



Smart Card  
Alliance

News from the Alliance

## Backgrounder

## Contactless Payment: Top Ten Questions

### **What is contactless payment?**

The latest buzz in retail payment applications is contactless payment—a non-cash payment transaction that doesn't need a physical connection between the consumer payment device and the physical point-of-sale (POS) terminal. Contactless payment devices are available in multiple form factors, ranging from traditional plastic cards to key fobs, watches and mobile phones. Whether it is a new feature on a standard credit card or a dedicated payment account, contactless payment offers an alternative to more traditional payment methods such as magnetic stripe credit cards or cash.

### **Where will it be offered?**

Contactless payment is particularly attractive in merchant segments where speed and convenience of payment are essential, including quick-service restaurants, gas stations, convenience stores, parking facilities, transit services, entertainment venues and unstaffed vending locations.

### **What is the advantage of contactless payment for consumers?**

Contactless payment offers consumers the speed and convenience of “touch-and-go” or “pay-with-a-wave” payment devices. No more fumbling for cash, counting change, or worrying about whether you have enough cash for a purchase. In many cases, consumers also don't need to sign a receipt or enter a personal identification number (PIN). Perhaps the biggest benefit however is that it will give consumers a fast alternative to cash payment.

### **What is the advantage of contactless payment for merchants and issuers?**

A Smart Card Alliance report, “Contactless Payments: Delivering Merchant and Consumer Benefits,” detailed the many benefits to retailers who accept contactless payment—faster transaction times, increased revenue, improved operational efficiency and lower operating costs. The report includes results from the MasterCard and American Express pilots to illustrate the benefits to merchants and issuers. For example, transaction volume and size increased. MasterCard PayPass cardholder transaction volumes increased 12 percent from the prior year at the PayPass trial merchants. American Express ExpressPay pilot results showed that customer average transaction size increased 20 to 30 percent compared to cash spending at participating merchants.

The technology allows issuers to penetrate the cash payment market, enjoy increased customer transaction volume and improve customer retention and loyalty.

### **How does contactless payment work?**

A consumer presents a contactless MasterCard, Visa or American Express payment card or keychain device to within a couple of inches of the POS terminal. The terminal automatically reads payment account information stored on the smart chip embedded in the card and securely processes the payment transaction.

Inside the card or keychain device a contactless smart chip is wired to an antenna. Contactless payment terminals emit high frequency radio waves which are used to both provide power to the

contactless payment device and communicate information between the device and the reader. When the contactless payment device is brought close to the reader (typically less than 4 inches away), the contactless smart chip is powered on. Once the chip is powered on, a wireless communication protocol is established between the contactless device and the reader. The card and the terminal exchange security information, then conduct a secure payment transaction, all in less than one-third of a second.

### **Where is contactless payment being used?**

Contactless payment is already being used in Asia, Europe and North America. Trains and subway systems around the world already use contactless smart cards for transit payment, with many major cities in the United States like Washington D.C., Chicago, Boston and San Francisco also implementing or planning to implement contactless smart card-based automatic fare collection (AFC) systems. American Express and MasterCard conducted contactless payment pilots in several cities (Orlando, FL and Dallas, TX for MasterCard PayPass and Phoenix, AZ and New York, NY for American Express ExpressPay) before they and Visa USA announced that contactless payments were ready for nationwide launch.

### **Who is using contactless payment?**

Millions of U.S. consumers are already using contactless payment technologies, with tens of millions more expected this year as the new financial industry-backed contactless payment initiatives are launched nationwide. Chase Bank U.S.A. recently announced a broad roll out of “blink” credit cards with contactless payment technology. American Express, JCB, MasterCard, and Visa have all conducted pilot programs for contactless payment. Transit riders in major cities pass through turnstiles and parking facilities using contactless AFC cards. Consumers purchase gasoline, fast food and groceries using ExxonMobil Speedpass™. Motorists speed through toll lanes on freeways, bridges and tunnels using ultra high frequency contactless payment systems such as E-Z Pass™ and similar toll payment systems.

### **Is the technology in American Express, MasterCard and Visa contactless payment devices the same the technology in RFID tags used in tracking shipments?**

No. While both American Express, MasterCard and Visa contactless payment devices and RFID tags use RF technology to communicate information, the contactless payment devices have fundamentally different capabilities than RFID tags.

Applications that use RF to communicate are implemented using different frequencies and hardware capabilities, resulting in operational ranges and security features that are based on the needs specific to each market. The contactless smart chips used in payment devices can provide much higher security using techniques like mutual authentication, unique diversified session keys and data encryption. As a general definition, RFID tag technology is used in applications that identify or track objects and contactless smart chip technology is used in applications that identify people or store financial or personal information. You can think of the RFID tag as an alternative to a bar code.

Contactless smart chip technology is a type of smart card, and you can think of it as a tiny computer in a contactless device that is designed to protect the information inside it and any transactions made with it.

In general the differences between these two technologies, particularly the security and privacy protection advantages of contactless smart chips, are poorly understood due to the complexity of the subject.

### **Do all contactless payment devices use smart chip technology?**

No. Different contactless payment schemes use different technology to implement contactless radio frequency communications and consumer account information storage. This is very important to remember since the operational range and security features will not be the same for all contactless payment implementations.

In general, contactless payment devices that use smart chip technology comply with the international standard ISO/IEC 14443. This standard limits the ability to read the contactless device to approximately 4 inches (10 centimeters) and smart chips complying with this standard can support a wide variety of security measures to ensure the integrity, confidentiality and privacy of stored or transmitted information and to counter potential security threats. For example, the American Express, MasterCard and Visa contactless payment initiatives and many new contactless transit fare payment cards implement ISO/IEC 14443 compliant smart chip technology in the contactless payment cards and devices. Longer-range contactless toll payment implementations and ExxonMobil Speedpass do not use smart chip technology.

It is also important to note that there are contactless payment implementations that use proprietary smart chip technology that is not compliant with ISO/IEC 14443, but that may incorporate security features to protect the payment transactions.

**Where can I learn more?**

The Smart Card Alliance has free reports on contactless technology and payment at [www.smartcardalliance.org](http://www.smartcardalliance.org).

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