Implementing EMV® in the U.S.:
How the U.S. Common Debit AIDs Facilitate Debit Transaction Routing and Ensure Durbin Compliance

27 June 2015
Background

- **Dodd-Frank Wall Street Reform and Consumer Protection Act, Section 1075, a.k.a. “Durbin Amendment” (paraphrased)**
  
  ...all debit cards will need to participate in at least two unaffiliated networks so that transactions initiated using those debit cards will have at least two independent routing channels. The two unaffiliated networks could be one PIN network and one signature network (the most common configuration), two signature networks or two PIN networks (in each case so long as the two networks are not affiliated).

  - Impacts POS debit transactions
  - Read more about it starting on page 697 of: http://www.sec.gov/about/laws/wallstreetreform-cpa.pdf

- **With the introduction of EMV®**
  - Durbin compliance is still required
  - Routing choice must be preserved

- **Durbin amendment**
  - Applies to POS transactions initiated by U.S.-issued debit cards at U.S. terminals
  - Doesn’t mention credit transactions
  - Doesn’t mention ATM transactions
What’s on a Magnetic Stripe Card?

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<th>Track 1: maximum of 79 characters</th>
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<td>Not used in most financial applications</td>
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</table>
Magnetic Stripe Transaction: Authorization Request

- Magnetic stripe card at magnetic stripe terminal

1. Terminal reads track data
2. Request
3. Merchant or Acquiring Processor
4. Request
5. Issuer makes authorization decision

BIN? PIN or signature? Interchange fee?
Magnetic Stripe Transaction: Authorization Response

- Magnetic stripe card at magnetic stripe terminal
Chip Card Technology

• Documents
  • Web Pages
  • Pictures

Information

• Application
  • Word Processor
    • Browser
    • Photo Editor

Application

• Operating System
  • e.g. Windows 7

Hardware

• e.g. Intel/AMD

Application

• e.g. Multos

Application

• Application 1
  • Application 1 - AID 1

Application

• Application 2
  • Application 2 - AID 2

Application

• Application 3
  • Application 3 Data

Application

• e.g. Infineon
What’s on a Chip Card?

Data Required for Each Application on a Contact Chip Card:

- Keys for Authentication
- Risk Management Parameters
- Application-Specific Data
- Cardholder Data

Track 1: maximum of 79 characters

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<th>%B</th>
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Not used in most financial applications
Global Payment Networks and Global AIDs

- “Global AID”: an AID that is owned by the global/international payment network whose logo is on the card
- When a global AID is selected, generally the transaction must be routed to the associated global payment network
Introducing EMV Brings Challenges

- When a “global” AID is selected, generally the transaction must be routed to the associated global payment network.
- How can we preserve the routing choices we have today, and comply with Durbin?
- What AIDs can be used on cards that do not carry the brand of a global payment network?
EMV Migration Forum Debit Working Committee

- Solution: U.S. Common Debit AIDs
  - [Link](http://www.emv-connection.com/u-s-debit-emv-technical-proposal/)
- U.S. contact debit chip cards will typically contain
  - A payment network-specific (“global”) AID
  - A U.S. Common Debit AID
EMV Migration Forum Debit Working Committee

- Solution: U.S. Common Debit AIDs
  - Discover
  - MasterCard
  - Visa
  - Shared Debit AID from Debit Network Alliance (DNA)
    - www.debitnetworkalliance.com
Impact to U.S. Issuers:
Debit Chip Cards that Support Global Payment Networks

- These debit chip cards will typically contain
  - A debit application from a global payment network
    - e.g. Discover, MasterCard, Visa
  - A global AID from that global payment network
    - Needed for use outside of the U.S.
  - The U.S. Common Debit AID from that global payment network
    - For use in the U.S.

- Both AIDs will point to the same funding account
  - For example, a single debit account
Impact to U.S. Issuers:
Debit Chip Cards that do not Support a Global Payment Network

- These debit chip cards
  - May use the Shared Debit AID from the DNA
  - Will contain
    - A debit application that meets the criteria specified by the DNA
    - The DNA Shared Debit AID (for use in the U.S.)
  - No other AID will be on chip cards that support the Shared Debit AID
Problem Solved?

- **Application Selection**
  - Terminal must determine what AIDs are mutually supported between the chip card and the terminal, and select one
  - When there is more than one mutually-supported AID, the AID to use for the transaction may be selected by either
    - The cardholder or
    - The terminal

Card Supports (Example):
- A0000000041010
- A0000000042203

Terminal Supports (Example):
- A0000000031010
- A00000000980840
- A0000000041010
- A0000000042203
- A0000006200620
- And others…
Application Selection

- Cardholder selection
  - Terminal presents short description of AIDs on screen, cardholder selects one
- Terminal selection by application priority
  - Terminal selects AID with highest priority on the card, as indicated by the issuer
- Custom (or country-specific) logic
  - Terminal selects AID based on business needs
  - Needed to support U.S. Common Debit AIDs

Please select one of the following:
- Visa Debit
- US Debit
Impact to U.S. Terminal Owners and Acquirers

- U.S. terminals (ATM and POS) will need to support
  - Global AIDs
    - For the global payment networks the terminal owner participates in
  - U.S. Common Debit AIDs
    - For those same global payment networks and U.S. debit networks (if routing to unaffiliated debit networks is desired)
  - Shared Debit AID from the DNA
    - If the terminal owner participates in any of the DNA member networks

### Debit AIDs Supported by a U.S. Chip-Enabled Terminal (Example)

- **Diner’s Club/Discover (Global) AID**  A0000001523010
- **Discover U.S. Common Debit AID**    A0000001524010
- **MasterCard Debit (Global) AID**      A0000000041010
- **MasterCard U.S. Common Debit AID**   A0000000042203
- **Visa Debit (Global) AID**            A0000000031010
- **Visa U.S. Common Debit AID**         A0000000980840
- **DNA Shared Debit AID**              A0000006200620
Selecting the U.S. Common Debit AID

- During a transaction, the U.S. ATM or POS terminal may select either the global AID or the U.S. Common Debit AID when both are supported by the chip card and the terminal, and cardholder AID selection is not provided.
- Custom (U.S.-specific) logic is required in the terminal to select a U.S. Common Debit AID over a global AID with higher priority.
Routing Options When Using a U.S. Common Debit AID

- When a U.S. Common Debit AID is selected, the transaction can be routed to any network the issuer has enabled for that card, that supports that AID; this could be either
  - The associated global payment network, or
  - A U.S. debit network that supports this AID
Selecting the Shared Debit AID

- The Shared Debit AID will be the only AID on a debit network chip card that does not support a global payment network.
- During a transaction, the U.S. ATM or POS terminal should select the Shared Debit AID (using standard EMV Application Selection logic) when it is supported by the chip card and the terminal.
- No conflict between the U.S. Common Debit AIDs offered by the global payment networks and the Shared Debit AID from the DNA.
When the Shared Debit AID from the DNA is selected, the transaction can be routed to any debit network that has licensed the Shared Debit AID, and that the issuer has enabled for that card.
EMV/Chip Transaction using U.S. Common Debit AID

**AIDs Supported by Debit Chip Card (Example)**

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- Talk with your terminal vendor about U.S.-specific logic
EMV/Chip Transaction: Authorization Request

- Chip card at chip-enabled terminal

1. Card and terminal interact
2. Visa U.S. Common Debit AID selected
3. Card generates EMV data, including Authorization Request Cryptogram (ARQC)

Request with EMV data

Merchant or Acquiring Processor

Visa Network

U.S. Debit Network

Issuer or Issuer Processor

5. Issuer verifies EMV data and makes authorization decision

PIN or No PIN? EMV-ready? Requirements?

- Card and terminal interact
- Visa U.S. Common Debit AID selected
- Card generates EMV data, including Authorization Request Cryptogram (ARQC)
EMV/Chip Transaction: Authorization Response

- Chip card at chip-enabled terminal

[Diagram showing EMV/Chip transaction flow]
Testing and Certification

- For U.S. Common Debit AID and DNA Shared Debit AID
- Issuers
- Terminal owners/acquirers
- Check with your payment network representatives to obtain their specific requirements and updated certification test plans
Resources and References

- EMV Specifications
  - [www.emvco.com](http://www.emvco.com)
- Dodd-Frank Wall Street Reform and Consumer Protection Act and the Durbin Amendment
  - [www.sec.gov/about/laws/wallstreetreform-cpa.pdf](http://www.sec.gov/about/laws/wallstreetreform-cpa.pdf) (page 697)
- EMV Migration Forum
  - Debit Technical Proposal
  - Minimum EMV Chip Card and Terminal Requirements – U.S.
  - Implementing EMV at the ATM, Appendix A (Transaction Scenarios involving U.S. Common Debit AIDs)
- Debit Network Alliance white papers
Project Team

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Thank you!