



**e-business case studies**

# e-Business Exchange:

An online billing and payment provider



***Putting e-business to Work***



## CONTENTS

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<b>Overview</b>	<b>2</b>
<b>Business Drivers</b>	<b>3</b>
<b>Development Strategy</b>	<b>4</b>
e-BX—a Single Solution for a Multitude of Needs	4
Development Timeline	5
Architecture	6
IBM Offers Complete, End-to-End Solution	6
Lotus Solutions Complete the Picture	7
<b>Return on Investment</b>	<b>8</b>
Overall ROI Benefits	8
Rapid Development Cycle Bolsters Competitiveness	9
<b>Customer Snapshot</b>	<b>10</b>
ABX Introduces Thailand to Efficiencies of B2B E-commerce	10
<b>Future Plans</b>	<b>11</b>

## LIST OF FIGURES

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<b>Figure 1. Benefits</b>	<b>8</b>
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## e-Business Exchange

### The Company

- Established in 1995; an IBM Premier Business Partner
- Headquarters: Penang, Malaysia; staff of 400 software developers
- e-BX, flagship online billing and payment system developed with largest mix of IBM and Lotus software in single solution

### The Web Site

- [www.ebx.com](http://www.ebx.com)

### The Benefits

*For e-Business Exchange:*

- Expansion into new markets

*For customers:*

- Time-to-market reduced from several months to three weeks
- Lower implementation costs

### The Technology

- IBM DB2® Universal Database™ Workgroup, Enterprise and Enterprise-Extended Editions
- IBM DB2 Connect™
- IBM DB2 DataJoiner®
- IBM WebSphere® Application Server, Standard and Advanced Editions
- IBM WebSphere Performance Pack
- IBM WebSphere Payment Manager
- IBM Net.Data®
- IBM Content Manager OnDemand
- IBM SecureWay® Communications Server
- IBM SecureWay Network Dispatcher

## OVERVIEW

### e-business case studies: e-Business Exchange

Even though he's the founder and CEO of e-Business Exchange Pte. Ltd., Chan Hong Saik's expertise lies in the printing industry. He's been running Hong Hong Printing Sdn Bhd from its Penang, Malaysia headquarters for 30 years, printing security checks, consumer packaging and bank documents. But, as traditional as his business is, he still recognized that an infusion of e-business would bring greater efficiency to his enterprise and provide better service and relationship-building with his customers and partners. On average, transitioning from hard-copy to electronic billing can generate cost savings of 50 percent to 75 percent. So, Chan looked for an out-of-the-box electronic billing solution, but didn't find one that met his business's unique needs.

Ever the entrepreneur, Chan decided to develop his own solution—for Hong Hong Printing as well as other businesses in a myriad of industries. And, that's how e-Business Exchange was born in 1995. e-Business Exchange's flagship e-business solution is e-BX, a suite of ready-to-use online billing and payment systems for companies of all sizes and industries. Using e-BX, businesses can handle invoicing, receive payments and even create business-to-business (B2B) catalog purchasing and intra-organization workflow applications. A second suite of e-BX products, falling under the e-BX TradePlus family, enables companies to automate and integrate their procurement processes.

Without any experience in the IT field, Chan built his fledgling company with a staff of IT professionals with varied skill sets. At the time, he had already developed a relationship with IBM through his printing business, becoming a remarketer of IBM printers. Building on that relationship, Chan sent his then-small IT staff to IBM for training, before they began development work on e-BX. Today, e-Business Exchange boasts 400 developers and is an IBM Premier Business Partner. And, in an interesting turn of events, IBM is a reseller of e-BX.

The e-BX suite, which integrates what is believed to be the largest mix of IBM and Lotus e-business software solutions in one package, was developed under the IBM Application Framework for e-business. Designed to help companies build successful e-businesses, the Application Framework for e-business prescribes a methodology and standards-based technologies that can provide businesses a jump-start in the Web's multivendor, multiplatform environment.

## BUSINESS DRIVERS

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Although business-to-consumer (B2C) commerce was the first to make a splash in the Internet economy, B2B commerce is poised to grow rapidly. The latest Gartner Group projection calls for B2B transactions to comprise \$7.3 trillion by 2004—a staggering amount in a short time frame.<sup>1</sup> That's good news for e-Business Exchange. What's more, electronic bill presentment and payment—the area of e-Business Exchange's expertise—is expected to experience astonishing growth. Ovum, a London-based analyst group, predicts that the number of bills presented electronically will increase more than a hundredfold and the number of payments will reach 404 billion by 2005.<sup>2</sup>

As with Chan's Hong Hong Printing, which saved 90 percent in personnel expenses in its purchasing department from using e-BX, businesses of all kinds are recognizing the value that e-business brings. Yet, with limited capital and resources, not all organizations have the IT means to devote to e-business projects—or even the desire to do so.

That's why it was important that the electronic payment solution e-Business Exchange created be as easy to deploy and use as possible. Chan explains, “I wanted e-BX to offer businesses an option to go ‘e’ without having to get involved in hard-core IT development. Like my printing venture, a lot of companies don't want to build an IT shop, they just want to use IT products to go ‘e.’ This is what the e-BX products do—they make it easier for people to go ‘e’ and focus on their core business.”

### The Technology (Cont.)

- IBM SecureWay Firewall
- IBM MQSeries®
- IBM HTTP Server
- IBM DirectTalk®
- Lotus® Domino™
- Lotus Domino Mail Server
- Lotus LearningSpace®
- Lotus Sametime™
- IBM RS/6000®
- IBM Netfinity®
- IBM S/390® Parallel Enterprise Server™
- IBM AS/400®

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<sup>1</sup> Lawrence, Stacy. “Behind the Numbers: The Mystery of B-to-B Forecasts Revealed.” *The Standard*. Feb. 21, 2000.

<sup>2</sup> Jones Thompson, Maryann. “Online Billing Set to Take Off.” *The Standard*. Sept. 7, 1999.

## DEVELOPMENT STRATEGY

**“Like my printing venture, a lot of companies don’t want to build an IT shop, they just want to use IT products to go ‘e.’ This is what the e-BX products do—they make it easier for people to go ‘e’ and focus on their core business.”**

—Chan Hong Saik, CEO,  
e-Business Exchange

### e-BX—a Single Solution for a Multitude of Needs

Using e-BX, billers extract and transmit billing data to the system, which presents the bills in any format the biller wants to use. Bill payers have, through e-BX, on-demand browsing and printing of bills and secure communication with billers. e-BX also connects participating banks, enabling banking activities to be conducted electronically. By deploying e-BX TradePlus, companies gain a workflow management capability that manages the entire purchase order approval process.

e-BX is offered as a suite of products, which together provide functionality, not only for online bill presentment and payment, but also for catalog management and marketing, XML document publication and archiving, workflow management, messaging and scheduling.

- e-BX Biller Consolidator™ is a full-service electronic bill presentment and payment/electronic statement presentment consolidation product that supports both thick and thin clients. It presents bills and statements online in either predetermined or customized formats. The software supports enterprises that store their billing data in binary print files like IBM AFP (Advanced Function Printing) and Xerox DJDE, text/ASCII files in proprietary formats, XML files with DTD, back-end databases like IBM DB2 and Oracle, and enterprise document management software like IBM Content Manager OnDemand.

When the bill payer chooses to pay, he selects from a list of banks, and e-BX Biller Consolidator will link to the e-BX Payment Enabling eXchange (PEX) server in the selected bank. After authenticating with the bank, PEX displays the list of payment options for paying the selected bill(s). PEX takes care of the payment processing and remittance of information back to the enterprise.

- e-BX Bill Maker™ enables Biller Consolidator to extract and present billing data in any format. The biller uses an HTML editor such as NetObjects Fusion to graphically design the bill template. e-BX publishes a full set of XML tags that are used to represent various information on the bill. e-BX constructs integrated bills by extracting each billing item from the bill database using the XML tags and rendering it through the bill template designed by the biller. This presentation capability enables personalized formatting and delivery of bills.
- e-BX Biller Direct™ is designed for the large enterprise that seeks to present bills or statements to its customers on their own Web sites. The solution is able to accept as input almost any type of data file and allows the enterprise to use the e-BX Bill Maker graphical tool to create and manage the bill templates.
- e-BX Bill Presentment Switch™ is a comprehensive bill presentment switch to link billers with multiple bill presentment consolidators. The e-BX Bill Presentment Switch provides all the functions required from biller registration, consumer registration with the biller, conversion of summary data into acceptable formats and delivery to the nominated CSP.
- e-BX BSP Suite™ enables organizations to offer a bill/statement hosting service to billers. The e-BX software is designed to simplify the loading of billers’ data into the system, which allows print bureaus and others to offer a low-cost, fast-start service.

- e-BX TradePlus™ is a full-service e-market environment where buyers and sellers exchange information, negotiate and agree on price and exchange trade documents. Functions include cataloging and catalog management, quote and bid management, procurement approval workflow, order management, notification of new orders, purchase requisitions, RFQs and quotations, e-document exchange for presenting and distributing purchase orders, invoices, credit/debit notes and payment approval workflow.
- e-BX Payment Enabling eXchange (PEX)™ is a payment gateway that resides at the banks and provides payment capabilities to e-BX Biller Consolidator, e-BX TradePlus and third-party solutions. It enables customers to select payment methods, banks and accounts, while supporting all major payment methods for both B2B and B2C commerce. It also offers a central payment switch to attach payments with individual bills so that reconciliation is easier for enterprises.
- e-BX PEX B2B Gateway manages payment origination, processing, clearing and settlement in support of electronic bill presentment, e-procurement, e-marketplaces, online merchants, direct electronic payments and other e-business applications. This package manages transaction initiation functions, financial transactions in and out of suppliers' and buyers' accounts, acquisition and distribution of remittance data and balancing of settlement transactions. In addition, it is compatible with in-house or interbank settlement systems with cross-country and multicurrency support funds transfer and telegraphic transfer systems for payments to sellers.

### **Development Timeline**

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e-Business Exchange began developing e-BX about five years ago. At the time, Chan had just launched his venture and had a small staff of IT professionals with skill sets in various areas. To help prepare them for creating the end-to-end online billing solution, he sent them to IBM for e-business training. Development work for the core e-BX product took about two years. Today, e-Business Exchange has its full-suite of e-BX solutions ready for business.

In fact, the company recently unveiled a version of e-BX that is accessible from mobile devices such as laptops, personal digital assistants (PDAs) and Wireless Application Protocol (WAP)-enabled phones, allowing bills to be viewed through these channels. The solution can integrate with Interactive Voice Response (IVR) systems, and it supports messaging by e-mail, beeper, short message service and other media.

***“We felt comfortable building e-BX in accordance with the Application Framework for e-business because we didn’t have to take a chance implementing an untested concept on an untested platform. In short order, we demonstrated that the Application Framework for e-business works very well.”***

*—Chan Hong Saik*

**“The main reason for going with IBM was that we knew IBM offered a full breadth of end-to-end solutions. If we were to go with Oracle, Netscape or another vendor, we’d only get a piece of what we need.”**

—Tim Yoon, Chief Technology Officer,  
e-Business Exchange

## Architecture

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Creating an out-of-the-box online bill presentment and payment solution that would fit businesses of all sizes from a multitude of industries was not a simple proposition. So, the e-BX developers looked to the Application Framework for e-business for the guidance and proven e-business solutions they needed to meet the various requirements, enabling them to lower development time and costs. Notes Chan, “We felt comfortable building e-BX in accordance with the Application Framework for e-business because we didn’t have to take a chance implementing an untested concept on an untested platform. In short order, we demonstrated that the Application Framework for e-business works very well.”

Built around a three-tier computing model, e-BX consists of:

- A client tier containing the logic related to the presentation of bills, statements and invoices as well as requests to applications submitted through a Web browser
- Web application servers containing the business logic and processes that control the reading and writing of bills and payment information
- Servers supporting data storage and transactional applications used by the Web application server processes.

## IBM Offers Complete, End-to-End Solution

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From IBM DB2 Universal Database on the back end to IBM MQSeries integration software on the middle tier to IBM WebSphere Application Server driving the front end, e-BX is a “true blue” solution. Says Chan, “We make all of these solutions communicate with each other seamlessly—the first time this has happened on one common platform.” The solution runs on IBM RS/6000, IBM Netfinity, IBM S/390 and IBM AS/400 servers, which support connections to the end user’s browser.

Its long-standing relationship with IBM was just one of the reasons why e-Business Exchange chose to develop solely with IBM and Lotus e-business solutions. The Application Framework for e-business—particularly its prescription for an integrated IBM hardware and software solution—was another key selling point. Explains Tim Yoon, chief technology officer at e-Business Exchange, “The main reason for going with IBM was that we knew IBM offered a full breadth of end-to-end solutions. If we were to go with Oracle, Netscape or another vendor, we’d only get a piece of what we need.”

At the core of the e-BX product suite is DB2 Universal Database, which manages all of the data related to billings. “We favor DB2 because it is very robust,” says Yoon. “In fact, for one of our customers, Hong Kong Telecom, DB2 saved the day because there were so many transactions going through that DB2 was the only database that could handle the pace.” Adds Chan, “With some of IBM’s database competitors, crashes are frequent when the volume scales up this high.”



Integrated with DB2 is WebSphere Application Server, Standard and Advanced Editions, the runtime product for serving up HTML pages. IBM HTTP Server is the HTTP server, while IBM Net.Data retrieves data stored in DB2 and delivers it, dynamically, to the Web front end. Notes Yoon, “Net.Data certainly has a great track record, having been used to power sites for big events like Wimbledon. For us, it has proven itself by handling such large workloads and capacities.”

Using WebSphere Application Server, e-Business Exchange has created several B2B features for e-BX, including workflow and supply chain management capabilities. IBM SecureWay Communications Server provides network connectivity, while the Network Dispatcher component of IBM WebSphere Performance Pack provides server load balancing. MQSeries messaging software transmits billing information between e-BX and its back-end systems.

For clients who want to offer online bill payment while remaining on legacy billing systems, e-BX uses IBM Content Manager OnDemand to convert advanced function printing (AFP) files to a text format that can be stored on DB2. IBM DirectTalk enables interactive voice response, so e-BX users can provide their customers self-service functions relating to bill payment through their call centers.

“Another advantage of going with IBM,” says Yoon, “is its strength in solutions for e-business security.” The WebSphere suite of products supports all forms of security required by customers. Furthermore, IBM SecureWay Firewall provides network security.

### **Lotus Solutions Complete the Picture**

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e-Business Exchange has also integrated a host of Lotus products into e-BX. Lotus Domino is used for its secure replication capabilities. Explains Yoon, “When a bank or a biller wants to be able to transfer billing data to e-BX Biller Consolidator, we recommend Lotus Domino because it is a very good system for taking information from point A to point B. And, if they have large quantities of data to move, we recommend that they use IBM DB2 Connect or IBM DataJoiner.”

Lotus Sametime enables bill payers to initiate screen sharing when they want to review a bill with the biller. If there’s a dispute, for example, the payer can enable the biller’s customer service representative to view a specific portion of the bill, including annotations from the payer. To facilitate training on e-BX solutions, e-Business Exchange uses Lotus LearningSpace, a Web-ready asynchronous learning solution that runs on Lotus Domino.

“Businesses recognize IBM as an e-business solutions leader, so they feel confident using IBM products,” says Chan. “With this brand equity on our side, the Application Framework for e-business gave us a deeper advantage by pointing us to the right IBM e-business solutions for building our seamless, interactive platform.”

**RETURN ON INVESTMENT**

**Overall ROI Benefits**

<b>Function</b>	<b>Benefit</b>
Product development	<ul style="list-style-type: none"><li>• Faster time-to-market</li><li>• Lower development cost</li></ul>
Marketing	<ul style="list-style-type: none"><li>• Increased opportunities for market expansion</li><li>• Greater market penetration with IBM brand leverage</li></ul>
e-Business Exchange customers	<ul style="list-style-type: none"><li>• Time-to-market reduced from many months to three weeks</li><li>• Lower implementation costs</li></ul>

Figure 1. Benefits

## Rapid Development Cycle Bolsters Competitiveness

In the fast-moving world of technology, where it seems that innovations grow old before they can take root, speed is of the essence. Through the Application Framework for e-business, e-Business Exchange had a development roadmap that created a fast, efficient development process for e-BX. Notes Yoon, “Every three months, you find that something needs to be reengineered or enhanced. Sure, it’s the same product you had two months ago. But it may not be that hot tomorrow unless you make some enhancements today.” Working in such an intense environment, it was important for e-Business Exchange to follow the rapid application development process that the Application Framework for e-business allows through its use of legacy systems.

“The Application Framework for e-business makes us more competitive, because we can develop and deploy at lightning speeds,” says Yoon.

e-Business Exchange’s customers, too, benefit from the development speed that using e-BX brings to their environments. With a single solution for electronic bill presentment and payment, e-BX users don’t have to spend time evaluating and deploying different tools. “When IT isn’t your core business, why bother spending the time and resources to go ‘e’ when e-BX does it for you?” quips Chan.

Using the Application Framework, e-Business Exchange was also confident that it would be directed toward the latest in e-business technologies—so its developers wouldn’t have to worry about keeping up with the latest innovations. Says Yoon, “I don’t need to wake up every morning and ask, ‘Have we chosen to align with the right company?’ We know that IBM will be there when the technology is on the move, so while IBM focuses on enhancing its e-business solutions, we can focus on enhancing e-BX.”

Aligning with IBM, says Chan, also goes a long way in attracting customers. “People accept that IBM has the largest market share in the e-business industry, so they feel comfortable using IBM products,” he notes. “IBM also has very strong support services that make many global customers feel comfortable when they buy e-BX.”

**“The Application Framework for e-business makes us more competitive, because we can develop and deploy at lightning speeds.”**

—Tim Yoon

## CUSTOMER SNAPSHOT

### ABX Introduces Thailand to Efficiencies of B2B E-commerce

**“When IT isn’t your core business, why bother spending the time and resources to go ‘e’ when e-BX does it for you?”**

—Chan Hong Saik

A start-up formed earlier this year, Advanced Business Exchange Co., Ltd. (ABX) is the first B2B hosting service in Thailand. By creating e-marketplaces where buyers and sellers in a supply chain or dealer network can come together and do business, ABX aspires to help them generate tremendous cost savings.

Developed in partnership between e-BX and Metro Systems Corporation Public Co., Ltd., ABX, an IBM Business Partner, creates its e-marketplaces using the entire e-BX suite of products. Metro Systems is also an IBM Business Partner and is Thailand’s largest IT company. As it builds its business, ABX is targeting the 10 percent of Metro Systems’ 3,000 customers who operate with trading partners.

Explains Thanarat Leetrakul, vice president of marketing at ABX, “If each of these 300 customers has 100 trading partners, then our customer base grows by that much. Sellers and buyers each pay us a monthly fee and can use our hosting service to post online catalogs and such. If they conduct trading through our services, we share in a portion of their revenue.”

Industry research shows that the savings stemming from adoption of B2B solutions can range from 5 percent in the healthcare industry to 10 percent in the chemical industry and up to 39 percent in the electronic components field.

B2B e-commerce is indeed taking off in Asia. Thailand, in particular, requires that export and import trades be conducted online. “e-Business Exchange is in a good position to capture this market because it understands the Asian way of doing business,” notes Leetrakul. “And that’s good news for us as an e-BX solutions user.”

Providing its hosting services using a powerful suite of products developed entirely with IBM and Lotus software and hardware, ABX figures it can’t go wrong. In the e-BX suite, ABX has online billing and procurement solutions featuring fast development processes and open standards. The company has invested about \$4 million in e-BX solutions—and anticipates that it won’t take long to recoup this investment. In addition, its current staff of 40 is expected to grow to 80 by year-end.

Says Thitiphong Charanachitta, senior vice president of sales and marketing for ABX, “Our main goal is to bring Thailand to the e-commerce age, to enable the country’s businesses to do everything better, easier and more conveniently through e-BX products.”

## FUTURE PLANS

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e-Business Exchange has been working with clients throughout the Asia-Pacific region as well as in Europe and North America. The company's objective is to be a major player in the global e-business market, serving customers throughout the world. It plans to do so by continuing to work with IBM, leveraging IBM's extensive network to increase its customer base.

"One of my measures of success," says Chan, "is our ability to take e-BX worldwide. Our solution is already being used by world-class companies, who are scaling up to high-capacity volumes and have relayed very positive feedback from their users. We are all very fired up about e-BX, and hearing this kind of response gives us even further encouragement."

***"We know that IBM will be there when the technology is on the move, so while IBM focuses on enhancing its e-business solutions, we can focus on enhancing e-BX."***

—Tim Yoon





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