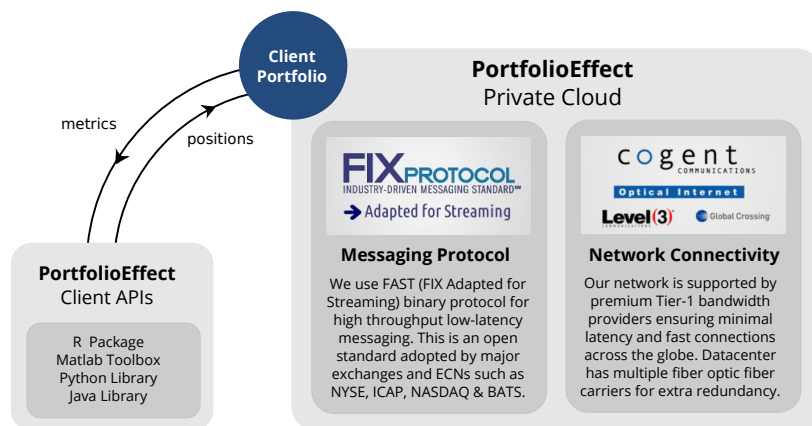


High Frequency Portfolio Analytics API

First cloud-based portfolio risk, performance & optimization service using high frequency market data



High Resolution Analysis

PortfolioEffect service employs latest advances in high frequency market microstructure theory to make classic portfolio risk and optimization results available intraday at tick-level resolution. It uses automated model pipeline to process high frequency price returns in a streaming fashion.

Cloud Based Architecture

PortfolioEffect is an entirely based in the cloud, which enables it to handle massive workloads associated with real-time processing of high frequency data. We use binary FIX protocol, adopted by exchanges such as NYSE, NASDAQ OMX & BATS for high throughput low-latency messaging.

Data-Driven Precision

Using high frequency data dramatically improves precision of portfolio metric estimates due to the so-called bias-variance trade-off. Such data provides many more recent/fresh data points, thus decreasing the variance of estimates, without using stale data points that would increase the estimation bias. Even for end-of-day figures, PortfolioEffect beats RiskMetrics daily Value-at-Risk estimates at all confidence levels.

Client Interfaces

- R
- MATLAB
- Java
- Python

Portfolio Backtesting

- Over 40+ portfolio risk & performance metrics (see "Portfolio Metrics")
- Auto-calibrating central processing pipeline (see "Model pipeline")
- 1 second (server data) or 1 tick (user data) resolution
- Cloud-based computations (NY datacenter)

Portfolio Optimization

- Classic Markowitz and extended optimization goals (Tail Risk, Sharpe Ratio, etc)
- Arbitrary optimization constraints (scalar, vector-based, user-defined)
- Multi-start (global) portfolio optimization algorithm

Portfolio Metrics

- Return, Expected Return, Expected Upside Return, Expected Downside Return
- Sharpe Ratio, Calmar Ratio, Sortino Ratio, Omega Ratio
- Value-at-Risk (VaR), Component VaR, Expected Tail Loss (ETL), Component ETL, Modified Sharpe Ratio, STARR Ratio, RACHEV Ratio
- Variance, Skewness, Kurtosis, Maximum Drawdown, Gain Variance, Loss Variance, Gain/Loss Variance Ratio, Downside Variance, Upside Variance, Upside/Downside Variance Ratio
- Ex-ante Alpha, Jensen's Alpha, Treynor Ratio, Information Ratio
- Beta, Covariance, Correlation
- Up Capture Ratio, Down Capture Ratio, Up Number Ratio, Down Number Ratio, Up Percentage Ratio, Down Percentage Ratio
- Hurst Exponent, Fractal dimension, Return Autocovariance

Market Data

- 8,000+ US Equities (stocks, indices, ETFs)
- From Dec 2013 to current transaction
- 1 second price bar aggregation
- Clients may use their own datasets for custom securities

Model Pipeline

- Market microstructure modelling
- Intraday portfolio factor analysis
- Price jumps/outliers detection
- Tail risks (high order moments)
- Price fractality (long-memory)
- Spot sensitivity analysis