

# Overview

This page will provide you with developer access to example use cases to power financial workflows using Refinitiv Real-Time data & APIs. On the right are a series of developer articles describing use cases in detail, complete with code examples, snippets and samples, as well as full Jupyter notebooks with source code available on Github. At the bottom of the page you will find links to related APIs, with overview, quick start guides, full documentation and developer tutorials.

From building ultra-low latency, high throughput, resilient market data feed infrastructure to streaming/snapping market data to feed a web page and everything in-between, our [RTSDK C++](#), [RTSDK Java](#), and [Websockets APIs](#) will have you covered for your workflows. These powerful and flexible APIs can be used to update your financial applications and support differing qualities of service / update rates. Whether your workflows require full tick updates or trade-safe conflated updates, one of our APIs will have you covered.

## Data & APIs

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Our APIs provide pricing data for over 100+ million instruments trading on over 500 exchanges, OTC venues and contributors worldwide. This data comes cleaned, tagged, standardized, and normalized to enhance its quality so that it's ready for immediate use in your technology upon delivery. The two domains our pricing data is organized by are as follows:

- **Market by Price – Level I & II** real-time data that provides data grouped by its price point that's the collection of the aggregate orders for the instrument.
- **Market by Order – Level II** real-time data that provides data in a detailed order book that lists all the individual orders for the instrument.

Additionally, our pricing data is marked with microsecond timestamps (nanosecond where available) with history of every tick on our network going back to 1996. If you need greater transparency on liquidity, looking through instrument orderbook history via our [TickHistory API](#) can provide that for you.

| API Flavor                        | THREAD SAFETY  |
|-----------------------------------|----------------|
| ETA Socket Transport              | Safe and Aware |
| ETA + Reactor<br>Socket Transport | Safe and Aware |
| EMA Socket                        | Safe and Aware |
| RTSDK Websocket Transport         | Safe and Aware |
| Websocket API                     | App Dependent  |

# Websockets

- Simple Open Protocol Specification ([GitHub link](#))
- Streaming JSON messages over
- Use any framework/language that supports Web Sockets
- Examples in multiple languages: Perl, Python, R, Ruby, Node.js, Go, Java, and C#
- [GitHub Examples link](#)
- Easy ultra-rapid Development
- Resilience (connection management, failover etc.) must be built into the consuming app

# Software Development Kit (SDK)

## Enterprise Message API (EMA)

- Simplified message parsing and event processing
- Uses Open Message Model (OMM)
- Supported in C++ and Java
- Rapid development & and high ease of use
- Github examples at [link](#).

# Enterprise Transport API (ETA)

- High performance, lowest latency, and high flexibility for data feeds
- Uses Open Message Model (OMM)
- Open Source (except for Multicast/Cache)
- Supported in C/C++ and Java
- Transport API encapsulates Core library, value-add/reactor and watchlist. Apps can be written to any of the layers.
- Github examples at [link](#).

## Platform & Distribution

### Refinitiv Real-Time Managed Distribution Service

Access Refinitiv's industry-leading all trade, all quote solution and associated infrastructure, with platforms and connectivity to data or exchange venues. These capabilities are delivered as managed services from our Data Centres located around the world, allowing you to reduce cost and focus more on your core business operations.



## **Refinitiv Real-Time - Optimized**

Access Refinitiv's industry-leading all trade, quote conflated solution, for real-time data made available via zero-footprint installation without the need for an installed device or application to consume data. It supports rapid application development and simple migrations for existing applications into the public cloud.

## **Refinitiv Real-Time Distribution System**

Access the Industry's most powerful software for distributing and managing structured market data to help you connect all enterprise workflows. It provides infrastructure that will allow you to tightly manage, control, and distribute the right data to the right applications, and ultimately to the right users for any type of front, middle and back-office application.

## **Refinitiv Real-Time Edge Device**

Our legacy deployed hardware solution for delivery market data to your site via secure private lines from our Data Centres located round the world. Available in both full tick and trade-safe conflated qualities of service for whatever your workflows require. Please note at this time that our strategic suite of APIs is not compatible with this distribution method and is only accessible via [Legacy APIs](#).

# Use Cases

## Front Office

- Powering trading and risk systems with exchange data and analytics
- Executing trades and performing execution analysis such as transaction cost analysis (TCA)
- Detecting trading patterns within the market with artificial intelligence (AI) and machine learning (ML)

## Middle Office

- Undertaking portfolio management
- Managing market and credit risk
- Complying with regulations such as trade surveillance and reporting

## Back Office

- Working through post-trade processes
- Performing clearing, confirmation, and settlement
- Conducting accounting and auditing