

## LEVERAGING THE IBM SYSTEM Z MAINFRAME FOR SHORT-TERM RETURN ON INVESTMENT IN BANKING



A Frost & Sullivan White Paper

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## INTRODUCTION

The current downturn in the economy is top-of-mind for all businesses. Banking institutions especially are reworking their business models and adapting to the shifting customer, regulatory and business requirements. Managers and employees alike have been compelled to step back and assess their work environments and efficiency. This creates an opportunity for information technology (IT) managers to proactively contribute to advancing the business by examining their systems infrastructure and supply chain closely. IT must be aligned with business goals; reducing cost and doing more with less is the focus of businesses right now. With all of the changes, mergers, acquisitions, and downsizing in the financial services industry, there are undoubtedly areas that are underutilized, overpriced, and excessively complex. These can be addressed with a near-term solution that will not diminish any long-term benefits, like some ad hoc solutions or patches can in tight times. That near-term solution can be achieved with the IBM System z mainframe. By leveraging this asset, banks can reduce the number of servers they have and increase utilization rates quickly.

While banks were increasing revenue and growing at rapid rates over the last several years, their information technology budgets and spending went up as well. For example, Merrill Lynch's 2007 reported income and expenses included Communications and Technology Expense of \$2.06 billion, a 12.0% increase over 2006 and 28.6% over 2005, and Citigroup's 2007 financials had a Technology/Communication Expense of \$4.53 billion, a 20.5% increase over 2006 and 28.6% over 2005. These increases likely had to do with technology investments used for growth at the time, including acquisitions they made, as well as higher communications costs. As we enter 2009, these businesses and several others are consolidating, and making this move with a strategic IT plan and with a trusted brand and system in place is crucial for near-term returns and future company health and growth.

The negative economic news continues to pummel the global financial sector in particular. The credit crunch has continued to ripple through the economy in the second half of 2008 and beginning of 2009. Consumer confidence continues to wane with the deluge of news of bailouts, rising unemployment, and an official declaration of an economic recession. As a result of such dire indicators, banks and financial services companies are cutting costs, including laying off workers, or considering such moves. Regardless, belt tightening is occurring in this industry more than any other because of continued scrutiny. Extreme pressure is now on managers to reduce spending and cut unnecessary expenses.

At the same time, over the last several years, the mainframe has relinquished the spotlight to other platforms, such as distributed servers. It has never gone away, however, and it has proven time and again that its capabilities outweigh any perceived cons.

When an organization wants to become leaner, it must have the proper infrastructure to support it. The IBM System z platform has the strength necessary for today's new banking

and financial services industry. The System z can be used right now for operational expense savings. This is something companies always strive for, but is particularly crucial in today's environment. Additionally, banks can use their already-owned legacy application-based mainframes and transform them by taking advantage of their built-in critical functions. Banks are centralizing their back office operations; they realize that the advantages offered by the mainframe in scalability, resilience, recoverability, and security are becoming more critical every day. This paper discusses the opportunities that mainframe capabilities can bring to meeting banks' current and future needs to help cut costs, increase operational efficiency, and mitigate risk in today's complex business environment.

## **THE CHANGING FINANCIAL SERVICES INDUSTRY**

The U.S. economy was belatedly pronounced to be in a recession at the beginning of December 2008. This announcement fueled more cutbacks on both Wall Street and Main Street, though most organizations felt the effects of the undeclared recession since the beginning of last year. The global economy has fared similarly, partially as a result of the financial crisis in the U.S., increased commodity prices and extreme volatility in the world stock markets. Several European and Asian countries' economies have contracted significantly, including Germany, Ireland and Singapore.

The financial sector was shaken in the third quarter of 2008 with news of heretofore revered institutions, Lehman Brothers and Merrill Lynch, filing for bankruptcy and being sold to Barclay's and Bank of America, respectively. One week before that, Fannie Mae, Freddie Mac, and AIG, Inc. were bailed out by the government with loans totaling hundreds of billions of dollars. Since the news of Lehman and Merrill, the two remaining investment banks, Goldman Sachs and Morgan Stanley have been made into bank holding companies in an effort to avoid a similar fate. In addition, Wachovia was acquired by Wells Fargo, after an initial stand-off with Citigroup – which has since been bailed out by the government as well. J.P. Morgan Chase also became the owner of Washington Mutual and its portfolio. Most recently it was announced that PNC would acquire National City; and more acquisitions are likely. In Europe, several countries have experienced similar problems. The Irish government recently announced plans to bail out some of the country's largest banks, for example. And the Dutch, Belgian and Luxembourg governments provided €11.2 billion for Fortis bank, Belgium's largest.

After years of intense competition and meeting the surging demand for new products, services, expansions, etc., the banking industry is now consolidating at rapid rate. Usually in such a quick merger, the initial worries are about financial risk and bad portfolios. However, it is also possible to take over a bad network. Often the processes and technologies and standards vary considerably between the organizations and geographies. Ideally for M&A, the organization has established a group for oversight, one that combines the IT and business sides so the best decision for both can be made. In this current flurry of mergers, the emerging banks can differentiate themselves with agility. They can effectively manage the change in this volatile business environment by making processes

explicit, but the lack of time presents a significant risk of business falling through the cracks. Additionally, banks have been operating in a modest regulatory environment for several years. An increase in number and intensity of regulations will be a significant change for banks, both culturally and financially.

Mergers and acquisitions historically have a focus on shareholder value. With the collapsed timeline of these bank mergers, however, there is a new level of pressure. The integration process of a merger or acquisition is increasingly crucial. Banks cannot afford to have any downtime in order to get their integration “right.” Time-to-market is still important and the customers expect a smooth transition – their experience should not be interrupted, despite changes and upgrades taking place in the infrastructure and processes. The focus should continually remain on customers.

In the face of basic operational challenges, innovation can fall by the wayside. This is a mistake – *innovation is vital to manage and profit from the expected influx of new client expectations, new market entrants, new products and new technology.* Technology and business integration are differentiators. Technological change can be part of business strategy, not something that simply enables strategy. Despite the consolidation, there is a proliferation of banking options and the industry will continue to be extremely competitive. A robust infrastructure is necessary to distinguish a bank from its competitors; it can provide a unique and better value for customers. Banks must continue to invest in technology to support expanding channels and continue to chase efficiency.

### **Banks’ business needs and IT solutions**

In these trying times, there are a few imperatives of which managers must not lose sight.

#### **Keeping customer focus**

According to a survey conducted by Customer Think, a research company specializing in customer-centric business strategy, 70 percent of customers who have left their bank said it was due to poor service rather than product choice or price. A U.S. financial institution that has committed to building and continuously improving the customer experience by re-engineering and streamlining underlying business processes and systems is already seeing great results from renewed dedication of its employees and improved customer satisfaction. A system that is able to effectively and securely manage and organize customer data is key. There are opportunities that can be seen only if an employee is armed with customer data, so they can better upsell and cross sell existing products and services, and introduce new offerings. Because today’s customers are more savvy and demanding, companies have to make every effort for retention or lose them to a competitor.

*The IBM mainframe improves data capture, retention and access. The modernization tools which are built-in make it much easier to publish back office data as web services. This greatly increases the flexibility of the mainframe technology for employee and customer access to relevant data and, subsequently, increases short- and long-term customer loyalty.*

## Dealing with extreme expense pressure

Most companies will spend as much or more on technology next year as they did last year, according to a recently released survey of IT professionals by IBM. Companies are taking a different approach to IT in this economic downturn than in the past, where it was likely to be cut. Organizations can and should leverage IT to reduce costs. However, many IT organizations assume that mainframe costs are higher than distributed servers, which is not the case over time, according to a study by Wintergreen Research. To illustrate, the average annual costs associated with a mainframe running a single application total \$236,000, while a distributed server system using 13 servers (one per application) running a single application total \$9,343,000. In larger data centers running 1,400 applications the cost difference is more than 11 times – \$676,890,000 vs. \$56,534,000 annually. These figures come from combining the average costs associated with service availability, infrastructure (space and electricity), network, hardware, software, and security.

*Mainframe labor costs also hold steady as workload grows. The workload at banks has increased significantly in recent months, with more customers and fewer bank employees. Additionally, IBM pricing policies are designed to favor the addition of workloads on the mainframe. The mainframe has lower software costs per transaction as workload grows and lower electrical and air-conditioning consumption than distributed server farms which is the current IT design used in many large financial companies.*

Large companies are consolidating more workloads to the mainframe to realize the value of scalability and security. A large financial services company that took over a failed competitor earlier this year currently operates in a distributed server environment. They immediately shut down the target's system and transferred the remaining assets to their system. They saw right away that their business had increased several-fold with the acquired assets, yet they had fewer people. They needed better technology. The acquirer decided to move to a more efficient and proficient platform that could handle applications, reporting, and storing massive amounts of data. The distributed physical servers – which often run at very low utilization rates – would have had to be managed, patched and updated repeatedly by employees, partly because of their tendency to break down.

*With the IBM System z, breakdowns are almost unheard of as the mainframe can consistently run at close to 100 percent utilization. Because of the complexities of some transactions, including legal documentation and regulatory compliance mandates, the speed, integration and standardization is hugely beneficial. The opportunity cost of lost sales or mistakes is something financial institutions simply cannot afford. It affects customer perception and gives competitors a window of opportunity. Business partners are also affected by outages; an unreliable system can create confusion, missed opportunities and a loss of confidence in the bank.*

The other savings come from fewer service costs and increased productivity, which is realized immediately. Other examples include Nationwide, the insurance and financial services company, which is consolidating hundreds of servers to Linux on the mainframe. The company projects saving \$15 million over three years. Nexxar Financial Group also consolidated x86 Intel servers to the System z platform and saved about 75 percent of its people cost in managing its information technology.

The IBM System z supports the highest levels of consolidation in the industry. Up to 60 Logical Partitions (LPARs) can be used. Each LPAR can run any of the supported operating systems: z/OS, z/VM, z/VSE, z/TPF, and Linux, which on System z and can be run at up to 100 percent sustained utilization levels. The System z is an ideal platform for consolidating many distributed and underutilized systems. Virtualization is embedded in the z architecture and is a key strength. Virtualization creates the appearance of multiple concurrent servers by sharing the existing hardware. Its major goal is to fully utilize resources, lowering the total amount of resources needed and the associated cost.

### **Placing increased focus on operational efficiency**

Banks right now will continue to look ahead and develop long-term IT integration strategies. However, getting more from what you already have in IT is now necessary; the current situation has spurred managers to look for more short-term fixes. While the mainframe is a key component in a transformation of a bank's core systems, it can provide immediate support without a full-scale overhaul. Existing assets from a core application and system can be reused to start or build new projects easier, faster and with less risk. The core assets are proven and reliable, and have been driving many key business functions already.

The short-term plans are not about cutting corners, but rather moves that will facilitate a smooth transition to the long-term plan, while increasing the bottom line right now. One of these can be leveraging systems that may already be in place. The IBM System z mainframe can be used in ways that may not be top-of-mind for bank IT managers. While it is ideal for running large amounts of data as usual, it can also be used to consolidate a bank's disparate wide-reaching systems quickly.

- Workload automation is a key enabling technology in environments built on service-oriented architecture (SOA), like the System z. It applies centralized and consistent views, controls and automation to batch workloads across differing IT resources. Extending workload automation across environments, including time-triggered batch services, event-triggered batch services, and transactional and Web services, exponentially increases the benefits of the technology.

- Workload management within the System z ties allows banks to group and manage the workload based upon peak timing and different processing schedules of the clients. It also provides an overarching view wherein banks can manage the different segments and environments from one central place to ensure the best results. Ultimately, this cuts costs and increases operational efficiency. Additionally, lower cost new workload processors (e.g., Java, Linux) further benefits the bank.

Obviously the current market conditions have increased the pressure within banks and on managers in particular. This climate has brought about significant consolidation; there were major acquisitions in banking in the second half of 2008. The next and most crucial part of these mergers is the integration process. Many of these acquisitions happened very quickly, and the integrations will need to follow suit. However, because the applications and customer data are so important to the continued success of the companies, they still need to be well-thought out. Given the degree of external complexity, internal simplification of systems is needed. M&A exacerbates this issue and makes the need more evident. Competition will heighten for capital, for clients, for specialized forms of talent and, ultimately, for sustainable return. Banks must focus on efficiency given they will no longer have the huge returns to which they have become accustomed in the last few years.

### **Enhancing risk management**

In this post subprime mortgage crisis environment, risk management is an initiative that will be more imperative than ever. Government regulations will increase, and transparency will be fundamental for banks going forward. Having a system in place that can help address this – and all of a bank’s strategic initiatives – is vital. Risk analytics and specialized talent are likely to be the top risk investments, and be key elements in a more holistic approach to risk management. Streamlining can restore health in the short-term and set the organization up for sustainable growth in the long-term.

To improve practices, financial institutions must find balance between commercial success and business sustainability. This can be done by increasing the quality, transparency and timeliness of risk information, and proactively managing risk exposure and liquidity. IBM has end-to-end software solutions to help, including Cognos, and Rational. IBM software can be an extension of the mainframe, with business process management and information solutions that enable the renovation of a bank’s current application portfolio, as well as support new business requirements and regulations.



## Global transformation

As a result of these challenges in today's environment, banks can consider IBM Core Banking application to support current and future organic growth. It is anticipated that transformation will occur most rapidly in Asia, where banks will struggle to operate effectively as the volume of transaction processing increases with economic growth. Transformation also is expected to occur rapidly in the Europe-Middle East-Africa (EMEA) region, as banks cope with regulatory compliance and risk management. Many banks in the Americas are now beginning the planning process for transformation. In emerging markets, and around the world there have been effects of the credit crunch and global recession. However, there are some key market trends in banking in Asia in particular that continue to dovetail with the need for the System z capabilities. These include:

- Asian banks have realized the importance of technology infrastructure improvement and the impact that aging IT systems can have on competitiveness, so more banks are looking to update their banking systems in the region.
- Banks are increasingly adopting new technologies, opening up cashless systems, ATM cards, Internet banking and, with the skyrocketing number of mobile phone usage, mobile banking.
- Despite the volatile markets, rising inflation and a slowing global economy, private banking in Asia Pacific is growing, propelled by the strength of the region's economies and growing wealth.
- The banking sector is expected to encounter rough waters in the short-term as economic growth cools under the chill of a global credit crunch and tighter business conditions.

## LEVERAGING THE SYSTEM Z MAINFRAME IN BANKING AND FINANCIAL SERVICES

There is always pressure from several sides on the IT executive. While they must control costs, there is also pressure to maintain and increase system efficiency. The mainframe can be the platform of choice for banks because of its many advantages. These include high availability, strong business continuity, deep levels of security, high system utilization rates and strong and consistent performance.

Banks must develop or keep up an environment where applications can be assembled into solutions and managed in a common and consistent way – especially when the solutions

consist of mixtures of old, mature, and young software. The mainframe becomes a nearly ideal hosting platform for businesses that acquired multiple, disparate software solutions and are now struggling to integrate them. There are opportunities in these bank mergers, too. The sheer amount of data a bank gathers can be searched and used for opportunities – especially if it is consolidated and therefore able to be cross-checked. Also, best IT practices in the two merging companies, as well as many departments and regions, can be adapted across the new enterprise.

Companies that oversee thousands of transactions a day cannot afford a second of downtime. The mainframe's reliability all but ensures uninterrupted business. The current situation in the majority of large financial services companies is a distributed environment with several small servers doing duplicate work. In such places, IT departments end up spending time supervising existing workloads instead of delivering innovative business services.

When a merger or acquisition occurs, the faster the companies can marry disparate infrastructures, the faster they can optimize their combined strengths, productivity and costs. Leveraging what you have can not only save money, but it can ease the transition for managers and employees. It is not about completely replacing systems, but utilizing and uniting existing infrastructure and investments, even if they are from more than one vendor. Applications and services can also be delivered at predictable costs and defined levels, all leading to increased ROI. Additionally, IBM can support integration with non-mainframe solutions. These include connectivity solutions, such as federated enterprise service bus (ESB) patterns. With an increased ability to provide end-to-end testing, more reliable and higher quality applications and enhancements can be gained in a shorter period of time.

### **Overview of System z's capabilities**

IBM System z is a core part of the IBM Banking Center of Excellence which is helping to deliver competitive advantages for the on-demand bank. IBM System z technology leads in delivering world-class application availability and overall business resiliency. The latest enhanced System z servers were introduced in 2008: the z10 Enterprise Class (EC) and z10 Business Class (BC). No other computing platform has integrated availability-enhancing features throughout its architecture as long as or as thoroughly as the IBM mainframe – over 40 years in the making. In addition, IBM System z servers are designed to deliver the system integrity and security-rich solutions. These solutions are needed in financial institutions to help meet today's on-demand operating environment security requirements.

There are a few long-standing myths and misconceptions regarding mainframes, including: complex code preventing adaptation to evolving business requirements; massive architecture; and outdated technology that is difficult to integrate with new, open technologies and modern distributed architectures. Today's System z defies these myths. For example, System z supplies flexibility for SOA. SOA in turn provides the ability for the mainframe to offer new capabilities that solve a new set of business problems, such as the

ability to offer older functionality to a more diverse and expanded consumer community.

### **Systems consolidation and simplification**

A company must be proactive in developing the IT integration in a merger situation. Banks can use the mainframe to decrease reliance on server-based infrastructure. Several virtual servers inside the mainframe have a great deal more power than stand-alones. System z helps enable financial firms to consolidate and tightly integrate multiple workloads on a single server with centralized systems management, reducing overall infrastructure spend. It is the only platform that can and regularly does support hundreds or thousands of servers with very low maintenance costs. Adding capacity also has a low marginal cost. The mainframe employs Extreme Virtualization that has been honed for over 40 years, and is the result of synergies between hardware and software functions.

An integration can start with building high-value but inexpensive links between multiple silos of information. For example, contract databases, loan origination, sales and compensation systems, customer relationship management (CRM) data warehouses, and other siloed systems formerly spanned a range of the company's business-focused products. Centralizing this information in one accessible repository is a big step forward. It facilitates analyses that can uncover opportunities for improving revenues. This is done by controlling unnecessary discounts and harmonizing inconsistent pricing policies across different products and regions. The value comes from integrating information at key points, not from creating new systems.

### **Unparalleled storage and application capacity**

Mainframe systems are the workhorses of IT; current estimates place 80 percent or more of the world's current data on mainframes. Though this estimate varies by industry, they are an undeniable part of the foundation for the world's core banking applications. More importantly, this mainframe-based approach will continue to be a cornerstone of banking IT architecture for the foreseeable future.

### **Scalability**

A SOA-based core banking framework can help not only protect, but grow new workloads on an IBM System z platform. This scalability can improve a company's ability to manage future growth since it has capabilities to handle up to 9,445 business transactions per second based on more than 380 million accounts with three billion transaction histories – a world record.

## **The short-term benefits and implications for banks**

### **Improved employee responsiveness and satisfied customers**

Organizations that use a technology platform in which processes are explicit, or clearly delineated among employees and/or groups, can realize significant benefits. Processes are easier to automate, monitor, and optimize when on a mainframe with the right capabilities. This benefits the bank since explicit processes increase process efficiency and lower handling costs. Managers can measure and monitor better, which improves decision-making quality and reduces error rates.

In complex distributed environments, there are often silos of data that make it difficult to get a clear, integrated view of information. System z provides an effective information infrastructure that allows different applications, databases and devices to access the same information in real time and provide all users with consistent, trusted information. When an employee can access a customer's records and solve their problem quickly, the customer has a better experience. And for banks, this is crucial. The ability to share resources and direct them dynamically and virtually, whenever and wherever they are needed, according to customer individual demands will increase customer satisfaction. For example, at Sun Trust Bank the System z has become part of their core infrastructure at both the back and front ends. The System z allows the bank to manage the client relationship holistically – all aspects are covered by using the System z. Sun Trust is able to scale and dynamically manage their environment in a way that ultimately produces a good client experience. They recognize that keeping the customer happy keeps them as a customer. And that this in turn helps drive revenue and increases the bottom line. The bank had projected initial cost savings of more than \$2 million and ongoing savings of \$500,000 per year.

### **Cost savings and energy efficiency**

In addition to aforementioned examples, utilizing systems already in place allows IT workers and experts to continue doing what they have been doing, maintaining labor costs. There is no new expensive training needed and no need to recruit for specialty platforms. In fact, developers with little or no experience with mainframe programming can quickly create highly customized and optimized System z services and applications. For example, IBM Rational Business Developer delivers the latest technology tools to support the definition and testing and debugging of Enterprise Generation Language (EGL) applications and services. It also offers a generation engine that transforms the EGL source into Java or COBOL code optimized for deployment to a broad variety of application hosting environments including J2EE servers (e.g., WebSphere, and Apache Tomcat) and traditional transactional systems (e.g., IBM System z CICS and IMS).

Energy costs have been rising steadily for the last few decades, and IT undoubtedly uses a great deal of energy. However, consolidating this energy and optimizing existing assets, shrinking the corporate and carbon footprint, and eliminating redundancies can provide a significant hard dollar ROI. Adding more servers to a bank's infrastructure to meet increasing demand for data capacity will require more power and energy. This rise in consumption makes energy costs much less affordable, and physical facilities cannot keep up with energy and cooling requirements. IBM System z platform uses its advanced virtualization capabilities to consolidate physical servers and boost resource utilization; it can process an incredibly high number of transactions per kilowatt, making it one of the most energy-efficient platforms in the world.

Fifth Third Bank used IBM as a partner with their hardware, software and services for data center consolidation. The project took less than a year, but the transformation is ongoing. They recognized an estimated \$10 million in IT cost savings associated with these IBM-related transformation initiatives. One of the initiatives was moving to a leasing model – using the leasing model frees up capital, so it is not tied up in fixed assets. Financing can convert large upfront costs into a stream of monthly payments that make budgeting easier and predictable. This is always important, but especially so in today's credit-constrained environment. Fifth Third saved \$2 million in software costs with IBM's enterprise licensing agreement and \$1.2 million in systems management costs by moving to a standardized job scheduling platform. In addition to cost savings, Fifth Third saw increased system resiliency, and increased business flexibility and speed to market through a more standardized and integrated infrastructure.

## **Security**

As often noted in the press and generally experienced in enterprises worldwide, security in a distributed server environment is difficult to achieve. With its leading-edge security technologies, including high-performance cryptography and supporting middleware, System z enables the efficient processing of large volumes of retail payments transactions, including card management and ATM point-of-sale transactions in a continuously available and resilient environment. The built-in encryption solutions help secure data from theft or compromise. Its highly developed user identification and authentication, resource access control, and auditing make it an industry leader in secure computing. Its networking and communications security protects the whole system from attack over the network.

The System z also has Business Continuity and Recovery Services, which leverage System z industry-leading capabilities, enable financial institutions to maintain customer service, minimize vulnerability and restore operating conditions if a disaster occurs, capabilities critical in today's environment. Financial services companies are also utilizing System z's scale out flexibility with Linux to implement risk management and compliance applications on the mainframe.

## **ROI Case Study: Bank of Russia saves US\$400 million per year by consolidating to IBM System z**

*The numbers in the case study done on Bank of Russia are staggering, and illustrate well IBM System z's scalability, capacity and efficiency. The changes they made took place over three years, but the effects were immediate – they saved US\$400 million in the first year as a result of the improvements in operational and energy efficiency.*

As the central bank for the Russian Federation, the Bank of Russia serves the interests of the state, the Russian people, and private businesses. Its main responsibilities include supporting the Russian currency, managing the national payment system, overseeing money and loans policies, and supervising the country's financial sector. With 78 regional offices, 800 local branches and 70,000 employees, the Bank provides services for around 1,000 commercial banks and 20,000 state budget institutions across the Federation.

The Bank set up a network of 74 electronic payment processing centers in the 1990s, each with its own data center, servers and software. With numerous processing applications, six hardware platforms, three different database platforms, more than 200 servers, and around 1,500 full-time technicians, transaction costs were high – around 11 rubles per transaction. Additionally, it was difficult to ensure the right level of security across this widely-distributed infrastructure, both physically and in terms of protecting against increasingly sophisticated cyber attacks.

Aiming to simplify its IT landscape to enable greater efficiency and innovation, the Bank of Russia decided to consolidate its 74 payment processing centers. The initial plan was to move to five regional facilities, but ultimately the Bank realized that it would be possible to reintegrate its entire distributed infrastructure in just two centers.

The Bank's IT department began to look for a technology platform for the consolidated infrastructure, considering both the IBM System platform z and HP Superdome servers. "We quickly realized that IBM System z offered us more options than competing platforms," explains Mikhail Senatorov, Deputy Chairman of IT. "For example, payment volumes are increasing year-on-year, so it was important to buy servers that could scale to meet the demand. With IBM System z, instead of buying an oversized server and growing into it over the years, we only need to pay for what we use. As volumes increase, we can ask IBM to activate more processors within the mainframe to deal with the demand."

"Another unique selling point for IBM was its expertise with long-distance data replication for high availability, business resilience and disaster recovery. The two sites we chose for the new data centers are 1,000 kilometers apart, and we needed to be able to mirror data between them so that we could fail over from one to the other in case of disaster. IBM Global Mirror and Metro Mirror are the only technologies on the market that we trusted to do this job reliably."

Working closely with IBM EC-Leasing, the Bank set up an IBM System z9 Enterprise Class (EC) as a test system and performed a number of migrations from its existing platforms into a new software landscape based on Oracle databases running under IBM z/OS® and applications running in virtualized Linux® servers under z/VM®. IBM WebSphere® MQ provides messaging services, and IBM Tivoli® OMEGAMON® is used for monitoring.

The success of the test phase encouraged the Bank to consolidate three of its 74 processing centers to the new platform as a proof of concept. It quickly became apparent that the new system could not only handle the traffic reliably, but was also delivering considerably improved performance.

Mikhail Senatorov comments: “The final test was to prove that we could provide a good service for the more remote areas in the Eastern part of Russia, so we moved Chukotka, Kamchatka, Sakhalin, Vladivostock and Khabarovsk onto the platform. This was the turning point – when we put it all together and showed that it worked, the decision was taken to switch the entire country over to the consolidated platform.”

The remaining migrations were planned and executed, and the entire project was completed within three years. The new shared architecture is split between two data centers, each containing two z9 EC mainframes. A storage area network, based on IBM System Storage hardware, provides a reliable, high-performance architecture for data storage. The Bank’s new infrastructure is an excellent example of what IBM terms the “new enterprise data center:” an efficient, simplified, virtualized, highly resilient set of shared resources capable of responding dynamically to business demands.

“Using virtualization to consolidate more than 200 distributed servers on just four IBM System z9 mainframes is a great advantage in terms of hardware licensing and energy costs, and decommissioning the 74 existing data centers was another major saving,” says Mikhail Senatorov. “In addition, we only need 200 full-time staff to run the new environment, compared to 1,500 for the old systems—and with a single software and hardware platform, we don’t need to maintain such a broad technical skillset.”

As a result of the improvements in operational and energy efficiency, the cost per transaction has been reduced from 11 rubles to just 50 kopeks – a 95 percent reduction, saving around US\$400 million per year. As transaction volumes are predicted to more than double by 2013, the savings will continue to increase in the coming years.

“We are planning to consolidate further, to just four System z mainframes by 2010, so we will continue to increase efficiencies and reduce costs”, says Mikhail Senatorov. “IBM deserves credit not only for the reliability and performance of the hardware, but also for dedicating a team of experts to Bank of Russia, who help us make the best decisions about the future of the environment. IBM is also very flexible about allowing us to run test environments and try out new products.”

The IBM solution plays a vital part in the Russian economy—50 percent of all payments and 60 percent of the country’s money now pass through it. By 2013, it will handle 17-18 million payments per day; yet even this huge volume will be within the capabilities of the IBM System z9 EC.

“We will simply switch on more processors as and when we need them,” explains Mikhail Senatorov. “We are currently using 17, and we calculate that we will need 42 by 2013; but since each machine can use as many as 54, we have plenty of room for growth.”

With the payments system reintegrated, virtualized and standardized, the next project for the Bank of Russia is to develop an analytics system to monitor trends and evaluate the activities of different banks.

Mikhail Senatorov concludes: “Payments processing is really only the first step. Now that we have the data in a single central repository, there is almost no limit to what we can achieve in terms of analytics – which will help us monitor the financial sector more closely and react dynamically to changing economic conditions. IBM has been a vital partner for us throughout the modernization of payment processing, and we look forward to the IBM team’s help and advice as we move forward with these new projects.”

As transaction volumes are predicted to more than double by 2013, the savings will continue to increase in the coming years. “Using virtualization to consolidate more than 200 distributed servers on just four IBM System z9 mainframes is a great advantage in terms of hardware licensing and energy costs, and decommissioning the 74 existing data centers was another major saving”, says Mikhail Senatorov. “In addition, we only need 200 full-time staff to run the new environment, compared to 1,500 for the old systems—and with a single software and hardware platform, we don’t need to maintain such a broad technical skillset.”

## **CONCLUSION AND NEXT STEPS**

Information and well-designed and integrated business processes are crucial to success in today’s banking industry. The IBM System z platform keeps information safe, available and accessible, and maximizes its value. The IBM System z is multifunctional, and most banks can leverage the mainframe system that they are already using to process crucial data. They have capacity that can be useful in storage, applications and other functions, heretofore not recognized necessarily as a mainframe function. With System z architecture, data-center complexity can be dramatically reduced and employees can focus on business and revenue goals. This is critical today, given the economic climate and state of the banking industry. Maximizing operating budget and increasing revenue are chief objectives for managers in the short-term. Using the System z to streamline operations can restore health quickly and set the organization up for sustainable growth in the long-term.



The IBM System z enables mission-critical systems to run faster, more efficiently, and more reliably – and, most importantly, in a way that solves current business problems. The mainframe has been the backbone of the banking industry for years, and will continue to be the model for business applications and the core system for many of the world’s largest banks. For total cost of ownership, the mainframe is the most cost-effective way of processing transactions. Transferring mission-critical applications and data off a mainframe is not an option for most business-focused IT leaders. The inherent scalability, reliability, and security of the mainframe continue to be key determinants for the ongoing use of mainframes in Tier 1 and Tier 2 banks worldwide.

This paper outlines the benefits possible for banks in using the System z platform. However, learning about the platform and deciding if transforming your systems is necessary is only one step in the process. Given the emphasis on timeliness and rapid migrations and/or integrations, this need not be a prolonged plan. An integration can happen quickly and incrementally if necessary – even for large institutions.

1. **Assess:** Evaluation of the current situation and what is best for individual institutions will naturally vary. Most banks however are currently focused on similar issues, as discussed – cost savings, operational efficiency, customer satisfaction and risk management. IT must be aligned with business goals; IBM can guide banks in deciding how to leverage existing mainframe investments or build new applications.
2. **Plan:** Decisions regarding what applications are necessary and what data needs to be moved. The migration will be smoother if planning stage is properly executed beforehand.
3. **Migrate:** The actual uploading and migration of the data.
4. **Manage:** Finally, ongoing support and management is important. A knowledgeable and experienced partner is needed for continued success.

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