

**Meeting Between Federal Reserve Board Staff and Representatives of Visa  
October 29, 2014**

**Participants:** Louise Roseman, Stephanie Martin, Susan Foley, David Mills, Samantha Pelosi, Mark Manuszak, Clinton Chen, Andreas Westgaard, Slavea Assenova, Aaron Rosenbaum (Federal Reserve Board)

William Sheedy, Alex Miller, Kimberly Lawrence, Ky Tran-Trong (Visa);  
Oliver Ireland (Morrison & Foerster, LLP)

**Summary:** As follow up to a meeting held on July 1, 2014, representatives of Visa met with Federal Reserve Board staff to discuss their observations of recent market developments related to the deployment of EMV (i.e., chip-based) credit and debit cards in the United States. Representatives of Visa also provided an overview of payment tokenization and discussed Visa's role as a token service provider (TSP) in the payments ecosystem. Finally, Visa provided an update on its licensing of its common debit application identifier (AID) to other debit networks.

Attachment

# EMV Update & Tokenization Overview

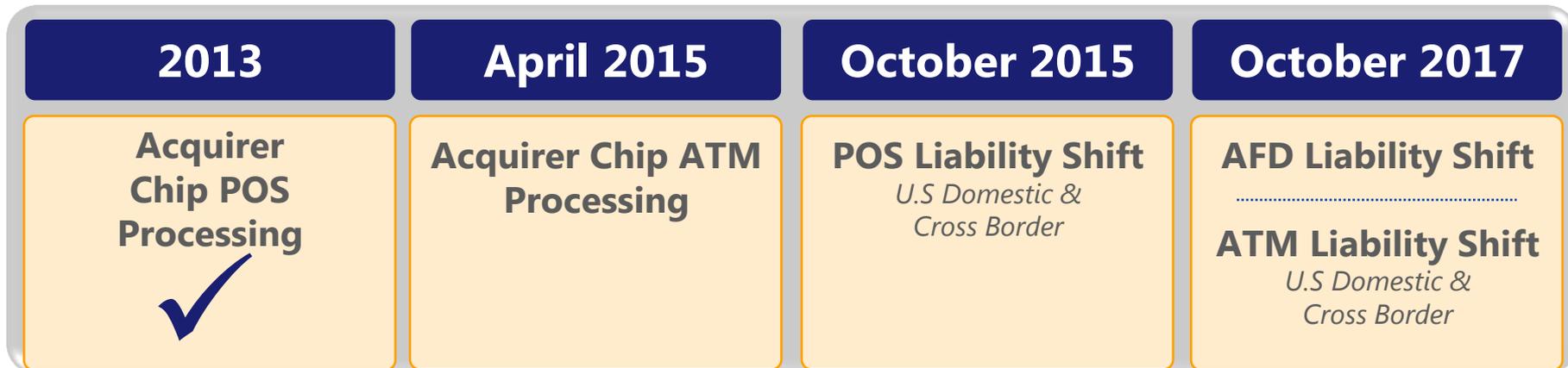
**Discussion with the Federal  
Reserve**

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**VISA**

# EMV Migration Momentum



## Progress

- Industry groups continue to work towards issue resolution and stakeholder education
- All 13 unaffiliated U.S. debit networks adopted the Visa Common Debit Solution, 8 of those have released specifications; the first Common Debit transactions were conducted with merchants in VA and WA last week
- Visa will invest more than \$20 million to educate consumers and merchants on payments security, in addition to kicking off a 20 city national public service campaign
- Apple Pay recently launched, utilizing contactless EMV chip technology embedded in the device and at the point of sale

## Executive Order

- Recent policy announcement to chip and PIN enable all government issued payment cards and to upgrade retail payment card terminals at Federal agency facilities to accept chip and PIN-enabled cards

## Ongoing Challenges

- Debit stakeholder readiness
- Streamline testing and certification processes for all stakeholders
- Consumer and merchant education on how to use EMV chip cards

# Payments Security Taskforce

## Overview

- Earlier this year, Visa and MasterCard formed a cross-industry<sup>1</sup> group to advance near-term opportunities for payment system security, with a focus on EMV, encryption and tokenization
- Senior executive members of the PST continue to meet on a regular basis and are focused on collaborating to progress initiatives in support of enhanced U.S. payments system security

## Progress Update

### EMV Issuer Forecast

Surveyed issuers estimated 575M payment cards (51% of total in the U.S.) will be EMV enabled by the end of 2015. EMV issuance is expected to reach 68% of total cards by the end of 2016

### EMV Acquirer Forecast

Surveyed acquirers estimated 47% of U.S. merchant POS terminals will be EMV enabled by the end of 2015. EMV acceptance is expected to reach 70% by the end of 2016

### Payment Security Landscape

Developing a white paper on payments security, including an integrated view of encryption, tokenization, and EMV and how they work together to devalue and protect data

### VARs EMV Certification Toolkit

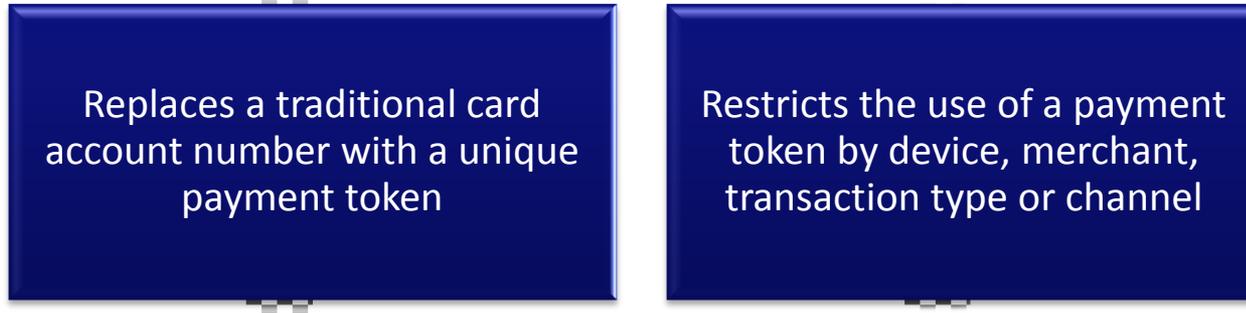
Developing a pre-certification toolkit for Value Added Resellers (VARs) and Independent Service Organization (ISOs) aimed at accelerating the delivery of EMV solutions for the mid-tier merchant segment

<sup>1</sup> PST members include top financial institutions and credit unions; large online and brick-and-mortar retailers; processors; POS manufacturers; industry trade groups.

Notes: Aite – *EMV: Lessons Learned and the U.S. Outlook (June 2014)*: 70% of credit cards and 41% of debit cards will be EMV capable by the end of 2015. Percent of EMV capable credit and debit cards will reach 91% and 68% respectively by the end of 2016. Javelin – *EMV in USA (April 2014)*: 53% of U.S. terminals will be EMV capable by the end of 2015. Acceptance will reach 71% by the end of 2016.

# Tokenization Roadmap

*Tokenization is the process of associating the primary account number or “PAN” with a unique “alternate identifier” which may be used in its stead to initiate payments.*



*Payment tokens further enhance security of digital payments and simplify the purchase experience when shopping on a computer, mobile, or other smart devices and help reduce fraudulent activity.*



Note: For clarity, the definition focuses on “payment tokens” used for payment obligations between parties as opposed to “non-payment tokens” (used for localized functions such as card security).

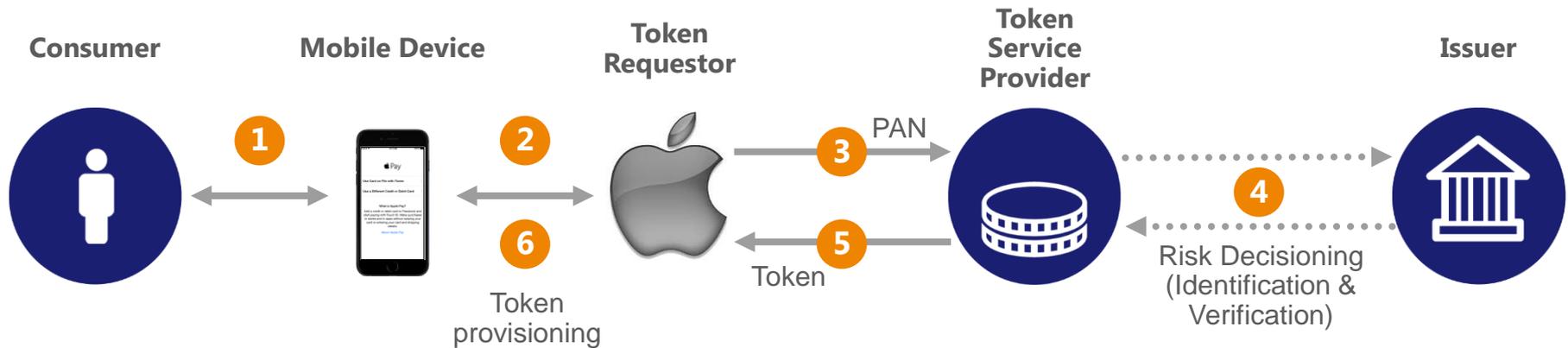
# Tokenization Core Concepts

**Payment Tokens help to improve the functionality of existing face-to-face transactions – NFC/Mobile – while supporting new and innovative transaction types like in-app mobile payments**

- Global and interoperable
- Compatible with existing network routing
- Compatible with existing payment technologies (web, NFC, POS standards)
- Supports future payment technologies
- Improved security
- Multiple Payment Tokens can be associated to a single PAN

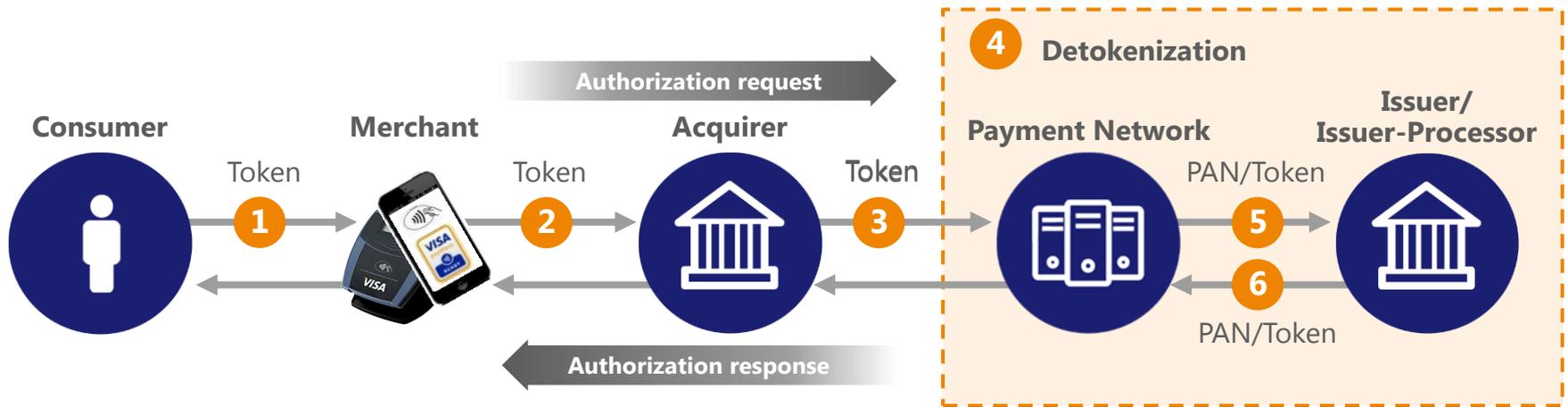


# Token Provisioning & Activation



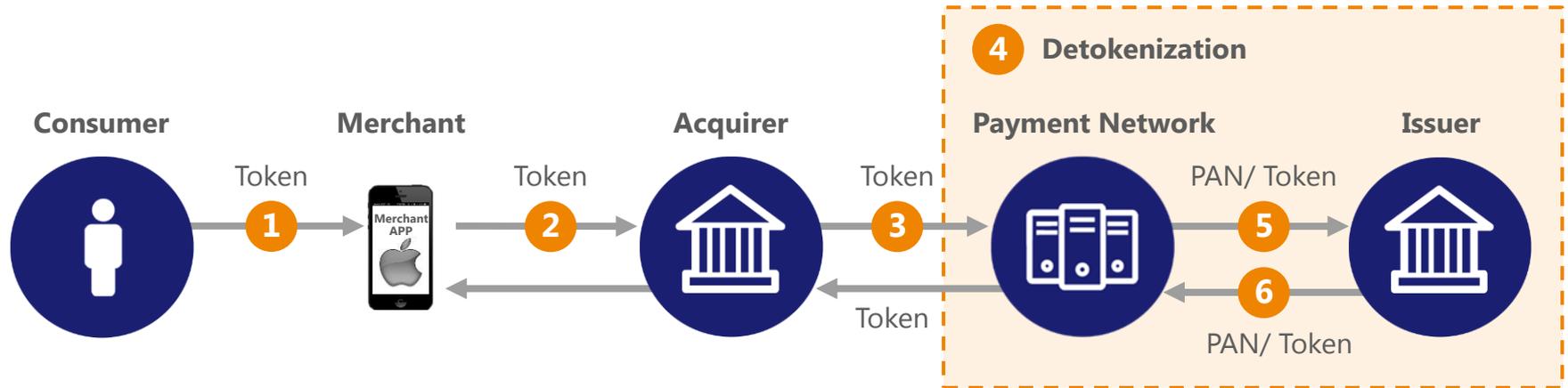
- 1** Consumer activates the service to enable their new Apple device for payments
- 2** Apple Pay service will collect/confirm payment account information from consumer
- 3** Apple will initiate token request by sending the PAN to the Token Service Provider during activation
- 4** Token Service Provider validates issuer participation and applies risk decisioning rules set up by the issuer to provision the token on behalf of the issuer
- 5** Based on validation from the issuer, Token Service Provider generates a new payment token from the assigned token BIN range and responds to Apple with the payment token, on behalf of the issuer
- 6** Apple securely provisions the token inside the secure element of the new device and activates it for payment; the Apple device uses an EMV contactless chip app which includes the Common Debit AID to facilitate routable debit transactions in a POS NFC environment

# Point of Sale (NFC) Transaction Using Payment Tokens



- 1 Consumer initiates a purchase using her device at an NFC-enabled merchant
- 2 Merchant submits token in place of PAN to acquirer
- 3 Acquirer passes token (looks and feels like PAN) to the payment network
- 4 Payment network, issuer processor, or issuer associates the token with the underlying PAN and validates rightful use of payment token
- 5 Payment network passes the token or, if already detokenized, both the PAN and token to the issuer/processor for authorization
- 6 Issuer/ processor authorizes or declines transaction. The entity that associated the token and PAN in step 4 exchanges PAN back to token, and sends response to acquirer and merchant

# In-App Transaction Using Payment Tokens



- 1** Consumer initiates a purchase from within the merchant's mobile App
- 2** Merchant submits token in place of PAN to acquirer – this will require upgrades to market participants to handle new message data between the App and the acquirer
- 3** Acquirer passes token (looks and feels like PAN) to the payment network
- 4** Payment network, issuer processor, or issuer associates the token with the underlying PAN and validates rightful use of payment token
- 5** Payment network passes just the token or, if already detokenized, both the PAN and token to the issuer/processor for authorization
- 6** Issuer/ processor authorizes or declines transaction. The entity that associated the token and PAN in step 4 exchanges PAN back to token, and sends response to acquirer and merchant

# Visa Token Service Offering

Service enables issuers and their processors to participate through a simplified enrollment process



## Visa Token Service

### 1. Service enrollment



Issuer enrollment process to enable service

### 2. Service configuration



Product eligibility, card metadata, processing options, risk decisioning and administration

### 3. Token request and issuance



Generate and issue tokens from token BIN ranges on behalf of issuer. Risk decisioning and facilitate provisioning of tokens to consumer devices

### 4. Transaction processing



De-tokenization, domain restriction validation during authorization, clearing and settlement and exception processing

### 5. Lifecycle management



Manage status of token to PAN mapping in the vault. Suspend, resume and deactivate tokens. Notify issuers and partners

# EMV Common Debit Solution Enables Merchant Routing for NFC/Contactless

- The Common Debit AID has been adopted by the industry to ensure merchant choice for U.S. EMV contact and contactless transactions
  - At the physical point of sale, merchants that want to enable multiple routing options for debit will need to ensure they have deployed an NFC-enabled terminal that is capable of selecting the Common Debit AID
  - Merchant routing for in-app payments can be achieved through BIN routing tables, just like how merchant routing works for PANs in the current POS or eCommerce environment
- Routing options can depend on the merchant's acceptance and technology services (e.g., terminal with or without a PIN pad)
- Merchants and acquirers should test their terminals to determine whether they are capable of supporting the Common Debit AID. While some NFC terminals may require software upgrades to support the Common Debit AID, other terminals (e.g., older contactless terminals) may require a hardware upgrade
  - For provisioned Visa cards, Apple Pay works at any merchant that accepts Visa at an NFC-enabled terminal
  - Tokens are designed to be, and can be, routed to multiple debit networks by a merchant or their acquirer, just as they route debit transactions using the PAN today