



**Smart Card
Alliance**

Contactless Payments: Frequently Asked Questions

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Contactless Payments: Frequently Asked Questions

This document was developed by the Smart Card Alliance Contactless Payments Council to answer frequently-asked questions about contactless payments. The questions and answers below apply only to contactless payment using contactless smart card technology, as implemented by American Express, Discover Network, MasterCard and Visa.

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General

1. What are contactless payments?

Contactless payments are simply payment transactions that require no physical contact between the consumer payment device and the physical point-of-sale (POS) terminal. In a contactless payment transaction, the consumer holds the contactless card or device in close proximity (less than 2-4 inches) to the merchant POS terminal and the payment account information is communicated wirelessly (via radio frequency (RF)).

In the United States, the term “contactless payments” refers to the use of payment products currently supported by American Express[®] (ExpressPay), Discover[®] Network ZipSM MasterCard (MasterCard[®] PayPassTM), and Visa Contactless.

2. What is RF?

Radio frequency (RF) waves are the frequencies within the electromagnetic spectrum associated with radio wave propagation. Many wireless communications technologies are based on RF, including radio, television, mobile phones, wireless networks and now, contactless payment cards and devices.

3. Is contactless payment technology the same as RFID technology?

No. There is a wide range of RF technologies used for a variety of applications. Each RF technology supports different operational parameters, RF frequencies, read ranges and security and privacy features based on the application. For example, RFID technologies are used in manufacturing, shipping and object-related tracking and are designed to operate over long ranges (e.g., 25 feet). Applications using RFID typically have minimal built-in support for security and privacy. On the other hand, the contactless smart cards that are used for making payments are designed to operate at a short range (less than 2-4 inches) and can support the robust security capabilities of the contact smart cards typically used for financial services and other applications where strong security is a requirement.

4. What are the benefits and advantages of contactless payments?

There is significant momentum in the marketplace to add the option to make payments via contactless payments to charge, credit, debit, prepaid, and gift cards in both consumer and

corporate card programs. Initial results indicate that contactless payment provides significant benefits for all stakeholders. Benefits and advantages of contactless payments include:

- Consumers like the speed and convenience of contactless payments. They no longer need to swipe their cards or carry cash for lower value transactions.
- With contactless payments, financial institutions can increase transaction volumes by capturing transactions typically made using cash. In addition, they can differentiate themselves with innovative new form factors to enhance loyalty and retention.
- Contactless payments use the international standard ISO/IEC14443 for contactless communications that is being adopted worldwide for financial payments and leverage the existing payments infrastructure which has supported payment cards for more than 40 years.
- Contactless payment cards are backed by the major payment brands -- American Express, Discover Network, MasterCard and Visa. Since mid-2005, over 17 million cards have been issued by some of the largest financial issuers in the U.S. and around the world.
- Acceptance of contactless payments is being adopted by a wide range of retail segments where speed and convenience are critical to the merchant service model. Over 35,000 merchant locations now accept contactless payment cards and devices. Acceptance of contactless payments has resulted in higher throughput, increased spend per transaction and greater customer convenience for merchants.
- In addition to the security measures already embedded within the traditional payment card infrastructure, new security measures have been incorporated to mitigate possible risks resulting from contactless payments. Cardholders and merchants are also protected by specific programs developed by the card brands and banks to further minimize liabilities related to fraud and misuse.

5. Is contactless payment technology more appropriate for credit cards or debit cards?

Contactless payment technology is a feature that can be added to any payment card product (e.g., credit, debit, prepaid). Contactless technology is now being used in both credit and debit products. The choice of which type or product is better suited to contactless technology is determined by the issuer and their business strategy.

Market Information

6. How many contactless cards have been issued in the United States? What are the expectations for growth in the market?

Industry sources estimate that over 17 million cards have been issued in the United States since mid-2005. The number of contactless cards in 2007 could be two or three times the 2006 volume as more portfolios become enabled, renewal cycles expand the penetration of contactless payments within existing portfolios, and new acquisitions occur. However, as with any new technology, it is very difficult to predict future volumes.

7. Which financial payment card issuers are issuing contactless payment cards and devices?

U.S. issuers who have adopted contactless payment technology as of January 2007 include Advanta, American Express, Bank of America, Citibank, Citizens Bank, GE Consumer Finance, HSBC Bank, JPMorgan Chase, KeyBank, Meijer Stores, US Bank and Wells Fargo.

The Smart Card Alliance Contactless Payments Resources page at <http://www.smartcardalliance.org/pages/activities-councils-contactless-payments-resources> has up-to-date information and news about contactless payments.

8. How does the emergence of biometric technology compete with contactless payments?

The nature of different acceptance venues, multiple stakeholder goals, perception of value-add, consumer access, and readiness determine the type of deployment for emerging technologies. Many contactless payment programs benefit from the speed and convenience of contactless technology while leveraging the existing payment infrastructure. Biometric payment pilot deployments seek to validate goals unique to biometric technology and its stakeholders. Both technologies are exploring new ways to add convenience and value to payments.

Contactless Payment Operation

9. Is the information passed in a contactless payment transaction the same that would appear in the track data of a magnetic stripe card?

Contactless payments leverage the same track data format but do not use exactly the same data elements. Please contact American Express, Discover Network, MasterCard or Visa about the specific implementations.

10. If a consumer has multiple contactless cards in a wallet or multiple contactless key fobs, how does the contactless transaction work?

If multiple contactless devices are held within proximity of a reader, anti-collision will prevent multiple devices from being read. In order to ensure a deliberate card read, a single contactless device must be placed within range of the reader.

11. How are tips and gratuities handled in contactless transactions (for example, at a restaurant)?

Tips and gratuities are handled in the same way as they would be with traditional payment cards, where the tip is included as part of the overall total amount before the transaction is processed.

Signature Waiver

12. When are signatures not required for contactless transactions?

American Express, Discover Network, MasterCard, and Visa, in concert with their issuers, have implemented new programs and rules designed to encourage adoption of contactless payments. These programs are typically aimed at transaction scenarios where the transaction value is low (typically below \$25) and cash is the predominant form of payment. While the specific programs differ by payment brand and may be specific to any given issuer and/or merchant implementation, these programs may include the following features:

- The consumer signature is not required.
- A customer receipt is only required upon cardholder request.
- The merchant retains full chargeback protection for transactions that meet the program requirements.

Contactless payment can also be used for transactions greater than \$25. For example, pharmacy chains accept contactless payment and frequently have higher valued transactions. For these transactions, a signature is most likely required by the merchant to maintain full chargeback rights. Some merchants do extend the benefit of “no signature” for larger-sized

transactions to their customers. However, these merchants typically would have made the business decision to take on the additional risk that may be associated with these transactions.

Merchant Benefits and Implementation

13. How much time does contactless payment technology save versus traditional card payments? Are there any quantifiable benefits for merchants with regard to contactless versus magnetic stripe payments?

Chase has reported that customer time at the POS is reduced 30-40%, and American Express has reported that contactless transactions are 63% faster than cash and 53% faster than using a traditional credit card. MasterCard found the most significant time savings were realized in the drive-through environment where 12-18 seconds were shaved off the purchase time as compared to cash. Merchants implementing contactless payment have confirmed that there are time savings.

More information is available in several white papers published by the Smart Card Alliance, available at <http://www.smartcardalliance.org/>.

14. Is there a common acceptance mark for contactless payments at the merchant point-of-sale?

Yes. American Express, Discover Network, MasterCard, and Visa have agreed to use a common contactless symbol to communicate the acceptance of contactless payments, based on the ISO/IEC 14443 standard, for global use at POS terminals. The contactless symbol helps consumers and merchant staff to easily understand how and where to present contactless cards and other devices so that they interact correctly with the terminal.



15. What is the cost to the merchant to upgrade its point-of-sale to accept contactless payments?

There is an incremental cost to merchants to accept contactless payments. The actual expense is dependent upon the merchant's existing infrastructure and its choice of contactless acceptance solution, for example: peripheral or integrated. Merchants should contact their acquirer or terminal vendor for exact costs.

16. Can the same POS terminal be used for accepting all payment brands' contactless payment cards and devices?

The same POS terminal can be set up to accept payment from all American Express ExpressPay, Discover Network, MasterCard PayPass and Visa Contactless contactless cards and devices; implementation will depend on the payment brands accepted by the merchant. Merchants should consult their POS vendor or merchant acquirer for additional information.

17. What POS systems are capable of accepting a contactless payment device?

The devices listed below are some of the devices available. There may be others and certainly manufacturers are developing new devices with contactless capabilities.

Contactless readers:

- OTI (<http://www.otiglobal.com>)
- VeriFone (<http://www.verifone.com>)
- ViVOtech (<http://www.vivotech.com>)

Contactless POS systems:

- Hypercom (<http://www.hypercom.com>)
- IBM (<http://www-03.ibm.com/products/retail/index.html>)
- Ingenico (<http://www.ingenico-us.com>)
- Lipman (<http://www.verifone.com>)
- Nurit (<http://www.verifone.com>)
- Micros (<http://www.micros.com>)
- Radiant (<http://www.radiantsystems.com>)
- VeriFone (<http://www.verifone.com>)

MasterCard *PayPass* approved products can be found at <http://www.paypass.com>.

Visa Contactless approved products can be found at <http://partnernetwork.visa.com/cd/testing/approved.jsp>.

Technical Questions

18. Can contactless payment transactions be identified from other transactions in the payment system?

Yes, the payment brands have implemented new indicator requirements and other means to uniquely identify contactless payment transactions from traditional, contact payment transactions. Please consult with the payment brands for specific payment brand requirements.

19. Are there any differences when personalizing contactless payment cards versus magnetic-stripe-only cards?

Yes. There are additional personalization processes for contactless payment cards since payment data and security keys are loaded onto the contactless smart card chip. Most major personalization bureaus support the contactless process. Issuers should contact their personalization vendor for changes and additions to their existing process for embossing and encoding.

Contactless Payments Security

20. Are contactless payment transactions secure?

Yes. Contactless payments, as implemented by American Express, Discover Network, MasterCard and Visa, are secure. The financial payment networks used to process contactless payments are the same networks that process millions of magnetic stripe transactions securely today. The primary difference is that the contactless payment device (card, fob or other form factor) uses radio frequency technology to send payment account information to the merchant's point-of-sale terminal instead of requiring the payment card's magnetic stripe to be physically read. Contactless payment devices are designed to operate at very short ranges (less than 2-4 inches) with the POS, and can include additional security elements to further enhance security.

The financial payments industry has designed multiple layers of security throughout the traditional credit and debit payment systems to protect all parties involved in a payment transaction. Most of these protective measures are independent of the technology used to transfer the consumer payment account information from the payment card or device to the merchant POS terminal and are used for both magnetic stripe and contactless transactions. For example, for online authorizations, risk management and fraud detection systems are used to detect potential fraudulent activity for any credit or debit card payment transaction. Consumers are further protected by the liability protection programs offered by the various payment brands and their

issuing banks for transactions that may have been made fraudulently using their credit or debit accounts.

21. How are contactless payment transactions made secure?

For contactless payments, the financial industry uses added security technology both on the contactless device as well as in the processing network and system to prevent fraud. While implementations differ among issuers, examples of security measures that are being used include the following:

- At the card level, each contactless card can have its own unique built-in secret “key” that is used to generate a unique card verification value or a cryptogram that exclusively identifies each transaction. No two cards share the same key, and the key is never transmitted. Contactless cards employ standardized encryption technology, 128-bit (e.g. Triple DES).
- At the system level, payment networks have the ability to automatically detect and reject any attempt to use the same transaction information more than once. Thus, even if a fraudster should “read” the information from a contactless transaction, or even numerous transactions from the same card, this information would be useless.
- Many contactless payment cards and devices do not transmit the name of the cardholder, limiting the amount of information that is communicated during the transaction. The cardholder name is part of the existing magnetic stripe data common on most traditional credit cards.
- Some contactless payment cards and devices do not include the cardholder's account number, but use an alternate number that is associated with a payment account by the issuer's backend processing system. This alternate number would not be able to be used in other payment transactions (e.g., with a magnetic stripe card or on the Internet).

In addition, cardholders control both the transaction and the card throughout the transaction. Cardholders do not have to surrender either a card or their account information to a third party during a contactless transaction.

22. What steps can consumers take to protect their contactless payment cards?

As with all credit and debit payment cards, consumers can minimize any risk of having their payment card data read by a potential thief by taking common precautions such as not leaving their contactless payment card or key fob unattended for a length of time.

Form Factors and Card Cost

23. What other form factors are available for contactless payment?

Contactless payment technology enables new, innovative form factors beyond standard-sized cards. While card form factor is most common today, issuers and payment brands have introduced a variety of new form factors, including fobs, mobile phones, mini cards, wristwatches and wristbands -- all enabled with contactless payment.

24. What is the cost differential to the bank to have a contactless payment card vs. the traditional magnetic stripe card?

There is an incremental cost for a contactless payment card, with the cost driven by the card volume and design. Alternative form factors, such as fobs and mini cards, are typically more

expensive than contactless cards but also depend on quantity, design and packaging. Card vendors can provide more information about the cost of contactless cards and devices.

25. Where can I find information on the cards that are approved for contactless payment?

MasterCard and Visa have defined specifications and certification processes to assist card manufacturers and silicon providers to develop market-ready products. Once a product is approved by MasterCard or Visa, it appears on their respective lists of approved products which are regularly updated to include new products.

For MasterCard *PayPass* product information, please go to: <http://www.paypass.com>.

For Visa Contactless product information, please go to:
<http://partnernetwork.visa.com/cd/testing/approved.jsp>

American Express, as an issuer, negotiates directly with specific vendors for the development of products meeting its specifications and therefore does not publish a list of approved products.

Discover Network offers specifications for all card manufacturers or silicon providers to develop products that must pass their testing and certification requirements. For Discover Network contactless payments information, please go to: <http://www.discovernetwork.com>.

Future Capabilities

26. Can contactless payments be used to pay transit fares?

Two pilot projects, MTA New York City Transit and Utah Transit Authority, are evaluating the use of contactless financial payment devices to pay fares directly at subway gates and on buses, respectively. Additional information on these pilots can be found in the Smart Card Alliance Transportation Council white paper, "Transit and Contactless Financial Payment: New Opportunities for Collaboration and Convergence," available at <http://www.smartcardalliance.org>.

In addition, since the late 1990s, U.S. transit agencies have made significant investments in contactless smart card-based automatic fare collection (AFC) systems. Currently, projects are under way in major metropolitan areas in North America to deploy fully integrated contactless smart card-based transit fare systems, where a contactless smart card is the fare medium. These projects use contactless technology that is unique for transit fare collection, rather than the technology used in the contactless financial payment cards offered by American Express, Discover Network, MasterCard and Visa. Additional information on the use of contactless smart cards in transportation can be found at <http://www.smartcardalliance.org/pages/smart-cards-applications-transportation>.

27. Will contactless payment cards be used anywhere other than the traditional, face-to-face point-of-sale?

Contactless is growing in those acceptance venues that require fast throughput and are cash heavy. Contactless can also expand to emerging channels such as unattended, mobile, transit and other non-retail-based merchant payment settings. While complimentary applications, in addition to the core payment function, can increase the value of the card, deployment within an overall system requires other considerations to be examined, including: payment brand approvals, terminal integration, back-end system development and deployment, and card personalization and application deployment.

28. Can mobile phones be used for contactless payments?

The industry has already seen the first instances of mobile phones being used to conduct contactless payments. Several pilots have been launched in the U.S. and in other markets around the world. Typically, these offerings leverage Near Field Communication (NFC) technologies to deliver contactless payment capabilities.

For more information about mobile payments, please see the Smart Card Alliance report, "Mobile Payments at the Physical Point-of-Sale: Assessing U.S. Market Drivers and Industry Direction," available at <http://www.smartcardalliance.org>. For more information regarding NFC, please review the resources of the NFC Forum available at <http://www.nfc-forum.org>.

International, EMV and Contactless

29. Is contactless payment EMV-compliant?

Contactless payment is being delivered around the world by the payment card brands and their issuing and merchant customers by leveraging the existing payment card infrastructure as its basis for implementation. In the U.S., the existing magnetic stripe processing infrastructure is being leveraged to deploy contactless payment per the specific program specifications of the payment brands. Likewise, countries where the payment schemes are predominately chip-based and have implemented EMV leverage the contactless EMV specifications as published by MasterCard, Visa and the other payment brands. Regardless of whether magnetic stripe or EMV is the core payment card infrastructure being leveraged, contactless payment program specifications developed by the payment brands are designed to be globally interoperable at the point-of-sale.

Contactless EMV programs have been launched in the United Kingdom, Turkey, Taiwan, Malaysia, Mexico, Lebanon, Korea and South Africa. Some contactless EMV implementations use dual-interface smart card chips for use in contactless and contact modes.

About the Smart Card Alliance

The Smart Card Alliance is a not-for-profit, multi-industry association working to stimulate the understanding, adoption, use and widespread application of smart card technology. Through specific projects such as education programs, market research, advocacy, industry relations and open forums, the Alliance keeps its members connected to industry leaders and innovative thought. The Alliance is the single industry voice for smart cards, leading industry discussion on the impact and value of smart cards in the U.S. and Latin America. For more information please visit <http://www.smartcardalliance.org>.

About the Smart Card Alliance Contactless Payments Council

The Contactless Payments Council (<http://www.smartcardalliance.org/pages/activities-councils-contactless-payments>) is one of several Smart Card Alliance technology and industry councils. The Contactless Payments Council was formed to focus on facilitating the adoption of contactless payments in the U.S. through education programs for consumers, merchants and issuers. The group is bringing together financial payments industry leaders, merchants and suppliers. The Council's primary goal is to inform and educate the market about the value of contactless payment and work to address misconceptions about the capabilities and security of contactless technology. Council participation is open to any Smart Card Alliance member who wishes to contribute to the Council projects.

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