



SQUARE REPORT

The decline of magstripe cards

The payments landscape is changing. See what EMV chip cards and contactless payments mean for business.

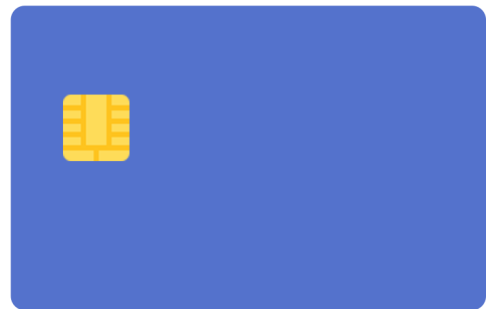


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RECENT CHANGES TO PAYMENTS TECHNOLOGY

For years, the payments landscape has remained relatively stagnant in the United States. But recently, things have begun to shift rather dramatically. These changes are being driven primarily by the need for more secure, authenticated forms of payment and by the increasingly digital consumer lifestyle.

First, there is the move towards a cash- and checkless society as consumers transition towards credit cards and digital payments as their preferred transaction methods. A recent Nilson Report projects that cash and check payment volume will decline by 24 percent and 46 percent in the United States by 2018. At the same time, card-payment volume is set to grow by over 50 percent. Digital payments technologies like card-on-file payments, recurring payments, and peer-to-peer digital payments are also expected to see increased adoption.

The second, simultaneous move is towards more secure, authenticated forms of payment. The adoption of EMV as the credit card processing standard in the United States (as driven by the EMV liability shift) is the most immediate change with the biggest impact. However, in the near future, we can expect to see NFC “contactless” payments—arguably more secure than EMV but much faster to process—reach mass adoption.

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Background on the Switch to Chip

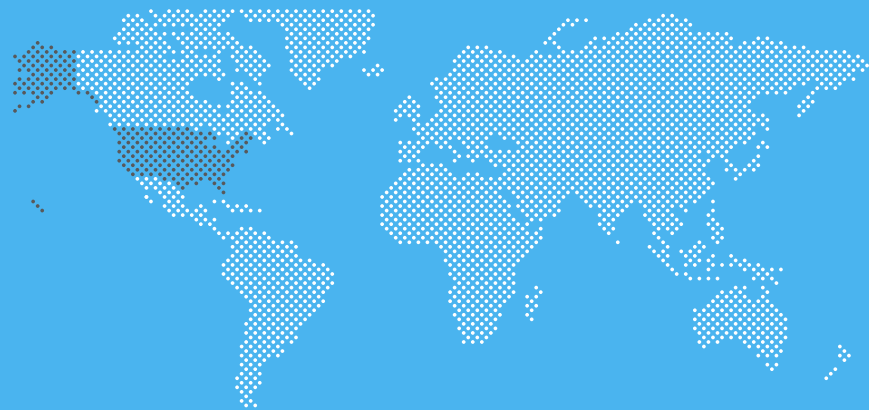
The transition to EMV as the credit card processing standard in the United States is progressing at full force. Banks and issuers are phasing out magstripe-only cards and replacing them with EMV chip cards, which have advanced technology that protects against counterfeiting.

The shift to EMV will have a sizable impact on both consumers and businesses. Namely, businesses will need to update their point of sale or payment terminal to accept chip cards—this reterminalization can be a costly and time-consuming task. This is especially true in light of the liability shift, a new set of policies for how banks handle fraud, which went into effect on October 1, 2015.

Now that liability has been shifted away from banks, businesses that aren't set up to accept chip cards could now be on the hook for certain types of fraudulent transactions (whereas previously the banks absorbed this cost).

Additionally, the transition requires behavioral change. Chip cards are dipped instead of swiped and remain inserted into the reader for the entirety of the transaction. They take noticeably longer to process than magstripe cards, which can lead to confusion on both the buyer and seller sides. Retailers and regulatory bodies alike, however, believe the tradeoff is worth it, thanks to the security benefits of EMV and chip-based transactions.

Late to the party: The United States is the last major market where people primarily use magnetic-stripe cards.



But the implications of the shift to EMV do not stop there. Similar to what has been seen in other countries that have adopted EMV, the shift to chip cards will likely accelerate usage of other forms of digital payments, including NFC contactless payments, as both consumers and businesses look for faster, more convenient ways to pay and accept payments. In the next two years, we expect that NFC and digital payment technologies will become predominant in the United States.



It doesn't add up

The U.S. makes only 24% of all credit card sales and is responsible for nearly 50% of fraud worldwide.

CARD SALES WORLDWIDE



FRAUD WORLDWIDE



It's time to catch up.

As the rest of the world has become more secure, fraud in the U.S. has increased.



Why Businesses Should Care

As the future of payments rapidly evolves, it's critical for U.S. businesses of all sizes to have an understanding of the new payments ecosystem in order to make informed decisions about their point-of-sale (POS) technology.

In this report, we provide a general overview of the payments changes that are currently underway, as well as what businesses can expect to see in the coming years. This paper also outlines key considerations for how businesses of all sizes should proceed in adopting the newest, most secure forms of payment.





THE SUNSET OF MAGSTRIPE CARDS IS OVERDUE IN THE U.S.

Magstripe cards are over four decades old and operate on the same technology as cassette tapes.

In addition to being antiquated, magstripe cards are extremely susceptible to counterfeiting. Sensitive cardholder data is held static within the magnetic stripe, making it relatively easy for a fraudster to lift the data and clone it onto a new card. To obtain and exploit cardholder data with minimal difficulty, fraudsters have been known to buy or make skimmers—a relatively unsophisticated piece of technology that can be purchased for as little as \$20.

Fraud is rampant in the United States. According to a BI Intelligence report, fraud cost U.S. retailers approximately \$32 billion in 2014, up from \$23 billion just one year earlier.

To put these figures into global context, the U.S. makes up half of the world's credit card fraud, despite representing only a quarter of all credit card transactions globally.

Some experts attribute the disproportionate fraud rates to the United States' laggardly adoption of chip cards. Most of the world has already transitioned to EMV as the standard. In the eurozone and Canada, EMV coverage has reached nearly 100 percent, and outside of the United States, worldwide EMV coverage has reached about 70 percent.

In fact, countries that have sunsetted magstripe cards have seen a dramatic reduction in fraud. The UK, for example, has seen a nearly 70 percent decline in counterfeit “card-present” transactions since adopting chip cards, according to Barclays. Similarly, in Canada, research firm Aite Group reports that losses from counterfeit, lost, and stolen cards dropped from 245 million Canadian dollars in 2008 to 111 million in 2013, consistent with the switch from magstripe to chip cards.

The United States is behind the pack in terms of EMV adoption, largely because of cost. Switching out all cards and payment processing systems (ATMs, registers, vending machines, self-service kiosks, and ticket terminals) will cost billions of dollars.

However, recent high-profile security breaches over the last few years have led to an acceleration of the move towards EMV. In 2014, President Obama signed an executive order that requires all government-issued credit cards and readers to come equipped with EMV technology starting in 2015. And large retailers like Home Depot, Walgreens, Target, and Walmart have pledged to accelerate the adoption of EMV-enabled terminals as well.



WHAT IS EMV TECHNOLOGY?

E MV, which stands for “Europay, MasterCard, and Visa,” refers to a set of specifications that apply to credit cards and payment terminals. The specifications are meant to protect merchants and consumers against certain types of card-present fraud and counterfeiting. EMVCo, overseen by Discover, UnionPay, American Express, JCB, MasterCard, and Visa, was created to manage and maintain the regulations and goals for EMV standards, including the worldwide deployment, acceptance, and interoperability of secure chip-based payment cards and devices including EMV-enabled point-of-sale terminals and ATMs.

EMV specifications address two important components of payments: the technological characteristics of chip cards and readers, as well as the security of cardholder data as it moves through the transaction life cycle. EMVCo aims to achieve these goals by moving payment cards to a more secure chip technology.



EMV is an example of an authenticated payment. Chip cards contain a microchip that helps protect bank details. The data on the microchip is encrypted and dynamic, making it extremely difficult for fraudsters to extract anything meaningful when skimming the card.

The actual EMV transaction life cycle is also more secure than a magnetic-stripe transaction. Magnetic-stripe cards transmit bank information to the payment terminal as-is. Chip cards are different in that they have sophisticated encryption built right into the chip. When you dip a chip card (it's a dip instead of a swipe), it talks back and forth with the payment terminal in an encrypted language to make sure everything checks out. For all these reasons, chip cards are far more adept at both protecting credit card information and spotting fraud quickly.



The EMV Liability Shift

Much of the switch to chip cards was a result of the “liability shift.” The EMV liability shift went into effect in October 2015. This shift is a change in how banking institutions handle fraud. Due to the shift, businesses that have not yet implemented an EMV-enabled terminal may now be on the hook for certain types of fraudulent transactions, whereas previously the banks absorbed the cost. The liability shift is an effort by U.S. banks to encourage and accelerate the adoption of EMV. While the adoption of EMV is positive, the shift can mean that businesses are saddled with unwanted charges.

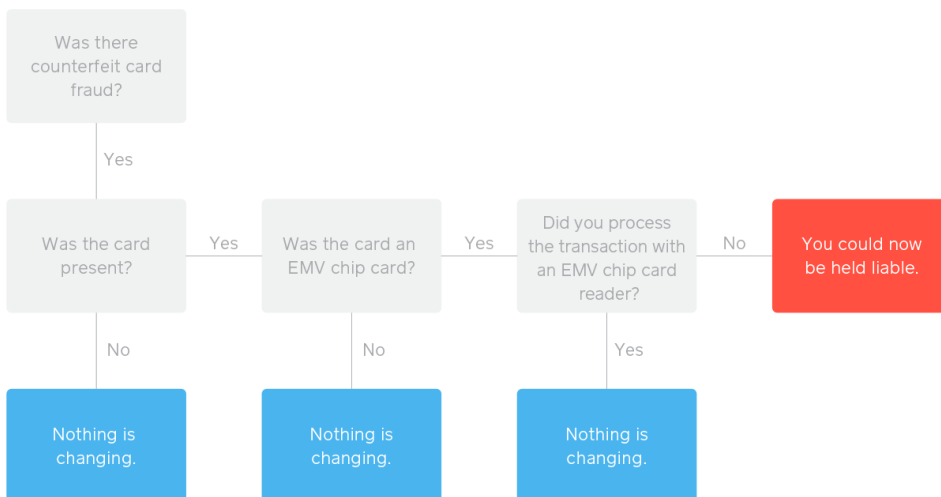
Only certain types of fraud apply to the liability shift. This chart outlines the kinds of fraud for which businesses are now liable.

We recommend that businesses implement an EMV-enabled POS to protect themselves from liability-shift-related charges.

What is Changing?

Long story short—for certain counterfeit transactions, the liability shifts to the party with the less secure technology.

Follow this simple flow chart to determine whether you—the merchant—could be held liable.



Get Covered for the Liability Shift in 5 Easy Steps

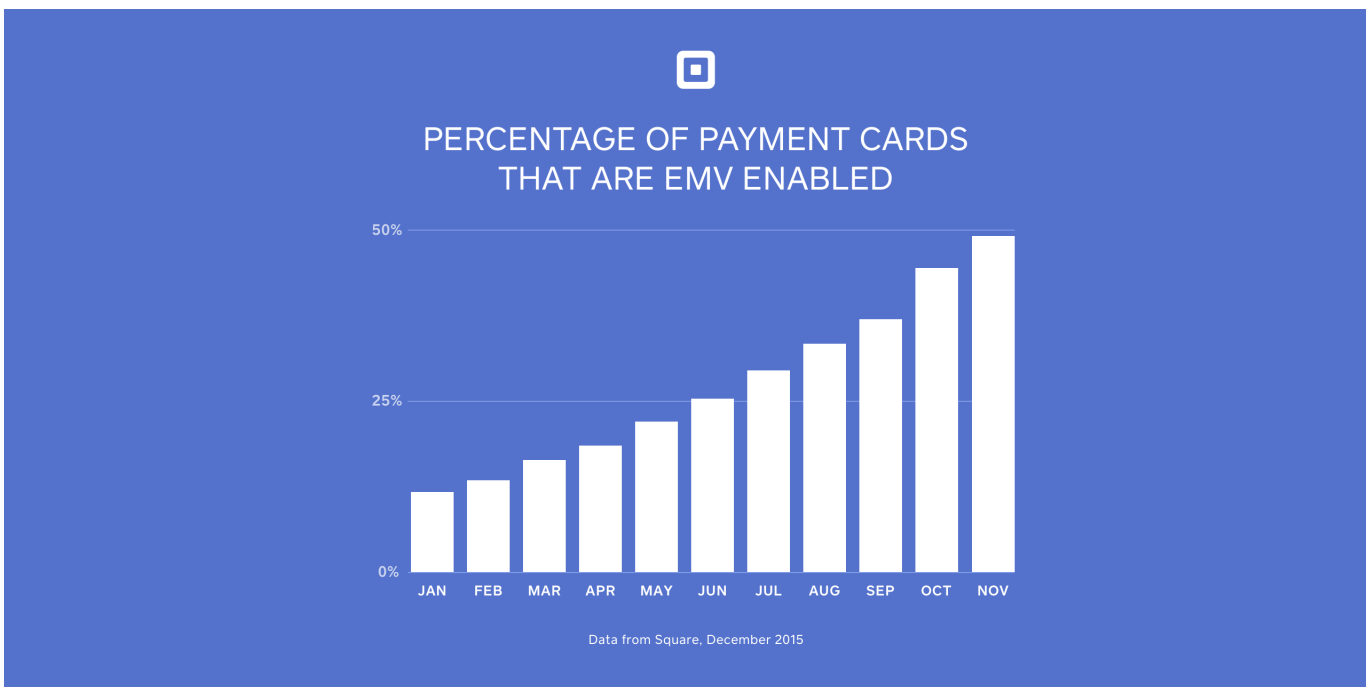
- 1 Educate yourself about the liability shift and EMV chip card technology.
- 2 Order an easy-to-implement EMV-enabled POS like the Square contactless and chip reader (\$49).
- 3 Pair the Square Reader with your mobile device to start accepting payments.
- 4 Train your staff on how to spot and accept chip cards (they are dipped instead of swiped).
- 5 Start accepting EMV chip cards.



STATUS TRACKING: THE STATE OF THE EMV MIGRATION

Consumer Adoption

The EMV migration is progressing at a steady clip. According to ABI Research, approximately 600 million EMV cards were issued in the U.S. in 2015. And the Payments Security Task Force, an industry group that includes representatives from financial institutions, the government, and the payments industry, projects that by the end of 2017, 98 percent of U.S. credit cards will be chip enabled.



Square data supports this point. In December 2015, 53 percent of cards accepted with Square were EMV chip-enabled cards.

Merchant Adoption

Despite the liability shift, and the fact that most consumers are carrying chip cards, U.S. businesses have been sluggish to adopt EMV-enabled payments terminals. While a recent Nilson Report shows a 32 percent increase in EMV-capable terminal shipments worldwide, Goldman Sachs estimates roughly that less than 50 percent of total terminals in the U.S. are currently EMV enabled. In the small-business category, that number is even lower. TD Bank's October survey found that just 41 percent of small business have installed EMV terminals.



Merchant Considerations for EMV Adoption

There are a number of reasons why the reterminalization process is slow going on the merchant side. In a recent survey by Software Advice, a reviews site for POS systems, SMB retailers that haven't adopted EMV were asked why they had yet to transition. Thirty-four percent reported that they didn't have the time to research or implement a new POS, and 33 percent said that switching everything out was too expensive. Another 23 percent thought upgrading was "unnecessary" and 10 percent weren't aware of EMV at all.

These reasons are not unfounded. Aside from being generally disorienting, the EMV migration is a costly effort. For small businesses, EMV terminals can be expensive—costing \$500 to \$1,000 on average.



Meet Square's Contactless and Chip Reader Available Now for \$49

Accept Apple Pay and chip cards everywhere

The Square contactless and chip reader is our most powerful reader yet. It securely accepts EMV chip cards as well as contactless payments like Apple Pay and Android Pay.

Pocket-sized and powerful

Packed with a powerful battery, the reader connects wirelessly to iOS or Android devices. It works seamlessly with Square's free point-of-sale app so you can take care of tipping, inventory, reports, and more.

Made for NFC and chip

One reader, two ways to get paid: accept Apple Pay (and other contactless payments) and EMV chip cards, too.



Chip Cards, by The Numbers

1.2 billion: Estimated number of credit and debit cards that have to be upgraded to chip cards.

12 million: Estimated number of point-of-sale terminals that have to be upgraded to accept chip cards.

400 million–500 million: Estimated number of chip cards that will in circulation by the end of 2015.

670,000: Estimated number of merchant locations currently ready to process chip card payments.

25%: Percentage of US. debit cards that will be issued as EMV cards by the end of 2015.

60%: Percentage of consumers with a chip card as of October 31, 2015.

\$3.50: Average cost for issuing a new EMV card.

\$500—\$1,000: Average cost of an EMV-compliant point-of-sale terminal.

Sources: Alte Group, Payments Source, 2015 PULSE Debit Issuer Survey, Payment Security Task Force, Visa; Ingenico Group; Smart Card Alliance

In addition to cost, EMV cards have a much slower transaction process, which affects the customer experience. According to a recent report from research firm IHL, the typical EMV transaction takes five to eight seconds longer than the average magstripe-card transaction. And that's assuming everything goes as it should—there are often even more hiccups in the process as buyers and sellers navigate the new technology.

However, small businesses are still advised to adopt EMV technology to protect themselves from the liability shift and offer the most secure way to process credit.

Cost. EMV terminals can cost hundreds of dollars (the Square EMV reader costs \$49).

Slow Transaction Times. EMV transactions are five to eight seconds slower than magstripe transactions.

Line Speed. For merchants with long queues, EMV transactions can slow down the line significantly.

Customer Experience. Because of their speed, EMV transactions can be a subpar customer experience.



After EMV: What is Next?

Overarchingly, there is a movement towards more secure, authenticated forms of payment like EMV. However, convenience, speed, and mobility are also quickly driving payment innovations. We are seeing this in the increased adoption of digital payment mechanisms like card-on-file payments, digital invoices, and peer-to-peer digital payment apps that have skyrocketed along with the sharing economy.

The trend towards digitized payments also applies to in-person commerce, with experts predicting a significant rise in NFC payments—and specifically, NFC mobile payments—in the near future.

What is NFC?

NFC (near field technology) payments are any purchase in which a device or card—either a contactless card or a mobile device—is involved in executing and confirming a payment. NFC payments use wireless communication technology to allow objects within close range to communicate and exchange data with one another.

Contactless card payments—payments that require customers to “tap” their card to pay—are one popular example of NFC payments, especially in Europe and Australia. There are also mobile contactless payment apps—the most popular examples in the space being Apple Pay, Android Pay, and Samsung Pay.





Here's how NFC contactless payments work



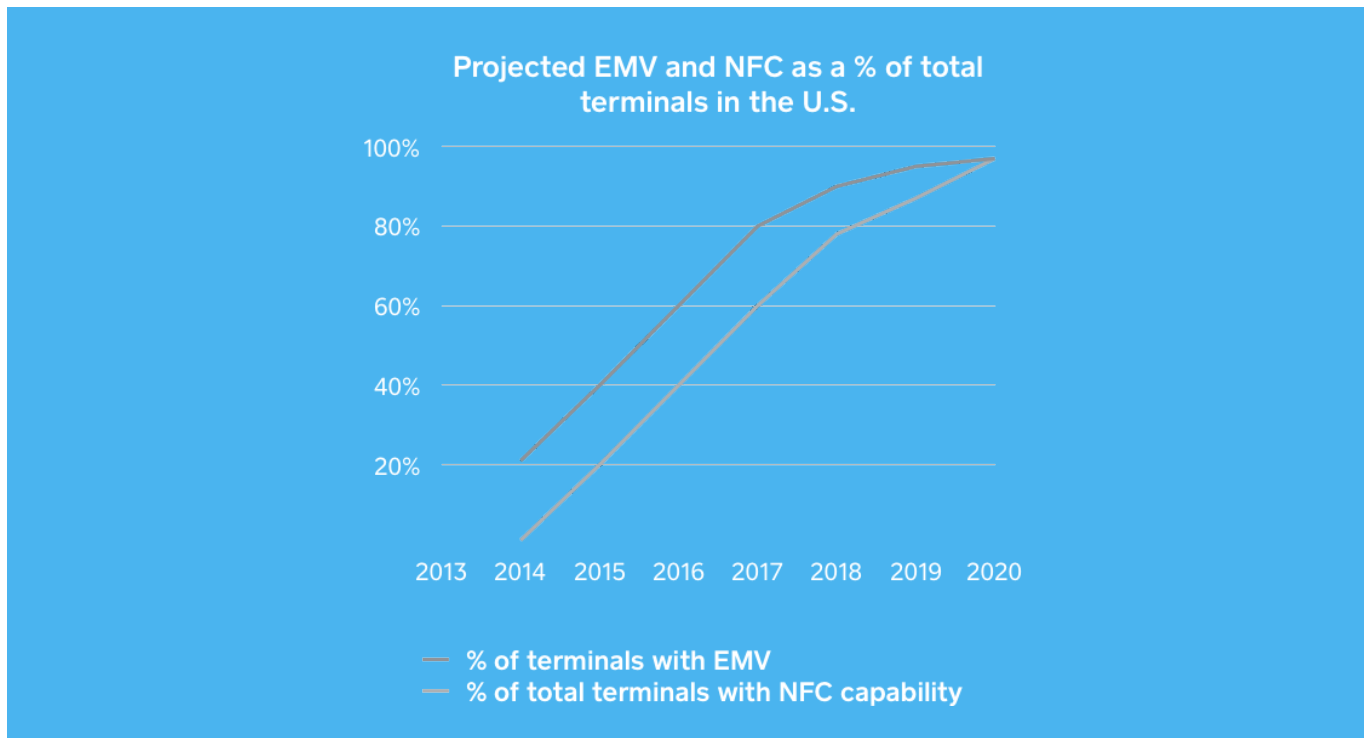
- 1 A consumer has an NFC-enabled card or mobile phone—such as the new Apple or Android devices—that contains a version of a payment app (e.g., Apple Pay or Android Pay) and is personalized with an electronic credit or debit card issued by the consumer's financial institution.
- 2 When the consumer visits a merchant who has a contactless payment-capable POS system, he or she can pay for goods or services by holding or tapping the phone close to the merchant's NFC contactless reader.
- 3 The consumer's credit card information is then encrypted and transmitted from the smartphone to the contactless POS reader via radio frequency (RFID) to complete the payment in a matter of seconds.



STATUS TRACKING: THE STATE OF NFC ADOPTION

If the explosive growth of NFC (both contactless cards and mobile payments) in regions that have already fully transitioned to EMV is any indicator, the United States is poised for large-scale adoption of similar technologies.

Australia has seen a surge in contactless card payments since adopting EMV. There, according to Australian bank Westpac, 60 percent of transactions are contactless. Australia isn't the only region that has seen a spike in contactless payments. One in eight purchases made with UK cards in December used contactless technology. In fact, last year UK consumers used this technology to make purchases more times than the last seven years combined. This surge indicates dissatisfaction with the EMV chip card experience.



Experts expect to see similar trends among consumers and businesses in the United States. A Goldman Sachs report forecasts 78 percent NFC penetration, among U.S. businesses, by 2018 and 98 percent by 2020. The report also predicts that the U.S. will outpace other regions in NFC adoption despite lagging in EMV penetration.

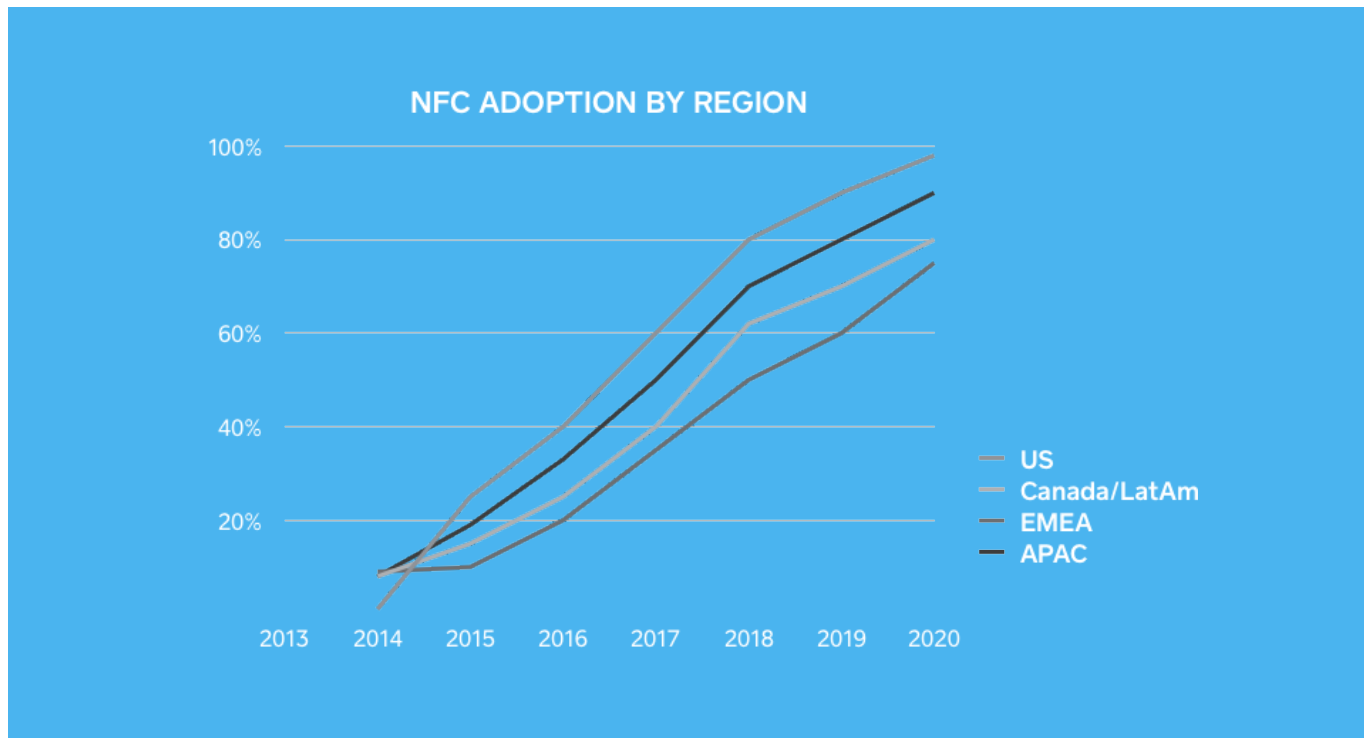
And BI Intelligence projects that merchants will quickly begin to unlock the potential of mobile payments this year, forecasting that U.S. in-store mobile payments will grow from \$120 billion in 2016 to \$808 billion by 2019.



The NFC adoption forecasts may seem bullish, especially when compared to EMV and current NFC adoption metrics, but the predictions are supported by data.

Many experts believe that consumers' slow adoption of mobile wallet payments is due to the lack of NFC-enabled payment acceptance devices. Up until now, NFC-enabled payment systems in the U.S. were incredibly costly for many small-to-medium-size businesses that couldn't afford huge reterminalizations costs or didn't see the immediate return on investment.

As NFC-enabled payment terminals become more affordable and begin to appear at more and more retailers, consumer usage of mobile wallets will likely increase. The benefits of NFC for consumers, merchants, issuers, and mobile operators are numerous and are almost entirely in line with the "must haves" that have historically driven wide stakeholder adoption.





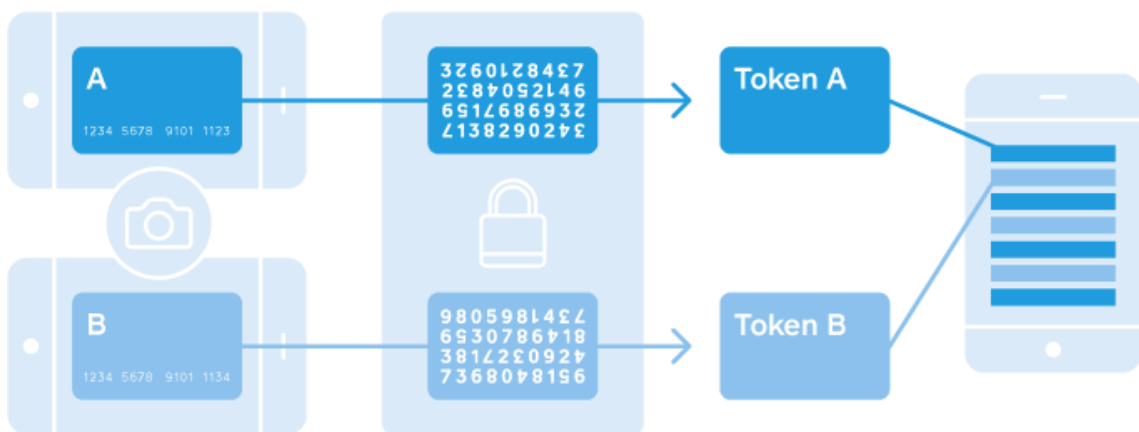
MERCHANT CONSIDERATIONS: SWITCHING TO AN NFC-ENABLED PAYMENT SYSTEM

N NFC-enabled payments have strong benefits for businesses and consumers alike. While EMV is a strong step in protecting both business and consumers and securing sensitive data, NFC is the fastest, most secure, and most convenient payment technology in the market today.

Security: Tokenization

NFC mobile payments tokenize consumers' sensitive information, which means bank details and other personal cardholder data are masked with an assigned I.D. that's unintelligible (and thus unusable) to fraudsters. These tokens change every time an NFC transaction happens, so the data is near impossible to isolate and extract. NFC payments like Apple Pay also go a step beyond EMV with fingerprint technology (Touch ID, in the case of Apple Pay).

Tokenization Simplified





Speed

NFC mobile payments are incredibly fast—almost instantaneous. For businesses like quick-service restaurants (QSRs) and retailers who are looking to keep lines short, the near instant transaction time is a significant benefit.

Slow EMV transaction times will encourage businesses and consumers to switch to contactless payments: **In June 2015, the British Bankers' Association reported that since the introduction of contactless cards, consumers have collectively saved over 90 years of waiting time at the checkout.**

Convenience

Consumers have come to rely on their mobile devices for day-to-day tasks. NFC-enabled contactless payments allow consumers to also pay via their mobile device, meaning they never have to take out their physical wallet. What's more, if a physical credit card is lost or stolen, consumers typically have to work with the banks, and wait up to 10 days, to replace the card. There's no need to do that with mobile wallets. A new card can be digitally provisioned to a mobile wallet and consumers can use the new, virtual card almost instantly.

As the payments landscape changes, it's imperative that businesses of all sizes adopt technology to stay current and secure but also look to the future when making POS terminal upgrades. With the EMV liability shift now in effect, we strongly recommend that businesses implement a POS that can accept both chip cards and mobile NFC payments, as soon as possible.

How to Start Accepting NFC Payments with Square

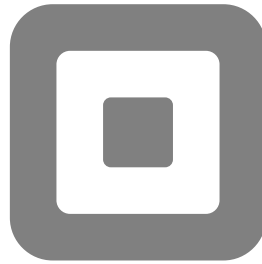
Educate yourself and key business stakeholders about NFC contactless payments.

Order Square's NFC-enabled contactless reader.

Pair the reader with your mobile device.

Educate yourself and your staff on how to accept mobile payments.

Implement a countertop display that lets customers know you accept mobile payments.



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