



The Bond Exchange of South Africa adopts FIX Protocol for its BTB Trade Capture System and provides FIX connectivity for the 54 members of the Bond Exchange.

CASE STUDY: Bond Exchange pioneers FIX for fixed income in South African financial markets

By John Littlewood, Bond Exchange South Africa
and Ashley Mendelowitz, Peresys

Background on BESA: The Bond Exchange of South Africa (BESA) is an independent financial exchange, responsible for regulating the debt securities market in South Africa. It is a self-regulatory organisation operating under an annual licence granted by the Financial Services Board. It operates with approximately 60 members, including Barclays Bank, Citibank, Deutsche Bank, JP Morgan Chase Bank, Merrill Lynch and the Rand Merchant Bank.

BESA this month switched over to its new Trade Capture System and abandoned its Bond Automated Trading System (BATS), which was implemented back in 2000. Short-lived, BATS failed to gain the support of the local bond market participants as an electronic trading system and had instead become an expensive trade reporting system. A BESA restructuring process was approved by the membership in November 2002. The restructuring facilitated the unbundling of members from the exchange into separate market associations, who contract with the exchange for trading, clearing and settlement services. At the end of 2002, a unanimous decision was made to discontinue BATS and procure a new world-class system that complied with international standards and gave greater benefits to its members: BESA needed to come up with the best BTB 'trade capture' and BTAPrices 'price discovery' integrated systems.

'The new systems needed to be simple and easy to use and feedback to date from its users has confirmed this,' said John Littlewood, General Manager, Operations for the Bond Exchange South Africa. 'This was important as although the exchange members had endorsed development of the new systems, we still had to get the 'buy in' from the users at the coalface. Achieving this with the new systems has helped overcome much of the resistance to change one normally experiences in rolling out a new system. Going forward, these new systems will also allow BESA to broaden its scope of services to new markets that we currently do not serve.'

After investigating the International Standards trends and recognising the emergence of FIX as a future standard for the fixed income market, in early 2003 BESA contracted with Peresys, a South African based solutions provider, to undertake its new system development. One of the preconditions was that the system be developed using the FIX Protocol. The Bond Market Association (BMA) had endorsed FIX and significant work was in progress to include fixed income tags in FIX version 4.4, due out in mid-2003.

'Key to our decision was also that the ongoing cost of the new development was to be less than the cost of continuing

with the existing ATS,' said BESA's General Manager, Operations, John Littlewood. 'We have been most impressed with Peresys, in their professional approach, their attention to detail and enthusiasm throughout this project, which has enabled them to meet the tight deadlines. Working onsite meant we could work very closely with their development team to ensure that the end system met both our own and our users' expectations. Going the FIX route has been the right decision for us and this is confirmed by our markets' acceptance of the new development and by the ongoing success that FPL has had in cementing FIX as a key international standard.'

Having recently pioneered FIX development in the South African cash equities market as part of a VPN hub-and-spoke service for the buy- and sell-side participants, Peresys was an ideal partner for BESA. In setting up its FIX hub, Peresys had also undertaken an extensive evaluation of available FIX engines and entered into a commercial agreement with FIX vendor Cameron Systems for its CameronFIX engine.

Ashley Mendelowitz, Managing Director, Peresys, steered their adoption of the FIX global messaging standard so they could better benefit their clients by providing increased order flow capabilities to their offshore counterparties. 'We were looking for the FIX engine that would best fit our hub solution and came across the Cameron product. Twelve months on, we have now integrated their FIX engine into our existing trading and messaging solutions and facilitated the use of FIX by the leading buy- and sell-side cash equities players in South Africa, as well as established a point of presence in London for offshore players wanting to route orders into this emerging market.'

In May 2003, Peresys commenced development of BESA's systems using the FIX Protocol. System development comprised two separate systems that would integrate into a single system for the members of the Bond Traders' Association.

Both systems have been developed using the Microsoft .NET platform, and integrate seamlessly into the FIX engine. The design caters for interfacing into member back and front-end systems via either FIX using the BESA Rules of Engagement, or a .NET wrapper that implements these same Rules of Engagement around an embedded FIX engine. The solution also interfaces into the local settlement authority.

BESA also conducted a further evaluation to determine whether they would purchase a FIX engine or outsource to one of the FIX network service providers.

Key decision criteria for BESA included:

- Would members agree to connectivity using a third-party supplier? All members would have to subscribe to the third-party network in order to be able to access the BESA systems, thereby increasing the current cost structure.
- Could we offer members security of data? All market information would have to flow through a separate network, which could compromise integrity of the data.
- The ability to use a FIX Engine to manage sessions to a number of separate applications? This was a definite advantage in having an in-house FIX engine.
- API development capability? Providing easy-to-use API development is very important given the large and high-profile member base and reputable suppliers will provide quality APIs able to achieve this.
- Did purchasing a FIX engine make more economic sense in the long run? Maintenance and compliance to FIX standards was a problem if we went with just any FIX engine. The value-added benefits obtained from purchasing from a reputable vendor such as high availability for guaranteed performance, a proven track record and API ease of use, far outweighed the costs incurred.
- Could we develop our own FIX engine? Such an option would be proprietary, would take time to develop, be risky to maintain and comply with updated FIX standards and there was no real benefit to be gained in reinventing the wheel.

BESA's conclusion

The logical conclusion of the evaluation was to leverage the successful work undertaken by Peresys and in partnership with Cameron Systems in the cash equities market. BESA's decision to purchase the FIX engine was finalized in late 2003. Once the purchase of their own FIX engine had been ratified, it was a straightforward choice based on the experience during development and evaluation. The quality of support, API flexibility, high availability and reliability experienced by Peresys in their hub solution made Cameron the natural choice for BESA.

Systems development

Initial development of the new systems for BESA was completed in November 2003 and an extensive testing programme was concluded in March 2004. The BTB trade capture system, which went live in mid May, provides FIX connectivity to the 54+ members of the Bond Exchange. The CameronFIX engine manages all connection and application services to both the local and the disaster recovery site.

The South African Bond Market trades mainly in RSA Government, Corporate and municipal bonds and includes such variations as fixed interest-bearing bonds, zero coupon bonds, CPI Linked, variable interest rate and floating rate bonds. Members conclude most of their trades telephonically or through InterDealer Brokers; trades are then reported to and matched at BESA, who in turn submit the trades for clearing and settlement. The FIX Protocol had to accommodate the current trading business model of the exchange.

FIX version 4.3 messages and tags were complemented by additions from FIX 4.4, which has now been endorsed by the BMA to support fixed income. A number of custom tags, [e.g. MktTradeType, TradeStatus] were also used, however these were kept to a minimum. The Trade Capture System implements a variety of FIX messages, some of which include New Order Single, New Order List, Trade Capture Reports, Allocation Instructions, Order Cancel Request, Order Cancel / Replace Request. A new message type, Trade Status, had to be defined.

In the business model of an exchange – Member [Client – Server], the FIX Protocol did not provide all the required security and messaging. The downloading of static data to the client, for example, was catered for by a custom protocol

on top of FIX Email messages [URL FIX]. Logon authentication had to be implemented by extending the logon message to support an encrypted password field, and a permission list specified in URL FIX custom protocol.

Concurrently with the development of the new system, a number of BESA's members have undertaken their own API development to link to the new systems. BESA provided both the rules of engagement (ROE) and .NET Assemblies which afforded its members the flexibility of using either their own FIX engine or simply using the assemblies which implements the rules of engagement.

The Price Discovery System, which was developed by Peresys in parallel with the trade capture system, is scheduled to go live in July 2004. This system will be a first for the South African bond market and will provide central price discovery for all market participants in what has to date been fragmented. In line with the trade capture system, the price discovery system also uses the FIX Protocol, and provides members with the same API flexibility of using either their own FIX engine or the .NET Assemblies.

The price discovery system is an integrated component of the trade capture system and also uses the FIX Protocol to receive and communicate price information. Key features of the system include:

- Collects and aggregates price information from all market sources in real time and disseminates this to market participants and vendors.
- Provides consolidated best bid and offer on all government benchmark bonds (which is also available for paying subscribers).
- Provides full price disclosure on all bonds, including depth and trade detail to members of the exchange.
- Enables API integration with electronic systems, which allows participants freedom of choice in how they choose to trade; via ATS, Inter Dealer Broker (IDB) or telephone. (Freedom of choice is a core tenet of the bond trading model.) **FIX**

