

# Real-time information, real-time decisions

## Zero latency enterprise in retail banking



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## Executive summary

Whether your customer dials in to your call center, uses your ATM, logs on to your online banking system, or approaches the teller window at your branch, are you able to treat that customer consistently? Do you have all of the pertinent and appropriate information available at that moment of customer contact to ensure that your customer enjoys a satisfying service experience? Do you know if this is the right time to offer an equity line or a debit card? How long will it be before this customer comes back into the branch and gives you another chance to expand that relationship?

Surprisingly, the information and processes you need to answer these questions and accomplish an exceptional level of service and effective sales are probably already available in your enterprise—somewhere. The key to unleashing this powerful capability is finding the separate pieces of the puzzle, fitting them together, and presenting them at the right place, consistently, and in real time, as the customer interacts with you.

This is the power that the HP Zero Latency Enterprise (ZLE) framework can bring to your enterprise—and HP is bringing that power to retail banking. Zero latency is about delivering information to all parts of the enterprise, immediately and consistently, as that information is updated by customer interactions and business changes. ZLE enables banks to bring together core systems, data warehouses, and delivery channels to deliver reliable and consistent information and process to the point of interaction, when and where they are needed. This white paper describes the challenges that face retail banks every day, and how the HP ZLE framework, utilized within HP's Real Time Financial Services, can accomplish unprecedented levels of integration, performance, and manageability in a retail banking technology environment.

## Intelligently managing the customer interaction

Bank customers engage in more than 200 billion interactions with their banks worldwide every year. Each one of these interactions can create value for the relationship, or it can leave your customer feeling like you don't know them or are unaware of their needs. Unfortunately, the latter scenario is the one that often prevails, and customer satisfaction at most banks remains lower than it should be. In fact, the annual American Customer Satisfaction Index scored customer satisfaction for the top four banks in the United States at 71 (out of a possible 100) at the end of 2002. Compare this to a score of 75 for department stores and supermarkets, and 79 for insurance companies, and you can see that banks have considerable room for improvement.

It's not that banks haven't tried to improve customer satisfaction. Financial institutions have spent billions of dollars attempting to create products and services that benefit their customers. Hundreds of millions more have been spent on customer relationship management (CRM) projects, with the goal of better understanding the customers' needs. But these efforts have been limited by the lack of consistency in the *delivery* of the information to the customer at the one time when it counts—at the point of interaction.

Unfortunately, the "many-to-many" connections between back-office systems and front-office delivery channels have evolved over time to produce an enterprise infrastructure that is complex, expensive, and inadequate to truly fulfill the promise of a single view of the customer—or a single view of the bank from the customer's perspective. In fact, the very technology architecture at the average bank actually hampers any effort to create that unified view.

Ideally, what is needed is a way to create an environment in which customers are treated consistently at any point of interaction and given a high level of service while leveraging customer knowledge to take advantage of sales and marketing opportunities. Having real-time access to customer information, with zero latency across the enterprise, creates the opportunities banks need to maintain and grow financial relationships with their customers.

The real-time availability of customer and transaction information also aids in the struggle against fraud, where perpetrators exploit the latency of information in an institution to conduct planned financial attacks that result in economic loss to the bank. Here again, eliminating the latency between systems and sources of information substantially removes the opportunities for such fraudulent activities, and captures fraudulent behavior *as it happens*.

Recent research by TowerGroup, the leading research and advisory company focusing on technology in the global financial services industry, describes the need to deliver consistent real-time data not only *from* among the various sources of customer information at the bank, but also *to* a variety of delivery channels. This can be accomplished by using information from core banking and CRM systems and distributing data and process to every delivery channel from the branch teller to the online bank. The need for bringing CRM information to the front office is expressed succinctly in the TowerGroup's research.

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**“Developing an enterprise view of the customer is one of the primary requirements of a CRM-based sales and service strategy.”**

Source: TowerGroup, Inc.

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The enterprise view of the customer requires a rethinking of the relationship between core banking systems, CRM systems, and delivery channels. Customer interaction management represents the movement toward integration and collaboration between these systems, and the need for zero latency between them.

## Intelligently managing product distribution

It is widely known that the more products a customer has with an institution, the more profitable the overall relationship is to the bank. In fact, financial institutions have discovered bottom-line value in improving their product/customer ratios. In the United States, the average ratio of products to customer is approximately 2.78 (for DDA, savings, credit card, and other products). The goal for many banks is to increase this ratio to about four products per customer, considered the “sweet spot” of customer profitability.

Unfortunately, this rule doesn't apply to the customer. There is usually little value or incentive for a customer to add the second or third product from the same institution. When you add the simple fact that it has never been simpler to switch a financial relationship from one institution to another, it becomes clear that banks must somehow offer increased value for every additional product a customer acquires. In the absence of customer value for aggregating their relationship, customers will nearly always base their choices on price.

But the same technology chaos that prevents consistency in customer service also hampers consistency in product delivery. This is especially true in the automation of payments systems, which purportedly makes life easier for the customer. Most of these systems were developed independently and without regard to the customer's preference for human interaction (more than half of today's banking customers do not use automated payments such as bill pay and automated statements), so there is little uniformity between the ATM and the Internet bank, and even more disparity between the Internet bank and the branch.

And the real lost opportunity here is that automated banking customers are over 60 percent more profitable to the enterprise. For example, online bill pay is one of the “stickiest” products a bank can offer, leading to significantly increased customer retention. In addition, manual iteration of payment

instruments can accumulate hard dollar costs of US\$32 or more each year. If you multiply that number by the account base at the bank, it is clear that there are substantial savings to be realized.

Just as the bank needs an enterprise view of the customer, so the customer needs a relationshipwide view of the bank, with seamless integration between individual products. This integrated product delivery strategy is needed to realize the benefits of the increased profitability and cost savings associated through automation, and those benefits are passed on directly to customers, who can now manage their relationships effectively regardless of delivery channel.

## The customer interaction management hub

In a recent report titled “Building the Customer Interaction Hub: It’s About Time,” TowerGroup describes the development of a technology environment that brings together distinct sources of information and process, and channels them through a central hub for distribution to any of the bank’s delivery channels. The customer interaction management (CIM) hub described in the report has many features that address the challenges of consistent customer treatment, such as integration between the back office and front office, consistency of data and process, and meeting multiple business goals.

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### CIM hub features

- The CIM hub integrates back-office and front-office systems, leveraging existing investments.
- The CIM hub provides consistency of data and process.
- The CIM hub can be deployed in a phased, evolutionary way, reducing risk to the enterprise.
- The CIM hub addresses multiple business goals, increased customer service and retention, more effective sales, and IT cost reduction.

Source: “Building the Customer Interaction Hub: It’s About Time,” TowerGroup, Inc.

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In addition to these benefits, the report goes on to list the characteristics that any CIM hub must have, including the ability to provide an operational data store (ODS) for real-time access, and interoperate with back- and front-office systems.

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### CIM hub operational characteristics

- The ability to provide an operational data store for real-time access
- The ability to interoperate with back- and front-office systems
- The ability to perform in and scale to high-volume environments
- The ability to manage reliability and change without negative impact

Source: “Building the Customer Interaction Hub: It’s About Time,” TowerGroup, Inc.

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The main points outlined in the TowerGroup report address an environment where information is provided in real time, and consistently across all customer touchpoints as well as within the enterprise. TowerGroup also stresses the importance of interoperability, reliability, scalability, and manageability in the creation of the CIM hub.

The combination of real-time business capabilities and robust operational requirements is what the HP ZLE environment is all about. By taking advantage of the powerful integration capabilities of the HP ZLE framework and exploiting its intrinsically robust and scalable platform, banks can deploy a CIM hub that provides business benefits from a consistent and unified customer view while protecting existing investments, manageability, and performance.

## The challenges of customer interaction management

Although integrated delivery channel architectures promise to deliver unprecedented levels of service and sales opportunities, any bank that wants to deploy a technology architecture to bring together disparate data and systems is challenged by a variety of technical and business issues. The full weight of these challenges must be considered when developing an integrated architecture.

While there is little doubt that CIM is becoming one of the highest priorities at banks, there are real challenges that face any institution wanting to deploy such a customer-centric infrastructure. Existing investments in delivery channel technology need to be protected, reliability must remain a high priority, performance must meet or exceed the existing environment, and the solution must provide real value to the bank.

## The difficulty of traditional enterprise application integration

The multiple core and delivery channel systems that have evolved over time all have different integration requirements, data structures, and availability guidelines. These systems were developed individually over the last 20 years, using the development toolsets of the day, requiring different development skills, and using sometimes-proprietary data models.

Linking the individual delivery systems together without a unifying hub architecture presents a technical challenge, and would undoubtedly result in an infrastructure that is as complex as the current environment. While the primary goal of channel integration might be accomplished, the bank would see little to no cost savings because the level of complexity remains the same or even increases, requiring the same or additional staff to maintain it. Once accomplished, this architecture would also be “frozen in time,” as any modifications going forward would be almost as difficult to achieve as the initial implementation.

## Performance and manageability become secondary concerns

This non-hub approach to delivery channel integration would not adequately address scalability and performance issues, or would focus on those aspects only as secondary concerns. While the primary objectives of such an architecture (real-time, consistent information) could be achieved, the bank risks deploying an integrated network of delivery channels that will not scale to meet the needs of increased customer interactions. Likewise, business requirements change, and the integrated architecture may not be able to change as quickly as the bank requires, or as easily and inexpensively as the IT management would like.

## Keeping all your eggs in one basket

Perhaps most disquieting of all is the fact that any hub-based technology that is developed to overcome the integration issues and centrally converge the delivery network represents an operational risk of having a single point of failure. Ironically, the different evolutionary paths taken by the distinct delivery channels also lead to an architecture where any failure of a single channel, say, the ATM, does not adversely affect the other channels. The reliability of any CIM hub, and the channels that depend on it, will be affected not only by the unforeseen failures that will occur, but also by the planned changes to the architecture that must happen as the business changes.

As with performance and manageability, banks may risk placing too little emphasis on reliability. Reliability of the CIM hub is critical to the banks' operations. Every tenth of a percent short of 100

percent uptime represents almost nine hours of downtime that could occur at the worst possible time. Reliability, and robust recovery from failures, must be built into the CIM hub from the very start.

## Batch vs. real-time—Data access at odds

There has always been an inherent difficulty in creating a source of information that can be concurrently accessed by both bank management and customer-facing systems. The need to analyze large amounts of customer information is critical to marketing, profitability, and segmentation efforts. Unfortunately, some of this same information is needed at the front office, where agent or automated systems benefit from having real-time access to the data.

Both of these functions, while important to the enterprise, have been traditionally at odds if placed in the same system. Large data queries against customer information tend to drag performance down for any real-time application needing the same data, while online transaction processing modifies customer data as analytical systems try to access it.

This dichotomy between batch and real-time data access has persisted for so long that traditional bank IT shops continue to design new applications using distinct batch and real-time data models, requiring complex synchronization and extraction routines to maintain consistency.

A true zero latency environment, however, needs to have this dual access, and must address the performance issues surrounding this mixed workload. The HP NonStop server solves these performance issues by incorporating a prioritization scheme that ensures system resources for real-time access while concurrently serving batch applications. NonStop servers have benefited from this innovative feature since their introduction in 1974.

## Protecting the investment in best-of-breed delivery channels

Banks have invested heavily in the deployment of delivery channel systems, and while current delivery technology solutions include some level of channel integration, banks must replace existing platforms to take advantage of new integration capabilities from these solutions. For a bank wanting to effectively integrate branch, call center, and online banking without a CIM hub, all three systems would have to be replaced with a single solution from a provider that may or may not have the relevant experience in scalable, reliable multichannel delivery systems, regardless of their strength in any particular channel technology.

## Meeting the challenge: The HP ZLE framework

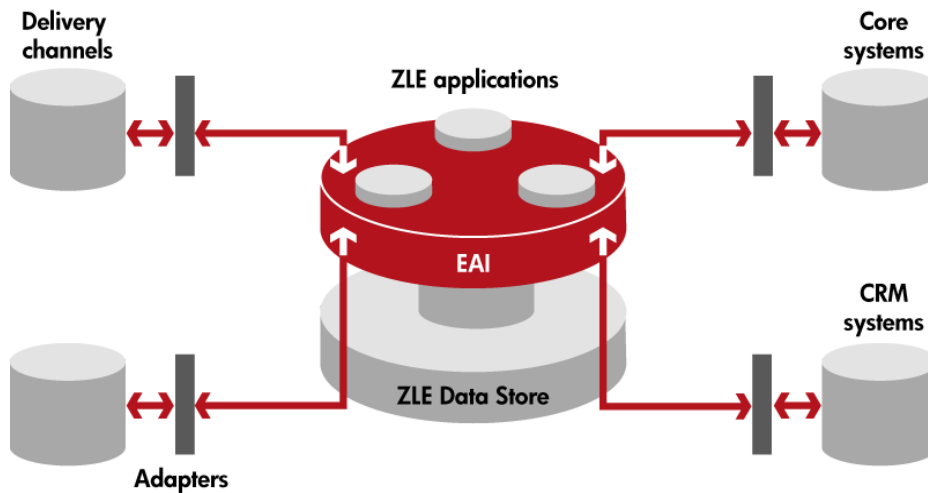
The challenge to today's bank IT executive is to bring the delivery channel systems together; tie them to an array of core banking, loan, and other back-office systems; supply them all with consistent customer information; and do so in a way that does not jeopardize the operational resilience of the institution, while leveraging the investment in best-of-breed delivery channel functionality.

The HP ZLE framework accomplishes all of this using standard, proven technologies to provide the benefits of CIM without sacrificing levels of service and without incurring the high cost of developing proprietary integration solutions.

The HP ZLE framework is a two-level architecture that provides interoperability between delivery channel, core, and CRM systems; transaction routing services; and an ODS that services real-time access to data while concurrently handling large query activity against the same data (see figure).

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The HP ZLE framework.



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## What legends are made of

In 1974, Tandem Computers was formed in response to a need in some industries for high-availability, high-transaction volume computing. The resulting minicomputers were quickly adopted by the banking, stock exchange, and telecommunications industries as a way to use reliability as a competitive advantage. The foundation for high availability was the use of modular hardware, dual-path access to critical components, and an operating system designed from the ground up to provide fault-tolerant processing in case of hardware failure, as well as a massively scalable architecture using parallel processing. This combination of specialized hardware and operating system software, the NonStop platform, resulted in what is now recognized as the most scalable and reliable platform in the market.

But that specialization came at the cost of the specialized development and management resources needed to deploy and maintain the platform. The Tandem Application Language, or TAL, was at the core of a specialized toolset used to create fault-tolerant applications on NonStop systems. And although the benefits of the specialized platform could not be disputed—finding, training, and retaining staff to work on the platform was a challenge.

## Today's NonStop server: Open technology on a robust platform

Today the HP NonStop Advanced Architecture takes the reliability of NonStop servers to higher levels than ever before. HP has actually *increased* the reliability of the already fault-tolerant processor technology by pairing two CPUs into single logical processors that enable the server to withstand multiple hardware failures without affecting system performance or functionality.

### Industry-standard paradigms

Unlike the earliest generations of the NonStop server, today's version no longer requires specialized resources. Processor and operating systems technologies have advanced to the point where the inner workings of fault tolerance are abstracted to industry-standard paradigms. NonStop server core

transaction processing, for example, can use a CORBA framework, or Tuxedo software-based transaction monitors. The NonStop server now supports BEA's WebLogic Server as its strategic application framework. This innovation gives banks a world-class Java 2 Platform, Enterprise Edition (J2EE) environment in which to develop mission-critical applications, or enables them to use a wide set of WebLogic Server based J2EE software solutions from hundreds of ISVs "out of the box," all while inheriting the NonStop server's reliability, scalability, and performance.

Web services, the new development paradigm, are also supported by NonStop servers. Web services provide the interoperability "glue" that allows applications to communicate in a standard way. Web and Java services expose the ZLE core to delivery channel, core, and CRM systems, as well as to external providers of financial services such as mortgage servicing or brokerage systems. By abstracting the internal technologies that give the NonStop platform its robust characteristics, any Web services-enabled or C-/C++-based application running on NonStop servers inherits all of the platform's reliability and scalability. NonStop servers also support both the Open Database Connectivity (ODBC) and Java Database Connectivity (JDBC) data integration standards.

The aspects of NonStop processing that have made it a success in high-volume, high-availability environments continue. NonStop servers are installed in high-volume ATM and point-of-sale (POS) networks, in some cases supporting thousands of transactions every second at an individual institution. In call center environments, they empower tens of thousands agents with the ability to effectively manage more than a billion calls every day, and manage 100 billion rows of customer information for both real-time and batch-based analytical system—all in a single institution.

At the core of the NonStop server's architecture is its ability to manage both failure events and planned component outages with intelligent recovery and parallel operations that keep the architecture available 24 x 7, every day of the year.

This means that banks can leverage existing development skills to integrate seamlessly into the ZLE framework using industry-standard tools, and IT shops can create new applications on NonStop servers using the same industry-standard development environments they use today. New applications benefit from the same reliability and scalability that is the hallmark of NonStop computing.

## Standards-based EAI

Application integration with the HP ZLE framework is accomplished using industry-standard enterprise application technologies as well as enterprise application integration (EAI) tools supplied by partners such as Actional, SeeBeyond, TIBCO, and webMethods.

By integrating existing best-of-breed delivery channel, core, and CRM solutions into the ZLE hub, these systems will benefit from data synchronization in real time without negatively affecting the individual availability of the external systems. New customer information about a particular transaction at the branch is made instantly available to every other channel, core system, and customer knowledge warehouse.

In more advanced implementations, business process itself can be migrated from the individual delivery channels to the HP ZLE framework, making the management of business functionality easier by centrally locating functions and processes that are shared among two or more delivery systems.

## Rich customer knowledge technologies

Integration doesn't stop with applications. Data analytics and business processes are also tightly integrated in the ZLE core. Rich sources of information such as customer profiles, transactional histories, and marketing analysis are stored in the ZLE Data Store for use by business intelligence personnel as well as by the front-office agents that service the customer on a day-to-day basis, elevating the consistency of information to unmatched levels.

Here, too, HP has teamed up with industry-leading solutions partners to bring state-of-the-art solutions to the ZLE platform, including SAS, Mercator, Trillium, and HNC Software.

## Specialized ZLE functionality

In addition to providing robust integration services for external systems, new applications can be developed to take advantage of the power in data sharing and zero information latency. Customer treatment processes can be developed using the instantaneous nature of ZLE to deliver the right messages, service or sales based, at the very moment the customer is interacting with the bank. Fraud detection is made all the more powerful by being able to discern patterns of fraudulent activity *while* they happen, cutting the losses that banks experience today.

## HP ZLE and the CIM hub: Real Time Financial Services

As banks look for ways to achieve higher levels of customer service and sales, channel integration and real-time decision making through the CIM hub are at the forefront of innovation. Both of these concepts rely on consistency and timeliness of information, and both must be accomplished using reliable, scalable, and manageable technologies.

HP has realized the CIM hub using ZLE within its Real Time Financial Services program. By utilizing experience gained within the finance industry through 25 years of traditional online transaction processing, HP has collected the best elements of the ZLE framework and created a solution. HP Real Time Financial Services is a preintegrated set of software components, architecture, and services based on adaptive infrastructure principles, with capabilities that enable financial institutions to enhance payments and finance-related data with real-time, comprehensive, cross-channel information to provide a “market of one.”

Real Time Financial Services accomplishes all of these objectives and fulfills all of the key operational requirements for a mission-critical architecture in retail banking. By integrating, rather than rebuilding, best-of-breed front-office solutions, the bank’s investment in individual delivery channels is not only retained, but future investments are also not tied to any specific vendor in order to maintain channel integration, increasing the bank’s flexibility.

Costs, too, are minimized, as studies by the Standish Group have shown. When the bank considers the time and money invested in separate solutions that handle transaction processing, integration technologies, relational database engines, business losses due to system downtime, and the human resources necessary to manage traditional server farms, the HP NonStop server environment exhibits a lower total cost of ownership (TCO). In fact, the TCO continues to decrease as the size of the deployment grows—resulting in increased linear scalability with decreased linear costs.

## Reducing risk with evolutionary change

HP’s ZLE framework and Real Time Financial Services can be deployed step by step, in an evolutionary manner, delivering business value at every step while reducing risk. Some examples of the way banks can introduce the framework into the delivery architecture include

- *Using Real Time Financial Services to enrich customer information presented during normal transaction processing.* The branch, ATM, online banking, or call center channels can be enabled to intercept transparently the customer’s transaction and use a ZLE-based online CRM data store to enrich the information going back to the channel from the host—perhaps with sales recommendations or service updates. This can be done one channel at a time, without increasing risk to the normal authorization process.
- *Deploying any subset of customer information (for example, balances) on a ZLE ODS.* This is available for real-time access by any of the delivery channels. The consistency of customer information is thus increased dramatically, while again reducing the risk to the enterprise by introducing the functionality in an evolutionary manner.
- *Incorporating new applications, such as fraud detection, by using Real Time Financial Services to capture business transactions as they occur.* The real-time capabilities of NonStop systems and the

HP ZLE framework can be used to create intelligence and value from the millions of interactions that today, at best, must wait for post-processing through a batch cycle before any knowledge is gained about what took place the day before.

All of this functionality, once developed for any single channel, can be leveraged to other delivery channels as the needs of the business dictate—and without introducing undue risk into the enterprise as a whole. Enriching daily interactions with CRM information, or creating an ODS, as either the system of record or simply as consistent and accessible storage of customer information, can be introduced into individual delivery channels as needed, and each step provides business value along the way.

## The HP ZLE framework in action

The HP ZLE framework has been enabling retail banks to achieve zero latency in their customer interactions, as the following examples illustrate.

### Real solutions, real returns: Conavi Bank

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***“I will know my customer.”***

Carlos Toro, Conavi Bank executive

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Conavi Bank set out to know its customers. It’s a simple goal, and yet one that can be so difficult to achieve. But Conavi Bank had that clear-cut objective in mind when they moved their Diebold WebATM network to HP’s Real Time Financial Services, allowing them to gain a 24 percent acceptance rate increase in their insurance program by personalizing insurance offers at just the right time, to just the right customer.

With 220 offices throughout the country that process 155 million transactions a year, Conavi is the second largest commercial and savings bank in Colombia. The bank led the way with the first HP ZLE implementation in the finance sector. The bank used the HP ZLE framework to implement a network of intelligent, Web-enabled ATMs to make offers to customers while traditional transactions were taking place.

Going forward, HP will help Conavi connect legacy, nonintelligent ATMs—now supported by a Unisys infrastructure—to the ZLE architecture through ACI’s BASE24 software. The BASE24 solution will gather transactions from the legacy ATMs and route them through traditional authorization processes and then store the resulting information in a ZLE ODS. This approach represents a low-risk channel integration solution that will allow Conavi to increase the effectiveness of its sales efforts.

### Banamex and the Intelligent Channel

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***“The NonStop server and ZLE framework—integral to our Intelligent Channel—provide the kind of visibility that allows us to interact with our customers in a consistent and knowledgeable manner, regardless of the delivery channel.”***

Enrique Grapa, executive VP and CIO/CTO, Banamex

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With 20 million accounts, 1,400 branches, and 135 million transactions every month, Banco Nacional de Mexico is one of Mexico’s largest retail institutions. It also boasts the country’s largest

Internet banking presence. But with increased competition from a globalization of the banking market in Mexico, Banamex sought to retain its leadership role through the delivery of consistent and up-to-the-second customer information to its Internet, ATM, and teller channels.

The ensuing project, Intelligent Channel, is based on HP's ZLE framework, and uses HP NonStop technology. The bank's technical criteria for selecting the NonStop platform and ZLE architecture were the same as were described for the CIM hub earlier:

- Scalability
- High availability
- Open standards
- Manageability of change

These criteria have allowed Banamex to focus on its primary competency—banking—while HP resources concentrated on the enabling technologies that allow Banamex to respond to competitive pressures in the market. Banamex picked the HP ZLE framework as the foundation that would give it the ability to make business decisions and implement them quickly and pervasively throughout the enterprise.

## Getting what you need for tomorrow, today

The customer sales and service paradigm of tomorrow will be about getting consistent and timely information to everywhere the customer is, in real time, as the customer interacts with the bank. At the same time, bank IT teams must ensure that the systems in place for customer interaction are first class in reliability, availability, and manageability. As we progress further toward the ideal multichannel delivery architecture, this responsibility will become more and more difficult.

But some banks are already laying the groundwork for exactly this kind of capability by selecting the HP ZLE framework and Real Time Financial Services to provide this capability without compromising the operational resilience of their infrastructures. In more and more instances, HP NonStop servers are being called on to provide institutions with a standards-based, scalable, and reliable platform on which to build an integrated delivery channel network.

The HP ZLE framework is providing a higher level of service and sales consistency and timeliness in an operational environment of industry-standard tools, 24 x 7 reliability, and massively scalable performance.

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