

Axellio PacketXpress & Packets2Disk High-Speed Financial Trading Surveillance for Global Exchange

Company

Large Global Stock Exchange in US and abroad

Challenge

Monitor and recreate financial transactions reliably with 100 Gbps of trading data for detailed analysis, problem resolution, and financial reporting regulations

Solution

Axellio and Packets2Disk Trading Intelligence Hub with superior price-performance, capturing 100 Gbps zero-loss trade data with 10 Million transactions analyzed per second

Results

Improved performance and reduced space and compute power with real-time and back-in-time access to weeks-worth of data. Provide access and deeper insight to all actual trading data.

Additional Application

Combine financial trading analysis with threat detection and response in one platform

Customer Profile

This Fortune 500 global exchange company is operating exchanges and clearing houses worldwide. Its subsidiaries offer a multitude of financial services for financial and commodity markets, including exchange-traded futures and options, as well as over-the-counter instruments. As part of its operations, a vast amount of market and trading data needs to be collected and relayed back to the market with speed and reliability.

The Challenge

Exchanges operating worldwide are subject to various regional reporting regulations but increasing trading volumes make reliable data collection and analysis challenging.

Securities exchanges operating in the United States are subject to the financial reporting requirements of the US Securities and Exchange Commission (SEC), including the SEC Regulation NMS (National Market System). This mandates that exchanges give every market feed subscriber equal and fair access to current market information, about the best prices for stocks and trades that have occurred. This obligation requires real-time monitoring and effective data retention and reporting, to prove that those regulations are met.

Beyond reporting, this market data is also essential when performance or transaction problems occur, because the exchange needs to reliably recreate transactions at the trade, or even packet level for detailed analysis and problem resolution. Furthermore, replaying entire trading days is critical to test and analyze newly developed trading algorithms in a predictive environment.

With the ever-increasing trading volume and pace, speeds well above 50 Gigabits-per-second (Gbps) are now common. However, this exchange had far exceeded the capacity of its current trading monitoring system, leading to dropped traffic and lost trading information. It now requires intake speeds of up to 100 Gbps during peak hours, with all traffic being reliably recorded, correlated, analyzed, and reported across multiple data centers and back-up systems.

The Solution

Being unable to find any commercial system to address this performance challenge, the exchange's operators collaborated with Axellio and Packets2Disk, to develop a solution in an extremely small and cost-effective system that would meet their needs.

Axellio, a US-based system developer and integrator, had developed a high-density and high-performance analysis and storage platform, with the ability to record and retain traffic at 100 Gbps lossless. The system can do this while also distributing the traffic simultaneously from disk at even higher rates, to either on-board or off-system analysis applications. Axellio had previously deployed this platform successfully with the US Army, at bases worldwide, for cyber security monitoring.



Axellio, a US-based system developer and integrator, had developed a high-density and high-performance analysis and storage platform, with the ability to record and retain traffic at 100 Gbps at no loss. The system can also simultaneously distribute traffic from the disk at even higher rates to either on-board or off-system analysis applications. Axellio had previously deployed this platform successfully with the US Army for cyber security monitoring.



Packets2Disk, a UK-based financial trading analysis company, provides powerful analysis software for the decoding, storage, and analysis of financial trading data. P2D Analytics provides a flexible solution that can be used throughout the financial trading ecosystem. It is used around the world by exchanges, brokers, traders, and those responsible for the management of these financial networks.

Axellio and Packets2Disk built an integrated, powerful solution that addresses all of the above needs in a footprint 70% smaller than similar systems, saving space, operating expenses, and CAPEX for the exchange:

- Axellio's PacketXpress captures sustained 100 Gbps, with no packet loss across a variety of high-speed ethernet interfaces sustaining 100 Gbps real-time data analysis and traffic distribution to other analysis applications, with no impact on capture performance. Its unique capability of simultaneous, high-speed read and write at intake speed with no-loss capture performance, allows for reliable analysis. Furthermore, rather than requiring racks of equipment, PacketXpress is a single box solution.
- Packets2Disk provides the monitoring, analysis, and alerting of trading data for a detailed breakdown by individual trading message of latency (network and system), and other statistics. Operating on almost 100 compute cores of Axellio's PacketXpress, all trading messages are decoded, latencies are calculated in real time, and messages and associated metrics are stored in a database where the information is easily accessible. The P2D Analytics engine also enables more complex latency calculations (Tick-to-trade, trade-to-tick, etc.) to be configured via the GUI by using flexible selection and manipulation of message fields. All major trading and data protocols and markets are supported to provide full visibility of the trading environment.

Our combined solution processes over 10 million transactions per second, while storing not just the resulting meta-data, but the underlying network packets for in-depth analysis or for distribution to additional analysis applications. This is done while seamlessly integrating into the existing analysis infrastructure.

The Results

Together with this global exchange, Axellio and Packet2Disk created the financial trade analysis visibility hub that enables the reliable recording of every packet, including every quote and trade, without packet drops, while also providing the underlying analysis and detailed transaction information in.

Besides using less space and compute power than before, this exchange now has real-time or back-in-time access to week-worth of complete data to

- Analyze its trading performance for external and internal data streams.
- Report all transactions reliably as required by law.
- Prove any transaction with the underlying wire data.
- Solve system problems based on actual trading traffic, recreating the events leading up to the event, during the event, and after.

Axellio's high-performance capture and analysis platform and Packets2Disk analytics software together provide the solution for exchanges worldwide to keep up with increasing reporting and data requirements.

Applicability beyond Global Exchanges

Axellio's and Packets2Disk solution can scale to your environment, even if you are not operating a global exchange. This solution can be right-sized to address your financial analysis requirement needs, whether you are broker-dealer, an investment bank, or do any other kind of market trading. Benefit from the message data that is already on your network, and make it easy to access, understand, and report on this data. We provide the most wide-ranging and timely business information by monitoring real network traffic as it passes between business and client, from server to server, and through the whole network infrastructure.



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