

The Archipelago Exchange: A case study in the expansion of FIX products and message processing

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More than order entry...

Since the late '90s when the Archipelago ECN first started offering FIX connectivity, the demand for additional FIX products has continued to grow. FIX technology has become embedded in many core industry processes and connectivity standards among market centers and securities industry participants have continuously improved.

As financial institutions become more familiar with FIX and more adept at developing complex applications, demand for enhanced functionality and services will continue to grow, taking FIX usage well beyond the exchanging of order entry messages between parties.

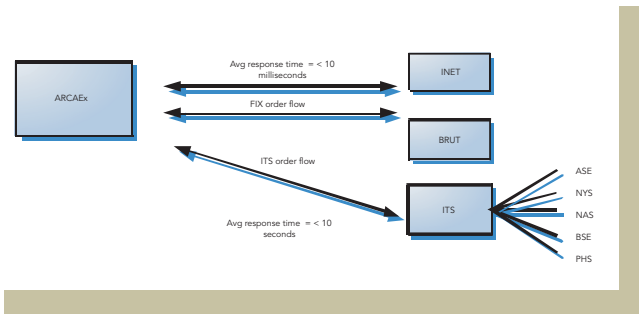
The need for speed - FIX market center linkages

For almost a decade, US market centers have maintained bi-lateral linkages. During that time, the Intermarket Trading System (ITS) has managed to provide connectivity among the major exchanges, where no connections had previously existed. The past decade has also seen the US equity markets undergo tremendous structural change, explosive growth in trading volumes and the entry of new market participants such as ECNs and other ATS platforms.

While these changes in the equity markets have resulted in benefits for investors, they bring a new set of technical challenges to the table. Linkages today must not only provide institutions with fast access to multiple sources of liquidity, they must also provide the scalability needed to accommodate higher market volumes characterized by the new breed of order driven- electronic market centers.

The Archipelago Exchange (ArcaEx®) has found that using FIX connectivity for these linkages has many advantages. Beyond providing fast, scalable and direct linkages between market centers, FIX also provides ArcaEx with a viable standardized protocol that can be used to develop innovative client products such as drop copies and the real-time delivery of trade information.

Example of FIX linkages (showing ITS linkage in comparison)



Below are some examples of how ArcaEx uses FIX today, and how FIX has made it easier to link market centers.

- **Development** – As a standard protocol, FIX ensures that applications among industry participants are similar. As a result, extensive development work is not necessary to support routing to new destinations. For example, one market center may require that an order message must contain a specific exchange destination or Ex-Destination code, where another does not. Using FIX, adding the Ex-Destination field to an order message is not a significant development project.
- **QA** – Because development work is minimal, using FIX reduces QA time. Because the changes are not complex, the scope of QA testing is limited to the smallest of changes. Complex changes to FIX applications are few and far between.
- **Linkage Certification** – Because FIX is a standard protocol, FIX Certification time is minimal. Issues that are revealed in the certification testing process are often easy to resolve. Certification often takes less than one day.
- **Production Support** – Day to day production support is easier with FIX linkages because the firm's in-house support staff can become familiar with one standardized protocol that allows them to support many market destinations.
- **SPEED** – Direct FIX connections are fast and reliable. IOC orders are often executed in as little as 2 milliseconds over FIX links.

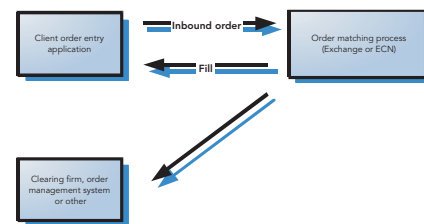
With the market structure changes mandated by the recent passage of Reg NMS, direct and scalable linkages among market centers will become even more advantageous and we will begin to see FIX linkages proliferate at an even quicker pace. In fact, one of the driving forces behind the recent consolidation among market centers is the desire to acquire and leverage existing FIX connectivity among market center participants.

Drop copies

Drop copies have been utilized by clearing firms and order management firms for many years, and their usage continues to expand. Drop copies are real-time copies of executions that are done on an order execution platform. When a trade execution occurs:

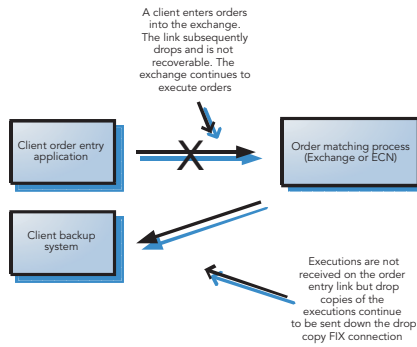
- A report will go back down the order entry session to the client.
- A second copy of the execution will go down a separate drop copy session that is normally maintained by an order management or clearing firm.
- The clearing firms and order management firms use the drop copies to update their order management systems and clearing applications.

Example of drop copies to clearing or OMS firms



Another use for drop copies that has become quite popular among clearing firms and order management firms is using them as a backup in the event that a client cannot get their executions on their order entry session(s). For example, if a client is trading and suddenly their order entry session has a problem and they can no longer receive executions, they will continue to get execution reports on their drop copy session.

Example of backup drop copies



Drop copies are already a valuable service for many firms and as direct market access (DMA) becomes more prominent in the equities markets drop copies will become even more important. Brokers will rely on drop copies to calculate risk for their customers that connect directly to market centers.

Data distribution - ArcaEx electronic liquidity updates

Today, ArcaEx uses FIX messaging to deliver market share information, real-time trade advertisements and news to clients. For example, during the trading day ArcaEx will send a real time advertisement message directly to a client's desktop indicating those stocks in which ArcaEx market share exceeds 10% of the overall market volume. Clients can then make routing decisions based on this information. ArcaEx will also provide this functionality and distribution on behalf of broker dealer electronic trading permit holders (ETP's).

Example of ArcaEx liquidity update data

ArcaEx Electronic Liquidity Update for Thursday, May 12, 2005 as of 13:15:00, ET

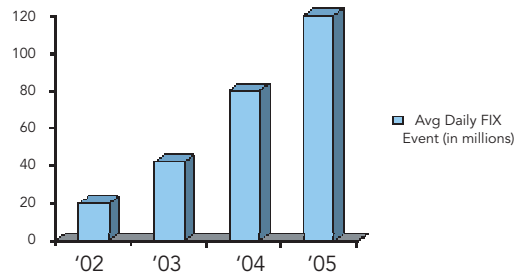
Symbol	ArcaEx Volume	Consolidated Volume	ArcaEx Market Share
ELN	2,780,513	17,393,200	15.99%
WMT	2,454,796	22,991,300	10.68%
F	1,641,396	14,349,000	11.44%
X	586,539	4,517,800	12.98%
VOD	517,900	1,282,900	40.37%
ET	490,533	4,107,200	11.94%
VLO	464,769	4,545,400	10.23%
BGO	338,750	1,303,300	25.99%
AX	328,469	500,000	65.69%
GM	304,085	2,879,600	10.56%

FIX or get out of the way - increased message traffic

In addition to the growing scope of FIX connectivity, there has been a tremendous increase in the number of FIX messages being exchanged between parties.

On a typical trading day, ArcaEx processes 5000 orders per second for a total of 35 million orders per day, system wide. Each day, ArcaEx sees an average of 100 million FIX messaging events. At this rate, ArcaEx could soon see over 36 billion FIX events a year. The chart below illustrates the increase in daily FIX events on ArcaEx over the last five years.

ArcaEx daily FIX events



FIX growth & expansion - ArcaEx keeping pace

The US equity markets will continue to undergo considerable change over the coming years. New regulation and the further consolidation of market centers will serve to broaden the role of FIX in the US equities markets as financial firms add functionality to support the ever changing trading environment and work to satisfy the increasing demand for FIX interfaces.

FIX will be a key element in allowing markets like ArcaEx to adapt to these changes and handle ever increasing volumes. All market centers will have to take advantage of emerging industry standards and apply those standards to create products that address all aspects of trading. **FIX**

Any thoughts on this or other articles?

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