The Transition to EMV Technology: Are You Ready?

**What you need to know about EMV,
and how Capgemini can help you make an easy,
cost-effective transition**

It's Time to Get Serious about EMV

In 1994, Europay, MasterCard® and Visa® formed a collaboration to ensure security and global interoperability. The result was the EMV standard for inter-operation of integrated circuit cards.

Today, there are almost 1 billion EMV chip cards in use globally, and EMV is now the global standard for credit and debit payment cards based on chip card technology. However, the U.S. has lagged behind the rest of the world in accepting and transitioning to chip card technology. As a result, U.S. magstripe cards are more vulnerable to fraud, and increasingly other countries refuse to accept them.

On August 9, 2011, Visa announced that it has taken a serious step to accelerate the migration to EMV contact and contactless chip techn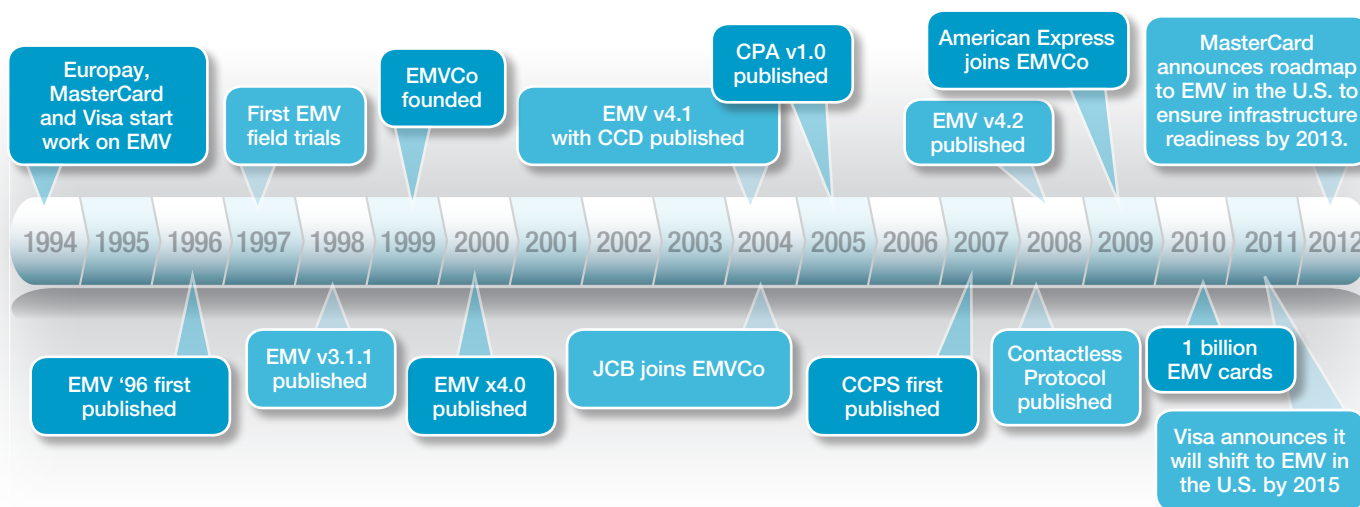ology in the U.S. by introducing a series of initiatives to shift to EMV by 2015, paving the way for mobile and wireless payments.[1]

MasterCard followed suit in January 2012, by introducing a comprehensive roadmap to advance the U.S. electronic payments system.[2]

On March 15, 2012, Discover announced it is implementing a 2013 EMV mandate for acquirers and direct-connect merchants in the U.S., Canada and Mexico. Their goal is to streamline certification and deployment efforts and enable a manageable transition for all parties involved, including issuers, merchants and acquirers.

In the wake of these announcements, other payment brands have joined in the chorus of support for EMV. It is clear that EMV technology is the future of non-cash payments.

The EMV Journey

| Europay, MasterCard and Visa start work on EMV | First EMV field trials | EMVCo founded | EMV v4.1 with CCD published | CPA v1.0 published | American Express joins EMVCo | EMV v4.2 published | MasterCard announces roadmap to EMV in the U.S. to ensure infrastructure readiness by 2013. |

| 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |

| EMV '96 first published | EMV v3.1.1 published | EMV x4.0 published | JCB joins EMVCo | CCPS first published | Contactless Protocol published | 1 billion EMV cards | Visa announces it will shift to EMV in the U.S. by 2015 |

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[1] *Visa Announces Plans to Accelerate Chip Migration and Adoption of Mobile Payments*, August 9, 2011

[2] *MasterCard Introduces U.S. Roadmap to Enable Next Generation of Electronic Payments*, January 30, 2012

[3] *Discover Implements EMV Mandate for U.S., Canada and Mexico*, Mar 15, 2012

What You Need to Know for a Transition to EMV

> "If we want to mitigate the possibility of the United States being a center of card fraud and enable our consumers and business folks to travel abroad more easily, it may be time to charge someone in government with developing a well-thought-out, participatory, multi-year plan to move this country to the emerging global payments card standard,"

Richard Oliver,
Federal Reserve, July 2010[4]

Why Now?

The announcements of initiatives by Visa, MasterCard, and Discover are just the first step. There is no doubt that other major brands will follow suit. If you want to stay ahead of the curve in this coming shift, you need to begin planning your transition now.

Since the U.S. is the largest remaining market that has not adopted EMV, it will increasingly become a target for fraud. By making the transition now, your firm can avoid escalating fraud management, fraud liability costs, and potential reputational damage. The advanced security offered by chip-enable payment products also means you can offer your customers the safest, most secure payment cards available.

U.S.-based magstripe cards are seen as fraud prone in other countries, and are starting to be rejected in Europe and other chip enabled countries. When cards are declined, customers tend to punish the card when they get home. That means you could be facing compromised customer loyalty and reduced transaction volume. By switching to EMV now, you can assure your customers that they only need one card for safe, secure transactions both internationally and domestically.

Additionally, EMV is key technology for internet banking, mobile payments, and other digital solutions.

6 Questions You Must Answer Before a Successful EMV Transition	
1	How can I implement systems to manage EMV and support mobile payments and authentication?
2	How should I interpret EMV requirements?
3	How must I communicate with cardholders to launch EMV and provide instructions on how to use new cards?
4	What needs to be on the EMV chip? E.g., applications to support the customer experience and security at the same time
5	How do I convert from magnetic strip to chip?
6	How can I use EMV to help comply with regulations for online banking?

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[4] *Soccer balls and payment cards: A push for global standards,* July 19, 2010. Portal and Rails blog, http://portalsandrails.frbatlanta.org/risk/

Capgemini's End-to-End Services Smooth Your Transition

U.S. payment card issuers missed out on nearly $4 billion in 2008 charge volume, ~$78.7 million in interchange fees, because of problems cardholders had with their cards while traveling abroad.[5]

When you're ready to make the transition to EMV, let Capgemini's technical expertise and on-the-ground experience with EMV ensure that your transition will be efficient, cost-effective, and flawless.

Your Capgemini experience begins with consulting.
When you head for a new destination, you need a good roadmap. Capgemini can help you create a detailed implementation roadmap that addresses platform selection, technology initiatives, business process design needs, and more—everything you need to plan an efficient transition that avoids costly pitfalls and implementation errors.

Capgemini's business consulting service offers key management and technical consulting to help you:

- Develop a chip-enabled payments strategy, including EMV/mobile payments and business model innovation workshops
- Determine if/how to support EMV payments, select chip payment application and timelines (for networks)
- Develop a business case and financial pro forma to weigh costs and revenue opportunities, including investments and options
- Develop detailed implementation roadmap addressing platform selection, technology initiatives, business process design needs
- Perform an impact and gap analysis
- Define key management processes and cryptographic functionality

- Create a conversion strategy to move from magstripe to chip
- Design a target operating model to manage chip based operations
- Design or re-design business processes specific for the initiative
- Select the right Issuing and acquiring platform including a Smart Card Management solution (SCM) to support the EMV business
- Re-design the enterprise architecture and infrastructure
- Launch new product offerings
- Conduct specific chip testing to ensure zero cardholder impact during transaction processing

Expert technology support once you get started.

Capgemini's expertise in key management, personalization and script processing speeds time-to-market; provides card vendor independence and flexibility; and improves risk management.

Technology support services include:

- Authorization systems
- Clearing and settlement
- Chip processes
- Core chip processingISO formats: 8583, Base 24, propriety formats
- Interface development and security architecture

Support for your evolving infrastructure every step of the way.

Capgemini's in-depth understanding of chip card platforms and end-to-end functions from personalization to authorization can ensure your transition is done effectively and efficiently.

Infrastructure support services include:

- Authorization infrastructure setup
- Clearing and settlement infrastructure set up
- Test card loading
- Interface links setup

Minimal surprises when you launch.

With Capgemini's help, there will be no surprises when you complete the transition to EMV. Thorough testing of every aspect of the transition makes sure it is all done right.

Testing support services include:

- Certification and simulator testing for Visa, MasterCard, American Express®, Discover® and other proprietary payment applications
- Personalization validation
- Clear PIN generation
- Network to network test
- Authorization simulator and Financial Authorization System stress test tool
- Field testing

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[5] *Card Problems Cost U.S. Issuers Hundreds of Millions Overseas*," Digital Transaction News, October 2009

Why Trust Your EMV Transition to Capgemini?

Capgemini has helped our clients lower new portfolio migration time by up to 50%

Years of working with EMV.
When you turn to Capgemini, you're getting a partner with over a decade of prior and hands-on experience with EMV:

Real-world experience. Clients include some of the top names in the business across the globe. This experience with EMV has taught us invaluable lessons that will save you money and make your transition as efficient as possible.

Technology leader in cards. For a leading cards processing solution system, Capgemini developed the world's first solution for smart card personalization, authorization, and script processing for MasterCard, Visa, American Express, and JCB. For the same system, we also developed the world's first multi-chip application including in-house authentication, Internet PIN change, and single message authorization.

In addition, we have developed a new encryption module interacting with HSM for chip card authentication, as well as an independent module for the *core card processing system* that allows businesses to configure chip risk parameters.

Proven expertise with EMV.
Capgemini has assisted a number of European banks in migrating portfolios to EMV including issuing, key management, testing, application enhancements, and scheme certification. We are well versed with the technology transition from magnetic stripe to chip and contactless cards. We have worked with issuers, acquirers and both regulatory and proprietary networks equally to help them implement EMV.

Unmatched credentials. Over 16 years of experience with 5,000+ projects delivered in cards space for more than 20 global clients including 5 of the top 20 issuers .

A world of experience few companies can match.
Headquartered in France, Capgemini is a European company with offices in over 40 countries, and on-the-ground experience in the U.S., Mexico, the U.K., Middle East, Australia, Canada, Finland, Malaysia, Indonesia, Vietnam, and India.

Capgemini's global structure is designed to leverage international teams to bring the best global solutions to local markets. That means that lessons learned, accelerators, and experiences from our work around the world are passed down to every new team that begins working on EMV transitions through the Center of Excellence.

[6] *Top 50 U.S. Visa/Mastercard Credit Card Issuers,* The Nilson Report, February 2012.

A deep understanding of how to help clients embrace and transition to new technologies.

Capgemini is the premiere integrator for credit card software in the world, with a wealth of experience in migrations and conversions:

- In-depth understanding of chip card platforms and end-to-end functions from personalization to authorization results in successful implementations around the globe.
- Expertise in key management, personalization, and script processing speeds time-to-market, provides card vendor independence/flexibility, and improves risk management

As part of the Smartcard Alliance, Capgemini is actively engaged in helping shape the industry.

The best results start with the best people.

At Capgemini, we live our brand promise of People Matter, Results Cound. Over 2,700 dedicated Cards professionals are ready to help you make this transition. When you work with Capgemini, you get all our experience in a wide variety of fields, and the advantages of our strategic partnerships and alliances to assist the transformation.

Demonstrated ability of delivering value for cards industry.

Capgemini has completed more than 55 projects involving portfolio migrations and has converted over 180 million customer accounts. Our experience includes conversion and migrations engagements across 30+ countries.

Capgemini has helped our clients reduce TCO for cards platform support and maintenance by up to 20-30%

Magnetic Stripes versus Chips

Payment chip cards contain a microprocessor, essentially a small computer that provides powerful security features and other capabilities not possible with traditional magnetic stripe cards. Cards with an embedded chip can be processed in two ways—through contact chip card technology that requires the card to come into contact with a terminal dip reader, contactless chip technology that communicates via radio frequency (RF) antenna. Either of these types of cards offer many benefits over the old magnetic stripe technology:

- Physical cards with a magnetic stripe must be replaced if the number is compromised, while EMV-enable cards do not.
- Research indicates that a contactless transaction is approximately 53 percent faster than a traditional magnetic stripe credit card transaction and 63 percent faster than using cash.
- Payment chip cards are considerable less vulnerable to fraud. The information on the chip cannot be manipulated in the way information on a magnetic stripe can and chip cards cannot be copied or counterfeited.
- Chip-enabled payment products greatly enhance security through encryption and dynamic authentication.
- In addition to both contact and contactless transactions, the payment card chip also enables mobile payments, so card holders can take advantage of multiple buying methods securely.

IN PRACTICE

Client	Capgemini Solution	The Results
US Card Scheme	▪ Provided a mainframe-based, parameter driven, stand-alone chip and pin system ▪ Seamless transition of feature between production and failover host ▪ Green screen interface for users ▪ Certification with payment schemes ▪ Full EMV scripting support with multiple risk based script triggers support ▪ Multiple chip personalization (VIS and MChip) support ▪ Authorizations upgrade for enhanced chip data validations ▪ Disputes upgrade for enhanced chip data chargeback rules ▪ PIN Management Service support including pin change and pin unblock ▪ Script reporting, history retention and display ▪ Enhanced Cryptographic validations using HSM ▪ Support for chip and signature cards for DDA compliance	▪ A mainframe-based, parameter driven, stand-alone plug-n-play Issuer scripting system supporting full EMV scripting ▪ Compliance with UK Pin @ POS requirements ▪ Client's new portfolio is now a full grade chip card Issuer ▪ Compliance with all chip regulations of the payment schemes ▪ Compliance with the Disability Discrimination Act of U.K. ▪ PIN Management Service ▪ Availability of the system in production and backup hosts ▪ Seamless migration of cards issued in the system to be processed on the new system without re-carding
A European Consumer Finance Company	▪ Developed key management process for full MasterCard EMV implementation ▪ Adapted the client system for chip card production and tailored the authorization system ▪ Assisted in chip parameter selection and configuration ▪ Performed simulator testing of chip cards ▪ Supported MasterCard certification	Our client was able to launch the product on a tight schedule. Key benefits: ▪ One of the first companies to issue chip cards in Finland ▪ Achieved MasterCard certification with no issues

For more information on how Capgemini can help streamline your EMV transition, visit us at **www.capgemini.com/cards** or contact us at **cards@capgemini.com**.

About Capgemini and the Collaborative Business Experience

Capgemini, one of the world's foremost providers of consulting, technology and outsourcing services, enables its clients to transform and perform through technologies.

Capgemini provides its clients with insights and capabilities that boost their freedom to achieve superior results through a unique way of working, the Collaborative Business Experience™.

The Group relies on its global delivery model called Rightshore®, which aims to get the right balance of the best talent from multiple locations, working as one team to create and deliver the optimum solution for clients.

Present in 40 countries, Capgemini reported 2011 global revenues of EUR 9.7 billion and employs around 120,000 people worldwide.

Capgemini's Global Financial Services Business Unit brings deep industry experience, innovative service offerings and next generation global delivery to serve the financial services industry.

With a network of 21,000 professionals serving over 900 clients worldwide, Capgemini collaborates with leading banks, insurers and capital market companies to deliver business and IT solutions and thought leadership which create tangible value.

For more information please visit **www.capgemini.com/financialservices**

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