The Virtual Bank Vault

Kutxabank embraces virtualization to build resilience into every transaction

Amid the revolution in banking technology, CIOs find themselves fighting a rearguard battle. While many banks are forging ahead, connecting with customers in innovative new ways at the front end, CIOs are well aware that a truly customer-centric experience depends on resilient infrastructure at the back end. Maintaining that resiliency can be a challenge. Add to that the drag of legacy systems that predate many of the regulations that govern financial markets, data privacy and security. For Koldo Etxeberria, CIO (Director Sistemas) at Kutxabank, these challenges multiplied after his bank was involved in a four-way consolidation among rival financial institutions in Spain’s Basque region three years ago.

Not only did the new holding company need to integrate IT for all four banks (BBK, Kutxa, CajaSur and Caja Vital), but Etxeberria had to rationalize datacenters and enable mobility—all while ensuring no data loss and no downtime for core systems. Integration included the core systems as well as the technology that touched customers and employees. The bank’s 8,000 workstations and 2,000 ATMs needed to be integrated with no disruption to the 6,500 employees or 2.8 million customers—most of whom are retail customers, with the others running small and medium-sized businesses. And all the bank’s technology had to be geared to a data-dependent future.

There was only one way to accomplish this, says Etxeberria, and that was through virtualization. Virtualization allowed the bank to convert workstations all at once over a single weekend, enabling employees to stay connected via mobile devices and improve resiliency at bank branches. All of the workstations and devices are now run as thin clients, with all data backed up at the bank’s datacenters, which are managed by IBM. “If we didn’t have virtualization, we couldn’t have done what we had planned with such an ambitious schedule,” says Etxeberria. “Virtualization helped us speed up integration, but it also added resilience to our desktops, and it’s been a driver for increasing mobility among our employees.”

Anyone at a Kutxabank branch or a call center can log in through a tablet or mobile device and access the same data and processing power as they could on a desktop.

To meet the bank’s strategic goals and specific requirements for virtualization, Kutxabank signed a 10½-year, end-to-end contract with IBM Global Technology Services in June 2013. IBM developed a virtualized infrastructure deploying IBM servers at Kutxabank’s datacenters. By moving storage and processing of customer data to a protected datacenter environment, the bank has increased security, simplified system administration and streamlined desktop management. In addition, IBM provides help desk services for users at the bank’s branch locations. It also supports the bank’s communications network—working closely with the telco operator chosen by Kutxabank, Euskaltel—and operates security solutions from different vendors. The contract extends to maintenance and support for the hardware and software at the 1,000-plus Kutxabank branches, including the virtualized workstations and ATMs.

Virtualization separates physical systems from the services that are trying to use them, providing hardware independence that enables IT resources to be shared and dynamically served up as needed. Virtualization allows the bank to do more with fewer physical assets while expanding IT capacity. Moving to a virtualized, cloud-based delivery model also gives Kutxabank an edge in maintaining an always-on architecture. Business continuity is part of the end-to-end agreement with the bank, but not as a separate layer of service. The whole model is resilient by design, explains Francisco Pombo, client executive for financial services at IBM. “Every time we incorporate a new service or new infrastructure, we are always thinking in terms of resilience,” he says.

Building trust

Banking is based on trust. For Etxeberria, resilience, at its most fundamental level, is a critical factor to maintain trust. Any bank that has come through a financial crisis understands the role of trust acutely. All banks have to manage risks, from
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Credit and liquidity risk to operational risk. In the banking risk framework, resiliency is viewed as an operational risk; any threat to resiliency is a threat to the entire banking operation.

“Banking is information management,” says Etxeberria. Money no longer sits in the bank’s vaults, it sits in the bank’s datastores—the systems of record—and it moves through interactions with customers and other financial institutions—the systems of engagement. “The capability to maintain continuous operations is one of the most important requirements in the design of tech architecture,” explains Etxeberria.

Kutxabank’s data control and business continuity plans are regulated by the Spanish and European central banks, and the bank follows the mandates of the Basle II Accord, which took effect in 2008. But ensuring an always-on bank entails more than ticking the boxes of even the most stringent regulations. At any given time, the bank maintains two primary datacenters—in balancing and active-active configuration for most of the critical services—and a third datacenter for recovery purposes. Kutxabank’s twice-a-year testing involves a full production switch. “They pass the entire bank—all of its customers, all of the data—from one datacenter to the other,” says Pombo. The following week, the bank switches back to the other datacenter. “It’s real,” says Pombo. “It’s a live test.” Any glitch is corrected, so in case of a real disaster recovery event, almost everything will be fully tested.

Kutxabank’s ambitious recovery point objective for enterprise systems is set at zero, with recovery time set at close to zero for critical services. The bank is in the process of categorizing other services that don’t need to meet those ambitious goals. The decades of past records held for regulatory purposes, for example, can carry longer recovery objectives. “We don’t want zero for all services, because it would be very expensive,” says Etxeberria.

With more than 60% of bank transactions happening outside a bank branch, the goal is to define the systems necessary for an always-on interface.

Preparing for the future

Back-end banking systems are as important today as the back-of-the-branch vaults once were. That raises a question: why introduce an external partner with something that crucial to the bank’s operation? For Kutxabank, the decision came after the merger three years ago—in the midst of a financial crisis in Europe as well as a technical revolution in banking. Cost efficiency was a key factor, says Etxeberria, but more than that, the bank needed to position its IT function for the future. “It was a challenge for us, and we couldn’t do it alone,” he explains. “We needed a technological partner whom we trust to speed up the changes needed to face the future, so we can concentrate on our core business.”

Instead of employing IT personnel to upgrade desktop systems and maintain ATMs, Kutxabank’s deployment of virtualization enables the bank to focus on customers and the technologies that are transforming banking. “We see technology as a driver for the future position of the bank,” says Etxeberria. “It’s very important for us to understand our customers and know what they need. Data analytics and related tech are built into our products.”

That data comes through many different channels now. “Customers have a great deal of discretion in how they choose to bank,” says Etxeberria. “Now the challenge is to understand our customers by analyzing transactions and data views in all channels. “We can now see far greater differentiation among our customers than we could even a few years ago. Baby Boomers bank differently than Millennials do, for example,” he explains. “We are developing the technology to analyze and understand our customers and

Why partner?

Banks today are seeking services to meet their constantly evolving and complex technology needs. They are turning to providers for critical capabilities so they, in turn, can focus on customer-centric innovation. They need providers who will deliver on the transformation agendas that their businesses require: anytime, anywhere, any device banking.

• Continuous availability to accommodate innovation in customer transactions
• Integrated end-to-end protection that extends the software-controlled environments to security and compliance
• Simplified, stable, secure and compliant systems
• Streamlined desktop administration
• Enhanced resiliency and security of customer data
• Automated service provisioning and monitoring

For these and other reasons, Kutxabank decided it needed a partner that does more than keep up with the latest technologies. It needed a partner that has the business, industry and IT expertise and innovative practices to give the bank a competitive advantage, so it decided to join hands with IBM.
For most banks, reputational risk is a top priority. How do reputational concerns influence resiliency programs for financial institutions?

One of the biggest risk domains that banks measure themselves against is reputation. So the first place they tend to focus on is customer-facing channels such as mobile banking, online banking and the branches. Banks are keen to harden the front end, and they’re designing continuous availability into those customer interfaces. But it’s proving harder for them to try and retrofit continuous availability into the back-end systems—including enhanced security and user authentication as well as their large customer and multiple product databases.

The key to continuous availability is to design it into every stratum—right down the stack from the security to the application layer, to the presentation layer, into the middleware, into the data layer and then into the infrastructure layer. This design ethos should permeate all the way down to the physical data center because you can only achieve continuous availability if you have a data center that allows you to do concurrent maintenance. You need full redundancy.

How does virtualization affect an institution’s ability to maintain continuous availability?

Banks around the globe have been early adopters of virtualization. There are a number of factors: it saves on hardware. It saves on power costs in the data center. And in some cases it saves on the cost of continually upgrading operating systems. It helps the IT department in controlling the environment because you’ve centralized the servers, and with virtualization you have the ability to switch on or switch down capacities and performance. You can move the workload to another site or add capacity on demand as needed. You can balance the workload.

Virtualization ultimately can enhance the customer experience. Banks that have gone down this route are able to analyze environments and know when the peaks and troughs are going to come. When you support an impending peak, you can switch on more power so you don’t have someone staring at the phone waiting for their mobile banking app to load.

You bring up a good point about mobile banking. How does the proliferation of mobile banking change the resiliency equation for consumer banks? What are some of the main concerns you hear from clients?

One of the biggest concerns is the complexity of the legacy systems interacting with this relatively new channel architecture. Mobile banking has been led by technology designed around the phone, not by the banking application. Apps were developed and all of a sudden there was client demand, but banks didn’t yet have a system in place to deliver.

It’s a bit like online banking. When online banking started, it was very clunky and very slow. Mobile banking is going through these same teething problems. The use of dynamic front-end architecture has been very important for online banking, and it’s very important for mobile banking. So much banking is now done online and that is only going to grow more complex with new payment technology such as Apple Pay, PayPal and other new entrants.

One thing it’s done for all financial institutions is to heighten reputational risk. If something goes wrong, it’s the bank that will get the blame, and usually on very public forums such as Twitter or Facebook. The public is unlikely to blame the phone app, the handset or the network provider. Put this on the back of the queue.

IBM is playing a very important role in this development, says Etxeberria. Relying on IBM to equip and manage the data environment, for example, means instead of measuring CPU, memory and disk utilization to assess the systems’ success, the emphasis can shift to customer satisfaction, productivity and the quality of the user experience. Continuous availability is necessary to achieve the customer experience Kutxabank is building now. Virtualization is an important step in that process. Redundancy and resilience become software-controlled functions. Yet, while virtualization and cloud-based delivery models answer the need for greater agility, they also increase management complexity.

Kutxabank’s agreement with IBM includes institution-wide experience in managing ongoing innovation, as well as creating it. Because Kutxabank is a “living institution,” IBM expects the bank’s architecture needs to expand, and with that expansion, the technology will evolve. “Every time a customer asks for more infrastructure power, we provide it as agreed in the Joint (Kutxabank and IBM) Architecture Committee,” says Pombo.

“We are involved with IBM in the evolution of technology, not only in production and resiliency,” says Etxeberria. “We are working together with IBM to help define the target model for the future and to supply the technology that will help us reach that target.”
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