WHY EMV AND WHY NOW?

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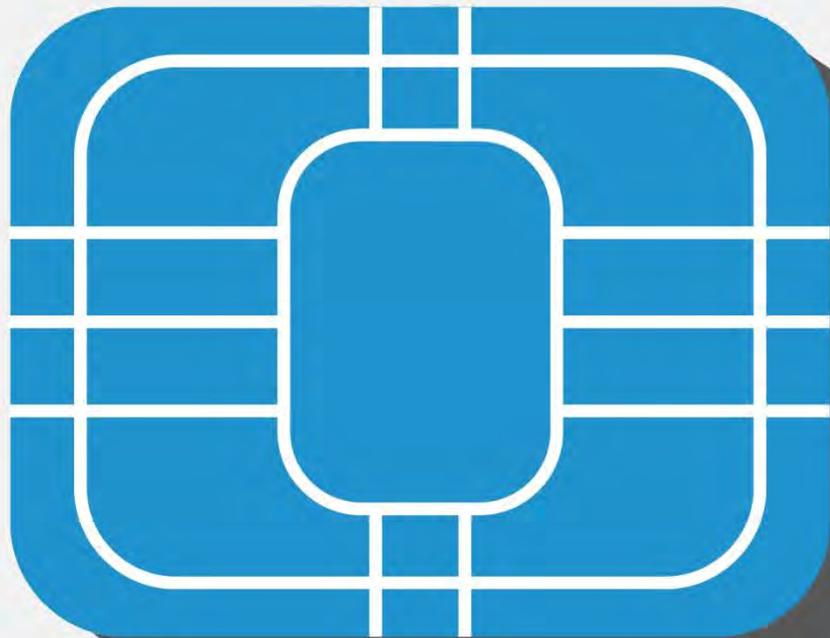
INTRODUCTION AND HISTORY

EMV is actually younger than we all may think as it only became available, as a specification that could be implemented, in 1996. The evolution of EMV can be seen in the development of Integrated Circuit Cards or ICCs which have been around since 1978 when Bull successfully created the self contained computer all within one piece of Silicon. Then a much less robust payment solution was developed in 1984 by Carte Bancaire, the French domestic payment system, and helped to establish the basic principles for what EMV ultimately developed.

EMV as a specification was designed to replace the magnetic stripe, hologram and other security features present on a physical payment card.

The Goal: replace the physical features with a digital mechanism capable of authenticating the card presented at the point of sale.

The founders of EMV wanted to create something that was future proof and could be dematerialized as technology evolved and the phone emerged as a means of merging our leather wallet with the future smart phone. Such early smart phone examples included in the Nokia 9000, which in 1996 offered Internet Browsing on the mobile phone and the Palm Pilot held our music, pictures, calendars and address books.

From 1996 until the present day EMVCo continues to update the EMV Contact Card Specification to enhance the security, improve performance and assure interoperability. The most recent release Version 4.3 was published in November of 2011. They have even begun work on an architecture designed to assure the security of payments well into this century.

Additionally, Based on the finalization of the ISO 14443, the International standard for near field communications, the various payment schemes created their own proprietary specifications for the use of NFC, all based on the EMV tool kit. In 2009 the owners of EMV contributed their contactless specifications (PayPass, PayWave and Express Pay) to EMVCO and worked together incorporate them into the EMV Contactless specifications. These specifications were last updated in February of 2014 as version 2.4. These specifications now incorporate the necessary enhancements to support Mobile Wallets, and specific requirements emerging from Transit.

Today Apple Pay, SoftCard, Google Wallet and a myriad of other interoperable mobile wallet initiatives around the world conform to the EMVCo specifications.

EMV MILESTONES FROM THE PERSPECTIVE OF PHILIP E ANDREAE

1984
The French recognized that they had a significant issue with the magnetic stripe cards that were then in circulation. They developed what was then called the B- Zero Prime or the primitive version of a smartcard or chip card or an integrated circuit card.

1993
The Telecommunication industry, through the work of ETSI, had embraced the Chip as the Subscriber interface Module or SIM. The member banks within MasterCard and Visa accepted that the magnetic stripe and the various security features used to secure payment cards were no longer fit for purpose. The French experiment was deemed a success and Europay, MasterCard and Visa decided that the right solution to payment card security was Chip and agreed to work together to develop EMV The Integrated Circuit Card Specification for Payment Systems.

1996
Version 3 of EMV is published and working from the common strategy of the international payment schemes to ultimately introduce EMV each country or economies was left to decide the time of their migration to EMV.

2010
Issuers around the globe see fraud on their cards occurring in the USA, American travels discover that without an EMV card it is hard to travel internationally so American banks begin to offer their international travelers EMV cards and work to agree to a schedule for the migration from magnetic stripe to EMV

1992
In France fraud goes from the teens in basis points to somewhere less that 02 basis points. Simultaneously, the number of online transactions goes from 25 percent online to 10 percent. It is proven that: chip can be used to authorize transactions offline using issuer- controlled parameters in the card. There was no need to pay the telecommunication agents for online requests and there is a radical drop in counterfeit fraud.

1994
In Parallel with the Boards of MasterCard and Visa (then dominated by the USA) agreeing to the global migration to EMV for the physical world, the Internet emerged. Merchants saw the internet as a way to extend their market from being local to being global. The payment systems extended the Mail Order Telephone order rules and related liability allowing the merchants to only capture the information clearly printed on the face of the card and began work to develop SET the specification for Secure Electronic Payments

2001-2002
Starting in the UK and extending around the globe the migration to EMV progresses. The United States deploys contactless cards using EMV standard and figuring out a way to support a minimal level of dynamic data without a need to upgrade the various authorization and clearing systems Simultaneously the international payment s chemes replace SET with 3D-Secure and push merchants and Issuers to adopt this new standard for securing internet payments. Unfortunately consumers rebel and merchant have to decide, lose the sale -8 % or accept the cost of fraud 0.30 %.

THE ROLE OF EMV IN SUPPORTING DIGITAL PAYMENT INNOVATIONS

Ever since the telephone and telex machines where introduced as mechanisms that would digitize payments; we have been actively involved in driving innovation thorough enhanced method of supporting digital payments.

Today and into the future EMV is and will enable face to face secure payments utilizing cards, fobs, dongles, smart phones and the cloud. It will secure payments in the shops and malls of this great land. It is the standard that is enabling the growth of Mobile wallets (Apple Pay, SoftCard and Google Wallet) and the ability to Identify, Authenticate, Verify and ultimately Authorize payment transactions in a secure and transparent way. That was and remains the goal of EMV and is what it continues to assure.

Recognizing the internet will continue to see double digit growth and continues to offer all of us access to an every expanding global shopping mall. Fully aware of how consumers are using phones, tablets, kiosks, ATM and personal computers to find and purchase what they desire; we are developing enhanced security solutions such as our cards capable of generating and displaying one time passwords or offering the ability to display a dynamic Card Verification Value. We see opportunities to merge EMV with 3D-Secure EMV as a method of secure the internet. We see cards and digital credentials inside mobile phones, issued by Financial Institution potentially becoming an integral part of the emerging use of federated credentials designed to replace user names and passwords and secure cyberspace.

In addition EMV brings enormous advantages to token and tokenization. Here is how: The PAN or Personal Account Number, the 15 or 16 digits printed on the face of the card, is a token or unique number connecting the card to the account the Financial Institution manages for the cardholder. Unfortunately back in 1994 and even now when the Internet emerged we did not found a convenient and acceptable method to protect the card not present environment from stolen data being used to commit fraud.

THE ROLE OF EMV IN SUPPORTING DIGITAL PAYMENT INNOVATIONS

We the consumers, merchants and financial institutions allowed "Convenience to TRUMP Security". We collectively drove the payments networks to simply expand the scope of the rules and merchant liability associated with mail order and telephone order catalog sales. We allowed the merchant to simply ask the consumer to enter the data on the face of their payment cards If we had come up with an effective and convenient way to authenticate that the consumer was who they claimed to be we would not be talking about tokenizing a token (the Personal Account Number). Unfortunately we are where we are and now must figure out how to protect the Card Not Present (Internet / eCommerce) space.

What people are talking about doing is segregating the account numbers or tokens we use in the physical world from those that we use in the virtual or mobile world.

Whenever EMV is employed there is a need to create a set of credentials for each "PAN". This process is called Data Preparation and is when the Secrets and certificates that allow EMV to create the Unique and Dynamic Signature associated with each transaction are created. This is exactly what is happening when Apple described the process when the PAN is mapped to the DAN and the Secure Element is enabled to support that particular card.

The interesting reality is that in the physical world, through the use of these secrets and credentials EMV, will restore the Personal Account Number back to what it was, a unique number that links the card to the line of credit or deposit account a financial institution manages for the cardholder

CONCLUSION

EMV is a security protocol built on International standards and evolving cryptographically enabled computer technologies. The technology that EMV employs evolves, just like all computer technologies, and is specifically enhanced to add additional security features designed to assure the integrity of the cryptographic processes and secrets that underline all forms of hardware based security in use today.

EMV is only about payments. The techniques and technologies EMV utilizes are the technologies that will secure cyber space. Not EMV but standards like EMV will provide the means of assuring that our identity in cyberspace can be secured. Efforts now underway in the FIDO alliance and W3C are looking to methods of eliminating the use of Single factor Authentication or User Name password and replace them with Multi-factor authentication based on Cards, Fobs, Phones, Fingerprints, Voice prints, facial recognition and a myriad of other techniques to make sure only the rightful consumer or citizen is presenting themselves in cyberspace.

We spend time educating our clients and the industry on the power and capabilities of EMV. OT also participates in or is monitoring the activities of various standards bodies such as FIDO, X9, W3C O we are engaging with our competitors, clients and suppliers to enhance and develop security solutions to our connected world.

OBERTHUR'S CORE EMV STRENGTHS

OT is a key historical player in the U.S. market, having established its U.S. footprint in 1996 and rapidly started business with the largest banks in the industry.

OT's EMV partnerships include trusted global brands American Express, China Union Pay, Discover, MasterCard and Visa. OT has delivered EMV cards to four of the top five card issuers in the U.S. Further, OT provides magstripe cards for seven of the top ten U.S. card issuers.

OT is an EMV pioneer in the U.S. and current market leader with 65% share of this still burgeoning market. OT currently produces 20+ million EMV cards for 25 different U.S. issuers annually. To support the EMV migration, OT invested in its U.S. production capacity in order to produce 400 million EMV cards and 100+ million chips annually.

To mitigate the complexity of EMV, OT offers EMV-In-A-Box, allowing a smoother, faster issuance of EMV cards. EMV-In-A-Box's proven methodology has been executed for 250+ EMV migration projects.

EMV-In-A-Box effectively addresses issuers interested in both initial migration from magnetic stripe cards to EMV contact or dual interface cards, supporting multiple cardholder verification methods (CVM), or reissuing cards on a similar card platform due to chip lifecycle expirations, a new card platform or extending their portfolios from contact to dual. Thus, EMV-In-A-Box provides full lifecycle management of your EMV card issuance programs, which allows for complete flexibility today and tomorrow.

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ABOUT OBERTHUR TECHNOLOGIES

OT is a world leader in digital security solutions for the mobility space. OT has always been at the heart of mobility, from the first smart cards to the latest contactless payment technologies which equip millions of smartphones. Present in the Payment, Telecommunications and Identity markets, OT offers end-to-end solutions in the Smart Transactions, Mobile Financial Services, Machine-to-Machine, Digital Identity and Transport & Access Control. OT employs over 6 000 employees, including 600 R&D people. With more than 50 sales offices across 5 continents and 10 facilities, OT's international network serves clients in 140 countries.

For more information: **www.oberthur.com**

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