

Independent Assessment

by Alan Radding

IBM System z case study: BC Card

Back to the basics—reliability, scalability, security

Executive Summary

Mainframe computers have traditionally found a home with companies needing the reliability, availability, scalability, and security. Architected to be resilient, mainframes long have been the preferred computing platform for the most mission-critical workloads, the ones that generate the revenue, for large enterprises.

BC Card, the leading credit card processing company in Korea, rose to prominence over the past 10 years powered not by mainframe computers, as you might expect, but by UNIX servers. That changed late in 2009 when the company opted to replace UNIX servers with a set of three System z EC machines.

The initial applications for the System z will be credit card authorization and the associated back-end processing—true mission-critical applications if ever there were any. So why rock the boat after 10 years? The BC Card CIO explains:

We believed that the existing platform would have risks in providing stable services in the non-fault environment 24 hours a day, 365 days a year. In dealing with large-capacity operations so that more than 8 million transactions can be handled each day, we thought the existing platform has limitations.

In short, BC Card had outgrown its UNIX servers and instead of scaling up to bigger or more UNIX boxes, they went with the System z for the rock solid reliability, availability, and scalability it delivers.

This case study looks at what BC Card did, why they did it, how they did it, and where they are going from here. Its story starts with the core System z reliability and scalability but already the company is looking beyond that.

Challenge—high volume, mission-critical workloads

When BC Card emerged in Korea in 1982 as a credit card processor, it had no competitors. By 1990, that situation began to change as banking companies set up credit card operations. Within 10 years, Korea was a highly competitive credit card market with a dozen or more card processors.

BC Card was formed through a coalition of 11 South Korean banks that handle credit card transactions for 2.62 million merchants and 40 million credit card holders in the country. Recently a new CEO arrived with the mandate to drive growth and establish BC Card as the country's leading card processor. At that point, facing an increasingly competitive local and global market and intent on pursuing a growth strategy, the company realized it had tapped out its existing IT infrastructure.

The company's IT infrastructure, which relied on a set of aging distributed UNIX servers, posed a serious challenge. This infrastructure could barely handle its current workload. Clearly it could never support the CEO's growth strategy. Even its UNIX vendor, HP, was advising the company upgrade its UNIX servers if it was going to handle fast growing, high performance, mission-critical workloads. In that case, BC Card management decided to revisit the IT platform question, not simply jump to the latest HP offering.

As Korea's largest credit card service provider, BC Card needed a computing platform flexible and scalable enough to handle global service expansion of high-quality payment services. The new platform would have to support the establishment of the global standards for business process and IT systems necessary to achieve its corporate vision as a global payment service leader and as a provider of hosting services for local institutions.

Background—BC Card

BC Card was founded as Bank Credit Card Association in 1982 and changed its name to BC Card Co., Ltd. in 1987. The company is based in Seoul, South Korea.

Today, BC Card offers a secure, convenient payment system to help financial institutions become more competitive while delivering credit card processing services. The company provides payment services for the complete range of institutions, from the financial sector to private enterprise and government agencies.

As of February 2009, with a customer base of 40.26 million cardholders and 2.62 million merchants, BC Card holds the largest market share in Korea. According to the company, the services it offers include:

- End-to-end credit card business processing platform that encompasses card issuance and delivery, authorization and billing, merchant management, and payment and settlement - i.e. a complete card business service.
- Customized market research and analysis, risk management, brand management, product development and marketing.
- Products that include check cards, pre-paid cards, international debit cards and post-paid transportation cards etc.

As the leading credit card processor in Korea and with plans to grow even larger, BC Card clearly needed a modern IT platform that could deliver world-class reliability, scalability, and flexibility with bulletproof security.

The Mainframe—platform of choice for mission-critical work

Historically, the mainframe has been the platform of choice to run the world's critical production and business systems. Even today, decades after the

emergence of distributed systems, a huge percentage of the world's transaction data is handled by mainframe systems.

The reason: the mainframe's reputation for 5-9 availability (99.999% uptime), scalability, and security combined with its manageability. It is possible to achieve these attributes with distributed systems but you will have to cobble together numerous pieces yourself to ensure sufficient redundancy, dependable failover, scalability, and bullet-proof security. With the mainframe, all of that is there already, architected in from the start and proven with countless companies over many years. You don't have to build it; you get it.

The CIO of BC Card said it himself: "We chose System z for its continuous operation and service quality made available through IBM's mainframe software solutions." He went on to say that "the existing [distributed UNIX] platform would have risks in providing stable services in the non-fault environment 24 hours a day, 365 days a year. In dealing with large-capacity operations so that more than 8 million transactions can be handled a day, we thought the existing platform has limitations even in performance." It evaluated the UNIX vendor's latest and greatest system before the company turned to the System z to handle its high volume, critical workloads.

Choosing the System z

IBM touts BC Card as a new System z customer, but the card payment processor actually used a mainframe over 10 years ago before it switched to a distributed UNIX environment. So, BC Card more accurately is a returning customer.

When the company began discussions with IBM in 2009 it initially was interested in IBM's System p, a RISC-based UNIX system, because of its familiarity with UNIX. Subsequent analysis of the System p against the IBM's System z in light of BC Card's requirements for reliability, availability, and

scalability led the company to conclude that the System z would be the better choice.

At that time HP was the incumbent vendor, having provided the installed UNIX servers. HP proposed replacing the existing servers with a SuperDome. The analysis encompassed the hardware, software, and middleware and covered a range of benchmarks including performance, reliability, scalability, security, and flexibility.

The comprehensive IBM hardware, software, middleware package had great appeal. BC Card, for instance, quickly began planning the development of new WebSphere applications.

Making the decision even easier was the IBM System z Solution Edition program that provides a deeply discounted System z hardware/software/middleware package, including three years of maintenance. Surprisingly, the company did not opt for the System z Solution Edition for GDPS (geographically dispersed parallel sysplex, a disaster recovery/business continuance strategy). However, its plan does include using part of an LPAR for a high availability sysplex.

Ultimately, BC Card settled on three System z EC machines, one as part of its disaster recovery strategy. Also included in the deal were DB2, InfoSphere Replication Server (IRS), CICS, WebSphere middleware, and Tivoli workload scheduler management software.

Implementing the System z at BC Card

To facilitate the migration from the distributed servers to the System z BC Card lined up IBM for technical support. It also enlisted IBM consulting services for longer range IT planning.

The migration will be rolled out in phases. The first stage involves moving the critical card authorization and card processing applications to the z. This is classic, hardcore mainframe computing.

First up are the company's two major systems, the Authorization system and the Card system. BC Card will run DB2/CICS for Authorization system and DB2 / WebSphere for Card system. Specifically, WebSphere Application Server (WAS) for z/OS acts as a J2EE-based application server for the Card system.

Along with WebSphere, BC Card adopted Rational Developer for System z (RDz) as its integrated development environment (IDE). It also will use Rational Team Concert (RTC) for configuration management, specifically version management.

To manage the new environment, the company turned to Tivoli Workload Scheduler (TWS) for Batch Job Scheduling; Tivoli Omegamon for DB2, CICS, Messaging management; IBM Tivoli Composite Application Manager (ITCAM) for WAS for system performance tuning; and Tivoli Decision Support for system performance reporting. Finally BC Card will use Tivoli System Automation for the automation of system resources.

BC Card will operate the z with its existing IT staff. The plan calls for intensive training for its current operators and administrators. The company still employs people who worked with the old mainframe although they too will need extensive retraining.

The company is realistic, expecting some resistance to the change. "Change is difficult for everyone. But I believe change for growth is necessary," said the CIO. With the decision the CIO is committed to fully executing the plan. "Even though there are objections or complaints arising in the process, I believe not only the company but also all employees will ultimately enjoy good results when we continue proceeding toward the fulfillment of our goal," he added.

Key BC Card System z Components

z10 EC (3 machines)
z/OS
DB2
Infosphere Replication Server
CICS
WebSphere
Tivoli
Rational

BC Card Results

Just a few months into the effort, it is too soon for the company to see results. However, work has begun on application and data migration. At the same time, plans are being developed for the next phase of applications.

Still, the CIO has high expectations: “Monetarily calculating the ROI at this point is not relevant. The right answer to the ROI question is to enable the IT shop respond flexibly without any problem under the circumstances. Of course, the technology must meet our needs and the demands for new businesses.”

As a global payment service provider BC Card expects to achieve ROI by enhancing the capability of the IT shop through componentization (modularization) by business function and through stability. The company anticipates new IT platform will allow IT to work more productively.

From a business standpoint, the new platform will enable the company to deliver near continuous service availability at the highest possible level as it strives for growth and pursues new business initiatives in a highly competitive market. In short, it will allow the company to not only maintain but expand its leadership position in the market.

Lessons Learned

At this point there are only a couple of lessons to draw from the BC Card experience. To begin, challenge assumptions. BC Card challenged two common assumptions:

- 1) the incumbent vendor is most likely the best choice
- 2) the mainframe is an overpriced workhorse that is not price-competitive with distributed platforms

After analyzing its needs in light of its strategic plans and requirements for performance, reliability, scalability, security and then benchmarking its options, it turned out that the System z was the best option. That might not be the case in every situation, but it was for BC Card.

With the introduction of System z Solution Edition pricing assumptions about the cost of mainframe computing also need to be revisited. The System z

has long made a strong TCO case. Now it can make a competitive cost of acquisition argument too. If it is not actually cheaper, it gets close enough to remove acquisition cost as a deciding factor.

Independent Assessment analysis

There are some things mainframe computers have long done better than any other platform—reliability, availability, scalability, transaction processing performance, and security. That is not necessarily what every organization needs, but in the case of BC Card it was. The company was smart enough to realize that although the distributed computing model might be made to work, at considerable expense and risk, why bother. The mainframe from the outset is optimized for exactly this kind of work. There is nothing BC Card needed to reinvent.

The mainframe is not appropriate for every workload and every organization, but in this case it was. Other platforms can make a compelling case for other workloads—Web 2.0, HPC, end-user computing. Hardcore, large scale business transaction processing, however, is ideal for the mainframe.

About Independent Assessment

Independent Assessment is the IT and business assessment, analysis, and writing service of Alan Radding, an independent business and IT analyst/writer for over 20 years. It provides independent ROI and TCO analysis, competitive assessment and positioning reports, case studies, white papers, and Web content.

Independent Assessment publishes *dancingdinosaur*, the independent blog covering the System z.