The Keys to Becoming a Successful Acquirer of Transactions in a Changing Payment Processing Environment

A REPORT FROM NEWNET COMMUNICATION TECHNOLOGIES, LLC
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**Introduction: The payment processing landscape is shifting**
Driven by increased demand for mobile and electronic commerce, higher data volumes, the proliferation of new devices and emerging network and back-office technologies the payment system is changing. Those changes are creating both challenges and opportunities for mobile operators, merchants, card issuers, acquirers and processors.

To compete in this new system, organizations must address the critical requirements of security, protocol processing and transaction routing. And, to succeed in this environment, they need proven, integrated transaction processing solutions.

**Transactions Are Changing**
Driven by changing consumer preferences, global mobility, Internet usage and a new generation of platforms and technologies, the processing of payment transactions continues to transform.

**Consumer Trends**
Card-based payments continue to displace cash and check transactions. Credit and debit transactions are growing by more than 10 percent annually, and are expected to surpass 130 billion transactions in 2012. As acquirers and processors capture a growing share of the merchant payment volume, a trend towards consolidation has emerged in the electronic payment processing sector.

Currently, more than 15 percent of all global transactions are processed on non-dial up systems. By 2014, worldwide e-commerce is expected to exceed $500 billion, and mobile transactions are projected to reach $1.5 trillion. By 2015, one billion people are expected to access mobile financial services, and in the U.S. alone, commerce sales are projected to reach $119 billion.

**Network pressures**
While regulatory concerns remain in several nations and regions, stakeholders across the payment value chain are poised to take advantage of mobile-related growth opportunities.

As the volume of electronic and mobile transactions grow, the access mechanisms for electronic payment transactions are shifting from dial-up to broadband and wireless platforms using IP and the Internet. For many years, banks, card acquirers and financial institutions used legacy connections (typically X.25 and telephone dial-up lines) to handle electronic transactions in the retail environment. Those private analog connections were secure and reliable, and dial-up access continues to provide the majority of connectivity for electronic payment transactions.

As IP-based transactions continue to grow in volume with more data originating from IP point of sale (POS) devices, wireless and NFC devices, mobile and smartphones, personal computers and handheld devices, processing volumes may begin to exceed the designed capacity of traditional dial-up networks.
**IT Implications**
Currently, major acquirers, carriers and transaction processors struggle with aging and obsolete IT infrastructures. Most legacy technologies cannot handle the transaction volumes, routing and processing requirements of the emerging electronic payment environment.

Traditional network and back-office systems are not configured to manage transactions originating from Internet devices using NFC mobile wallets, SMS/USSD, mobile applications, mobile Internet payments, or carrier billed services. And, older systems seldom incorporate the encryption, tokenization, security compliance and reporting capabilities needed in a modern transaction processing solution.

As payment processing volumes grow and more transactions originate from kiosks, mobile phones, and other devices, more robust and flexible systems are needed. Modernized banking systems will evolve to include converged mainframe and distributed architectures. Organizations will increasingly employ in-line analytics and in-flight compression to manage, transport and understand the growing volume of ecommerce and commerce data.

**Strategic Shifts**
The market is growing and fracturing at the same time, with new startups, Internet powerhouses, carriers, and service providers now seeking a share of this expanding opportunity. New mobile services have been announced or launched by major players, including Google Wallet, Starbucks Mobile, Intuit GoPayments, Square Mobile, Mpesa, Nokia Money, Isis, and others.

Fixed line carriers, mobile network operators and financial institutions are working to adjust to this environment, and are jockeying for competitive position. While large retailers are transitioning quickly from dial-up to IP routing, many smaller retailers are seeking affordable and workable processing solutions that will allow them to maximize their share of the commerce and e-commerce. Merchants of all sizes are seeking the advantages of enhanced mobile payments, including real-time dialogs, in-brand messaging and product-specific coupons and vouchers.

**New Expectations**
From the consumer perspective, trust and security are vital. Consumers gained a level of comfort in the protections provided by major credit card companies, and they will seek a similar trusted service environment in the mobile and electronic commerce space. To meet those expectations, merchants, financial institutions and acquirers must deploy systems that address fraud, hacks, theft, and other vulnerabilities from the POS location, across the networks, to the banks and back.

Finally, to handle the proliferation of originating devices, vendors, networks and processing technology platforms, organizations also need a new and critically important ability to integrate those crucial elements. That integration expertise must include the knowledge and experience needed to handle legacy dial-up environments, as well as the innovative changes driven by changes in mobile and Internet-based commerce.

Not surprisingly, organizations that rely on fast, efficient payment processing are looking for more robust and scalable systems, including technology that address security, protocol processing and transaction routing. To fully appreciate this dynamic marketplace, it is useful to examine the makeup of a next-generation payment processing architecture.
Elements Of A Modern Payment Processing System

A modern transaction solution must address the requirements of mobile, broadband and dial-up payment environments. It should address the requirements of security, protocol support and both network and transaction routing.

**Mobile:** The emerging mobile payment environment requires unique transaction processing capabilities. Any payment processing solution must be capable of routing transactions originating from mobile applications, mobile browsers and mobile wallets. They should be capable of accepting and routing payments from smartphones and tablets equipped with card readers.

Mobile POS payment processing must address 2D barcode-based payments and should support secure code-based transactions over contactless and NFC devices. To support mobile money transfers, a payment solution should incorporate SMS-based transfer processing, and mobile-to-mobile payment interfaces. A mobile solution must provide secure end-to-end encrypted processing and routing. Support for local transaction protocols including the advanced XML formats along with the ISO8583 and variants are necessary for mobile transaction switching and routing solutions.

**Broadband:** Broadband or Internet-based payment processing must be capable of handling IP POS and ATM transactions using advanced techniques such as SSL termination, acceleration and HW offload. A reliable system will manage network routing, transaction protocol processing and security.

**Dial-Up:** Dial-up remains an important channel for many electronic transactions. Processors, acquirers and carriers need a payment gateway capable of handling PSTN-IP and PSTN-X.25 requirements in a high-density transaction environment. Any dial-up solution should provide protocol support for VISA, ISO 8583 and TPDU transactions.

As illustrated in Figure A, stakeholders throughout the payment system need secure and reliable transaction processing. The best of this new generation of payment solutions address requirements across the transaction processing value chain.

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**Figure A – The emerging payment processing system**
These systems allow cardholders to securely shop, access cash and account information, and meet the needs of telecom network providers and major card networks. Merchants, banks and other financial institutions, as well as transaction acquirers and processors depend on secure, high-volume payment processing technologies.

**Security**

Fraud represents a significant risk in the payment environment. Emerging mobile and broadband Internet payments are especially vulnerable to various threats. Payments are exposed to risk at a number of points, including hacking attempts against databases and web servers, vulnerabilities at merchant locations and the theft of consumer cards and cardholder information. With 11 million IP thefts recorded in 2009, stakeholders throughout the payment value chain may suffer fraud-related loss of revenues and pay the cost of damages and damage control efforts.

A payment transaction processing solution should provide true end-to-end payment transaction processing security. That protection must start at the point of origin and continue through the network to the payment processing system, to the authorization server at a bank or other financial institution, and then back through the network as the authorization is forwarded to the originating point.

To counter the security threats of an IP-centric landscape, a modern payment processing solution should have the fundamentals of secure device connection, authentication and authorization.

A reliable platform will provide a secure means of transporting information over both secure and unsecured networks. It should support the connection of mobile and IP Point-of-Sale (POS) devices, meeting all PCI-DSS standards and with SSL acceleration and offloading, digital certificates, and state-of-the-art DUKPT powered encryption and decryption technologies.

To ensure security while enabling interoperability between client protocols and host processor protocols, the solution should support a wide range of industry standard and vendor-specific payment protocols, including Visa I/II, ISO 8583 and TPDU. The platform should ensure the secure delivery of transactions across the full spectrum of emerging applications and services, including NFC payments, mobile wallets, SmartCash and mobile money transfers.

**Transaction and Network Routing**

As payment options expand to encompass next-generation POS and mobile channels, millions of terminals and consumer devices create billions of transactions, resulting in data that must be forwarded across telecom networks. These networks are provided by multiple operators and routed to a particular server in the back-end system of a financial institution.

In this complex environment, transaction and network-oriented routing is crucial for financial acquirers and transaction processors including banks that provide credit card services, companies that provide credit card transaction services between banks and merchants and network operators that supply fixed-line connectivity.
What Should a Modern Transaction Routing Solution Look Like?

A secure payment processing solution will assure POS interoperability and single-source payment processing across dial, broadband and mobile access environments. It should be field proven on a global basis, high-performance and terminal agnostic and capable of processing billions of transactions a month. A workable routing solution will ensure seamless integration across SSL, HTTPS, M-SMS, browser and mobile wallet technologies.

It must deliver configurable network routing by data type to multiple servers, including host/SSL/IP-POS, RIP/OSPF IP-routing. Security should be ensured by end-to-end encryption, and supported by system partners with worldwide deployments and industry experience.

The heart of any next-generation payment solution is the transaction routing gateway, a critical technology that provides secure access and protocol routing across the entire transaction process. An enhanced payment platform may also incorporate specialized software to facilitate faster transaction processing of credit card and debit card authorizations, fund transfers and others.

Beyond basic transaction flow, modern payment solutions can also deliver powerful transaction management capabilities. Banks, financial acquirers, network operators and other stakeholders can leverage these tools to capture statistics on transaction volumes per hour and other variables, or to assess the optimum utilization of leased lines, POS equipment, and other resources. Advanced routing systems can also be used to support and enhance fraud detection efforts in the payment transaction environment.

Protocol Support

Given the complexity of the mobile and Internet-based transaction environment, any system must provide seamless support for the various protocols used by POS terminals and back-end banking servers. The industry needs a solution capable of recognizing those key protocols, of providing conversions, translations, and modifications as needed, and of moving data back and forth with speed, efficiency and security.

The ideal solution should act as a transaction protocol routing gateway for IP POS devices initiating transactions over a TCP/IP network. Such a solution would route transaction data based on industry-standard transaction protocols, including VISA I, VISA II, ISO 8583 and TPDU. Routing support should be available for RIP version 2, OSPF v1 and v2, IGMP, for transparent on-demand routing, and with support for host, subnet and network routers.

In most mobile or Internet-based payment settings, an IP-oriented transaction gateway may be situated at a carrier, acquirer/processor or ISO/managed service provider location. That gateway serves to ensure that transactions are routed to the authorization host servers, supported by the appropriate protocol standards, and that the response is returned from the host to the IP POS device.

Powerful Benefits

The ideal payments processing system will have:

- A comprehensive transaction processing solution for service providers, mobile operators, merchant acquirers and payment processors

- Accelerated processing of credit and debit card transactions, fund transfers and health and benefit transfers
• Full integration of security, protocols, and routing activities

• Robust routing supports various transaction and data types to multiple servers on bank and processor systems

• Direct forwarding allows users to configure direct selection of traffic to pre-defined authorization servers

• Enhanced encryption supports 3DES, AES and other encryption standards

• Powerful accounting record keeping provides comprehensive transaction tracking, with POS, host, time, duration, status and other details

• Business Intelligence, including real-time data capture and tracking for advanced analytics and reporting, with per-call transaction call detail records (CDRs) to support pattern determination and fraud prevention efforts

• Strong data and network security, including industry-standard PCI DSS compliance, enhanced encryption supporting 3DES, AES, DUKPT and other encryption standards, SSL acceleration and offload, and IPsec connectivity

• Integrated payments via a common platform for SSL, HTTPS, mobile SMS, mobile browser, and mobile wallet payments

• Rules based routing of transactions specific to customer requirements for increased revenues, improved data handling, and enhanced network efficiencies

NewNet Provides the Solution

NewNet Communication Technologies, LLC is a leading provider of innovative solutions for next generation mobile and fixed line networks.

NewNet’s Secure Electronic Transaction processing platform, supports mobile payments, e-banking and e-commerce. This field-proven platform implements the latest in secure IP transport technology to provide a cost effective means to process thousands of simultaneous transactions per second.

Figure B – NewNet offer comprehensive mobile, broadband and dial transaction payment solutions
The NewNet portfolio consists of secure, high-capacity, high-performance, and highly-scalable, carrier grader solutions that have been deployed by major carriers worldwide. NewNet delivers:

- End-to-End payment solutions
- Mobile Smartphone POS Payment
- Mobile NFC Payment
- Mobile Wallet Solution
- Mobile SMS Payment
- Single Payment platform enables all forms of Mobile & Internet payment services
- Feature rich Dial Payment platform

**NewNet Secure Transaction Portfolio**

**The AccessGuard 1000 System** is a compact IP transaction switching and routing accelerator designed to process secure IP-based transactions in excess of one million per hour. The system consolidates various functions including security, routing, protocol handling, management and reporting into one condensed solution. The system minimizes the transaction time to help reduce the transaction cost and the network operation costs.

An SNMP-based remote management system provides element event and alarm reporting, configuration management, software download, parameter storage and rapid response to pre-configured events. The system is also designed to transfer non-financial based transactions including business-to-business verifications, security verifications, point-to-point encryption and a variety of custom applications that require the highest degree of security and efficiency.

**The Total Control Secure Transaction Gateway** is a field-proven processing platform for carrier class transaction network service providers and enterprises for dial-up connectivity. The gateway enables fast transaction processing of credit card authorizations, debit card fund transfers, health benefit authorizations, electronic benefits transfers, and other communications involving single session transfer of small amounts of data.

The transaction gateway accelerates transaction times with Fast Connect which reduces or eliminates steps such as alerting, audible ring, billing delay, answer tone, and call termination. The Total Control Secure Transaction Gateway supports transaction protocols which speeds calls and reduces traffic to a processing host by up to 50 percent with full protocol emulation.

**The AccessView Accounting Server** captures statistics from the Transaction Gateway and AccessGuard 1000 System and processes and stores them in a database. The data captured supports subscriber billing, transaction recording, report generation, network performance monitoring, analytics, system modeling and measurements.

**The Common Element Manager** features an easy-to-use graphical interface that enables network operators to view system status and device availability at a glance. It is based on Java architecture and it interprets with the service providers’ network management platform of choice, thereby leveraging the existing equipment investment.

All NewNet solutions are supported by the company’s skilled professional services team. NewNet can provide a wide range of custom engineering and support services needed to develop and deploy solutions that fully meet specific requirements across the mobile and Internet transaction payment value chain. The company has also created a strong ecosystem of business and technical partners to support and extend these secure payment solutions.
Conclusion

Consumers are embracing electronic and mobile commerce, and devices and transactions are proliferating. The increase in volume and complexity of these transactions are straining the capacity and capabilities of traditional networks and processing systems.

This new environment created both challenges and opportunities for retail merchants, fixed and mobile network operators, card issuers and other financial institutions, and for organizations that acquire and process electronic payments.

As noted in this report, those organizations are seeking transaction processing solutions that deliver reliable performance in a dynamic, high-volume e-commerce marketplace. An optimum payment processing solution must address the requirements of security, protocol processing, and network and transaction routing in a holistic, integrated way.

By deploying a robust and integrated transaction processing platform, organizations across the payment chain can gain advantages in performance, competitive position and consumer satisfaction. The basics of next-generation payment processing, and the keys to becoming a more successful transaction acquirer.
About NewNet Communication Technologies, LLC

NewNet Communication Technologies, LLC is a global provider of innovative solutions for next generation mobile technology. For over 25 years, NewNet has enabled global operators and equipment manufacturers to rapidly develop and deploy cutting edge, revenue generating solutions needed to build, grow and improve global communications.

NewNet specializes in Mobile Messaging, Secure Transaction Transport, Interactive Voice Response, Real Time Charging and Rating, Wireless Broadband and Network Optimization solutions that have reached millions of end users in over 90 countries.

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