

## Visa U.S.A.

<b>Industry:</b>	Financial Services
<b>Product(s):</b>	BEA Tuxedo®, BEA Services
<b>Business Problem:</b>	Needed to expand with 100% transaction reliability
<b>Project:</b>	Visa Direct Exchange, the world's largest private financial payments network
<b>Why BEA:</b>	BEA Tuxedo was the only product that met or exceeded all of Visa U.S.A.'s top three requirements: the ability to handle the scale of its current operations, the ability to scale exponentially in the future, and the flexibility and ease of adding and customizing new functionality over time.
<b>Highlights:</b>	The network is designed to process more than \$1 trillion in payments annually and a volume of 10,000 transactions per second — almost triple its current peak load of 3,500 per second — and more than 100 billion transactions annually, more than twice the current transaction volume.

### COMPANY BRIEF

Visa is the world's leading payment brand and largest consumer payment system, enabling banks to provide their consumer and merchant customers with the best way to pay and be paid.

More than 14,000 U.S. financial institutions rely on Visa's processing system, VisaNet, to facilitate over \$810 billion in annual transaction volume — including more than half of all Internet payments — with virtually 100 percent reliability. U.S. consumers carry more than 353 million Visa-branded smart, credit, commercial, stored value and check cards, accepted at over 21 million locations worldwide, including some 643,000 ATMs in the Visa/PLUS Global ATM Network.

### BUSINESS CHALLENGE

Visa cardholders, like most consumers in today's digital economy, are looking for increased flexibility and convenience when paying for goods and services. In addition to this trend, Visa anticipates an explosion in the number of electronic payment transactions in the near future, sparked by the availability of new transaction options, such as mobile commerce, smart cards and person-to-person payments. To prepare for these movements, Visa set out to implement a network re-architecture in order to future-proof and add enormous scalability to its payments infrastructure.

The re-architecture initiative, called Direct Exchange, would build on VisaNet, the company's existing transaction platform. VisaNet had proven itself to be unfailingly reliable; however, time had finally caught up with the platform — a closed proprietary system that was highly advanced when deployed two decades earlier.



Direct Exchange needed to be designed to process an unprecedented volume of transactions with “anytime, anywhere, anyplace” flexibility in order to support Visa’s vision of universal commerce, while maintaining Visa’s standard of 100-percent reliability. The importance of true 100 percent uptime cannot be overstated. Just five minutes of downtime annually could impact \$55 million in transactions. Eight hours of down time, equivalent to 99.9-percent uptime, would mean a potential loss of \$5 billion in transactions.

## **BUILT ON BEA™ SOLUTION**

Visa’s redesigned transaction platform had to be a standards-based environment. The platform would communicate across Visa’s secure, private IP (Internet Protocol) network. It had to provide “plug and play” compatibility with emerging technologies. Compliance with open standards would protect Visa’s investment and extend the life of the infrastructure indefinitely by enabling Visa to add and customize new features and capabilities rapidly in response to changing market opportunities. It also had to scale by an order of magnitude beyond Visa’s current financial transaction volume, which is already the heaviest in the world, to handle Visa’s projected traffic in the coming years. And, of course, the platform had to match VisaNet’s unflinching reliability.

Visa conducted an extensive selection process with several possible transaction solutions. When all was said and done, BEA Tuxedo was the clear choice as Visa commenced work on Direct Exchange. “Besides being the most proven and best-of-breed technology, BEA Tuxedo was the only product that met or exceeded all of our requirements,” said Scott Thompson, Visa USA’s Chief Technology Officer.

BEA Tuxedo brought its 16-year track record of success to Direct Exchange, as well as its ability to integrate seamlessly with legacy mainframe systems, an essential capability in the world of financial services. BEA’s software supports Java and C++ application development, which is important to Visa because it continues to use both languages extensively. BEA Tuxedo provides numerous additional capabilities that are crucial for developing and deploying mission-critical e-commerce applications across distributed environments, including distributed transaction management, dynamic load balancing, tight security features, and dynamic replication of distributed applications.

The strength of BEA’s professional services, including its consulting and customer support groups, proved to be a key decision criteria for Visa. Visa would have to work closely with its technology partner, from the initial architectural assessment all the way through to design and implementation of its new payments network. “BEA’s highly skilled customer support organization responds quickly to our requests, and its worldwide presence gives us peace of mind as we look to the future when the design concepts of the platform expand beyond North America,” said Sara Garrison, Senior Vice President, Technology Development, Visa USA.

Direct Exchange reached the initial stages of deployment in late summer 2000, and is slated for full production rollout by mid-2001. The network is designed to process more than \$1 trillion in payments annually, accommodating a volume of 10,000 transactions per second, almost triple its current peak load of 3,500 messages per second. This equates to more than 100 billion transactions annually, more than twice the current transaction volume. Visa expects these numbers to continue to climb as the new payment technologies enter the mainstream.

“We’re very happy with the build-out of Visa Direct Exchange. BEA has played an integral role in helping us bring the system online within the budget and timeline that we established two years ago. BEA Tuxedo has demonstrated the ability to keep pace with our projected 20-30

percent annual growth, and we view it as an ideal platform to support emerging technologies, such as mobile commerce,” said Garrison.

Technology partners Cisco Systems, Oracle and Sun Microsystems worked with Visa and BEA to make Direct Exchange a reality. Worldwide, the network includes nine million miles of fiber, enough to circle the globe 400 times. “The system is so massive that it defies a person’s ability to comprehend. But despite such size, it’s so reliable that it actually serves as a backup to other payment platforms. It’s a real credit to BEA that its Tuxedo software is able to power such an immense transaction system,” added Garrison.

“BEA has played an integral role in helping us bring the world’s largest transaction engine online within our budget and timeline,” said Garrison. “We view BEA Tuxedo as an ideal platform to support the emerging technologies that Visa Direct Exchange enables.”

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