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Agenda

- PIN-Entry Device (PED) Compromise Trends and Security Vulnerabilities
- Review of recent attacks and best practices for prevention
- Review of Visa PED Usage Mandates
  - Review of Visa’s PED Retirement Mandates
- Review of PED Usage Best Practices
- An Overview of Visa’s US Authentication Announcement
- Q & A

NOTE: This deck will be posted on www.visa.com/cisp
Global Payment Systems Risk Strategy

A multi-layered approach

Build and enhance stakeholder trust in Visa as the most secure way to pay and be paid

PREVENT
Minimize fraud in the payment system

PROTECT
Protect vulnerable account data

RESPOND
Monitor and manage events that occur

TRUST AND PARTNERSHIP

ADVANCE
Build risk strategies and trust for emerging products and entities

PIN Security Compromise Trends and Best Practices
PIN Entry Device (PED) Tampering Cases

- **Number of PED tampering cases increasing**
  - Criminals target merchants with certain PED models
    - Attacks on older vulnerable PEDs and newer PED models
    - Wireless models becoming a target
  - Small and large merchants, often multiple stores, targeted
    - Swap out PEDs with altered PEDs

- **Attacks are more sophisticated & technically advanced**
  - Recent attacks involved *VeriFone Everest and Ingenico i3070 PED models*
  - However new PED models are being targeted

- **Evidence of technology being exported globally**

**PED Tampering usually involves:**
- A second mag stripe reader or connection to existing reader
- Additional circuit board(s)
- Keypad membrane
- Bluetooth device
- Flash memory chip or drive
Americas PED Tampering

North America

- Attacks on chain stores with older POS PEDs
- POS PEDs not well secured
- Criminals travel across country replicating attack
- Perform ATM cash-outs immediately

Latin America

- Attacks in Peru, Chile and Colombia
- Highly sophisticated attacks
- PED swaps involved social engineering
- Newer PCI approved PEDs found
- Wireless PEDs targeted, difficult to physically secure
VeriFone Everest

Normal

Tampered
PED Tampering

Membrane keyboard to capture PINs
Preventive Measures for PED Tampering

- Replace vulnerable PEDs as quickly as possible
- Train staff to regularly inspect PEDs visually to identify anything abnormal such as
  - Missing or altered seals or screws
  - Extraneous wiring, holes in the device, or the addition of labels
  - Overlay material used to mask damage from tampering
- Ensure PEDs are physically secured / locked down to counters

Review Visa’s Terminal Usage Best Practices:

“Point-of-Sale Terminal Tampering Is a Crime … and You Can Stop It”

www.visa.com/cisp

Point-of-Sale Terminal Tampering Is a Crime . . . and You Can Stop It

Increasingly, criminals with sophisticated tools are actively targeting vulnerable merchant point-of-sale (POS) terminals to steal payment card data and PINs for counterfeit fraud purposes. That’s the bad news! The good news is that all acquirers, merchants, and processors can take appropriate steps to eliminate POS terminal weaknesses and the possibility of POS tampering.

Criminal gangs worldwide are illegally accessing active POS terminals and modifying them by inserting an undetectable
What to do if PED Tampering is Detected

- **Contain and limit the exposure**
  - Remove/unplug suspected PED(s) from your network
  - Secure and safeguard all PEDs
  - For multi-lane locations, track PEDs to a specific lane/register
  - Large merchants should have incident response plans for compromise events

- **Alert all necessary parties**
  - Follow steps in Visa’s *What to do If Compromised* document on [www.visa.com/cisp](http://www.visa.com/cisp)
  - Notify your sponsoring merchant bank and processor
  - Notify Visa Fraud Control
  - Notify your PED vendor
  - PED Vendors must notify the PCI Security Standards Council

- **Notify Visa Incident Response team** if unable to contact sponsor bank:
  - **U.S.** – (650) 432-2978 or usfraudcontrol@visa.com
  - **Canada** – (416) 860-3090 or CanadaInvestigations@visa.com
  - **Latin America & Caribbean** – (305) 328-1713 or lacfraudinvestigations@visa.com
Securing the Payment System

Visa data security programs drive payment system security

**PCI Data Security Standard** (PCI DSS)
- Drive PCI DSS compliance to ensure entities protect cardholder data

**PCI PIN Security Requirements**
- Advance compliance to prevent PIN compromises

**PCI PIN Transaction Security (PTS) Testing program**

**PCI Payment Application Security Standard (PA-DSS)**
- Promote development and use of secure payment applications
Compromised PIN-Entry Device List

- Review PEDs in use to identify any known vulnerable devices
- **Visa Bulletin** available on [www.visa.com/cisp](http://www.visa.com/cisp)
- Take precautions to secure all PEDs in use...or in storage

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Visa Security Alert

16 November 2012

**Help Protect Cardholder Data From Attacks on PIN Entry Devices**

**U.S. | Acquirers, Processors, Merchants, Agents**

To promote the security and integrity of the payment system, Visa is reminding clients, merchants and payment system participants of their responsibility to protect cardholder account and PIN data.

Criminals trying to obtain cardholder account and PIN data at the point of sale (POS) frequently target PIN Entry Devices (PEDs) that are known to be vulnerable. Last year, Visa alerted clients that the VeriFone Everest Plus PED was used in tampering and skimming attacks.

Evidence indicates that these devices were removed from the point of sale and replaced with modified devices designed to capture magnetic stripe card and PIN data, which was then transmitted to criminals wirelessly. Surveillance footage shows that the suspects were able to remove a PED and install a modified device in less than one minute.

**Recommended Mitigation Strategies**

All VeriFone Everest Plus users are encouraged to upgrade to systems that feature the most up-to-date security...
Known Compromised Attended POS PEDs

**Compromised Non Lab-Evaluated PEDs**

<table>
<thead>
<tr>
<th>Ingenico</th>
<th>VeriFone</th>
<th>Hypercom</th>
</tr>
</thead>
<tbody>
<tr>
<td>• eN-Crypt 2400</td>
<td>• PINpad 101, 201, 2000</td>
<td>• S7S</td>
</tr>
<tr>
<td>• C2000 Protégé</td>
<td>• Everest</td>
<td>• S8</td>
</tr>
<tr>
<td>• Everest Plus (-0.X)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Mandatory sunset date July 2010*

**Compromised Pre-PCI PEDs**

<table>
<thead>
<tr>
<th>Ingenico</th>
<th>VeriFone</th>
</tr>
</thead>
<tbody>
<tr>
<td>• eN-Crypt 2100</td>
<td>• Everest Plus (-1.X)</td>
</tr>
</tbody>
</table>

*Mandatory sunset date Dec. 2014 or earlier!*

**Compromised PCI PEDs**

<table>
<thead>
<tr>
<th>Ingenico</th>
</tr>
</thead>
<tbody>
<tr>
<td>• i3070MP01</td>
</tr>
<tr>
<td>• i3070EP01</td>
</tr>
</tbody>
</table>

*Visa has no sunset dates for PCI approved PEDs*

Compromised PEDs listed on [www.visa.com/cisp](http://www.visa.com/cisp)
Merchant Best Practices to Prevent Skimming

1. Implement a terminal authentication system to detect internal serial number or connectivity changes
2. Secure terminals / PEDs to counters to prevent removal and secure cable connections
3. Inspect and secure PEDs within unattended self checkout lanes
4. Use terminal asset tracking procedures for devices deployed, stored and shipped
5. Secure stored PEDs and validate inventory against asset records

- www.pcisecuritystandards.org/documents/skimming_prevention_IS.pdf
Non Lab-Evaluated / Non Visa Approved
- PEDs deployed prior to January 2004
- Mandatory Visa sunset date July 2010

Pre-PCI Approved PEDs
- Deployed since January 2004
- Expired on Dec. 2007
- Mandatory Visa sunset date Dec. 2014
- Listed on: www.visa.com/cisp

PCI Approved PEDs
- PEDs deployed since Dec. 2007
- 253 V1 PEDs expire April 2014
- Visa has no sunset date for PCI Approved PEDs
- Listed by PCI SSC

Best Practices for POS PED Acquisitions:
- Locate PED on PCI PTS website to validate approval status
- Keep print screen of PCI PED approval with PO
- Purchase the latest version of PCI PEDs when possible – V3

Attended POS PED Categories
Pre-PCI PED Usage Rules

1. Entire list of devices are expired
2. Expired PEDs cannot be purchased or newly deployed
3. All attended Pre-PCI POS PEDs must be retired by December 2014
4. Entities should plan now to comply with Visa mandatory sunset date
5. Pre-PCI PIN Entry Device List
   www.visa.com/pin
Always validate Hardware, Firmware and Application prior to purchase.

PCI PIN Transaction Security Devices

Please review the legal conditions and restrictions regarding PCI PTS approval contained in the Payment Card Industry PIN Transaction Security Testing and Approval Program Guide.

PCI Security Standards Council bulletin on determination of PCI approval status for PTS devices Payment Card Industry (PCI) Recognized Laboratories Derived Test Requirements

Additional PIN Transaction Security (PTS) documents are available in the document library. Search by Company Name, Product Name, Approval Number, Product Type, Version or Expiry Date.

Company: Ingenico

www.ingenico.com

i3380

Hardware #: I3380MH01, I3380EH01
Firmware #: UniCapt32 2.x.y, UniCapt 32 3.x.y
Applic #: SSA 01.xx

www.pcisecuritystandards.org
**POS PED Usage, Planning and Acquisitions**

- Always purchase the highest PED version
- Never purchase or deploy expired PEDs
- Plan now for the Pre-PCI PED sunset date
- Beware of ‘bargains’ as sunset date approaches
- Remove attended Pre-PCI POS PEDs no later than December 2014
- For more information review Visa’s **General PED FAQs**
  
  [www.visa.com/cisp](http://www.visa.com/cisp)

### PCI Approved PIN Entry Devices

**www.pcisecuritystandards.org**

<table>
<thead>
<tr>
<th>PCI PED Version</th>
<th>V1</th>
<th>V2</th>
<th>V3</th>
</tr>
</thead>
<tbody>
<tr>
<td>PED/EPP</td>
<td>283</td>
<td>198</td>
<td>112</td>
</tr>
</tbody>
</table>
PCI PIN Requirements for Secure PED Usage

PCI SSC released updated *PCI PIN Security Requirements* in 2011

- New language added to *PCI PIN Security Requirement 29*
- Physical and logical protections must exist for deployed PEDs
- Precautions may include:
  - PEDs physically mounted or tethered to prevent removal
  - Implementation of a terminal authentication system
- Visa effective date for new PCI PIN Security Requirements: July 2012

### PCI PIN Modifications – Summary of Changes

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Section(s)</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>Main Body</td>
<td>Clarified that no other person (not similarly entrusted with that component) can observe or otherwise obtain the component.</td>
</tr>
<tr>
<td></td>
<td>Normative Annex B</td>
<td>Specified that key custodians sufficient to form the necessary threshold to create a key must not directly report to the same individual.</td>
</tr>
<tr>
<td>26</td>
<td>N/A</td>
<td>Increased minimum passphrase from six to eight characters for Certification and Registration Authority relevant equipment.</td>
</tr>
<tr>
<td>27</td>
<td>N/A</td>
<td>Added biometrics as an associated usage authentication mechanism for security tokens</td>
</tr>
<tr>
<td>28</td>
<td>N/A</td>
<td>Specified that precautions must be taken to minimize the threat of compromise of PIN-processing equipment once deployed.</td>
</tr>
<tr>
<td>29</td>
<td>Main Body</td>
<td>Specified that secure areas must be established for the inventory of PEDs that have not had keys injected.</td>
</tr>
<tr>
<td></td>
<td>Normative Annex B</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>

-PIN Security Compromise Trends and Best Practices-
Visa’s U.S. Chip Announcement

Visa’s U.S. Chip Announcement

Consider Visa’s Chip roadmap as you invest in your next terminal upgrades

1. Technology Innovation Program
   Starting October 2012, Visa will eliminate the need for eligible merchants to annually validate compliance with PCI DSS for any year in which > 75% of transactions originate from chip-enabled terminals

2. Develop Chip Processing Infrastructure
   By April 2013 Visa will require processors to support acceptance of EMV chip transactions

3. Establish Liability Shift
   By October 2015* acquirers/merchants who do not support dynamic data (chip) may be liable for counterfeit fraud

Laying the Groundwork for Dynamic Authentication in the U.S.

* 2017 for Automated Fuel Dispensers
Future Proof POS Acceptance

- Stay ahead of emerging threats by investing in the most secure equipment
- Align PED retirement / usage mandates with Authentication Roadmap
- Adopt a ‘touch once’ approach

- Visa TDES Mandates: All POS PEDs must use TDES* August 2012
- PCI PTS Compliance: ~ 150 V1 POS PEDs Expire April 2014
- Pre-PCI PED Compliance: Sunset of Pre-PCI Attended POS PEDs December 2014
- CHIP Liability Shift - POS: Deployed Chip devices limits liability October 2015
- CHIP Liability Shift - AFD: Deployed Chip devices limits liability October 2017

* TBD for US Automated Fuel Dispensers (AFD)
Secure PED Acquisition, Usage and Planning

**Acquisitions**
- Never purchase expired PEDs
- Always purchase PCI Approved Version 3 PEDs
- Purchase PEDs that are EMV capable

**Usage**
- Secure PEDs while in stores
- Use a terminal authentication system
- Replace vulnerable PEDs
- Track PED Inventories

**Planning**
- Retire Pre-PCI Attended POS PEDs by December 2014
Americas Visa PIN Security Trainings

2013 Key Management Training Schedule:

- **PIN Security and Key Management for Plus Agents**
  - February 19, Scottsdale, AZ (English)

- **Key Management & PIN Security Compliance Validation**
  - March 25 – 27, Sao Paulo, Brazil (Portuguese)
  - April 23 - 25, Ashburn, VA (English)

- **PIN Security and Key Management**
  - June 25, Toronto, Canada (English)
  - September 10, Ashburn, VA (English)

For more information go to www.visa.com/cisp

- Trainings are accredited for Continuing Professional Education
- Custom in-house training sessions available
- Contact: VisaBusinessSchool@visa.com
For More Visa PIN Security Information

www.visa.com/cisp

- Compromised POS PED Bulletins
- *Listing of Pre-PCI Approved PEDs*
- PIN Compliance Validation Framework
- Visa PED Frequently Asked Questions
- Visa PIN Security Tools and Best Practices for Merchants
- Visa PIN Security Program: Auditor’s Guide
- Visa What to do if Compromised
- Other PIN security related Bulletins and information
- Global list of ESOs - www.visa.com/merchants/risk_management

Contact: pinusa@visa.com
PCI SSC PIN and PTS Resources

PCI Security Standards Council

www.pcisecuritystandards.org

- New *PCI PIN Security Requirements V1 Sept 2011*
  - *Visa Effective date July 2012*
- PCI PTS Approved PIN Entry Device List
  - Hundreds of Vendors
  - Over 500 PEDs….but try to purchase V3 PEDs only