



Product Description

ePulse Generic Gateway

Data Translation, Conversion, and Distribution

DESCRIPTION

The ePulse Generic Gateway (eGG) is a translator and multiplexor for market data of all kinds. A most general description of the eGG is that it accepts data in any format, from any source, and using any Market Data Distribution System (MDDS) platform and can relay it in any format, into any other distribution platform. It can receive and transmit data over a network even in the absence of a distribution platform in the form of XML messages formatted as Market Data Distribution Language (MDDL) for example.

The processes, mechanisms and data transformations, by which real time market data is ultimately delivered to the end user, are complex and challenging to develop, implement, or integrate. In addition there are numerous options for data sources and distribution technologies, which are usually incompatible, both technically and in terms of data formats. The eGG addresses these issues by providing a

- simple, standard interface to multiple data vendors and distribution platforms
- standard data formats by which data from multiple sources and formats can be seamlessly used across an organisation.

Key Objectives of the eGG

For a product to assume a critical role in data delivery to trading rooms, it must meet high standards of reliability, performance, scalability, extensibility, customisability, and feature-richness. The eGG has been designed from the very start with these objectives in mind. It addresses these requirements in the following ways:

- The eGG has built-in support for reliability, which includes key functionality in the area of failover, data redundancy, real time data monitoring.
- The design of the eGG is based on extensive experience in the market data field and draws together all of the functionality typically required by a market data processing application such as status monitoring, administration, permissions, queuing, polling, etc.
- The eGG is fully multi-threaded and designed for scalability. It can concurrently service multiple data requests and process multiple data feeds independently.

- In spite of the considerable functionality available with the eGG, it has a relatively low footprint. By being lightweight and fast, it meets most performance requirements.
- The highly modular and loosely coupled design of the eGG makes it easily extensible. All modules have standard interfaces and can be plugged in, removed, or replaced without affecting other parts of the product. Performance benefits can be gained by implementing only those modules that are required.

Architecture

eGG can be conceptually split into three layers: reception, translation, and transmission.

Reception

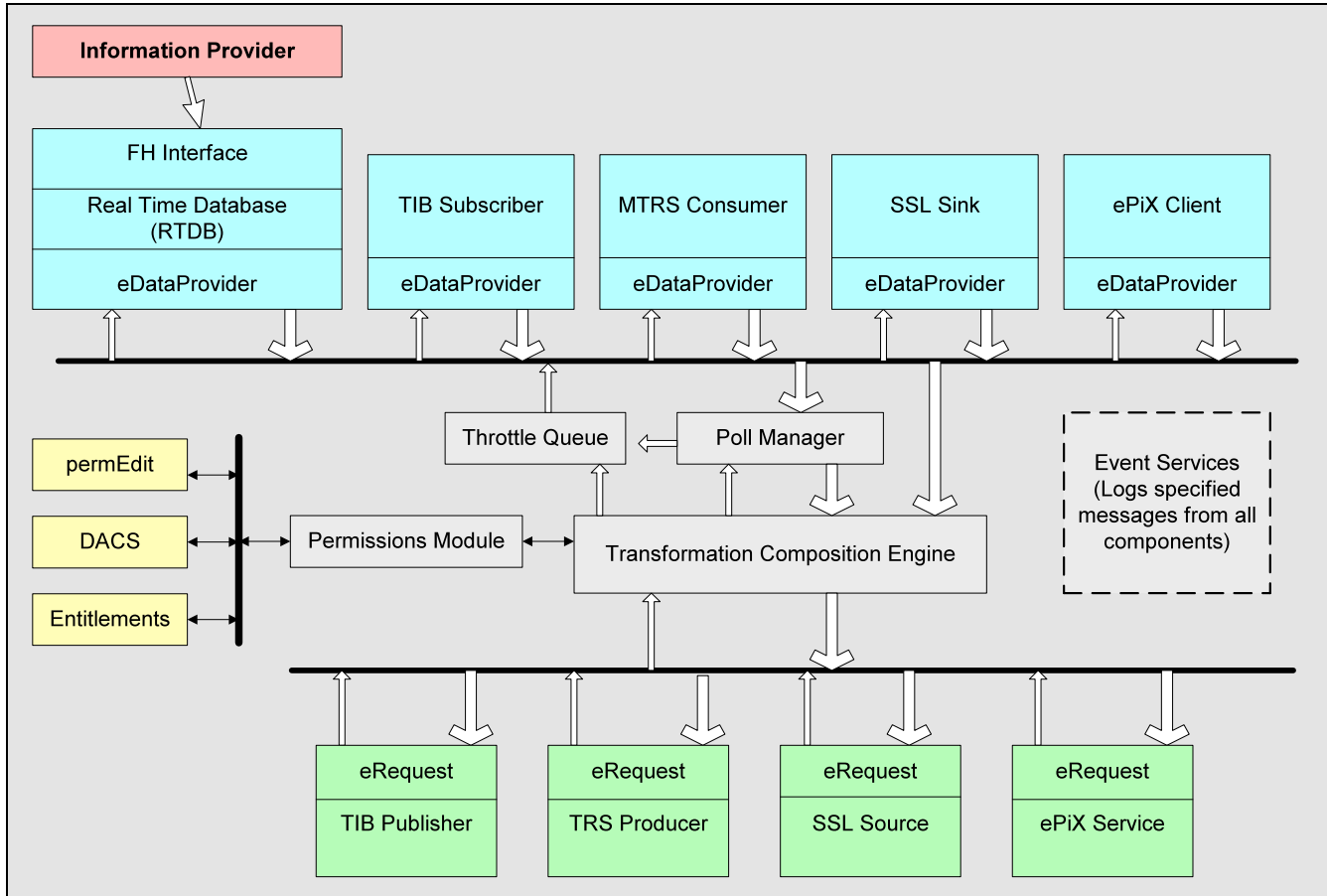
The reception layer contains modules for taking in data from various sources, which might be raw data feeds, databases, or distribution platforms. For each type of source, a corresponding interface module is plugged in. The plug-ins enable other modules in the eGG to access the data from the sources through a well-defined interface. This layer might also contain a high-throughput data storage component called the Real Time Database. This is used when the data source itself does not provide the facility to query and retrieve data.

Translation

This is the core part of the eGG and has all the main processing components. The logic for delivering the various features like access control, throttling, polling, etc are present in this layer. It also contains the Transformation and Composition Engine that can reformat and rename the incoming data, or construct new data objects from it.

Transmission

The output layer takes care of publishing, distributing, or delivering the data to clients. Like the reception layer, this layer also contains plug-ins to interface with particular output devices, protocols, or platforms. Typically, the external interface will utilise a request-response paradigm. This layer parses the requests and abstracts them to a common format used by all eGG components and passes them on to the Translation layer. The response received from the Translation layer is then converted back to a client-specific format and transmitted.



Components of the eGG

The design of the gateway includes support for records and pages. The diagram above illustrates the various components and the data flow between them. The important components are:

Real Time Database

Where the data source does not provide a method to retrieve specific data as needed, it becomes necessary to store all relevant data so that any information requested by clients can be retrieved immediately. This is the function of the Real Time Database. It is a high-speed cache reflecting the market state and history and continuously updated by data arriving from the feed. It uses data structures optimised for rapid indexing and searching of large tables of data and provides interfaces for querying, retrieving, and updating specific items.

Feed Handler Interface

This is used to receive data from the Feed Handler. The Feed Handler is a customised plug-in that translates the data from the feed into a standard, well-defined form which can be processed by the eGG components. The

Feed Handler Interface defines this format in the form of a set of functions it exposes to the Feed Handler.

Transformation and Composition Engine (TCE)

This module provides an easy and flexible way to transform and splice incoming data and present it in different combinations. For example, data from pages and records can be combined to form new records or pages, or records can be linked together to form collections, or data from different sources can be combined together and distributed as new data items. A rule-based approach has been adopted with the TCE loading the rules from a configuration file at start-up.

The TCE is also responsible for routing requests to the required data sources based on a global mapping table. In this respect, the TCE becomes a very powerful and flexible data repository.

Throttle Queue

To prevent overloading the data provider with a burst of requests and risking undesirable consequences, all requests are passed through the Throttle Queue,

which limits the request rate to a configurable value. It queues pending requests and releases them at a controlled rate in order to maintain robust and optimal performance.

Poll Manager

Due to the inner intricacies of some data sources and distribution platforms, it is often not desirable to request for real-time updates for certain instruments. Instead, the instruments are polled at configurable intervals and any changes detected and processed. This module carries out this polling automatically and triggers processing of changes to the data. The TCE determines when a request should be polled based on a configuration table and sends the request to the Poll Manager or bypasses it.

Semantic Interpretation and Abstraction Module

This is a collection of plug-ins that interprets data and abstracts the content to a form more suitable for distribution. Separate plug-ins are used to interpret data from different vendors. This module processes chain and collection records and translates them into vendor-independent normalised entities.

Permissions Module

This is a generic interface to the underlying permissions database/API and provides all the functions needed by the eGG to approve or deny data to the end user. Wherever possible the request from the client will be validated through the Permissions Module.

Event Services Module

The Event Services provide a method by which XML messages can be logged to a file. The main purpose of the event service is to log messages that can be processed by other applications to determine the usage of the Feed Handler or obtain useful statistics.

Benefits of using the eGG

- Data available to in-house applications in the format of choice, regardless of actual data provider and distribution platform.
- Obviates the difficult and potentially risky task of interacting with sophisticated market data platforms. Data can be retrieved in any format (including industry standards such as XML and MDDL) without specific skills in the market data area.
- Allows the rapid development of feed handlers in a controlled and structured manner by the re-use of modules and plug-ins

- Independence from particular data vendors and formats as the eGG effectively insulates the rest of the organization from changes to vendors and formats.
- Proven reliability and performance, making market data availability more reliable enterprise-wide.
- Easy integration of multiple data sources and technologies providing a seamless data flow to consuming applications.
- All the above benefits are also available for in-house data publishing.
- New exchanges and virtual exchanges can easily integrated to in-house systems.

INFORMATION

Please contact ePulse Limited for further details at the address below.

ePulse Limited
4 Crown Place
London
EC2A 4BT
United Kingdom
Tel: +44(0) 20 7422 6300
Fax: +44(0) 20 7422 6316

For more information, send mail to the following address, or refer to the company website.

email: sales@epulse.eu
website: www.epulse.eu

Copyrights and trademarks

© Copyright ePulse Limited 2007. All rights reserved.

This document contains proprietary confidential and trade secret information of ePulse Limited and except as provided by written agreement with ePulse Limited no part of it may be disclosed, distributed, reproduced, transmitted, stored in a retrieval system, adapted or translated in any forms or by any means.

ePulse Limited makes no express warranties in respect of this software and excludes all implied warranties as to the satisfactory quality and fitness for purpose of the software. ePulse Limited shall not be liable for any direct, incidental, special, exemplary or consequential damages, including, but not limited to, lost data, programs, anticipated or lost profits or benefits, resulting from the use of, adaptation, licensing or other reliance upon the software by the licensee.

Trademarks and service marks including those, which may also be product names and company names mentioned herein may be the trademarks of their respective owners and if so are acknowledged as such.