

SOLUTION DESCRIPTION

SEQUENTIAL RECONSTRUCTION OF MESSAGE FLOW FOR REGULATORY COMPLIANCE

OVERVIEW

The following provides an overview of a solution that will enable financial firms to sequentially reconstruct message flow related to trading activities across the front-office, execution and back-office. This capability to automatically provide an overview of the flow and timing of trading messages will be essential in meeting regulatory requirements such as MiFID II and MiFIR.

POTENTIAL USERS

The solution is aimed at firms participating in electronic trading of financial instruments. Such firms include: proprietary trading firms, hedge funds and asset managers, brokers and banks, and trading venue operators such as exchanges and multilateral trading facilities (MTFs).

SOLUTION COMPONENTS

The solution is based on a layered approach rather than a series of highly integrated proprietary appliances. The functionality of the integrated appliances is disaggregated into functional layers that can scale independently and allow selection of best-of-breed software solutions across each layer in a flexible and modular fashion. The three layers are:

- The data capture layer, which is responsible for capturing and recording all network data for analysis in real-time and on-demand
- The data harvesting layer, which is responsible for translating captured data into meaningful and relevant information for analysis, which in this case is messages related to trading
- The data aggregation layer, which aggregates data from multiple data harvesters as well as other data sources to reconstruct message flows end-to-end

WHAT IT DOES

MESSAGE FLOW MONITORING

For any firm that is trading – or facilitating the trading of – financial instruments on electronic markets, there is a need to monitor such activity via a dashboard. This could be for a variety of purposes, including:

- Visibility into performance of trading systems, networks and venues
- Monitoring trader/customer order flow for events such as limit breaches
- Responding to flagged items and alerts
- Intraday reporting

A key requirement is the ability to customize the dashboard to summarize and aggregate data by trader, desk, instrument, asset class, venue, currency, message type and other criteria, and to be able to drill down to interrogate individual events.

SEQUENTIAL RECONSTRUCTION OF MESSAGE FLOW

When breaches/alerts are discovered via the dashboard, or in the event of a compliance investigation into specific trading activity, the joint solution enables users to run reports and ad-hoc queries against not just the events in question, but also additional sources of data, so those breaches can be fully investigated in context.

An essential aspect of this is the ability to capture **all** network data traffic with highly granular time-stamps, so that no events are missed. This enables a fully sequenced audit of activity to be run and allows a complete reconstruction of order/trade history.

HOW THE SOLUTION WORKS

DATA CAPTURE

To enable full packet capture and on-demand retrieval of information, network recorders are installed at appropriate points on the trading networks to ensure that 100% of the network traffic is being captured at the network level. The data is written to disk with zero packet loss at sustained high bandwidth levels of 40 Gbps and above.

The network recorders, such as the Napatech Pandion, capture all raw network (PCAP) data and write that data to disk. This captured data is then made available, both via a REST API and as streamed output, with Berkeley filtering available around elements such as MAC addresses, IP addresses and port numbers.

DATA HARVESTING

As the data is captured to the network recorder, it is made available to the data harvesting layer, which reads the raw IP traffic and converts it to structured, meaningful data such as orders, trades, prices, etc.

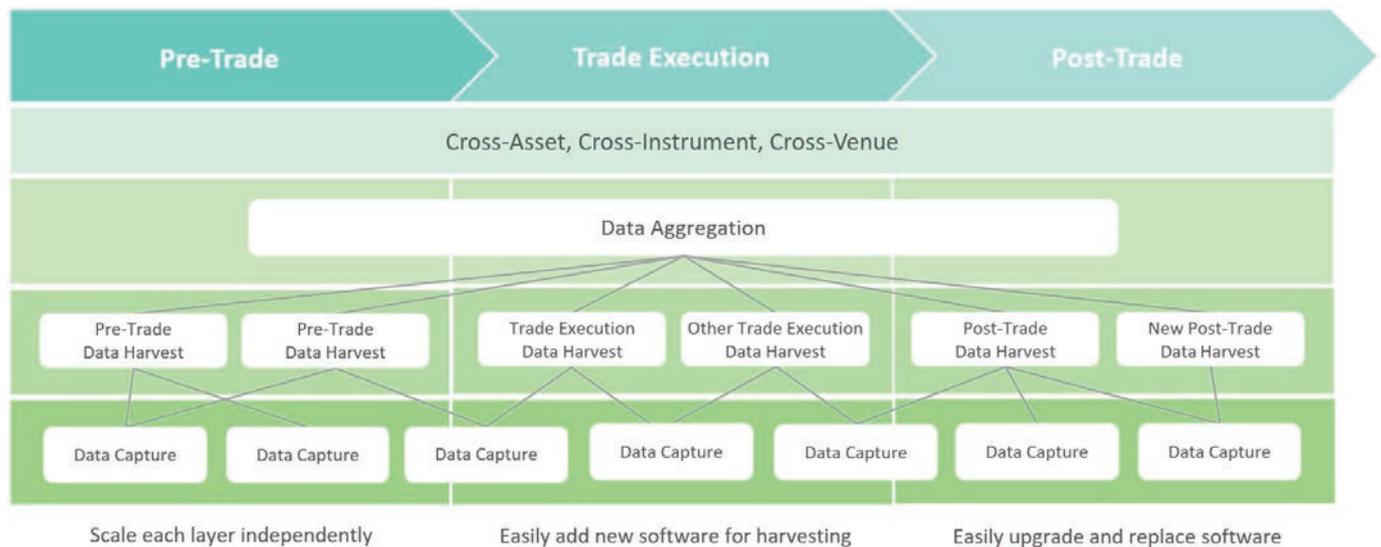
This structured data is then made available in the appropriate format to the data aggregation layer, potentially in multiple locations to allow very high performance queries to be run.

Multiple instances of data harvesting layer solutions can co-exist under different configurations, independent of single or multiple Pandion devices.

DATA AGGREGATION

The data aggregation layer executes high performance structured queries that are federated and aggregated across multiple data sources. These sources include the intelligently filtered data, along with other data sources such as settlement systems, KYC databases, and position/risk systems. This enables consolidated queries to run against both streaming and historical information.

The joint solution ensures that the user dashboards provide near real time monitoring of electronic trading activity on a comprehensive yet flexible basis, and that forensic investigation reports - which can be based on a wide range of criteria - contain all relevant trading activity that has occurred across the network and enable all events to be sequentially reconstructed.



COMPANY PROFILE

Napatech helps companies to reimagine their business, by bringing hyper-scale computing benefits to IT organizations of every size. We enhance open and standard virtualized servers to boost innovation and release valuable computing resources that improve services and increase revenue.

Our Reconfigurable Computing Platform™ is based on a broad set of FPGA software for leading IT compute, network and security applications that are supported on a wide array of FPGA hardware designs.

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