EMV for Merchants and Merchant Acquirers: U.S. Migration Considerations

- Smart Card Alliance Webinar
- October 6, 2011
Introductions

- Randy Vanderhoof
- Executive Director -- Smart Card Alliance
Who We Are

Smart Card Alliance mission

To stimulate the understanding, adoption, use and widespread application of smart card technology through educational programs, market analysis, advocacy, and industry relations.

Over 190 members, including participants from financial, retail, government, corporate, and transit industries and technology providers to those users

Major activities

- Industry and Technology Councils
  - Payments Council
  - Healthcare Council
  - Identity Council
  - Physical Access Council
  - Transportation Council
- Conferences, symposia, web seminars and educational workshops
- Web-based resources and email newsletters
Payments Council

- **Mission**: Education facilitating the adoption of chip-enabled payments in the U.S.
- **Membership**: 62 member organizations
- **2011 focus**: EMV and NFC
- **Council resources**: “Card Payments Roadmap in the United States” white paper; EMV FAQ; EMV Resources; Smart.Payments LinkedIn Group
- **Outreach to industry groups**
  - Standards: GlobalPlatform, ISO/ANSI
  - Payment: ETA, NACHA
  - Security: EMVCo, FSTC
  - Mobile: NFC Forum, GSMA
  - Merchant: NRF, MAG
Today’s Speakers

- Randy Vanderhoof, Executive Director, Smart Card Alliance
- Oliver Manahan, Vice President, MasterCard Worldwide & Payments Council Co-Chair
- Guy Berg, Global Industry Consultant, Datacard Group
- Simon Hurry, Senior Business Leader, Visa Inc. & Payments Council Co-Chair
- Amer Matar, Chief Technology Officer, Moneris Solutions
Webinar Topics

- Global EMV deployment and results
- Business drivers for U.S. migration to EMV and key choices in EMV implementation
- EMV 101: How do EMV payment processes differ from magnetic stripe transactions; what are issuer EMV options and their implications for card acceptance; what are key considerations for EMV implementation
- Overview of Visa U.S. migration approach and next steps for merchants and acquirers
- Acquirer and merchant lessons learned from Canadian EMV migration
Global EMV Deployment

- Oliver Manahan
- Vice President, MasterCard Worldwide
Global EMV Deployment

EMV Adoption Rates by Region*

*Figures reported as of Q1 2011 and represent the latest statistics from American Express, JCB, MasterCard, and Visa, as reported by their member financial institutions globally. Figures do not include data from the United States.
Business Drivers

• **Current equipment:**
  - Chip capable, or requires new POS?

• **Chip brings more data**
  - Modifications to internal systems and potentially network

• **Training, testing, etc.**

• **Reduction in fraud – hence reduction in request for copy / chargebacks**

• **Opportunity to optimize processes**

• **Improvement in check-out speed**
Key Choices

- **Contact chip only, or contact and contactless**
  - Contactless also supports newer payment options, e.g., Mobile/NFC

- **Support for online only, or offline as well**
  - Offline requires brand public keys within the device, and maintenance of those keys

- **Support of cardholder verification**
  - Online PIN, Offline PIN, Signature, No CVM…
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EMV in 10 Minutes

- Guy Berg
- Global Industry Consultant, Datacard Group
EMV Transaction Framework

(1) EMV chip application performs risk assessment

(2) Terminal performs risk assessment

(3) New EMV authentication data

(4) Issuer Authorization Changes
   ➢ Dynamic cryptogram validation
   ➢ May return an authentication cryptogram
   ➢ Post issuance updates
Card Perspective

Operating System Level
- MULTOS
- Global Platform JavaCard
- Card Vendor 1 Proprietary
- Card Vendor 2 Proprietary
- Card Vendor 3 Proprietary
- Etc....

EMV Application Level
- Visa
  - payWave Contactless EMV
  - VSDC Contact EMV
- MasterCard
  - M/Chip (EMV) PayPass
  - M/Chip Contact EMV
- American Express
- Discover

Data Level
- Personalization Data
  - Risk management criteria
  - Cardholder data
  - Security keys and certificates

Card vendors have different chip operating systems
Brands have different chip application implementations
Brands have different EMV risk configuration options
Each Brand has different terminal certification requirements

<table>
<thead>
<tr>
<th>Visa EMV terminal processing functions</th>
<th>MC EMV terminal processing functions</th>
<th>AMEX EMV terminal processing functions</th>
<th>Discover EMV terminal processing functions</th>
<th>Others EMV terminal processing functions</th>
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**EMV Kernel**
EMV terminal functions that EMVCo tests against the EMV standards and certifies

**Terminal Operating System**
EMV Risk Management and Security

Risk Management Decision Criteria

Card Stock Security

Issuance Security
Data Preparation & Key Mgmt Security

Offline Transaction Security

Online Transaction Security

PIN

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Online EMV Authentication
(Dynamic Cryptogram)

EMV Field 55 data

Online Dynamic Cryptogram

EMV data

Online Response Cryptogram (3DES) – ARPC
For Contact Chip EMV

Online Dynamic Cryptogram (3DES) – ARQC
For Contact and Contactless

ARPC

Payment Brand

Acquirer System

HSM

Issuer Auth System
Combined Online and Offline Authentication

EMV transaction data

Payment Brand

Online Dynamic Cryptogram

Acquirer System

EMV transaction data

Online Dynamic Cryptogram (3DES) - ARQC

Issuer Auth System

SDA, DDA, CDA

Offline Authentication

ARPC

Online Dynamic Cryptogram

ARPC

Issuer Auth System

ARPC

Online Dynamic Cryptogram

ARPC

Issuor Auth System
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EMV in the USA – Acceptance channel

- Simon Hurry
- Senior Business Leader, Visa Inc.
Agenda

- Layered approach to security
- Visa’s US chip acceleration and mobile adoption announcement
- Network impacts
- EMV support considerations
- Summary
Layered Approach to Security

It will take time to reach critical mass for chip deployment. A layered approach is advised to minimize risk.

1. Devalue transaction data by moving to online dynamic authentication, globally
   - Eliminate vulnerable data where possible
   - Maintain effective security where vulnerable data remains

2. Bridge solutions to optimize existing technologies while laying groundwork for future payment methods

3. Expand contact chip to all markets to lay commercial framework for contactless/mobile acceptance

4. Implement policies in U.S.A. to accelerate chip adoption
Visa Europe announced a corresponding program – PCI validation relief for merchants that adopt dual-interface terminals.

Guide PCI encryption & token standards
Continue to enforce PCI & PIN compliance

Tech Innovation Program (TIP)
PCI validation relief for merchants that adopt dual-interface terminals

Acquirer Chip Processing
Require acquirer processor support for chip processing

Liability Shift
Debit and credit domestic and cross-border counterfeit liability shifts at all POS excluding AFDs

Further incent deployment of chip cards and chip terminals via a liability shift policy

* Visa Europe announced a corresponding program
Smart (Chip) Terminal Basics

Terminals, can be contact and/or contactless, but should be dual interface.

- **Contact** – Ideal for use with secure higher ticket payments, where speed of transaction is not as paramount; support of issuers in offline or international markets (including the USA).  [http://www.emvco.com/approvals.aspx](http://www.emvco.com/approvals.aspx)

- **Contactless /Mobile** – Ideal for use in secure lower ticket payments, where speed of transaction is paramount. Foundation for acceptance of mobile payments
Foundation for Dynamic Authentication across Multiple Form Factors

- Underlying EMV standards and data are consistent across contact chip and Visa payWave.
- Effective April 1, 2013, U.S. acquirer processors and sub-processor service providers are required to support merchant acceptance of chip transactions.
RECOMMENDATION: Ensure merchant / acquirer terminal, software and processing changes are fully tested prior to implementation.
Summary

- Moving to an EMV-based POS environment and set of procedures
  - Uses same infrastructure for contactless and contact chip
  - Provides a path to reduce on-going PCI DSS compliance costs
- Chip offers increased data security and reduces the incidence of counterfeit fraud
- Contactless chip provides foundation for mobile payment
- Rewards merchants that invest in dual interface terminals
- Supports strengthening the existing payment methods and builds a framework for future innovation
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Lessons Learned in Canadian Migration

- Amer Matar
- Chief Technology Officer, Moneris Solutions
Before You Start

- Industry wide change
  - Issuers
  - Consumers
  - Merchants
  - Acquirer / Processors
  - Brands

- Understanding the goal

- Working together
Things to Keep in Mind

- Understand the challenge
  - Technology change
  - Business change
  - Behavioral change

- Do it once

- Inter-Brand harmonization

- EMVCo vs Brands
Where and How Do You Start

- Research
- Learn
- Engage Brands
- Industry Experience
- Commitment
Implementation Considerations

- Roles and responsibilities
- Pilot or not?
- 80-20 rule
- Industry specific verticals
- Acquirers
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Q&A Session
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