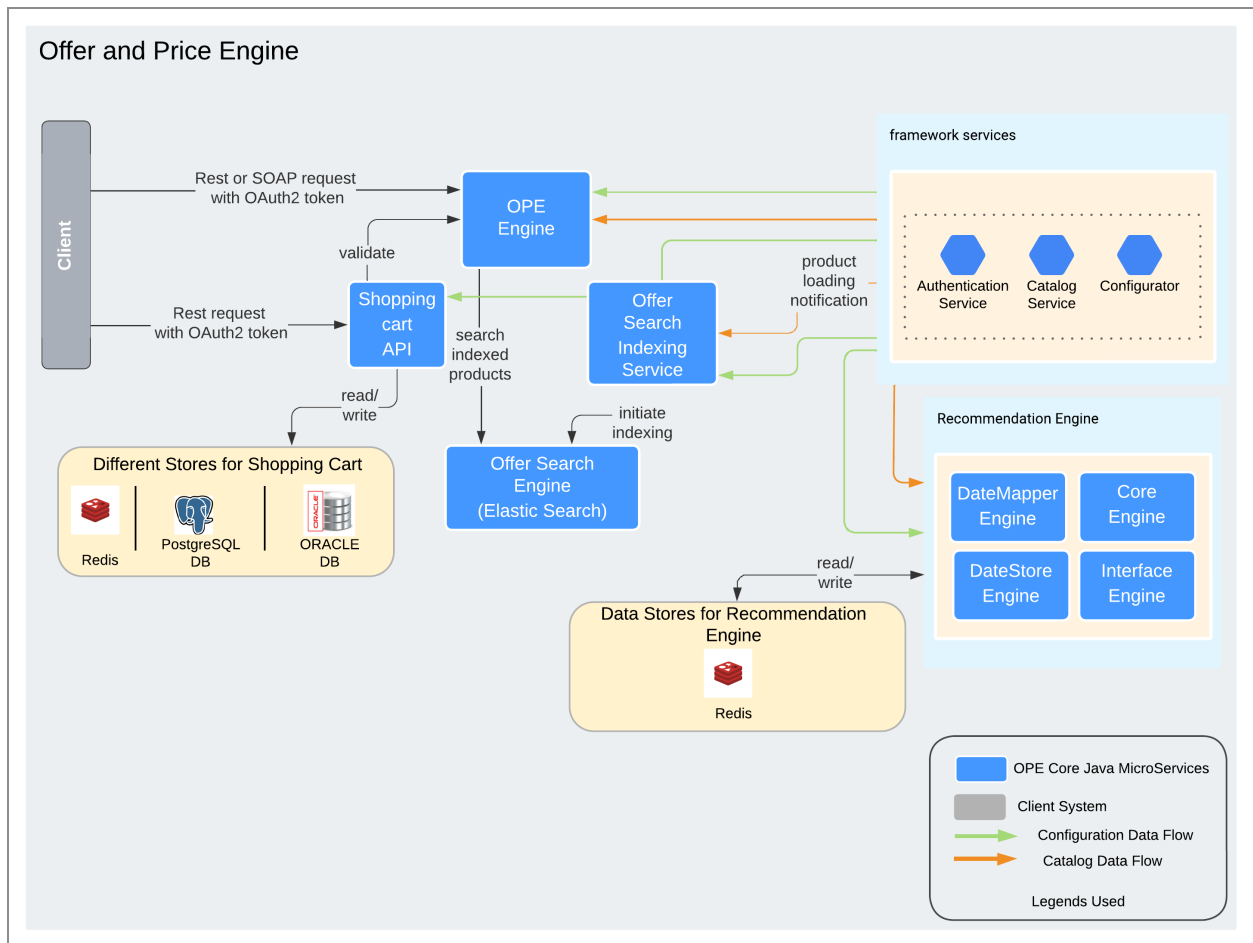
For example, if a customer has a particular smartphone and wants to purchase a case, only the cases that are compatible with the customer's smartphone model should be presented to the customer for purchase.

Search and Browse

The Search and Browse feature in TIBCO Offer and Price Engine powered by the Offer Search Indexing service has similar functionality to a web search engine. Its functionalities include searching and guided browsing for offers. The offers are indexed in the Offer Search Indexing engine for fast searches.

Architecture





- **OPE Engine**

This is the core offer processing engine. It provides interfaces for multi-channel offer eligibility, validity, and price evaluations.

- **Offer Search Indexing Service**

It enables search and guided browsing for offers. The offers are indexed in this engine for fast searches.

- **Authentication Service**

A JSON Web Token-based authorization has been introduced for the Order Management Server REST web service by using JSON Web Token (JWT). The Authorization service has been added to get a token based on the user name and password. This token can be used to access other operations of the order services.

Note:

- Authentication service is a primary service that does not depend on any other service to start.
- The Configurator UI requires the authentication service to always be up and running. The credentials entered on the UI by users are validated by the authentication service. On successful validation, tokens are generated. These tokens are then used by the Configurator UI to initiate the login process.

- **Catalog Service**

It is a REST service that is used to load the product, price, discount, category, OfferIdMappings, and rule models.

- **Configurator REST Service and Configurator UI**

Configurator is available as a REST service and also as a UI. You must run the `start.sh` script from the `$OPE_HOME/roles/configurator/standalone/bin` directory. For configurator REST service, start the service from the `$OPE_HOME/roles/configurator/standalone/bin` and for configurator UI, start the service from `$OPE_HOME/roles/configurator-ui/standalone/bin` directory. You need to upload the seed-data present under the `$OPE_HOME/seed-data` directory either from configurator or configurator UI.

- **Shopping Cart Service**

The REST APIs in the Shopping Cart service are used to perform various actions on the products in a cart. For example, you can save, update, delete, or get products in the cart. For the shopping cart APIs, specification from TM Forum R19.0.0 is followed.

- **Recommendation Engine Data Mapper**

This is a Java-based Spring Boot service that provides the feature of mapping and publishing customers' transactional data. The filtered data is stored in Redis. It supports the json and csv data.

- **Recommendation Engine Data Store**

Recommendation Engine Data Store is a Java-based Spring Boot service. It has GraphQL APIs to save, update, retrieve, and delete any data in Redis. These GraphQL APIs are used by other Recommendation services such as Recommendation Engine Data Mapper, Recommendation Engine Core, and Recommendation Engine API.

It also has REST APIs to save, update, retrieve, and delete PMML.

- **Recommendation Engine Core**

It is a python-based service. It is the core engine for the recommendation engine as it is responsible for running Apriori and Cosine algorithms to generate Association rules and similar products respectively. It also processes active PMML and predicts against transactional data in the system. It stores association rules, similar products, and customer predictions in Redis.

- **Recommendation Engine API**

This is a Java-based Spring Boot service. This is the leading Recommender System that generates and provides recommendations to the users. This service is based on TMF680_Recommendation_API_REST_Specification_R18.0.0.

TIBCO Documentation and Support Services

For information about this product, you can read the documentation, contact TIBCO Support, and join TIBCO Community.

How to Access TIBCO Documentation

Documentation for TIBCO products is available on the [TIBCO Product Documentation](#) website, mainly in HTML and PDF formats.

The [TIBCO Product Documentation](#) website is updated frequently and is more current than any other documentation included with the product.

Product-Specific Documentation

The following documentation for this product is available on the [TIBCO® Offer and Price Engine](#) documentation page:

- *TIBCO® Offer and Price Engine Release Notes*
- *TIBCO® Offer and Price Engine Installation and Configuration Guide*
- *TIBCO® Offer and Price Engine Concepts Guide*
- *TIBCO® Offer and Price Engine User Guide*
- *TIBCO® Offer and Price Engine Web services Guide*
- *TIBCO® Offer and Price Engine Security Guidelines*

How to Contact TIBCO Support

Get an overview of [TIBCO Support](#). You can contact TIBCO Support in the following ways:

- For accessing the Support Knowledge Base and getting personalized content about products you are interested in, visit the [TIBCO Support](#) website.
- For creating a Support case, you must have a valid maintenance or support contract with TIBCO. You also need a user name and password to log in to [TIBCO Support](#) website. If you do not have a user name, you can request one by clicking **Register** on

the website.

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