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Agenda

• Executive Order 13681
• What is EMV?
• Global Impact of EMV
• How EMV Works
• Card Brand Rules
• EMVCo
• Next Steps
  › Fiscal Service Deployment Plan
Executive Order 13681
Executive Order and Card Acceptance

• Applies to Executive Departments and Agencies

• Point of sale (POS) card acceptance provisions apply to covered agencies directly and to the Treasury through the Fiscal Service’s Card Acquiring Service (CAS)
  › “Standalone terminals” acquired through CAS
  › Third-party, integrated agency POS systems

• All new terminals acquired by agencies through Treasury or through alternative means authorized by Treasury after December 31, 2014 must include hardware necessary to support EMV chip and pin
  › For existing card terminals acquired through Treasury, a plan must be developed by January 1, 2015 for agencies to install EMV-enabling software
What is EMV?
Brief History of Chip Cards

• Chip-based payment cards introduced in the 1980’s
  › High communications costs and unreliable service
  › Offline processing susceptible to fraud

• Specifications developed country by country
  › Interoperability issues

• Europay, MasterCard and Visa
  › Joint effort to develop common specification
  › EMVCo formed in 1999
    • Now includes Amex, Discover, JCB and China UnionPay
What is EMV?

- International standard defining interoperability of secure transactions
  - Introduces **dynamic data** specific to the transaction
  - **Devalues** transaction data; reducing risk of counterfeit fraud
- World-wide adoption including U.S. neighbors, Canada and Mexico
  - Effecting U.S. multi-national retailers
- Enabler of future payments types
  - Contactless, Mobile
- Chip & PIN ≠ EMV
What is EMV?

- Chip on card uses cryptography to provide security
- Utilizes 2 forms of cryptography
  - Digital signatures – ensures data is **authentic**
  - Encryption – ensures data is kept **confidential**
- Digital signature devalues the data
  - Even if data is intercepted, signature cannot be replicated
- Encryption is only used to protect the PIN
  - EMV does **not** encrypt all transaction data
EMV in the Security Equation

Theft
- Physical Attacks
- System Breach
  - Policy & Inspection
  - PCI-DSS
  - P2PE/Tokens

Fraud
- Account Data Compromise
  - EMV Chip
  - EMV PIN
- Counterfeit Cards
- Lost/Stolen Cards

EMV in the Security Equation
Global Impact of EMV
Global Fraud Trends

Counterfeit Fraud Volume (Visa only)

- Europe (Liability Shift in 2005)
  - 2004: 56%
  - 2011: -56%

- Asia Pacific (Liability Shift in 2006)
  - 2004: -52%

- U.S. (Liability Shift in 2015)
  - 2004: 307%

U.S. and Rest of World Sales Volume 2012

- U.S.: $5.1T
- ROW: $16.5T

U.S. and Rest of World Fraud Volume 2012

- U.S.: $5.3B
- ROW: $5.9B

ROW: $16.5T

U.S.: $5.1T

ROW: $5.9B

U.S.: $5.3B
Canadian Fraud Trends

2008-2010
HOLIDAY FRAUD PEAKS

2011
HOLIDAY FRAUD SIGNIFICANTLY REDUCED

Canada Begins to Migrate to EMV

% EMV Penetration**
Lost & Stolen
Other
Total Counterfeit
Card Not Present

Source: MasterCard Analysis 2012
*Cross Border Counterfeit Fraud = Total Counterfeit Fraud – Domestic Fraud
** % face-to-face EMV penetration
As EMV migration nears completion in Canada, Europe and parts of Asia,...

U.S. cross-border counterfeit fraud shows significant growth

Source: MasterCard Analysis 2012
*Cross Border Counterfeit Fraud = Total Counterfeit Fraud – Domestic Fraud  **% face-to-face EMV penetration
Impact on Card Not Present

- Increase in Card-Not-Present fraud is driving other solutions
  - 3-D Secure
  - Tokenization
  - Chip authentication devices

* Retail Payments Risk Forum Working Paper
  Federal Reserve Bank of Atlanta
  January 2012
How EMV works
EMV Introduces New Security Functions

1. Card Authentication Security
2. Cardholder Verification Options
3. Authorization Options
4. Contact, Contactless, and Mobile Technology

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010100100101
011010100100101011
010100100101
Online Card Authentication

1. Generates an EMV Dynamic Cryptogram
2. Host Validates the EMV Dynamic Cryptogram

Offline Card Authentication (optional)

1. Card provides the terminal a dynamic security certificate
2. Terminal validates the dynamic security certificate
3. Online Authorization
Is the cardholder the right person?

- More than one CVM supported on card
- Issuers choose CVMs to support
- Issuer chooses the priority of CVMs

EMV CVM List
- Signature
- Online PIN
- Offline PIN
- No CVM
Online vs. Offline PIN

**EMV Online PIN**
- Works same as mag stripe host-based PIN
- All EMV cards use online PIN for ATM
- No system changes required
- U.S. is an online market

**EMV Offline PIN**
- PIN stored and validated on chip
- Most Offline PIN transactions go online for authorization
- Changes required:
  - PIN selection/activation process
  - Customer PIN Communications
  - Offline PIN change process
  - Synchronization with online PIN
  - Add ability to send PIN and PIN counter updates to card
Issuers can make better decisions with risk data provided in EMV transactions.

**Transaction approval process**

**EMV Authorization/Approval**

(1) **Online Authorization**
- Works much like magnetic stripe transaction
  - New EMV data is sent to host
  - Dynamic authentication technology is used
  - New risk assessment rules are enabled

(2) **Offline Authorization (Optional)**
- The card authorizes transaction
  - No communication with host system for authorization
  - Card contains offline authorization criteria and counters
Card Brand Rules
A Regional Debit Network solution proposal has been released by the EMV Migration Forum.
Liability Shift

- Counterfeit fraud liability is assigned to least secure party
- Standard rules apply when both are equal
- Inclusion of PIN adds Lost/Stolen shift

EMV w/PIN > EMV w/Sig > Mag stripe

- Visa only states that the party not using EMV technology is liable
EMVCo
EMVCo Initiatives

• EMV Next Generation
  › Contact/Contactless convergence
  › Simplified terminal implementations
  › Cryptography (Elliptical Curve Cryptography)

• Mobile & Mobile Point-of-Sale (mPOS)
  › Guidance for mPOS development

• Tokenization
  › Develop spec to support secure/interoperable transactions
Next Steps
Next Steps – High Level

• Executing Treasury’s “Plan” for standalone terminals:
  › Identify and engage agencies/POCs with CAS standalone terminals
  › Arrange Fiscal Service bulk purchase of replacement terminals
  • Obtain inter-agency agreements to confer agency ownership and reimbursement of the Fiscal Service
  › Schedule replacement terminal and EMV-enabling software deployment with agencies

• For agencies with third party, integrated solutions:
  › Contact your solution provider and ascertain when EMV-enabled upgrades will be available
  › Contact Vantiv to ensure solution is supported
1. Deploy up to 3,200 EMV-enabled replacement terminal packages to 52 CAS Program agencies:
   › VeriFone Vx520 terminal with Vx820 customer-facing PIN pads
     • ~ 40 wireless terminals (Ingenico iWL255)
   › Shipped to each agency site, with installation via scheduled teleconference call with Vantiv technical support

2. Deploy up to 400 EMV-enabling software and PIN pads to existing EMV-capable terminal sites:
   › VeriFone Vx820 and Ingenico iPP220 customer-facing PIN pads
     • ~ 11 wireless terminals
   › E-mail agency site POCs download instructions once software available
### TASK 1: Roadmap Development

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### TASK 2: Standalone Terminal Upgrade and Replacement

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<td>Complete EMV-Enabling Software Testing, Training And Certification</td>
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<td>Source And Acquire Replacement Terminals And PIN Pads</td>
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<td>Contact/Resolve Non-Responsive Agency Sites</td>
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### NOTES

1. Standalone terminals will be EMV chip & PIN-enabled, with Near Field Communications (NFC) capability.
2. Sites/MIDs identified by FS and Vantiv through CAS program management.
3. Will be identified by Fiscal Service outreach and CAS program agency contact.
4. Initial communication with Executive Order and EMV information distributed to all CAS program agency contacts in 11/2014. Conference call with ISV/VAR agencies held 12/1/2014; Webinar for all agencies planned for 1/15/2015.
5. Vantiv working with terminal manufacturers Ingenico and VeriFone to develop EMV-enabling software to integrate with Vantiv-supported CAS Program standalone terminals.
6. Acquisition of replacement standalone terminals and PIN pads via bulk purchase planned. Hardware/software will be acquired by Fiscal Service with ownership transferred through inter-agency agreements to CAS program agencies upon deployment.
7. Approximately 400 CAS standalone terminals (Ingenico and VeriFone) are EMV-capable but require an enabling software download and addition of a PIN pad to become Executive Order-compliant and meet CAS program needs.
8. See Note 1. VeriFone Vx520 terminals with Vx820 customer facing PIN pads have been selected to meet CAS program agency needs. Total terminals ~3,200.
9. CAS will contact agency sites that have not activated replacement terminals or software downloads.
10. Agency sites that have not responded to validate POC information for deployment or activated EMV terminals will be contacted by Fiscal Service escalation if still non-responsive after repeated attempts.
11. Vantiv will work with CAS program agencies and their ISV/VAR providers to understand EMV upgrade and certification requirements. Under the Executive Order, these card acceptance solutions are the responsibility of each agency and not the Fiscal Service.
Deployment – 10-Step Engagement

1 (a). Kickoff Meeting with Agency

1 (b). POCs & Terminal Locations Confirmed

2. Agreement Sent to Agency

3. Acknowledgement

4. Acknowledgement Received

5. Deployment Specialist Notified

6. Agreement Received

7. EMV Terminals Sent to Agency Location(s)

8 (a). Installation Completed

8 (b). Training

8 (c). Activation of Terminals

9. Confirmation of Terminals in Production

10. Validation

Deployment Partners:
  • Agency
  • Agency sites (MIDs)
  • Fiscal Service
  • Vantiv

Migration Completed
Contacts

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