



WHITE PAPER

VX Evolution: Enriching the Payments Interface for Modern Consumers

Examining market drivers behind
the evolution of VeriFone's next
generation of POS terminals

Executive Summary

Designed as a retail fraud-buster, Chip and PIN has brought an unexpected twist to POS evolution - it has put the payment terminal in the hands of the consumer; creating a unique customer 'touch-point' that is now ripe for exploitation.

Payment devices are a powerful part of the overall retail experience. VeriFone believes that today's devices must address retailers' business needs for optimum security and greater return on investment, while also appealing to, and engaging effectively with, the consumer.

Speed, availability and performance are still vital; but so too is the ability to make transactions easier and more convenient for a population whose attitudes towards technology have changed dramatically since the introduction of Chip and PIN.

In the past year alone, high-tech, touch screen software has come of age at a time when many retailers are ready to upgrade their POS systems. Touch screen penetration now dominates mobile phones, portable navigation units, gaming and other applications - redefining the ways in which consumers expect to interact with devices.

So, how can retailers maximise the obvious consumer appeal of new interface technologies, in a cost-conscious retail environment, while still retaining a healthy return on investment?

This white paper outlines how VeriFone, as one of the world's leading payments technology vendors, is taking advantage of reduced component costs, economies of scale and the latest IT innovations to evolve its VX product portfolio; creating a new generation of payment devices that reflect BOTH consumers' aspirations and retailers' stringent operational requirements.

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A New Attitude to Payments

There is a ‘pocket-based’ revolution taking place in payments. Consumer adoption of multiple card formats including contactless payment cards, multi-application payment cards, prepaid gift and loyalty cards are all fuelling the growth of advanced electronic payment devices. This and consumers increasing familiarity with sophisticated handheld devices - from mobile phones to games consoles - is transforming how retailers engage at the Point of Sale (PoS).

A recent study by the Centre of Retail Research, commissioned by Visa Europe, confirms this. It reports that multi-application cards and phone-enabled promotional offers are expected to be used by 35.2% and 34.6% of retailers respectively, and pre-paid cards by 33.9%. Phone-enabled contactless payments were also highly rated (32.7%) and contactless cards by 26.4%. Keyfobs/tags were expected to be accepted by 19.1%.

The report also highlights that customer interest in new technology is driven by perceived advantages of: convenience (73.6%), fewer cards or vouchers to carry (64.6%), and the fact that for many people the mobile phone is a key piece of equipment they carry everywhere and use for many types of communication (68.1%).

Advantages of the new advanced payment capabilities are that they are seen as modern and up-to-date as well as reducing the need to carry change (38.9%). Other features were thought to be innovative (27.3%); greater security (24.6%) and providing greater control (18.5%).

To keep pace with the card revolution taking place in the customer’s pocket, retailers need to continually evolve their POS estates. The same drive for convenience, security, and flexibility will push future investment in new card acceptance devices.

As retailers assess their options, one thing is clear - they cannot afford to replace their POS estates with ‘like for like’ terminals. Most realise that today’s techno-savvy consumer will soon want more from their in-store experience.

VeriFone believes that ‘ease of use’ is no longer a sufficient success criteria for customer transaction points - instead ‘ease of customer engagement’ will be the new marker for POS success.

Retailers' Perspective

Even as the recession has taken its toll on retail sales, retailers have continued to invest in retail technology. The retail technology hardware market, consisting of integrated point of sale (POS) systems, payment terminals, POS barcode scanners, POS printers, and electronic article surveillance systems, managed to continue growing during 2009, while many retailers experienced declines in sales as consumers tightened their purse strings.

In its new market study “Next Generation Point of Sale Systems and Retail Technology,” ABI Research forecasts that growth in this market will continue for the foreseeable future as retailers invest in the latest technology. ABI Research anticipates retail technology spending will grow to nearly \$21 billion in 2014, from \$14.8 billion in 2009.

The study finds that continuing growth in retail technology systems shipments and revenues will be driven by global demand for technologies needed to meet rapidly evolving security standards, as well as retailers' demands for highly efficient and customer-friendly technology.

Retailers will look to technology to enhance the customer experience, drive customer loyalty, reduce costs, and to become more efficient at managing inventory, space and human resources. It is also a way to stay competitive as peers look to achieve the same goals.

While retailers will be eager to embrace technology, global economic challenges will continue to put pressure on investment budgets. VeriFone anticipates a ‘back to basics’ focus on fundamentals and a shift in market values as IT is called to renew its focus on return on investment and lower total cost of ownership.

Consequently, it will be the POS technology which delivers the most benefit and the highest impact that will prevail. Retailers will look for market focused solutions not products. For vendors that means cautious and responsible innovation with a focus on key features. Terminal manufacturers will have to exercise discipline to offer more functionality and benefits using less parts and more simple elegant and engaging designs. POS will be about optimizing performance, innovating services and evolving functionality and features. And all within the most secure transaction environment possible.

Market Drivers

There are also some key market drivers that will significantly impact the global retail POS payments environment in the next five years: contactless; security and compliance; and wireless integration. These will provide powerful impetus for many retailers to upgrade or replace their entire POS estates.

Contactless

Contactless payment has progressed reasonably quickly since the emergence of the first products in the USA in 2004. Datamonitor estimated 80 million contactless devices globally at the end of 2008. Today, it values the global contactless market at potential value of \$963 billion a year. In the US the potential is enormous, with low value cash transactions of \$297 billion per year. The UK is also a major market with 18 billion sub £15 cash transactions each year.

Card issuers and banks have been the first to champion contactless. EurActiv reports that Visa Europe is spending around €10 million helping retailers to adopt the new technology with the vast majority of contactless devices distributed across the UK. Italy and Turkey are the other two front-runners, while pilot projects are in progress in France, Germany, Poland, Spain and Switzerland.

As the critical base for contactless starts to tip towards mass acceptance, VeriFone is certain retailers will have little option but to integrate contactless payment as a core part of their POS - particularly to retain loyalty and secure competitive edge.

Security & Compliance

According to the 2010 Debit Issuer Study, commissioned by PULSE, as debit card transactions continue to increase, issuers are becoming more concerned about how fraud and government regulation could impact profitability. In 2009, 95 percent of debit card issuers were affected by data breaches, making fraud mitigation a top challenge for issuers. Issuers' average signature POS fraud losses increased 43 percent last year from 5.2 basis points (bps) to 7.5 bps, and PIN POS fraud losses rose by 24 percent from 0.8 bps to 1.0 bps.

From an operational perspective, a recent report by HP reveals that security vulnerability costs include rework (up to 100 times the development costs or more), noncompliance penalties (up to \$3.5 million per incident for PCI DSS), planned and unplanned downtime due to security patching and incidents (\$1 million per hour, on average), and breach disclosure costs (\$6.7 million per breach).

In addition to the monetary impact, there is also the potential damage to the relationship between an organisation and its customers. Industry experts point out it can take years to regain customer loyalty once it has been lost, if it can be regained at all.

For both retailers and consumers, building advanced security features into the POS platform makes sense. Many retailers are investing in new terminal estates in order to conform to PCI PTS requirements, however, many experts would question whether PCI goes far enough to protect merchants and acquirers; and that existing processes present many unguarded loop-holes that fraudsters could exploit.

Indeed, the PCI Security Standards Council itself is now studying a number of emerging technologies and plans to issue a guidance document on end-to-end encryption when it releases the next version of the PCI Data Security Standards (PCI DSS), due out in October 2010. Bob Russo, general manager of the PCI Council, has indicated that researchers are preparing documentation on what he calls the latest industry “big buzz word” end-to-end (E2E) encryption. Other technologies being studied include the use of tokenization and chip and PIN technologies to protect credit card data and how virtualization affects data protection technologies.

Wireless & GPRS

Market experts including Frost and Sullivan are also highlighting the emergence of transmission control protocol/Internet protocol (TCP/IP) and wireless communication technologies such as CDMA, GPRS, and Wi-Fi as key factors driving terminal sales.

The need for faster front and back office integration; real-time stock and transaction monitoring and reporting; and remote wireless access to centrally managed applications will continue to fuel demand for better POS connectivity.

Technology Enablers

There are many technology enablers that are stimulating the evolution of POS terminals. While much of this technology has been available in high end electronic devices for several years, the cost and scale of manufacture is now at levels which make their inclusion in cost-conscious retail environments not only feasible but also inevitable.

Touch Screens

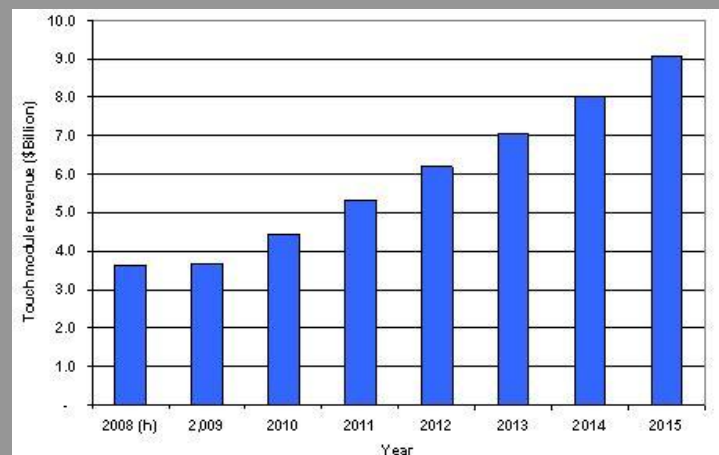
Touch screen interfaces, such as the iPhone, have taught consumers how to interact with the screen. Consumers have learned how to engage with the medium, and they have come to expect a certain level of quality and depth of experience from touch screen technology.

Touch screens are becoming widespread due to the ease of use and intuitive interfaces they enable, which can save time and increase productivity. In the past few years, we have seen deployments growing across a wide range of applications that include retail banking, self-service checkout at retail, point-of-sale, self-service check-in for transportation and ticketing, and education.

The number of companies entering into the touch screen marketplace is rapidly expanding. There are more than 170 companies currently offering some form of touch screen solution. More than 60 companies are producing resistive touch screen systems, and many companies are also pursuing multi-touch solutions.

According to Display Search's market research, touch screen module revenues will increase from \$3.7 billion in 2009 to more than \$9 billion by 2015. That equals a compounded annual growth rate (CAGR) of 13.9%; which makes the growth rate for touch screen technologies more than 10 times faster than that of the general display industry.

Figure 1: Touch Screen Module Revenue Forecast (Source: NPDGroup)



The real potential of touch-based technologies at the customer pay point is that they offer a more immersive, collaborative, and natural user experience. For marketers, touch-based systems also offer a new toolset for reaching consumers by providing a platform that places the consumer in control of the experience.

TFT Full Colour Displays

The past few years has also witnessed the emergence of TFT in POS environments. While current monochrome displays featuring a 128 x 64 white backlight offer the best value, they don't offer the same compelling visual capabilities of TFT panels.

As touch screen takes off so will the inclusion and variants of TFT. Higher end products are likely to feature TFT as a standard and many of these will include intuitive graphical user interfaces (IGUI). These devices will bring payment devices into a new era with crisp clear colour displays and game changing consumer impact.

Faster Processors

Next level processor performance will enable retailers to succeed in a market environment that is faster-paced and more challenging than ever. With processor costs plummeting, higher specs are becoming available within the payments space.

However, there is a great deal of myth surrounding current processor platforms particularly the dual processor. Two are not always better than one particularly when it comes to payment devices. Many current dual processor based devices use a 450 MIPS processor to run applications, and only a 50 MIPS processor to handle critical security tasks. This means secure transactions are slowed to just 50 MIPS.

For most merchants, security remains top of mind. Being able to securely process transactions – with maximum speed and efficiency – and ensure the highest data protection is absolutely essential. High speed single processors capable of processing both applications and secure transactions equally quickly may offer the best solution.

Lower Memory Costs

Just a year ago, 6MB of memory was typical for most payment devices. Today, most new terminals offer 32 MB. As suppliers keep pace with global demand by opening new manufacturing facilities, the price of memory is expected to fall. Lower priced memory will open the door for even higher capacity terminals that are more than just basic transaction slaves.

Why is more memory important for retailers? With more memory, retailers can support alternate payment schemes and produce crisp, clear, colour displays with animated graphics for promotions and applications. They can offer contactless capabilities and the Near Field Communications (NFC) standard for mobile payments with a cell phone and utilise terminal management schemes to streamline operations Integrate additional security and encryption packages.

A Portfolio for All POS Applications

VeriFone's new VX Evolution payment devices include four new products powered by the proven Verix architecture to ensure backward compatibility and eliminate any need for retraining of sales, support and deployment resources. Robust extended life design, durable construction and fully tested 'life cycle' performance also ensures that the terminals offer physical as well as platform longevity.

- VX 520 - A countertop workhorse, featuring standard 160MB memory for unprecedented performance and security as well as multiple communications options, including dial, Ethernet, and GPRS quad-band, as well as battery capability for mobile use
- VX 680 - A leap forward in mobile payment featuring more memory, more power, and large color display touch screen and full range of communications options for WiFi, GPRS, CDMA and Bluetooth connectivity
- VX 820 - A fully-loaded programmable PIN pad featuring a 3.5" colour display and touch screen, with a back-lit keypad that is easier to use and builds upon user-based design for easier interaction and data entry. Connectivity is simplified with a single-port link to USB, Ethernet or serial communications.
- VX 820 DUET - A stylish, hand-over payment device with integrated PIN pad functionality that consolidates the functions of a modern countertop device and a separate PIN pad into one, easy-to-handle device for both consumer and merchant use.

Evolving a New Generation of Terminals

So, how can retailers boost convenience and security, while building on the obvious consumer appeal of new interface technologies, in a cost-conscious retail environment - while still retaining a healthy return on investment?

As one of the world's leading terminal manufacturers, VeriFone is championing global ePOS innovation, performance and design. It has taken advantage of reduced component costs, economies of scale and the latest IT and encryption innovations to evolve the new generation of VX payment devices. These reflect BOTH consumers' aspirations and retailers' stringent operational requirements.

VeriFone's new VX Evolution range of payment devices feature industry-leading performance with ARM11 advanced processors and large standard memory configurations. Sophisticated and stylish, they deliver colourful, interactive content, and are appealing to modern users - making transactions easier, more intuitive and convenient.

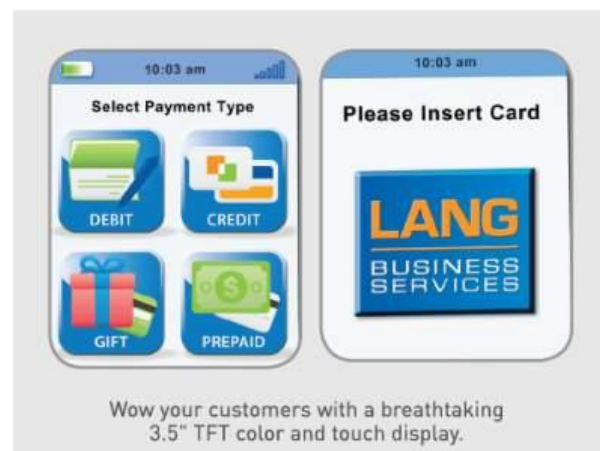
Designed to PCI PTS 3.0 specifications, the VX Evolution products also support end-to-end encryption of card data. The new devices also incorporate standard USB ports for maximum flexibility, and optionally include integrated contactless for acceptance of contactless cards, fobs and mobile-phone initiated payments.

Maximising Modern Screen Technology to Boost Consumer Engagement

VeriFone's VX Evolution payment devices incorporate a well-designed touch screen that literally puts capabilities at the fingertips of the sales assistant or consumer - providing new easy-to-use selling points and capturing the attention of consumers just like a PDA or a smart phone.

3.5" TFT colour displays and backlit keypads are easier on the eye and more versatile in a variety of in-store and venue lighting situations - they are designed to enhance branding, deliver dazzling promotions and create a completely different, dynamic and compelling user experience.

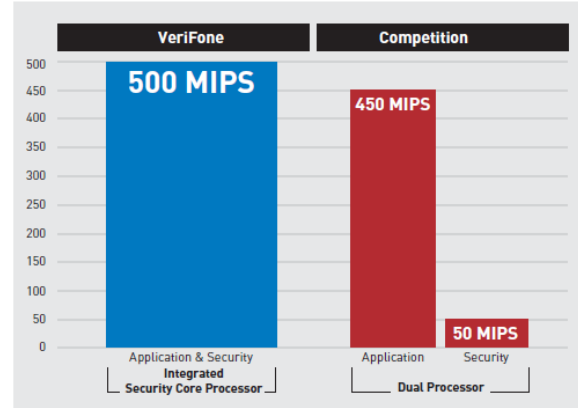
Coupling an integrated graphical user interface and a colour display also simplifies navigation and eliminates the need for hard function and ATM keys which can be confusing and take up valuable space on the payment device. Instead, it offers flexibility to configure virtual buttons and tailor each device as required. This frees up precious display space for other applications such as customer cross-selling.



High Performance Processors for Faster, More Responsive Performance

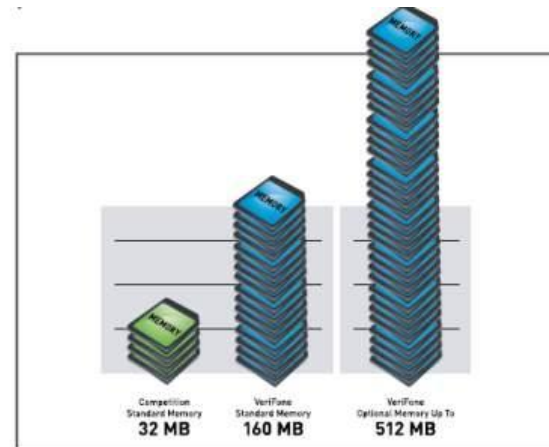
VeriFone’s VX Evolution devices, have a built-in, integrated security core processor, designed to offer extraordinary application performance and unsurpassed security for today’s payment environment.

The line of VX Evolution devices runs on a powerful 500 MIPS processor that outperforms the competition’s 450 MIPS processor on application functions and delivers 8x faster processing on security tasks by dynamically allocating MIPS as needed. No payment device is better suited to meeting retailers’ transaction processing requirements plus the dependable security they need for true peace of mind. With VX Evolution’s ground-breaking Arm 11 processor they can efficiently and reliably support even more value-added applications – without any slowdowns.



More Memory for More Capability

Just a year ago, 6MB of memory was typical for most payment devices. Today, VeriFone is transforming payments by offering 160MB of memory as standard within the VX Evolution line - five times the 32 MB that’s now common in competitors’ devices. Furthermore, VX Evolution’s 160MB of memory is available up to an incredible 512MB - that’s 15 times more than the current industry standard.



VX Evolution’s extended memory allows retailers to run additional revenue-generating applications such as telco top-up, loyalty and gift card as well as add ons such as return/exchange to lower their cost of business.

Cost Effective and Convenient Contactless Built-in

With contactless and NFC transaction volume growing, retailers are turning to contactless to make lines move faster and help minimise use of cash for low value transactions. They can now tap into this expanding market with fully integrated contactless payment capability available as an option on every VX Evolution device.

The contactless antenna is neatly tucked away under the display screen. There’s no need for a separate snap-on-reader or add-on peripherals. Integrated contactless in the portable VX 680 also means retailers can use it anywhere – for queue busting within the store; delivery points; or at outdoor venues and markets.

VeriFone supports the widest range of global standards for contactless applications:

- Discover Network Zip
- MasterCard PayPass
- Visa payWave
- MiFare
- American Express ExpressPay

Maximising a Flexible and Proven Platform

Technology is accelerating—driving shorter product cycles, raising customer expectations and creating critical usability considerations. Payment devices are part of this trend, just like any other technology.

So, does evolving new devices mean introducing a totally new platform? History has shown that platform switches by major vendors have caused unnecessary costs and made support more complex for retailers.

To make the most of new ‘customer focused’ technologies while addressing retailers operational needs VeriFone has instead focused on creating a unique evolution path that leverages all the advantages of its proven VX platform.

Why? Because the VX system and guiding development principles have a decade of proven use, combined with the new market-leading functionality of VX Evolution. VX maximises communications, speed and flexibility, supports value-added transactions and delivers multi-app capability with application separation at both the hardware and software level—enabling applications to securely co-exist on the same device.

VX Evolution lets retailers continue to leverage the VX platform using the hundreds of existing applications that run on VX. It is known and supported worldwide, with almost 8 million devices sold, handling hundreds of millions of transactions daily.

Its enhanced, yet familiar toolkit, plus clear guidelines and documentation, allows retailers to quickly build POS solutions based on VX Evolution’s core technologies and capabilities—giving efficient, known, and highly cost-effective migration path.

Similarly, the intuitive, user-friendly interface and consistent features of the VX platform will ensure fast deployment of enhancements with minimal additional end-user training, lowering costs to stay current and creating fewer crises for help desks.

In addition, its side-by-side application technology means that when standards or applications change over time, they are easier to change individually. And new ones are easy to add, keeping retailers ready for whatever the future holds in store.

Rather than built-in hardware LEDs, VX Evolution takes advantage of the full colour display to provide emulated LEDs. These can be efficiently adapted within the software to conform to the contactless colour LED requirements of specific countries. Retailers can also use the screens for retailer branding, saving time and money when compared with separate overlays. This software-based design provides them with all the flexibility they need to economically respond to change.

Conclusion

Speed, availability and performance will remain vital. So will the ability to make transactions easier, more convenient and also pleasurable for a population whose attitudes towards technology is becoming more intuitive, immersive and embracing.

VeriFone's latest VX Evolution portfolio reflects many of the key trends for PoS over the next few years. More memory, more processing power, larger, colourful touch screens, multiple applications, flexible multi-connectivity and, of course, contactless, security and PCI Compliance.

With powerful tools to engage consumers and staff more effectively, these new platforms will open the door to new revenue streams, more flexible bespoke OS services and more integrated powerful solutions - reflecting BOTH consumers' aspirations and retailers' stringent operational requirements - for true long term return on investment.

VX Evolution Checklist

- ✓ Interactive Touch Screens
- ✓ 3.5" TFT Displays
- ✓ 8 x Faster Processing
- ✓ 15 x More Memory
- ✓ PCI PTS 3.0
- ✓ End to End Encryption
- ✓ Contactless Options
- ✓ Versatile Connectivity
- ✓ Proven Platform
- ✓ Flexible Easy to Integrate
- ✓ Solid ROI
- ✓ Positive Customer & Staff Experience

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