WHITE PAPER

ANY WALLET, APP OR PROGRAM

HOW TO MANAGE THE GROWING COMPLEXITY OF MOBILE COMMERCE AT THE POINT OF SALE

VeriFone®
THE WAY TO PAY™

EXECUTIVE SUMMARY

The shopping experience is on the cusp of a major transformation. Major players in mobile, web, payments and retail are launching electronic wallets that consumers can use at physical stores for payments -- turning the leather wallet obsolete in the process.

Mobile wallets running on mobile phones equipped with Near Field Communication (NFC) technology are being deployed around the world by global leaders in web and mobile. Tens of millions of phones are expected to reach consumer's hands in the coming months ready for proximity mobile payments and promotions.

Other leading global players in alternative payment and mobile applications are capitalizing on the power of the cloud and introducing "cloud wallet" payment services with the same objective: delivering mobile commerce experiences to consumers where payments are just the start.

Key to all mobile wallet initiatives are the value-added mobile couponing, marketing and loyalty that promise to engage the consumer, help drive traffic, and increase sales and consumer loyalty to participating merchants.

What hasn't changed is that no matter what wallet, app or program consumers carry, they still need to interact with and authenticate themselves securely at a merchant point-of-sale system. And all new payment options and value-added services must integrate smoothly at the point of sale with existing card schemes, couponing and loyalty systems or merchants will reject it.

Enabling the acceptance side of mobile commerce is just as important as enabling the consumer side in a world of global mobile wallet payments.

CONTENT

MOBILE WILL CHANGE COMMERCE AS WE KNOW IT

Consumers have bought into mobile technology hook, line and sinker and it's changing the nature of shopping. During the 2011 holiday season, according to the Pew Research Center, 25% of cell owners used their phone inside stores to gather price comparisons; 24% used them to look up online reviews. And 19% of those who searched for a better price on an in-store product eventually bought the product online[1].

Merchants are also leveraging mobile technology to drive more traffic into stores, increase sales and loyalty of their customers. In a research paper by the National Retail Federation (NRF) Shop.org working group, 48% of retailers interviewed report having a mobile-optimized website; 35% have deployed an iPhone app; and 15% offer an Android app and an iPad app[2].

But beyond that, companies from varied industries – mobile phone carriers, Internet service companies, banks, alternative payments and so forth – are seeking to leverage mobility to enhance the physical shopping environment with digital couponing, loyalty, location-based social media and value-added services.

When Google was planning how to enable widespread acceptance of Google Wallet NFC transactions, it turned to VeriFone – the payment solutions provider for 70% of the top 200 retail companies in the U.S. – as a key enabler at the point of sale.

MULTIPLE WALLETS, SAME TARGET: THE CONSUMER

Major forces are converging on that physical point of sale. Internet giant Google has already launched in the United States a mobile payments scheme called Google Wallet that is stored on Android OS-based mobile phones equipped with NFCtechnology. Consumers can just tap their Google Wallet-enabled phones at NFC-enabled point-of-sale systems to make secure short-range wireless payments and redeem coupons and loyalty leveraging the existing merchant infrastructure.

Google lined up major retailers including American Eagle Outfitters, Bloomingdale's, GUESS Macy's, and Toys "R" Us to accept Google Offers, mobile loyalty and payments sent via consumer's mobile phones, while also ensuring payments at thousands of other merchant locations accepting MasterCard's contactless PayPass system.

Meanwhile, phone carriers AT&T, Verizon Wireless and T-Mobile, also in the United States, have formed a mobile commerce venture called Isis that will also start deploying millions of NFC mobile phones with their own mobile wallet starting in the summer of 2012. Isis has forged relationships with four major payment networks and major issuing banks such as JPMorgan Chase, Capital One and Barclaycard US. And again, the objective is to enable mobile offers, couponing and loyalty along with payments at merchant locations.

1 "The rise of in-store mobile commerce," January 30, 2012, Pew Research Center's Internet and American Life Project. http://www.pewinternet.org/Reports/2012/In-store-mobile-commerce.aspx
2 "The State Of Retailing Online 2011: Marketing, Social, And Mobile", May 4th 2011, Shop.org and Forrester Research

The appeal of NFC and mobile wallets to mobile phone operators is a global one. Mobile phone operators in multiple countries are gearing up for the deployment of NFC wallet payment around the world. That includes most of the biggest global mobile phone carriers such as Vodafone, Telefonica, Orange and T-Mobile. Europe is the region with most commercial launches and expanded roll outs planned, including in the United Kingdom, Turkey, Poland, France and Spain. Asia is not far behind with developments in Singapore, South Korea, China and Japan[3].

CREDENTIALS IN THE HANDSET: NFC MOBILE WALLETS

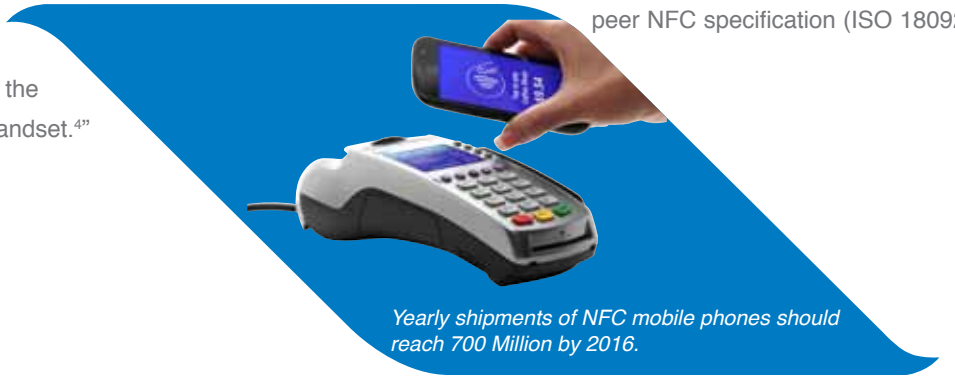
The promise of mobile payments and related applications is too great to ignore. NFC is viewed by many as the key enabling technology for mobile wallets allowing consumers to download all their payment credentials to the phone's mobile wallet and just tap the phone at a point of sale to transfer via short range wireless technology payment, coupon and loyalty information to make a purchase.

George Peabody, director of Emerging Technologies Advisory Service from the Mercator Group, defines NFC wallets as "a mobile wallet that accesses the payment card credentials stored in the secure element on the handset. This approach replicates the plastic card model by distributing, albeit in a far more secure fashion, the payment credentials to the very edge of the network, i.e. onto the accountholder's handset.[4]"

A key aspect driving development of mobile NFC applications is the ability to combine the security standards of smart cards already used in payment and telecom, to ride the existing acceptance rails at merchants and add to that the ability to leverage Internet-based resources and services to drive the shopping experience.

According to IMS Research, global shipments of NFC smartphones should reach 80 million during 2012[5]. The market research firm observed that most of the major mobile phone manufacturers have released NFC-enabled phones over the previous 12 months, with the notable exception of Apple. Moving forward, Berg Insight estimates that NFC mobile phone shipments should grow at a compound annual growth rate (CAGR) of 87.8%, to the level of 700 million units shipped a year by 2016 [6].

NFC mobile phones use the same ISO 14443 standard currently used by EMV and US contactless credit and debit cards, so for payment only, the phones are immediately compatible with contactless readers deployed around the world. The phones use a smart chip "secure element" to store the payment application and consumer account information. But NFC is not contactless. NFC enables rich interaction between the NFC mobile phone and the merchant NFC point-of-sale system for the exchange of coupons, promotions, digital receipts and much more, especially in the more recent peer-to-peer NFC specification (ISO 18092).



Yearly shipments of NFC mobile phones should reach 700 Million by 2016.

3 "The Year Ahead for NFC: Major M-Commerce Rollouts Unlikely Until 2013" Dec 23 2011, NFC Times, http://www.nfctimes.com/report/year-ahead-nfc-major-m-commerce-rollouts-unlikely-until-2013
4 "Fighting for Position: The Mobile Wallet Wars" August 2011, Mercator Advisory Group

5 "Significant Uptake in 2012 will Drive Up-to 80 Million Handsets," 14 December, 2011, IMS Research. http://imsresearch.com/news-events/press-template.php?pr_id=2469
6 "Shipments of NFC-enabled handsets reached 30 million units in 2011", March 26, 2012, Berg Insight

CREDENTIALS IN THE CLOUD: CLOUD WALLETS

NFC is not the only game in town, however. Cloud-based payment gateways also provide opportunities to bring new functions and payment options to the POS terminal.

This model, called "card on file" in the industry, is now becoming popular by the name "cloud wallet." The Mercator Group defines cloud wallet: "This model stores the payment credentials in the cloud, on a server managed by a merchant or payment services provider. The funding source for a transaction is managed by the network-based service. Amazon, for example, stores consumer payment card information on its servers. When making a one-click purchase from the Amazon mobile app, the consumer uses the current or default payment card to fund the purchase. The payment card credentials are not stored on the mobile device. The same is true for PayPal's wallet, Starbucks, and Apple's iTunes. All store the payment funding source on their servers.[7]"

PayPal has been the biggest proponent of these services for purchases in physical stores. It relies on a consumer entering a phone number at the point of sale, a PIN for authentication and connection to the cloud wallet using the merchant's own point-of-sale system. Coupons, loyalty and payment credentials can then be reconciled for each transaction as if the credentials had been sent via a mobile phone.

Unlike NFC, cloud wallets do not rely on the secure element on a phone but instead leverage the PCI-approved Tamper Resistant Security Module (TRSM) embedded in the merchant point-of-sale device. The TRSM allows the creation of a secure channel of communication with the cloud wallet host for payment transactions.

Many companies that are promoting cloud wallets do, however, also envision incorporating NFC-based transactions into their own wallet schemes as NFC phones become more widely available.

7 "Fighting for Position: The Mobile Wallet Wars" August 2011, Mercator Advisory Group

THE IMPORTANCE OF MOBILE COUPONING, PROMOTIONS AND MARKETING

No matter what wallet technology is being used, the main driver behind deployments has not been payment, but rather the ability to transform the consumer experience with added-value. Mobile payments are just the start: Google and Isis, for example, seek to generate revenue not from taking a share of payment interchange rates but from value-added applications such as mobile offers, couponing, loyalty and other mobile-commerce applications [8].

Mobile marketing applications appeal to both consumers and merchants, the two key constituencies that must adopt mobile wallets. Consumers will be able carry all the loyalty cards they choose, never lose a coupon or promotion and receive targeted messages and promotions on their phones to be redeemed at the POS, without having to print or clip anything.

Merchants will finally be able to leverage mobile devices to drive traffic to stores, delivering location-based and personalized promotions ready to be redeemed at the point of sale. They will also be able to influence consumer behavior in-store, helping cross-sell and upsell products and increase repeat purchases by sending coupons directly to the phone from the checkout system upon completion of a purchase.

8 "Isis Expects to Launch with Three Banks; Chase, CapOne Likely" Nov 10, 2011, NFC Times http://www.nfctimes.com/news/isis-plans-launch-three-banks-chase-capone-likely

ALL WALLETS CONVERGE AT THE POS

While service providers, telecoms and handset providers anticipate the potential of mobilizing payments and leveraging value-added applications to motivate shoppers and drive traffic, it can't happen unless the merchant system is enabled to participate in the transaction. For every wallet app in the hands of a consumer, whether NFC or cloud-based, the merchant system will require a matching acceptance app.

In order to fully participate, merchants will need to support multiple mobile wallets and new payment schemes in the same way that they have supported different card brands in the past. The difference today is that merchants need to keep up with a constantly growing number, and ever-changing popularity of wallet apps fostered by the smartphone app revolution.

Payment at the point of sale has traditionally been a relatively complex and rigid process. That's because each processor requires not only that each payment application be certified on each device in order to access its network, but those processors also require certification of any other software on the device that could impact the smooth and secure processing of the payment card transaction. As market research firm Aité Group noted in a 2011 report, "The current inflexibility of transaction-routing infrastructure ensures that existing authorization infrastructure will be unable to handle the new transaction types created by these marketing solutions.[9]"

Especially complicated is the integration of the all-important mobile couponing, promotions and loyalty schemes. While they are key to the success of mobile wallets, integration is required to ensure that value-added mobile marketing applications and data can flow through merchant systems and be redeemed and reconciled at the host.

Therefore, merchants will only buy into these new payment methods and marketing programs if there is an easy way to manage this complexity at the point of sale. Merchants need an easy way to provision new applications and update existing ones, to process mobile coupons and loyalty and to manage all apps easily, without affecting or compromising the security of the all-important payment apps. or existing checkout or business prosesses. Something has to change in the current retail environment to enable the mobile app revolution to arrive at merchant systems.

Aité Group senior analyst Rick Oglesby, who authored the report noted earlier, observed, "Current trends in the payments industry are driving a more complex point-of-sale infrastructure that will require POS services to be offered as hosted monthly services. The POS terminal itself may soon become more similar to a cable TV box, opening a portal to a wealth of services to be accessed at the point of transaction.[10]"

In this services-oriented world, POS apps will be added, updated and removed on a frequent basis as merchant and consumer needs change. But it requires a system for managing these changes in the POS terminal and ensuring that no change violates the integrity of other apps running on the device.

9 "The Hosted POS: Enabling Mobile Marketing and Mobile Payments in the United States," September 8, 2011, Aite Group. http://www.aitegroup.com/Reports/ReportDetail.aspx?recordItemID=833

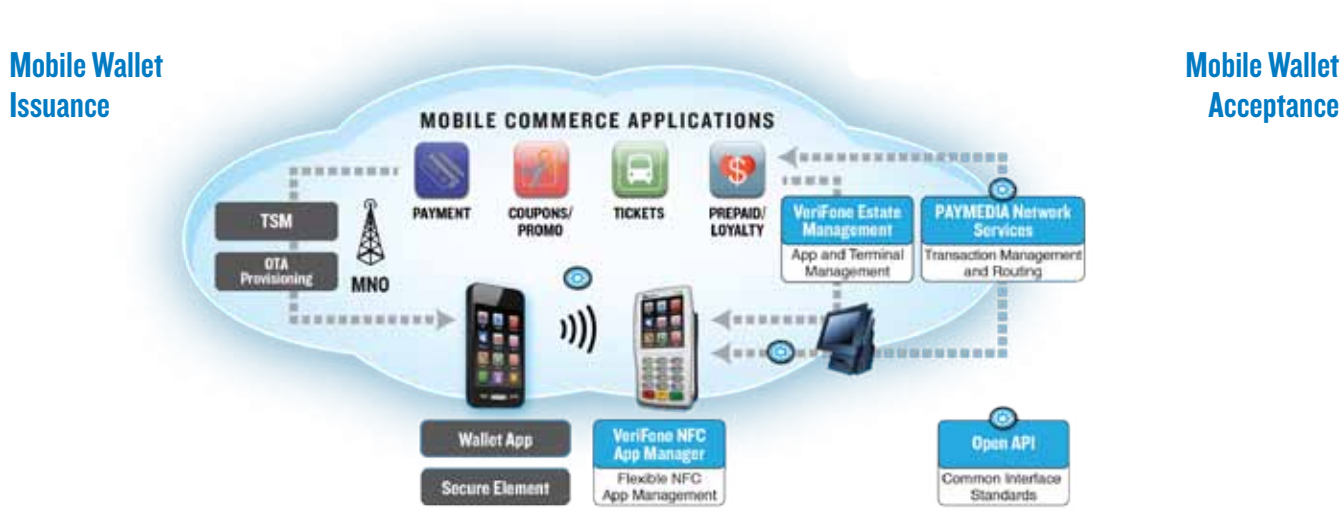
10 ibid.

THE CHALLENGES IN THE ACCEPTANCE SIDE OF MOBILE COMMERCE

- **Outdated Hardware:** The vast majority of merchants are not enabled with POS systems that can accept NFC mobile wallets. And those enabled with older contactless payment systems won't support new standards such as NFC peer-to-peer ISO 18092, which allows two NFC devices to exchange data simultaneously, and is key for the value-added applications such as couponing, loyalty and promotions. It will take years to replace the entire installed base for acceptance of NFC mobile wallets. But hardware is just the first hurdle.
- **Rigid Software Platforms:** The next challenge to overcome on the retail countertop is the "walled garden [11]" approach, by which payment networks bundle authentication, authorization and settlement with strict certification requirements for POS devices. Traditionally, that meant that each POS terminal had to be specifically programmed for each payment method, and any change to any payment-related application could require a recertification effort of the entire firmware. In an era where merchants may want to swap in/swap out value-added applications in the same speed as consumer apps shift, the walled garden approach would make it prohibitive to achieve the mobile vision due to complexity, time needed to make changes at individual devices, and the cost of doing so.
- **No Interfaces for New Value-Added Applications:** Value-added mobile applications such as mobile coupons, offers, promotions and loyalty have no established standards for integration with the merchant's cash register. There needs to be integration between phone and NFC POS system, between the NFC device and the cash register, and between the cash register and the host. Further complicating matters, is the wide fragmentation of the cash register environment, with a variety of incompatible hardware providers and a multitude of back-office systems.
- **Poor Remote Management Capabilities:** App and terminal management in point-of-sale systems is difficult in the best of cases and was designed to manage a limited set of specific applications. Point-of-sale systems are part of the indispensable infrastructure in stores that must run smoothly at all of the operating hours. Any disruption to the POS could put in question thousands of dollars in sales. Today, application updates for a network of POS systems can take many hours and even create new problems with new applications interfering with existing ones.
- **Little Usage of Cloud-Based Gateways:** Cloud-based payment and value-added services gateways provide an easier means to provision and manage applications. All wallets (NFC and cloud-based) can be enabled at the server level and a merchant would make one single connection to accept all of them. This could be especially good for networks of smaller merchants or merchants with slow connections and speed up deployment of wallets on a global scale. But gateways are still little used by merchants and acquirers alike and certification requirements make it difficult to enable their services across borders.

11 "Why PayPal Will Open Up the Walled Garden of Payments," Patrick Gauthier, PYMNTS.com. http://pymnts.com/briefingroom/payments-and-open-platforms/payments-in-the-cloud/why-paypal-will-open-up-the-walled-garden-of-payments/

VERIFONE'S SUITE OF TOOLS FOR MOBILE COMMERCE ACCEPTANCE



- **100% NFC Ready:** VeriFone has the most extensive line of NFC mobile payment acceptance solutions in the world. From countertop to portable, PIN pads to full blown multimedia, every point-of-sale solution in the VeriFone product line is NFC ready, supporting ISO 14443 and 18092 (peer-to-peer) standards. VeriFone NFC-enabled consumer-facing and self-service payment systems enable mobile transactions in financial, retail, hospitality, petroleum and transportation markets globally.
- **Flexible Software Platform:** All of VeriFone's NFC-enabled devices come with the flexible NFC App Manager firmware architecture built-in. The App manager software enables flexible app management in the point of sale with complete app insulation and modularity. New NFC or cloud wallet acceptance apps can be easily added, updated or removed without affecting other apps. Payment apps are further firewalled from value-added apps to ensure absolute security on payment transactions.
- **Common Interface Open API Standards:** VeriFone has developed open API standards to enable the flow of mobile coupons, promotions and loyalty not currently supported at merchants and acceptance systems. For example, VeriFone POS systems are capable of translating NFC-based promotions into barcodes or mag-stripe data that can easily be understood by electronic cash registers regardless of their brand or software package.
- **Powerful App and Device Management:** VeriFone HQ is the most advanced estate management platform in the market. It enables full management and secure provisioning of acceptance apps to POS devices. It enables retailers and acquirers to remotely control thousands of devices, including the ability to download apps and updates, features and functionality. It enables the tracking of each terminal, key management and where it is physically located.
- **Transaction Management and Routing:** VeriFone's PAYMEDIA Network Services is a cloud-based, hosted gateway service that enables merchants to make one single integration to route transactions to multiple application providers (NFC and cloud wallet providers, social commerce, mobile couponing, marketing and promotions, etc.) to payment networks. This makes it easy for merchants to turn services on and off, enable easy one-off promotions and offers, and route all added-value NFC transactions to app providers. PAYMEDIA Network Services is deployed on a global level enabling merchants in multiple regions to start accepting mobile wallets with a single connection.

CONCLUSION

MANAGE THE MOBILE COMMERCE EXPERIENCE

VeriFone's mobile payment and value-added solutions transform the point of sale into an intelligent point of interaction. VeriFone provides merchants and service providers with full control over the mobile commerce experience. Regardless of the phone, wallet or app consumers bring into stores, VeriFone enables seamless transactions at the point of sale. To find out more on bridging the worlds of mobile commerce and retail payment go to www.verifone.com/NFC.

GOOGLE CASE STUDY ABSTRACT

When Google was planning how to enable widespread acceptance of Google Wallet NFC transactions, it turned to VeriFone as a key enabler at the point of sale. With 70% of the top 200 retail companies in the U.S. using VeriFone products and services, they were an essential partner to assure widespread acceptance of Google Wallet.

VeriFone was ready with a complete suite of tools for NFC acceptance to ease Google Wallet deployment and implementation issues. VeriFone had available the widest range of NFC-enabled platforms for multiple retail environments, all equipped with the flexible NFC App Manager software that made it easy for retailers to add the Google Wallet acceptance app. VeriFone also developed the PAYDOCX interface specs to ensure that value-added Google Offers and loyalty would be accepted by retailer systems.

In the words of Spencer Spinnell, Director Emerging Platforms, Google, “VeriFone’s extensive retail experience and leading technology solutions were an important factor in getting Google Wallet deployed at top-tier retailers across the United States.”

By the May 30, 2011 launch date, 12 of the 14 large retailers participating in the Google Wallet launch were enabled with VeriFone solutions. Brands included American Eagle Outfitters, Bloomingdales, Champs Sports, Foot Locker, GUESS, Macy’s, Radio Shack, The Container Store and Toys “R” Us. Read more at: http://www.verifone.com/casestudies/GoogleWallet_CS.pdf