FIX Protocol: Achieving Low Latency and Content-Based Routing

The Financial Information eXchange (FIX) protocol has become the language that global financial markets use to communicate trading information among buy- and sell-side firms and trading platforms. In trading, speed is a competitive advantage and delays can be costly. Transactions need to occur within microseconds to meet customer expectations.

These demanding trading environments require low latency/low jitter, high availability, security, and the flexibility to steer traffic based on content. Supporting complex architectures—such as dedicated FIX engines for multi-tenant trading applications—requires an understanding of the FIX protocol to parse and control the messages.

With two decades of proven experience making networked applications perform better and more securely, F5 trading solutions are optimized in hardware with FPGAs. They ensure predictable, low latency to deliver market-leading FIX performance and control.

Transactions with 5 Microseconds of Latency

F5 solutions optimize application delivery for FIX applications by providing predictable forwarding latency along with the industry's fastest firewall. F5's hardware-accelerated FPGA forwards data packets faster than traditional methods bound by CPU to ensure this predictable low latency. Load balancing services achieve high availability to ensure that a failure won't impact transactions.

The integrated, high-performance network firewall and SSL protect the entire trading environment and scale to perform under the most demanding conditions. By combining firewall security and high performance together on one platform, the solution eliminates the need for multiple point solutions that increase latency, overhead, and costs.

Performance test results show that the F5 platform processes transactions in as low as 5 microseconds of latency—performing five times faster than other solutions that combine load balancing and firewall services.

FPGA hardware acceleration is available on select hardware platforms, including BIG-IP 5000, 7000, and 10000 series appliances and VIPRION B4300, B2200, and B2100 series blades.

Content-Based Routing for FIX

The F5 solution includes the FIX Protocol Profile, which provides intelligence and control that can be customized according to business logic. Using a thorough understanding of how the FIX protocol is structured, F5 provides content-based routing, message validation, and tag substitution.

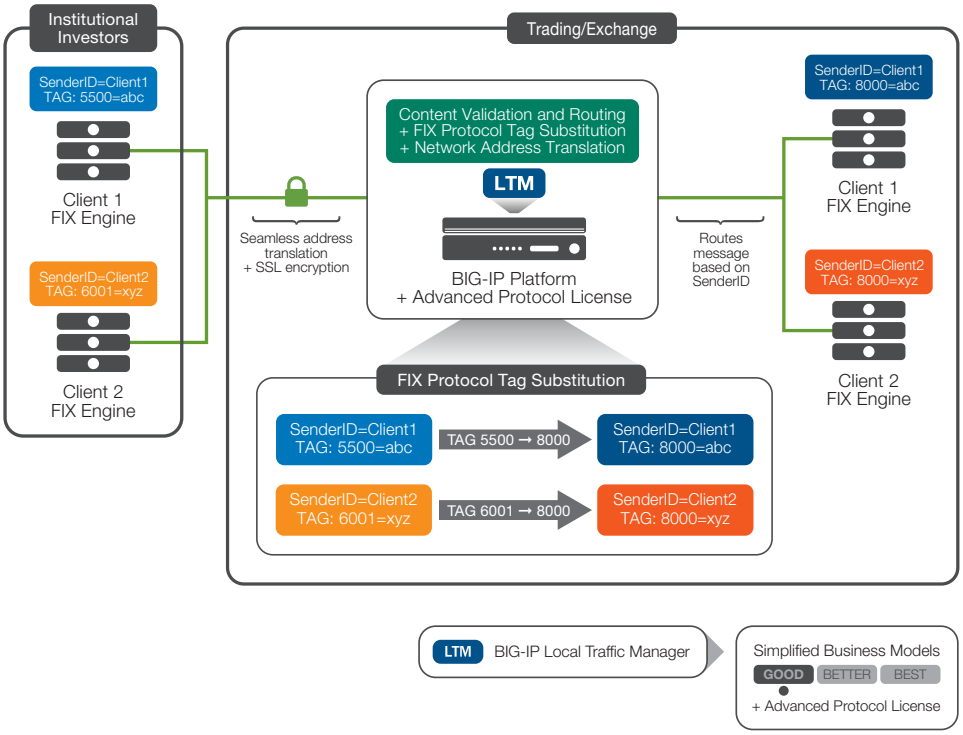
Key features

- **FPGA Hardware Acceleration**—Delivers predictable latency as low as 5 microseconds.
- **Content Validation and Routing**—Ensures messages conform to protocol standards and steers connections based on sender.
- **FIX Protocol Tag Substitution**—Maps user-defined tags and translates client messages to company standards.
- **High-Speed Logging**—Provides insight for troubleshooting and audit capabilities.
- **Load Balancing**—Distributes client load across multiple servers to increase availability and scale.

Key benefits

- **High Availability of FIX Applications**—Improves trading resilience regardless of server failure.
- **Low Latency and Jitter**—Optimizes performance of time-sensitive applications to increase competitiveness and revenue.
- **Flexible, Content-Based FIX Routing**—Uses a powerful, built-in FIX protocol engine to modify and route FIX messages according to business needs.
- **Consolidation and Reduced Latency**—Consolidates load balancing and firewall services to reduce latency introduced by multiple devices.
- **Compliance and Auditing Information**—Tracks information related to trading orders received and executed.

Content-based routing directs FIX messages based upon the Sender Comp ID. It parses the Sender ID from the message and then directs it to the appropriate pool of servers. Validation ensures that messages conform to protocol standards to prevent FIX engines from hanging or locking on malformed messages. FIX tag substitution maps a custom tag number from one company to a custom tag number from another company for the same type of information, enabling the transfer of information without the need to modify applications.



The F5 solution controls traffic based on message content and substitutes FIX tags without requiring modification of applications.

F5 offers financial institutions using the FIX protocol a solution to make FIX trading secure, fast, and available. By providing high-speed performance, control and firewall services together, F5 helps financial institutions protect and ensure the competitiveness of their demanding trading environments.

Learn more

For more information about F5 low-latency solutions for FIX, please see the following resources or visit f5.com.

Case Study

Eze Software Ensures Resiliency and Security for High-Speed Financial Transactions

Product Information

BIG-IP Local Traffic Manager

F5 Hardware Platforms

Datasheets

BIG-IP System Hardware

VIPRION Hardware

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