EMV – Beyond October 1, 2015

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Heartland Payment Systems
Housekeeping

This webinar is being recorded (posted in about 10 days)
• YouTube (youtube.com/conexxusonline)
• Website Link (conexxus.org)

Slide Deck
• Survey Link – Presentation provided at end

Participants
• Ask questions via webinar interface
• Please, no vendor specific questions

Email: info@conexxus.org
About Conexxus

We are an independent & non-profit
Volunteers

We set standards...
Data exchange, Security, Payments

We provide clarity
Identify and Educate
Emerging tech/trends

We advocate for our industry
Open standards, innovation and competition

We improve profitability
2016 Conexxus Annual Conference

May 1 – 5
Loews Ventana Canyon
Tucson, AZ

Registration is open

Conexxus.org/AnnualConference
Conexxus Data Security Standards Committee
Agenda

- EMV overview
- Timelines
- EMV numbers
- Considerations
- Liability shift
What EMV is…

EMVCo
Owned & operated by

MasterCard
UnionPay
JCB
AMERICAN EXPRESS
DISCOVER
VISA

Global payment standard = consistent experience worldwide

Improved security = Decreased fraud

Building block for future technology
What EMV is not…

<table>
<thead>
<tr>
<th>What EMV is not</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMV ≠ Mandated / required</td>
<td>Merchant choice to implement!</td>
</tr>
<tr>
<td>EMV ≠ Protection against all chargebacks</td>
<td>Liability shift is for counterfeit &amp; lost/stolen only.</td>
</tr>
<tr>
<td>EMV ≠ Secure cardholder data</td>
<td>EMV does <strong>not</strong> protect or encrypt card numbers.</td>
</tr>
<tr>
<td>EMV ≠ PCI DSS</td>
<td>EMV protects against fraud, PCI focuses on security of sensitive data.</td>
</tr>
</tbody>
</table>
Why EMV?

- It is all about the Chip
- The chip contains a micro-processor that will generate dynamic data for each transaction
- Makes it harder and more expensive to steal & copy data on the card
- The chip is harder to steal & duplicate than mag stripe data
U.S. EMV Timelines

**AFD**: Automated Fuel Dispenser  
**Visa GCAR**: Global Compromised Account Recovery  
**MasterCard ADC**: Account Data Compromise

1 Applies to Level 1 & Level 2 merchants where 75% of transactions come from a dual interface, chip-enabled, terminal
EMV: The Numbers

**MasterCard¹:**
- 30% U.S. issued MasterCards are chip cards
  - 54% of these are credit cards
- Chip transactions at POS increased 55% Nov 2015 versus Oct 2015
- 809,417 chip active POS locations
  - 20% growth month over month
  - 65% of merchants have multiple locations

**Visa²:**
- 212.7 million EMV chip cards issued
- 9% increase from Nov 2015 to Dec 2015
- 118 million EMV credit cards issued
- 94.8 million EMV debit cards issued
- 766k EMV chip activated merchants
  - 11% increase Nov - Dec

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¹: MasterCard Chip Cards US Migration Trends Nov 2015
²: Visa US EMV Migration Summary December 2015

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(presented by Heartland)
EMV Acceptance

- **Issuers:**
  - American Express
  - Bank of America
  - Hawaiian Airlines Visa
  - Chase
  - Citi
  - HSBC
  - North Carolina State Employees’ Credit Union
  - Sam’s Club & WalMart MasterCard
  - US Bank
  - USAA
  - Wells Fargo

- **Merchants:**
  - Wal-Mart
  - Sears
  - Target
  - CVS
  - Walgreens
  - Home Depot

And growing.....
POS Considerations

Supported Cardholder Verification Method (CVM)

- PIN
- Signature
- No Signature (such as implemented at a QSR; also called no CVM)

NFC / Contactless Support

- Is speed of service a need?
- Do you serve a demographic that is looking for mobile payments?
Cardholder Verification Methods (CVM)

Point of interaction can support variety of CVMs

<table>
<thead>
<tr>
<th>CVM</th>
<th>Defined</th>
<th>Pro</th>
<th>Con</th>
</tr>
</thead>
<tbody>
<tr>
<td>Online PIN</td>
<td>PIN is encrypted and verified online by the issuer, via the auth message</td>
<td>Security</td>
<td>Requires terminal support of PIN</td>
</tr>
<tr>
<td>Offline PIN</td>
<td>PIN verified offline by the terminal and card, without being sent in the auth message, only the result is sent to the host</td>
<td>Security</td>
<td>Requires terminal support of PIN and management of multiple keys</td>
</tr>
<tr>
<td>Signature</td>
<td>The signature on the receipt is compared to the signature on the back of the card</td>
<td>Simple to implement</td>
<td>Less secure than PIN</td>
</tr>
<tr>
<td>No CVM</td>
<td>No cardholder verification, generally used for low value transactions</td>
<td>Speed</td>
<td>Unable to use for larger value transactions</td>
</tr>
</tbody>
</table>

- Issuer decides which CVMs to support on the card
## Authentication / Authorization Methods

**EMV transactions can be authorized ONLINE vs OFFLINE**

<table>
<thead>
<tr>
<th>ONLINE</th>
<th>OFFLINE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Authorization message sent to issuer in real time for approval or decline</td>
<td>Chip on EMV card and POS communicate to determine if transaction can be authorized</td>
</tr>
<tr>
<td>Online, real time</td>
<td>Usually occurs when there is no online connectivity</td>
</tr>
<tr>
<td>Includes unique Cryptogram that issuer can validate</td>
<td>Uses risk parameters contained on the card in authorization decision</td>
</tr>
</tbody>
</table>

- An EMV card can support both online & offline
Contact or Contactless?

- **Contact:**
  - Insert the card
  - Card remains in terminal during transaction

- **Contactless:**
  - “Tap” card or device near the terminal
  - Allows for a faster transaction
  - Fewer cards left in terminals (short term concern)
  - Building block for mobile
  - More costly for issuers to support
    - Unknown how many cards will offer contactless support
Liability Shift

There is no mandate for merchants to implement EMV!

Liability Shift = Potential Chargebacks

Generally liability is going to shift to the party using the least secure technology

1 Rules outlined are as of September 2015
### Counterfeit Card Fraud Liability Shift

**American Express, Discover, MasterCard & Visa**

<table>
<thead>
<tr>
<th>Before October 1, 2015</th>
<th>Current and October 2017 for AFDs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Issuer</strong> liable</td>
<td>For chip cards, <strong>Merchant</strong> liable if non-chip terminal</td>
</tr>
</tbody>
</table>

*Conxxus: EMV – Beyond October 1, 2015 (presented by Heartland)*
### Counterfeit Card Fraud Liability

<table>
<thead>
<tr>
<th>Before October 1, 2015</th>
<th>Mag stripe card + Mag stripe terminal =</th>
<th>Issuer liable</th>
</tr>
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<tbody>
<tr>
<td>Mag stripe card + Mag stripe terminal =</td>
<td>Issuer liable</td>
<td></td>
</tr>
<tr>
<td>Mag stripe card + Chip² terminal =</td>
<td>Issuer liable</td>
<td></td>
</tr>
<tr>
<td>Chip² card + Mag stripe terminal =</td>
<td>Merchant liable</td>
<td></td>
</tr>
<tr>
<td>Chip² card + Chip² terminal =</td>
<td>Issuer liable</td>
<td></td>
</tr>
</tbody>
</table>

1. Same applies for all brands
2. With or without PIN capabilities

---

Conexxus: EMV – Beyond October 1, 2015
(presented by Heartland)
### Counterfeit Card Fraud Liability

<table>
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<td>Issuer liable</td>
</tr>
<tr>
<td>Current</td>
<td>Chip² card +</td>
<td>=</td>
<td>Merchant liable</td>
</tr>
<tr>
<td></td>
<td>Mag stripe terminal</td>
<td></td>
<td>Issuer liable</td>
</tr>
<tr>
<td></td>
<td>Chip² card +</td>
<td>=</td>
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<td>Chip² terminal</td>
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1. Same applies for all brands
2. With or without PIN capabilities

To summarize… Liability for fraud shifts to the merchant when a counterfeit mag stripe from a chip card is used at a mag stripe terminal As of Oct-2015/2017

Conxxus: EMV – Beyond October 1, 2015 (presented by Heartland)
Lost / Stolen Fraud Liability Shift

### American Express, Discover & MasterCard

<table>
<thead>
<tr>
<th>Attended / Unattended</th>
<th>Before October 1, 2015</th>
<th>Current and October 2017 for AFD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Attended</strong></td>
<td><strong>Issuer</strong> liable</td>
<td>For chip cards, <strong>Merchant</strong> liable, If terminal is less secure (CVM hierarchy applies)</td>
</tr>
<tr>
<td><strong>Unattended</strong></td>
<td><strong>Merchant</strong> liable</td>
<td></td>
</tr>
</tbody>
</table>

Conexxus: EMV – Beyond October 1, 2015 (presented by Heartland)
### Lost / Stolen Fraud Liability: American Express, Discover & MasterCard

<table>
<thead>
<tr>
<th>Before October 1, 2015</th>
<th>Mag stripe card +</th>
<th>Mag stripe terminal</th>
<th>=</th>
<th>Issuer liable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mag stripe card</td>
<td>+</td>
<td>Mag stripe terminal</td>
<td>=</td>
<td>Issuer liable</td>
</tr>
<tr>
<td>Mag stripe card</td>
<td>+</td>
<td>Chip terminal</td>
<td>=</td>
<td>Issuer liable</td>
</tr>
<tr>
<td>Chip &amp; PIN card</td>
<td>+</td>
<td>Mag stripe terminal</td>
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<td>Issuer liable</td>
</tr>
<tr>
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<tr>
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<td>+</td>
<td>Chip &amp; PIN terminal</td>
<td>=</td>
<td>Merchant liable</td>
</tr>
</tbody>
</table>

Current

| Conexxus: EMV – Beyond October 1, 2015 (presented by Heartland) |

1Attended Environments
Lost / Stolen Fraud Liability: American Express, Discover & MasterCard

### Before October 1, 2015

<table>
<thead>
<tr>
<th>Card Type</th>
<th>Terminal Type</th>
<th>Liability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mag stripe card</td>
<td>Mag stripe terminal</td>
<td>Issuer liable</td>
</tr>
<tr>
<td></td>
<td>Chip terminal</td>
<td>Issuer liable</td>
</tr>
</tbody>
</table>

### Current

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<tr>
<th>Card Type</th>
<th>Terminal Type</th>
<th>Liability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chip &amp; PIN card</td>
<td>Mag stripe terminal</td>
<td>Merchant liable</td>
</tr>
<tr>
<td></td>
<td>Chip &amp; PIN terminal</td>
<td>Issuer liable</td>
</tr>
<tr>
<td>Chip &amp; Sig card</td>
<td>Chip &amp; PIN terminal</td>
<td>Issuer liable</td>
</tr>
<tr>
<td>Chip &amp; Sig card</td>
<td>Chip terminal</td>
<td>Issuer liable</td>
</tr>
</tbody>
</table>

1. **Lost / Stolen Fraud Liability:**
   - American Express, Discover & MasterCard

   To summarize...
   - Liability shifts to the merchant when a lost or stolen chip & PIN card is used at a less secure terminal.
   - As of Oct-2015

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1. **Attended Environments**

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*Conexxus: EMV – Beyond October 1, 2015 (presented by Heartland)*
Lost / Stolen Fraud Liability:
American Express/Discover/MasterCard Unattended\(^1\) (AFD)

<table>
<thead>
<tr>
<th>Before October 1, 2015</th>
<th>Mag stripe card + Mag stripe terminal = Merchant liable</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><img src="image1.png" alt="Mag stripe card" /> <img src="image2.png" alt="Mag stripe terminal" /> = <img src="image3.png" alt="Merchant liable" /></td>
</tr>
<tr>
<td></td>
<td><img src="image1.png" alt="Mag stripe card" /> <img src="image4.png" alt="Chip terminal" /> = <img src="image5.png" alt="Issuer liable" /></td>
</tr>
<tr>
<td></td>
<td><img src="image6.png" alt="Chip card" /> <img src="image2.png" alt="Mag stripe terminal" /> = <img src="image3.png" alt="Merchant liable" /></td>
</tr>
<tr>
<td></td>
<td><img src="image6.png" alt="Chip card" /> <img src="image7.png" alt="Chip &amp; PIN terminal" /> = <img src="image5.png" alt="Issuer liable" /></td>
</tr>
<tr>
<td></td>
<td><img src="image8.png" alt="Chip &amp; Sig card" /> <img src="image7.png" alt="Chip &amp; PIN terminal" /> = <img src="image3.png" alt="Merchant liable" /></td>
</tr>
<tr>
<td></td>
<td><img src="image9.png" alt="Chip &amp; PIN card" /> <img src="image7.png" alt="Chip &amp; PIN terminal" /> = <img src="image5.png" alt="Issuer liable" /></td>
</tr>
</tbody>
</table>

\(^1\)Unattended includes car washes, vending, laundry, etc.

Conexxus: EMV – Beyond October 1, 2015 (presented by Heartland)
Lost / Stolen Fraud Liability: American Express/Discover/MasterCard

<table>
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<tr>
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<tbody>
<tr>
<td>Mag stripe card + Mag stripe terminal</td>
</tr>
<tr>
<td>Mag stripe card + Mag stripe terminal</td>
</tr>
<tr>
<td>Mag stripe card + Chip terminal</td>
</tr>
<tr>
<td>Chip card + Mag stripe terminal</td>
</tr>
<tr>
<td>Chip card + Chip terminal</td>
</tr>
<tr>
<td>Chip &amp; Sig card + Chip &amp; PIN terminal</td>
</tr>
<tr>
<td>Chip &amp; PIN card + Chip &amp; no-PIN terminal</td>
</tr>
<tr>
<td>Chip &amp; PIN card + Chip &amp; PIN terminal</td>
</tr>
</tbody>
</table>

To summarize… Liability for fraud shifts to the issuer when a lost or stolen card is used at a more secure AFD terminal after Oct-2017

1 Unattended includes car washes, vending, laundry, etc.

Current unattended & after 10/2017 for AFD

Conexxus: EMV – Beyond October 1, 2015 (presented by Heartland)
## Lost / Stolen Fraud Liability Shift

<table>
<thead>
<tr>
<th>Attended</th>
<th>Before Apr-2014</th>
<th>Current</th>
</tr>
</thead>
<tbody>
<tr>
<td>Issuer liable</td>
<td>No Change</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Unattended</th>
<th>Before Apr-2014</th>
<th>Current</th>
</tr>
</thead>
<tbody>
<tr>
<td>Merchant liable</td>
<td>For chip cards, Issuer liable, If chip terminal</td>
<td></td>
</tr>
</tbody>
</table>

A variety of factors play into liability, such as if the full track data was provided, but for simplicity purposes using the current general scenario.
### Lost / Stolen Fraud Liability: Visa – Attended Environment

#### Before October 1, 2015

<table>
<thead>
<tr>
<th>Card Type</th>
<th>Terminal Type</th>
<th>Liability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mag stripe card</td>
<td>+</td>
<td>Issuer liable</td>
</tr>
<tr>
<td>Mag stripe card</td>
<td>+</td>
<td>Issuer liable</td>
</tr>
<tr>
<td>Chip &amp; PIN card</td>
<td>+</td>
<td>Issuer liable</td>
</tr>
<tr>
<td>Chip &amp; Sig card</td>
<td>+</td>
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</tr>
<tr>
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#### Current

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<tr>
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Conextxus: EMV – Beyond October 1, 2015 (presented by Heartland)
## Lost / Stolen Fraud Liability: Visa – Attended Environment

<table>
<thead>
<tr>
<th>Before October 1, 2015</th>
<th>Mag stripe card + Mag stripe terminal = Issuer liable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mag stripe card + Mag stripe terminal = Issuer liable</td>
<td></td>
</tr>
<tr>
<td>Mag stripe card + Chip &amp; PIN terminal = Issuer liable</td>
<td></td>
</tr>
<tr>
<td>Chip &amp; PIN card + Mag stripe terminal = Issuer liable</td>
<td></td>
</tr>
<tr>
<td>Chip &amp; PIN card + Chip &amp; PIN terminal = Issuer liable</td>
<td></td>
</tr>
<tr>
<td>Chip &amp; PIN card + Chip &amp; PIN terminal = Issuer liable</td>
<td></td>
</tr>
<tr>
<td>Chip &amp; PIN card + Chip &amp; PIN terminal = Issuer liable</td>
<td></td>
</tr>
</tbody>
</table>

**To summarize…**

- The merchant is **never liable** for lost and stolen card fraud

---

**Lost / Stolen Fraud Liability:**

- **Visa – Attended Environment**

**Before October 1, 2015**

- Mag stripe card + Mag stripe terminal = Issuer liable

**Current**

- Mag stripe card + Mag stripe terminal = Issuer liable
- Mag stripe card + Chip & PIN terminal = Issuer liable
- Chip & PIN card + Mag stripe terminal = Issuer liable
- Chip & PIN card + Chip & PIN terminal = Issuer liable
- Chip & PIN card + Chip & PIN terminal = Issuer liable
- Chip & PIN card + Chip & PIN terminal = Issuer liable

---

**Conexxus: EMV – Beyond October 1, 2015**

(presented by Heartland)
Lost / Stolen Liability: Visa – Unattended\(^1\)

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<tr>
<th>Before October 1, 2015</th>
<th>Mag stripe card</th>
<th>+</th>
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<tbody>
<tr>
<td>Mag stripe card</td>
<td>+</td>
<td></td>
<td>Mag stripe terminal</td>
<td>=</td>
<td>Merchant liable</td>
</tr>
<tr>
<td>Chip(^2) card</td>
<td>+</td>
<td></td>
<td>Chip terminal</td>
<td>=</td>
<td>Merchant liable</td>
</tr>
<tr>
<td>Chip(^2) card</td>
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<td>Chip terminal</td>
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\(^1\)Unattended includes car washes, vending, laundry, etc.
\(^2\)With or without PIN capabilities

Before October 1, 2015

Current for unattended & after 10/2017 for AFD
Lost / Stolen Liability: Visa – Unattended\(^1\)

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<tbody>
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<td>Current Unattended &amp; after 10/2017 for AFD</td>
<td>Mag stripe card + Mag stripe terminal = Merchant liable</td>
</tr>
<tr>
<td></td>
<td>Mag stripe card + Chip terminal = Merchant liable</td>
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\(^1\)Unattended includes car washes, vending, laundry, etc.
\(^2\)With or without PIN capabilities

To summarize… Liability for fraud shifts to the issuer when a lost or stolen chip card is used at chip AFD terminal

Conexxus: EMV – Beyond October 1, 2015 (presented by Heartland)
Terminal Certification

- Non-EMV process
  - Certification between equipment provider & processor

- EMV process
  - EMVCo Level 1 Type Approval and Level 2 Approval
    - Only valid for 4 years
  - E2E certification between equipment provider, processor and each card brand
  - Expect significant impact to time & cost
EMV +PLUS

EMV

Chip based authentication is used to eliminate counterfeit, lost and stolen fraud.

+Encryption

End-to-end encryption is used to protect sensitive card data in transit.

+Tokenization

Tokenization replaces sensitive card data with “tokens”, which have limited value.

Token

9830464637271847
Process Adjustments

- Staff training

- Customer Verification Method
  - Do you need a customer facing PIN pad?

- Cardholder training
  - Tap, swipe, or insert?
  - Forgotten cards – terminal message and beep
  - Consumer confusion and mistrust

- Additional timer per transaction
  - Perception is that it takes longer
Fallback

• Problem with chip cards or POS terminal that results in transaction being completed with a magnetic stripe

• Issuers and card brands monitoring – may lead to fines

• Issuers may start to decline
EMV: In Discussion

- Fleet and EMV
  - Visa and MasterCard Fleet
  - Wright Express
  - Voyager

- PIN Bypass

- End of life for mag-stripe
Next Steps

• Monitor industry news

• Seek education and updates from a trusted advisor...
  • Processor, acquirer
  • POS terminal / dispenser provider
  • Industry associations {Conexxus, NACS, EMV Migration Forum (EMF)}
  • GoChipCard.com

• Evaluate existing environment
  • POS – can it be updated and the cost to do so?
  • Location
  • Chargeback ratios
  • Competitive landscape

• Consider budget
Questions?

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