

New Era of Networks®

A Sybase Company

“Tigerex is unique in packaging technology and financial services relationships together to facilitate cross border trading. Our service enables small and medium size firms the same electronic and STP global trading capabilities that the largest firms possess—and *that* is very exciting.”

— Marcus Consolini,
Deputy Managing Director,
Tigerex

Tigerex

integrated

Intro: Tigerex Group Limited built a solution that simplifies trading in foreign stock exchanges. Using a combination of technology and financial services partnerships they created the Tigerex Network. The Tigerex Network allows clients, brokers and fund managers located anywhere in the world to execute trades in 48 different foreign stock exchanges. A major component of the Tigerex solution is Sybase's New Era of Network's e-Biz Integrator,™ BizTracker™ and Adapter for FIX.

Industry: Cross-border securities trading solutions

Business Requirements: Implement middleware solutions and translation packages for a secure cross-border financial message integration and distribution center. The financial messages need to be translated between multiple versions of financial formats. A rules engine needs to direct the translations and manage complex special case handling of differences between clients and execution brokers. All selected technologies must have an excellent reputation in the conservative financial community.

Solution: Sybase New Era of Network's e-Biz Integrator provides the middleware functionality. e-Biz Integrator's bundled rules engine and BizTracker supply the coordinating logic and the auditing components. The Adapter for FIX, handles the FIX (Financial Information eXchange) protocol translations.

Products Used: Sybase New Era of Network's e-Biz Integrator, BizTracker, Adapter for FIX. All products run on Sun Microsystems® servers.

Results: The Tigerex Network, a groundbreaking combination of technology, partners, and international financial expertise. Tigerex simplifies the complicated process of trading international securities. Using Sybase technology, Tigerex handles high volumes of electronic financial messages. Rules-driven processing directs message translations, full audit tracking, and value added features that often exceed the services offered by execution brokers and foreign exchanges.

Dynamic Technology in a Conservative Industry

When making stock market trades you probably would not consider using zlotys to purchase Viscoplast on the Warsaw Stock Exchange and then spending your hard-earned baht on shares of TelecomAsia in Thailand. The logistics of trading stocks listed in foreign exchanges, using local currencies, across worldwide time zones has been too complicated and costly for many brokers or investment managers. Until now.

Based in Sydney, Australia, Tigerex Group Limited provides a cross-border securities trading solution network, giving traders access to 48 different foreign stock exchanges. Tigerex was started by two founders of London's Tradepoint Stock Exchange, one of the world's first fully electronic stock exchanges.

The Tigerex Business

Tigerex has caught the attention of a conservative global financial industry by creating the Tigerex Network, a combined international package of innovative technology, trading expertise, and robust financial partner relationships. Tigerex has substantially reduced the

complexity of executing trades in foreign stock exchanges. On the technology side, Tigerex uses Sybase's New Era of Networks e-Biz Integrator, BizTracker and Adapter for FIX for their middleware, audit tracking, business rules, and translation engine.

Tigerex clients include local brokerages and fund managers worldwide. Their pitch is compelling: 'Hook up to the Tigerex Network and you will have the technology and relationships to trade in 48 different foreign markets.' Tigerex sends the trades to a connected execution broker who actually executes the transaction on the foreign market, all electronically, and all in a few seconds.

Tigerex offers two methods of accessing their service. The first method is Tigerex Direct™, a Web browser-based connection to the Tigerex Network. Tigerex Direct™ is a buy-side interface for purchasing securities in foreign markets and has no connection into the user's own backend trade system, yet provides the client with full electronic trading, tracking and auditing capabilities. The second method is Tigerex Connect™, a consultative integration that interfaces into the

customer's operating systems. Both Tigerex Direct™ and Tigerex Connect™ access the same e-Biz Integrator technology.

The sales cycle for Tigerex's service starts with Tigerex Direct™. Marcus Consolini, Tigerex's Deputy Managing Director explains, "Everybody who integrates Tigerex Connect™ started with Tigerex Direct™. It's best to gain experience and comfort with the technology and processes through Tigerex Direct prior to moving to Tigerex Connect."

The Role of the FIX Adapter

Up until the last decade, the full cycle of the securities trading process was labor-intensive and laden with paperwork. The phone and paper-based tracking systems resulted in delays and errors. This lack of agility exposed traders to significant market risks in volatile economic environments. In 1994, the Financial Information eXchange (FIX) protocol was adopted as a messaging standard for the financial community. The FIX protocol supports real-time electronic exchange of securities. In the financial industry, a common companion technology of FIX is SWIFT. SWIFT is an industry-owned cooperative supplying secure messaging services and interface software primarily for post trade communications.

Since its introduction, the FIX protocol has evolved and published progressive revisions, resulting in many different adaptations. Early on, Tigerex faced the issue of concurrently supporting at least five different versions of the FIX protocol in its trading community. To handle this complexity, Tigerex wisely decided to send out RFPs to find an off-the-shelf FIX protocol mapping package. This process led them to the Adapter for FIX. Marcus Consolini, tells about searching for a FIX mapping package, "We sat down, reviewed requirements, did an analysis, and tried to figure out what would be best for our messaging requirements, business rules, and recording audit trails. One of the key components of our business model was FIX capability. We wanted to be FIX enabled to all of our partners in the Tigerex Network, which include some of the largest global financial institutions. We also wanted to plan for SWIFT in the future." As Tigerex had expected, Sybase responded very favorably to the RFP for FIX mapping capabilities.

e-Biz Integrator—The Right Technology and the Right Image

Tigerex was pleasantly surprised by Sybase's response to their RFP. Marcus Consolini recalls, "Interestingly enough, Sybase not only responded with regard to FIX, which is what our expectations were, but they also came up with e-Biz Integrator, a middleware solution they believed complemented our FIX requirements. The rules and messaging format of e-Biz Integrator would satisfy our requirements for a middleware platform to handle international order routing and messaging. New Era of Networks was able to provide IBM MQSeries® via their reseller agreement with IBM. Tigerex was looking into IBM MQSeries as a vehicle for assured transport of the messages. In our evaluation we determined there was a synergy in using one vendor that could handle our FIX and SWIFT requirements, as well as our middleware services requirements. Originally, we had a relationship with a different middleware platform vendor. As we explored it further and further, Sybase and their middleware service bumped out the vendor we had in place."

"Our partnership with Sybase represents an important element of the Tigerex Network. Sybase's middleware components and FIX capability have helped Tigerex develop a 'best of breed' cross border-trading service for the securities industry."

— Marcus Consolini, Deputy Managing Director, Tigerex

e-Biz Integrator and Adapter for FIX matched Tigerex's requirements for their middleware and FIX technology. The Sybase name met another important Tigerex requirement: Reputation. The financial community is a very conservative group, particularly with respect to technology. For their service to be widely accepted in the financial arena, Tigerex knew they had to use core technologies that wouldn't raise any eyebrows. Marcus Consolini talks about the importance of image, "Reputation and experience within the financial community was a big influence. We were looking for a well recognized name that also had great technology. We didn't want technology components from small companies that might not be around. We needed to use core components that were stable

and well accepted within the financial community so they would feel comfortable with us integrating into their legacy systems. The Sybase name is widely recognized in the financial industry.”

“e-Biz Integrator is a stable, core middleware platform, and we have a high comfort factor using it. We haven’t had any problems. I know the core functionality I require will be there—and I know I’m going to get the support I need.”

– Marcus Consolini

Sybase’s supplied the stable, core technology foundation Tigerex used to build their unique cross-border trading solution. Through its track record of providing reliable, world-class technology solutions, Sybase has earned an excellent reputation and a high degree of acceptance within the conservative financial community. This well-deserved reputation was vitally important to Tigerex.

“Solid technology is a very serious thing when it comes to executing a trade. Losing a trade is not an option.”

– Marcus Consolini

Universal Translation and Message Integration

Tigerex sends and receives inbound messages from multiple institutions. Each institution generates and receives messages in their particular snapshot version of the FIX protocol. Architecturally, the Tigerex solution needs to receive messages in multiple formats, translate the messages into an internally standardized Tigerex format, and send the messages to the destination institutions after translating the messages into the institutions’ receiving format.

The combination of e-Biz Integrator, and Adapter for FIX gives Tigerex the ability to cleanly process nearly 20 inbound and outbound messages per second. The internally standardized Tigerex format is FIX version 4.2. Converting all messages to this format is important because it simplifies the storage, auditing, and message manipulation work by eliminating the bulk of the special cases. Additionally, when translating outbound messages, the translator only needs to support a one-to-many set of translation combinations rather than many-to-many. Using e-Biz Integrator, Tigerex has

increased the utility of the FIX protocol, which was originally designed to be a point-to-point connectivity protocol, as in one broker to one institution, with both using the same version of the protocol. Tigerex has built a system that stretches the FIX protocol so it connects many brokers to many institutions even where the brokers and institutions are using different versions of the FIX protocol.

Acting as a kind of universal translator and automatically mapping inbound and outbound messages is one of the powerful features of the Tigerex Network. Tigerex Connect™ allows customers to continue using their internal format, connect to the Tigerex Network, and conduct financial transactions with multiple institutions regardless of the individual formats the institutions use. This is a win for Tigerex customers; they don’t have to bear the costs of developing and testing their own translation capabilities.

Bundled Rules Engine Adds Value

What sets Tigerex apart is successfully managing the complex translation mapping process and handling differences between the execution brokers actually executing the trades in the 48 foreign exchanges. This ability to bring order out of chaos required a systematic application of rules.

e-Biz Integrator contains a bundled rules engine, which identifies specific courses of action to take when particular conditions are met. Tigerex has taken this powerful tool and added custom features to it. Consolini explains, “We built components to enhance the rules engine. We have certain functionality that’s unique to Tigerex. We built a queuing functionality within the middleware that actually halts the message for certain markets when the markets are closed. For numerous reasons, many executing brokers will not allow clients to send orders at certain times or even throw client orders away at other times. Tigerex’s ability to queue the message adds tremendous value to our service. It’s really appreciated by the client and execution broker because it makes their lives easier. We built components and rules on the edges of the middleware platform to manage these business requirements. This is a very unique characteristic of Tigerex and one of our major selling points to our clients and execution brokers.”

Serious Audit Trails from BizTracker

Another piece of the Sybase technology solution is BizTracker. BizTracker monitors transactions and messages as they pass through various stages of processing. Providing an audit trail for the system, all messages are stored in a central database at each stage

International Contacts

Argentina +5411 4313 4488	Korea +82 2 3451 5200
Australia +612 9936 8800	Malaysia +61 20 346 9290
Austria +43 1 504 8510	Mexico +52 5282 8000
Belgium +32 2 713 15 03	Netherlands +31 20 346 9290
Brazil +5511 3046 7388	New Zealand +64 4473 3661
Bulgaria +359 2 986 1287	Nigeria +234 12 62 5120
Canada +905 273 8500	Norway +47 231 621 45
Central America +506 204 7151	Panama +507 263 4349
Chile +56 2 330 6700	Peru +511 221 4190
China +8610 6856 8488	Philippines +632 750 2550
Colombia +57 1 218 8266	Poland +48 22 844 55 55
Croatia +385 42 33 1812	Portugal +351 21 424 6710
Czech Republic +420 2 24 31 08 08	Puerto Rico +787 289 7895
Denmark +45 3927 7913	Romania +40 1 231 08 70
Ecuador +59 322 508 593	Russian Federation +7 095 797 4774
El Salvador +503 245 1128	Singapore +65 370 5100
Finland +358 9 7250 200	Slovak Republic +421 26 478 2281
France +33 1 41 91 96 80	Slovenia +385 42 33 1812
Germany +49 69 9508 6182	South Africa +27 11 804 3740
Greece +30 1 98 89 300	South Korea +82 2 3451 5200
Guatemala +502 366 4348	Spain +34 91 749 7605
Honduras +504 239 5483	Sweden +46 8 587 70433
Hong Kong +852 2506 6000	Switzerland +41 1 800 9220
Hungary +36 22 517 631	Taiwan +886 2 2715 6000
India +91 22 655 0258	Thailand +662 618 8638
Indonesia +62 21 526 7690	Turkey +90 212 284 8339
Israel +972 3 548 3555	Ukraine +380 44 227 3230
Italy +39 02 696 820 64	United Arab Emirates +971 2 627 5911
Ivory Coast +225 22 43 73 73	United Kingdom +44 870 240 2255
Japan +81 3 5210 6000	Venezuela +58 212 267 5670
Kazakhstan +7 3272 64 1566	Asian Solutions Center +852 2506 8700

For other Europe, Middle East, or Africa inquiries:
+33 1 41 90 41 64 (Sybase Europe)

For other Asia Pacific inquiries:
+852 2506 6000 (Hong Kong)

For other Latin America inquiries:
+305 671 1020 (Miami)



Sybase, Inc.
Worldwide Headquarters
5000 Hacienda Drive
Dublin, CA 94568-7902 USA
Tel: +800 8 SYBASE
www.sybase.com

of the process. The tracing entries, stored in a database, are used for auditing, billing, and customer support. If a Tigerex customer calls because they sent a trade and did not receive a response, Tigerex can trace that transaction every step of the way. For privacy reasons, the Tigerex system translates and audits the messages, but it does not interpret the contents of the trade. Using BizTracker, the auditing process carefully records all messages related to a trade, whether outbound from the client or inbound from the execution broker. Marcus Consolini explains the automatic auditing function at Tigerex, "Our tracking is extremely deep, and it has to be. We're dealing with critical messages representing large financial transactions so we have to be able to track their every movement. BizTracker manages our tracking within e-Biz Integrator. We built other tracking tools that manage the movement within the databases and within the FIX engines themselves. When any message hits our system it immediately starts a recording process that follows the message all the way through the system. We can say to either our clients or partners, 'If there is a problem, we'll know exactly where it is.' We've been adamant about the tracking—it's one of our core competencies and key to our service."

A Highly Functional Professional Services Organization

Shortly after Tigerex decided to use e-Biz Integrator, they also chose Sybase's Professional Services to write the business rules for the middleware. Consolini talks about working with the Professional Services engineers, "We used them extensively; we had them working on the middleware in our office and later brought in our own people to learn from the Professional Services engineers. From an education perspective, the Professional Services engineer who stayed the longest was originally a trainer for Sybase and a code writer as well. We got the work done and we got our own staff trained. We still talk to them a couple of times a week. It has been a very positive relationship. The director of the Sybase team had actually integrated the FIX engine into e-Biz Integrator for a stock exchange in the Asia Pacific region. That experience set was quite comforting to us. We were very happy with that."

"We are providing a service that I really believe in ten years time will be used in much the same way as domestic online trading systems are today. Cross border trading is one of fastest growing areas of financial services, and to be at the forefront of this trend is very exciting."

— Marcus Consolini, Deputy Managing Director, Tigerex

"Sybase Professional Services provided us with high quality people. Their management on a project perspective was excellent. They sat down and really dug into the technology. They were motivated and they were interested. That made for a very positive experience."

— Marcus Consolini

The Most Wonderful Thing About Tigerex is...

The Tigerex Network was planned with a great deal of forethought, starting with the vision and the credentials of the founders. They selected e-Biz Integrator middleware and translation technology that met their functional needs and the approval of the financial community. They built a cohesive network of relationships with global financial institutions to facilitate trading in multiple foreign markets. Tigerex hired expert Professional Services engineers to create the rule sets, translation maps, auditing features, and a multitude of other capabilities for the e-Biz Integrator middleware. Through a process of deliberate steps, their vision has been realized. Tigerex has simplified what had been such an enormously complex process that even many large financial institutions approached it with trepidation. Tigerex has built a service like no other in the world.

Summing up their position Consolini says, "We have gone beyond what the executing brokers are capable of doing. It is great to be building technology and selling services to clients that the top brokerage firms can't match, and yet these firms are our partners. We have taken the burden off the execution broker by building technology on top of e-Biz Integrator so we can offer features like queuing and market order functionality. This is where we really start to set ourselves apart, and this is all functionality we have built in-house."