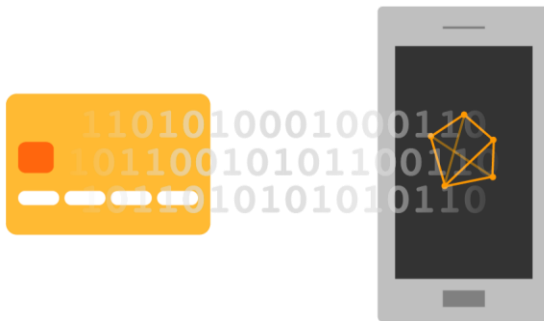


MDES enablement

Tokenization and digitization work hand-in-hand to create secure card credentials and make them available for use on mobile devices or in the cloud.

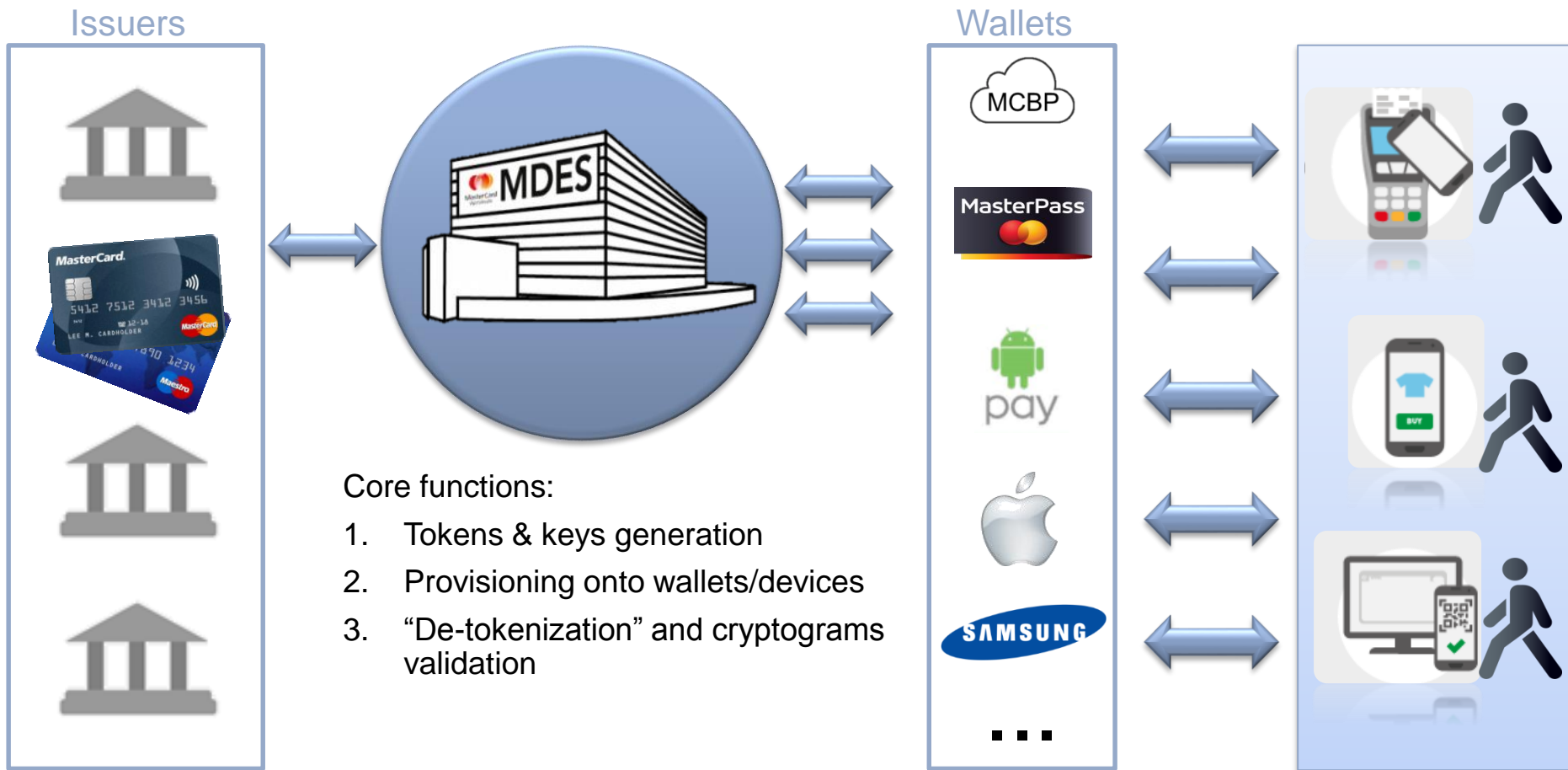


Tokenization is the replacement of a consumer card's primary account number (PAN) with an **alternative card number**



Digitization is the process that **delivers** 'tokenized' card details to **mobile devices** or servers for more secure payments

MDES: A “Factory” that Enables Digitization and Tokenization Through a Single Interface



MasterCard Digital Enablement Service

What is it ?

MDES is a centralized hub connecting issuer with digital environments and wallet providers, enabling connected devices to make EMV secure purchases in-store, in-app or online.

MDES is Suite of On-Behalf Services

- 1) Replaces card numbers with tokens



Tokenization is the replacement of a consumer card's primary account number (PAN) with an alternative card number.



- 2) Places these into digital environments
(e.g. mobile wallets)



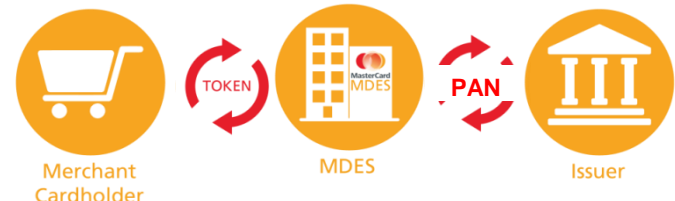
Digitization is the process that delivers 'tokenized' card details to mobile devices or servers for more secure payments.



- 3) Maps tokens to card numbers during a transaction in a secure way.



Detokenization is the process that converts token into PAN on the transaction authorization path. It includes PAN mapping, EMV crypto validation and token controls



What is tokenisation?

Tokenisation replaces the real PAN (“Funding PAN” or “FPAN”) with a different PAN (“Device PAN” or “DPAN”) which is automatically assigned by MDES

Original Card Data

Traditional 16-digit
card number and data

5XXX XXXX XXXX XXXX



Token

Standard account number
format

5XXX XXXX XXXX XXXX

Tokens are mapped to the funding account, **leveraging the existing payments infrastructure** and messaging formats for authorization and processing. The standard is managed by **EMVCo**



MasterCard

Page 6

Additional MDES Business Services



Card Availability



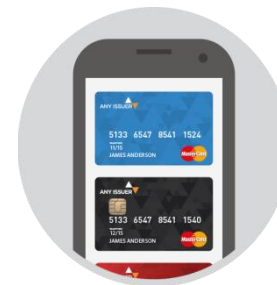
**Identification and
Verification**



**Digital Card
Generation**



**Mobile Device
Configuration**



**Card Image
Creation Service**



**Transaction
Mapping**



**Card
Configuration**



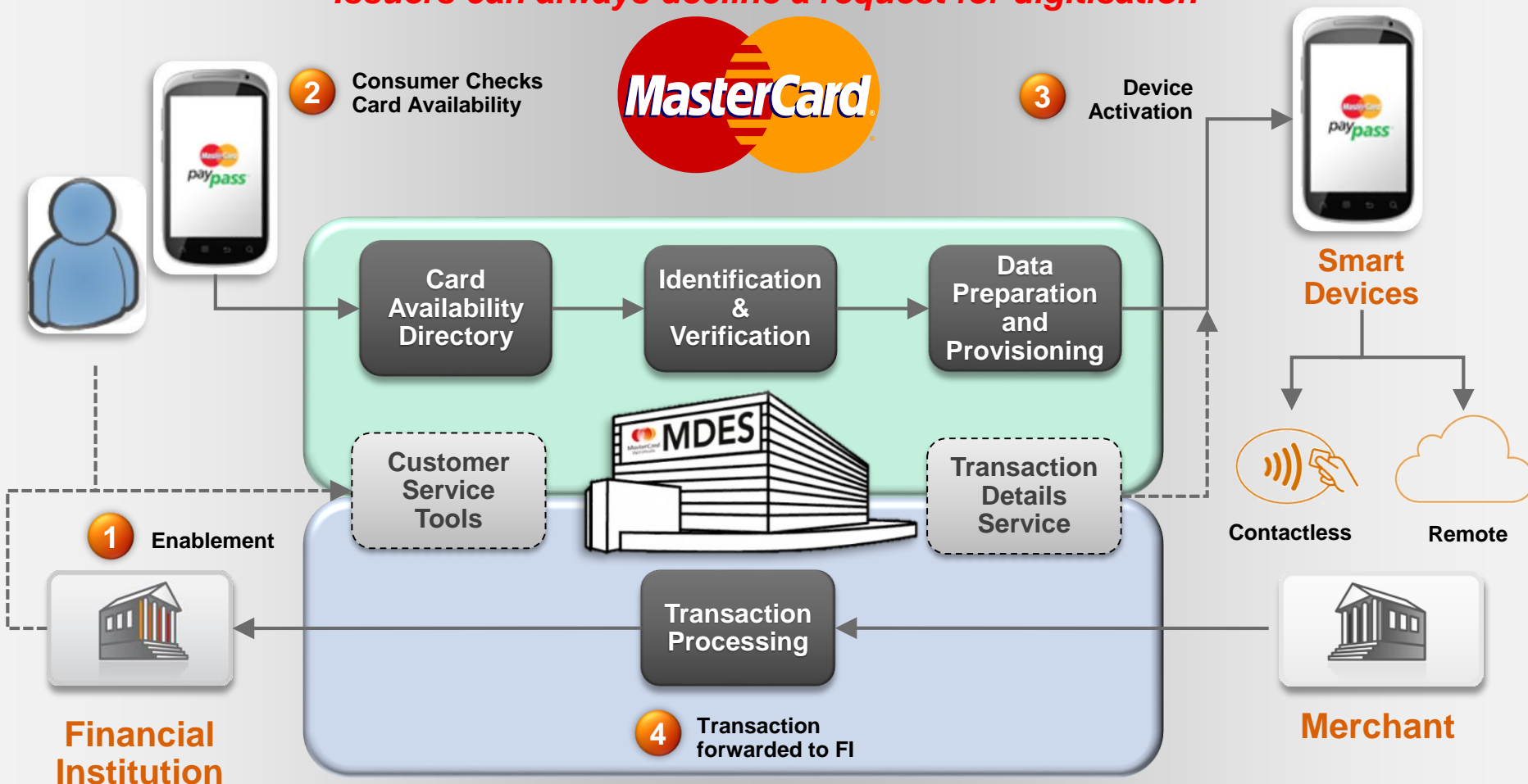
**Transaction
Detail**



**Customer
Interface**

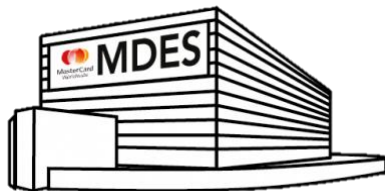
MDES Overview

Issuers can always decline a request for digitisation



All txns go online across MC network; all keys managed by MC

Tokenization Process



Establishing Tokenization



*0620/0630 messages can also be used to support ACN, TCN and TVN

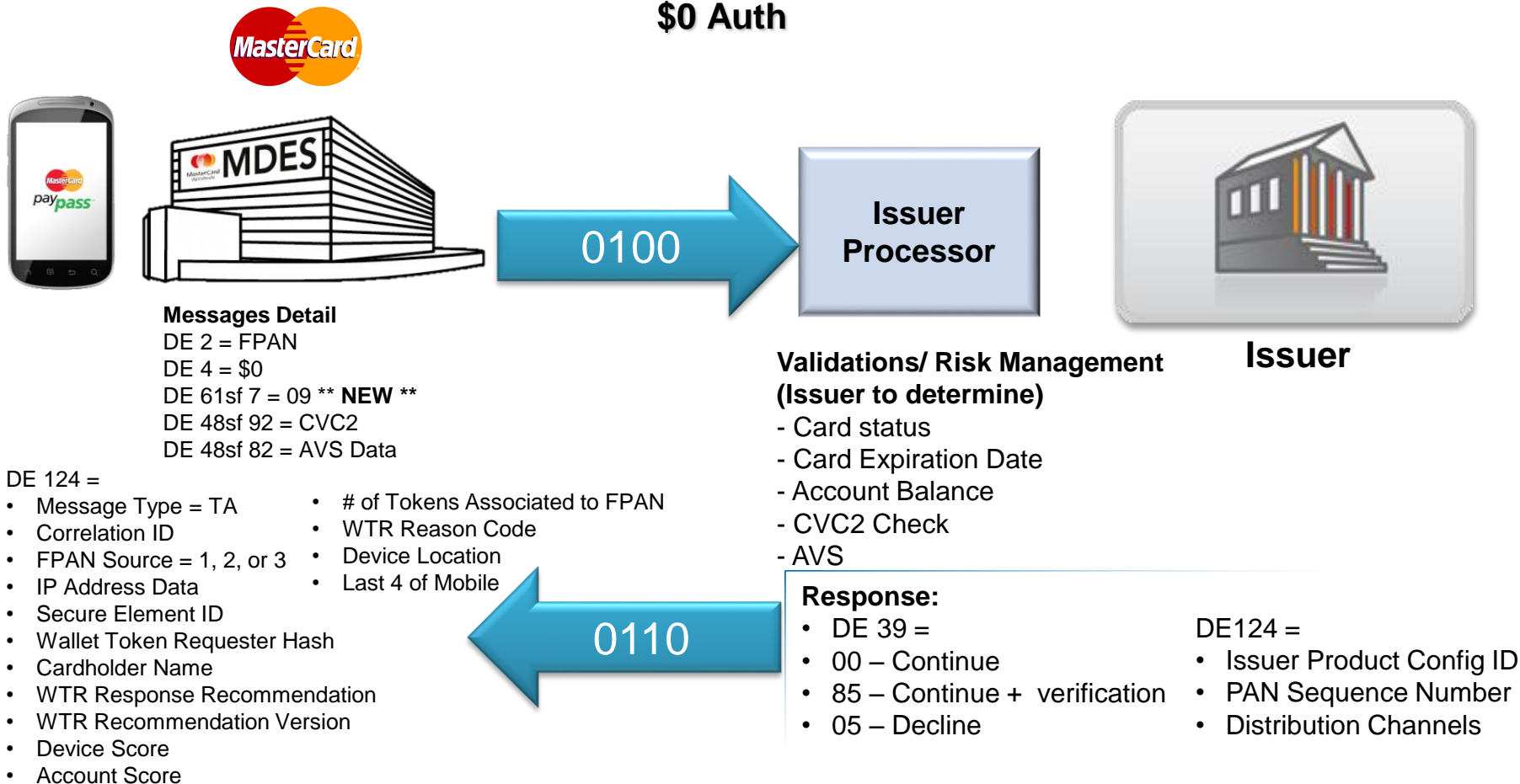
Digitization – ID&V messages

Function	Relevant message	Comments
Card Availability	Tokenization Eligibility Request (TER)	Optional Not required for Apple Pay but may be required for MCBP
Card Eligibility	Tokenization Authorization Request (TAR)	Mandatory TAR contains CVC2 and AVS data (if supported) and Wallet Provider data (e.g. account score, PAN source etc.) TAR support requires ACN to be supported
Activation Code	Activation Code Notification (ACN)	May be mandatory for some WSPs (possibly not all, TBC) Provides Activation Code to pass to consumer e.g. via SMS code, e-mail, automated voice call
Tokenization Event	Tokenization Event Notification (TVN)	Optional Notifies token deactivation, suspension, resumption, exception event
Tokenization Completion	Tokenization Complete Notification (TCN)	Mandatory for some WSP's (possibly not all, TBC) Provides DPAN Allows issuers to quickly electronically confirm digitization completion to cardholder if required by WSP

MasterCard Digital Enablement Service – Tokenization Authorization Transaction

Tokenization Authorization process

\$0 Auth

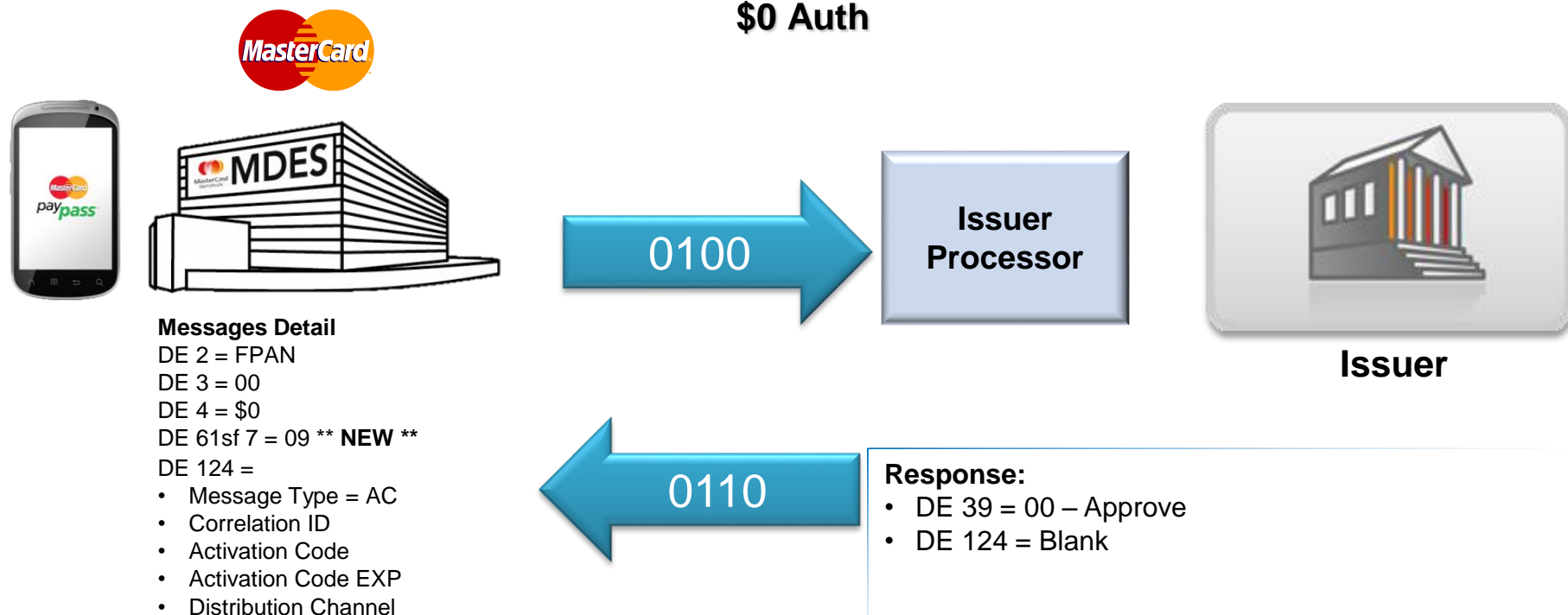


Issuer response – 1200 MS

MasterCard Digital Enablement Service – Activation Code Notification

Activation Code Notification

\$0 Auth



Global Release 597:
Activation Code Notifications can optionally be sent as
Administrative Advice/0620 messages from 17 Jan 2015.

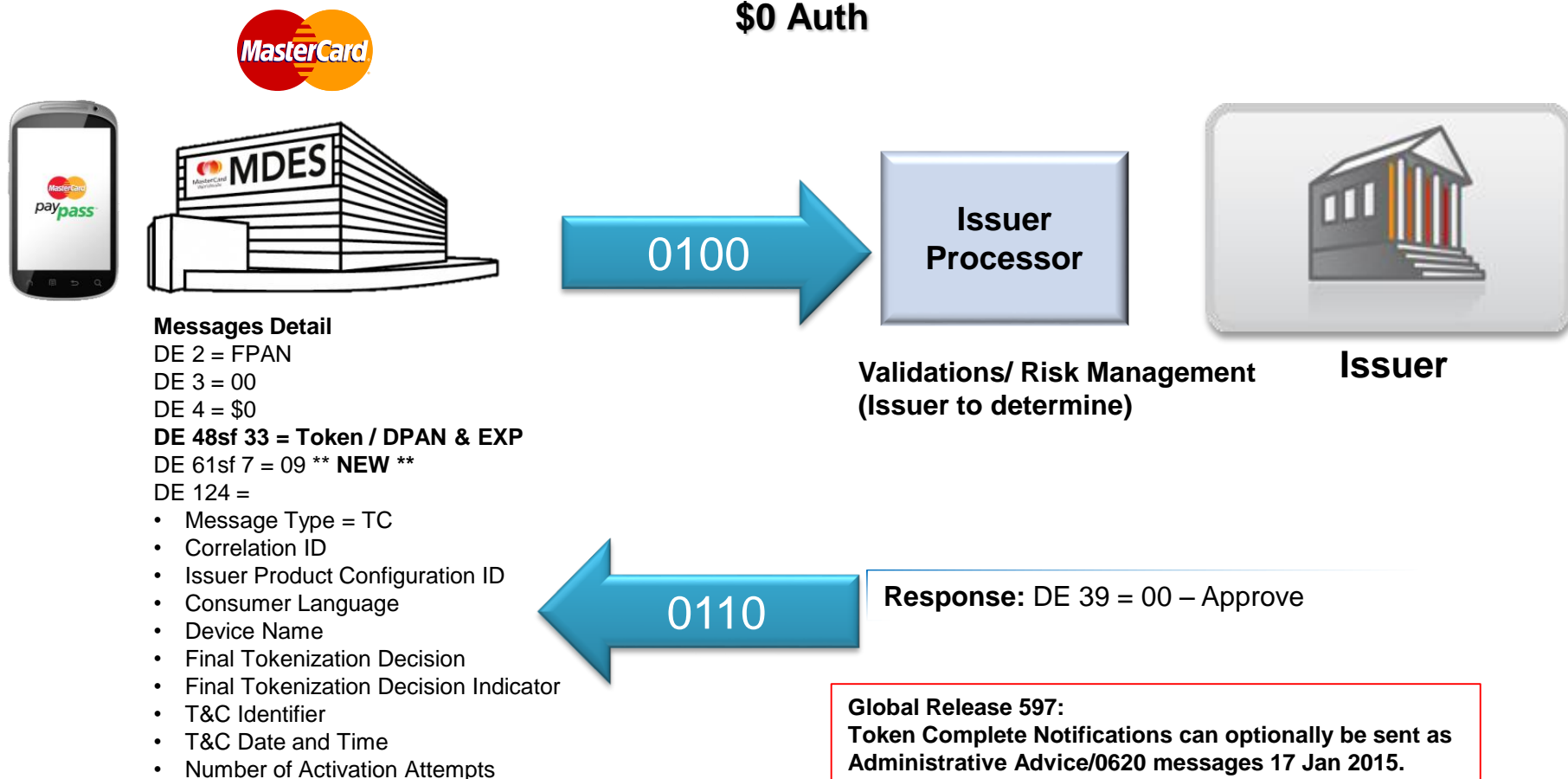
MasterCard Digital Enablement Service – Tokenization Complete Notification



Page 12

Tokenization Complete Notification

\$0 Auth

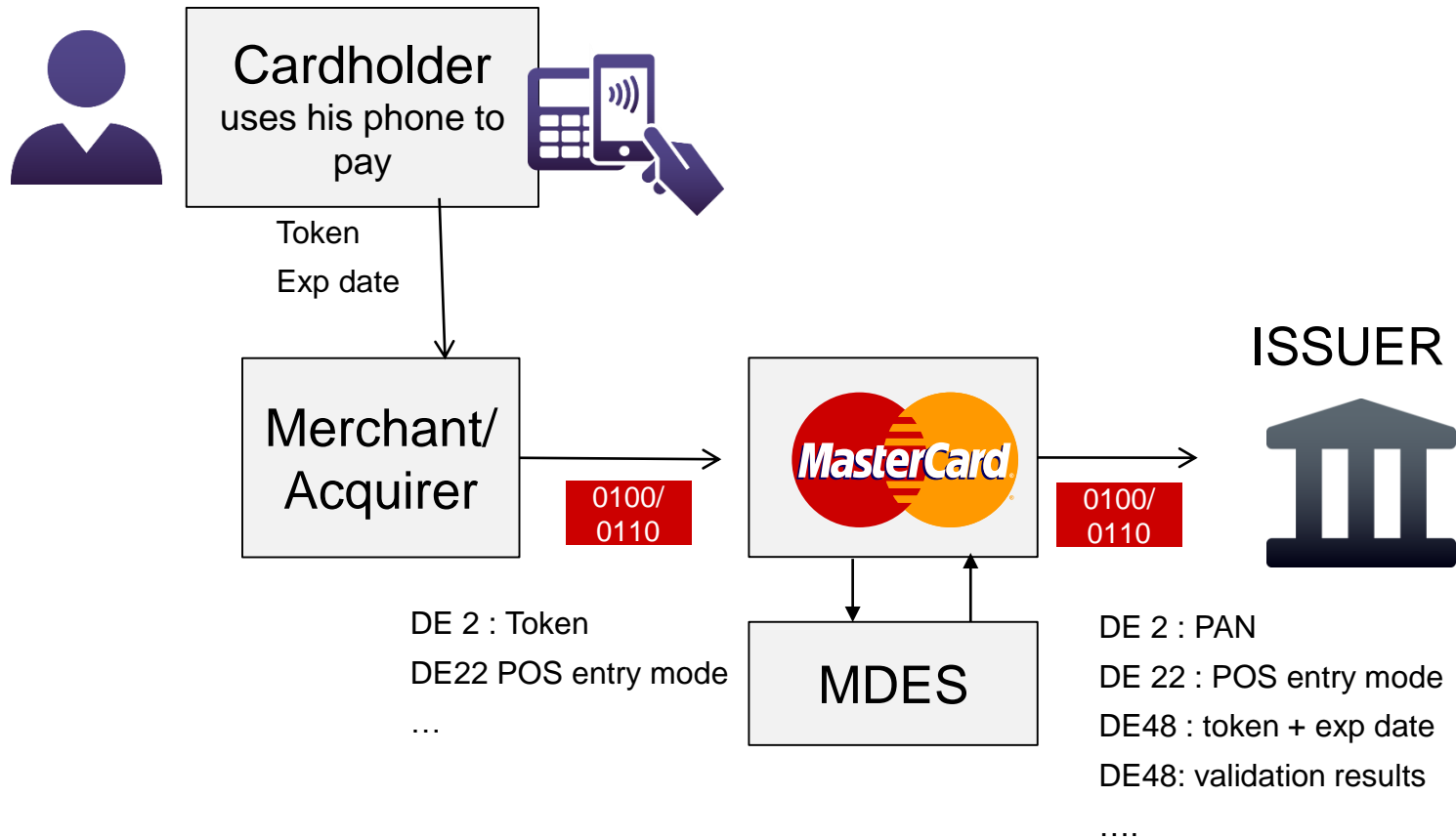


How do MDES Transactions work?

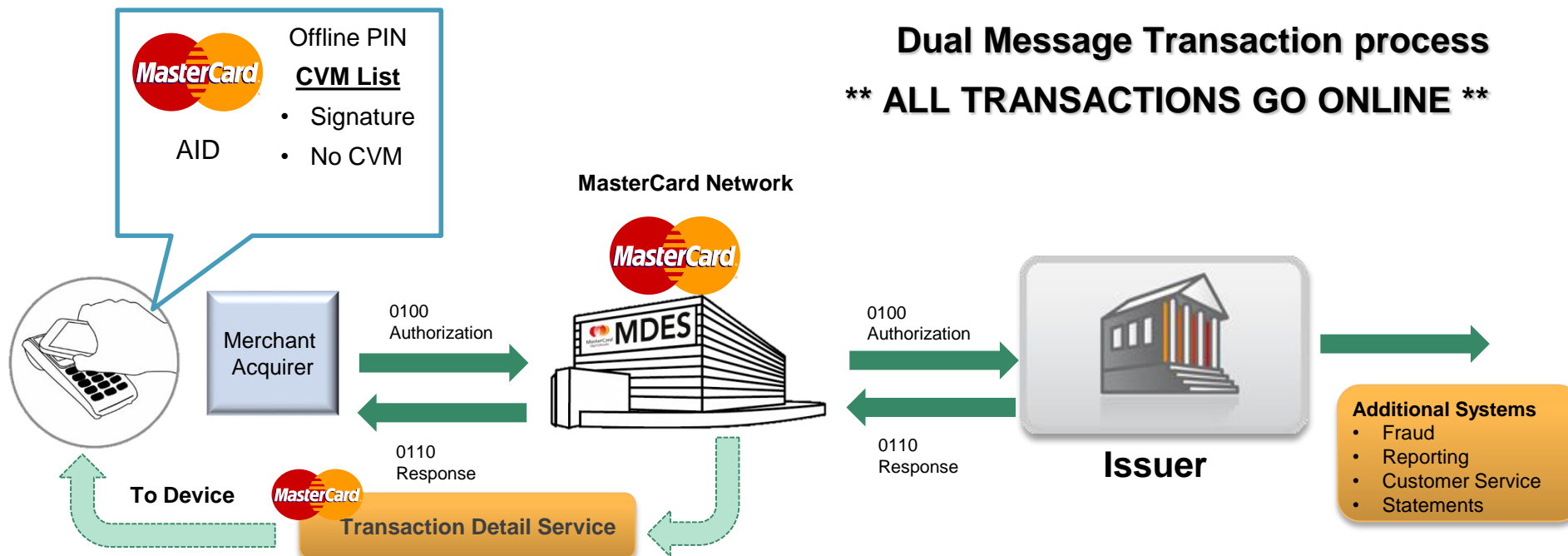
Processes and impacts

Transaction Flow

cardholder does a transaction with his device



Authorization Transaction



MasterCard Processing

Receive:

DE 2 = DPAN
 DE 22 =
 91 – **Mobile NFC** Magstripe Contactless
 07 – **Mobile NFC** EMV Chip Contactless
 09 – **Mobile Commerce** InApp (DE55)
 81 – **Mobile Commerce** InApp (UCAF)
 DE 52 = Online PIN (if provided by Merchant)

Validations:

- Valid Token Mapping
- CVC 3 (DE22 = 91)
- DE55 EMV Chip (DE22 = 07 or 09)
- DE48 UCAF (DE22 = 81)
- CVR/TVR table
- ARQC – EMV Data
- ATC – Application Transaction Counter for Chip transaction

Issuer Processing

Receive:

- DE 2 = FPAN
- DE 22 = 82 (**NFC**) or 09 (**Mobile**)
- DE 48 SE 33 = DPAN + Token Exp
- DE 48 SE 71 = Validation results
- DE 52 = Online PIN (if provided by Merchant)
- **No track data or DE 55****

Validations:

- Risk Management (Issuer to determine)
- Daily transaction velocity (# txns)
- Daily spending limits
- Card status
- Card Expiration Date

Authorization Transaction (cont.)

- The DE 48 (Additional Data) SE 71 is the field that confirms what OBS (On-behalf Services) have been completed (note an issuer may receive multiple occurrences as there are multiple OBS that MDES may provide).
- 1st occurrence:
 - SF 1 (On-behalf Services) = 50 (MDES PAN Mapping)
 - SF 2 (On-behalf Result 1) = C (Conversion of Token to PAN was completed)
 - SF 3 (On-behalf Result 2) = space or value (MasterCard use only)
- 2nd occurrence:
 - SF 1 (On-behalf Services) = 51 (MDES Chip Pre-validation) or 52 (MDES Dynamic CVC3 Pre-validation) [52 N/A for DSRP]
 - SF 2 (On-behalf Result 1) = V (Valid) or G (AC is valid not an ARQC, status of TVR/CVR unknown) [G N/A for PP Magstripe txns]
 - SF 3 (On-behalf Result 2) = space or value (MasterCard use only)

On-going maintenance

- Issuers can use an 0302 Issuer File Update Request to perform the following operations on a token:
 - PAN maintenance
 - Suspend
 - Resume
 - Deactivate
- Can be used in online or bulk modes
- This is an existing process that issuers already use to keep MasterCard updated on their MasterCard products
- Allows issuers to automatically maintain mapping between FPAN/FPAN Exp Date and token e.g. for card reissuance
- Please note:
 - File type R361 to be used in MTF (testing)
 - File type R311 to be used in production
- See MDES Technical Specifications and MDES Issuer Implementation Guide

Clearing (Dual Message System)

Key considerations:

- MasterCard has introduced several enhancements to Dual Message format specifications to support the digitization service.
- Depending on the issuer's business needs, some or all of these enhancements may need to be implemented to support the digitization service.
- These updates are applied to the issuer/issuer processor's Dual Message System.
- Please refer to the global release notes for detailed changes or the MDES Technical Specification.
- The table below shows the values that will appear in the POS entry mode for each of the DSRP or NFC type transactions:

Message Type	Transaction Type	POS Entry Mode/POS Data Code: Acquirer		POS Entry Mode/POS Data Code: Issuer	
		Value	Description	Value	Description
Clearing	Contactless Magstripe	A	PAN auto-entry via contactless magnetic stripe	N	Contactless input, PAN Mapping Service Applied This value is visible only to issuers; acquirers use value A or M
	Contactless M/Chip	M	PAN auto-entry via contactless M/Chip	N	Contactless input, PAN Mapping Service Applied This value is visible only to issuers; acquirers use value A or M
	DSRP with full EMV data	R	PAN entry via electronic commerce, including remote chip	O	PAN entry via electronic commerce, including remote chip MasterCard Digital Enablement Service Applied
	DSRP containing UCAF	S	Electronic commerce	O	PAN entry via electronic commerce, including remote chip MasterCard Digital Enablement Service Applied

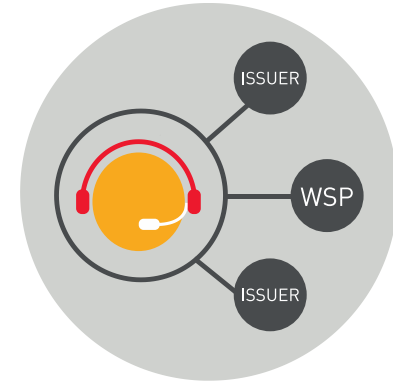
Customer Service Portal and API



The Customer Service Portal allows Issuers and WPs to:

- Investigate and resolve Cardholder issues
- Perform specific actions for Cardholders, such as initiate re-provisioning, suspend tokens, etc.

Issuers register for the Customer Service Portal via MC Connect



The Customer Service API allows Issuers and WPs to:

- Integrate their own environment with MDES

The API is exposed through the MasterCard Developer Zone

MDES Pricing Approach – Europe

Europe pricing bulletin №13, 6 August 2015

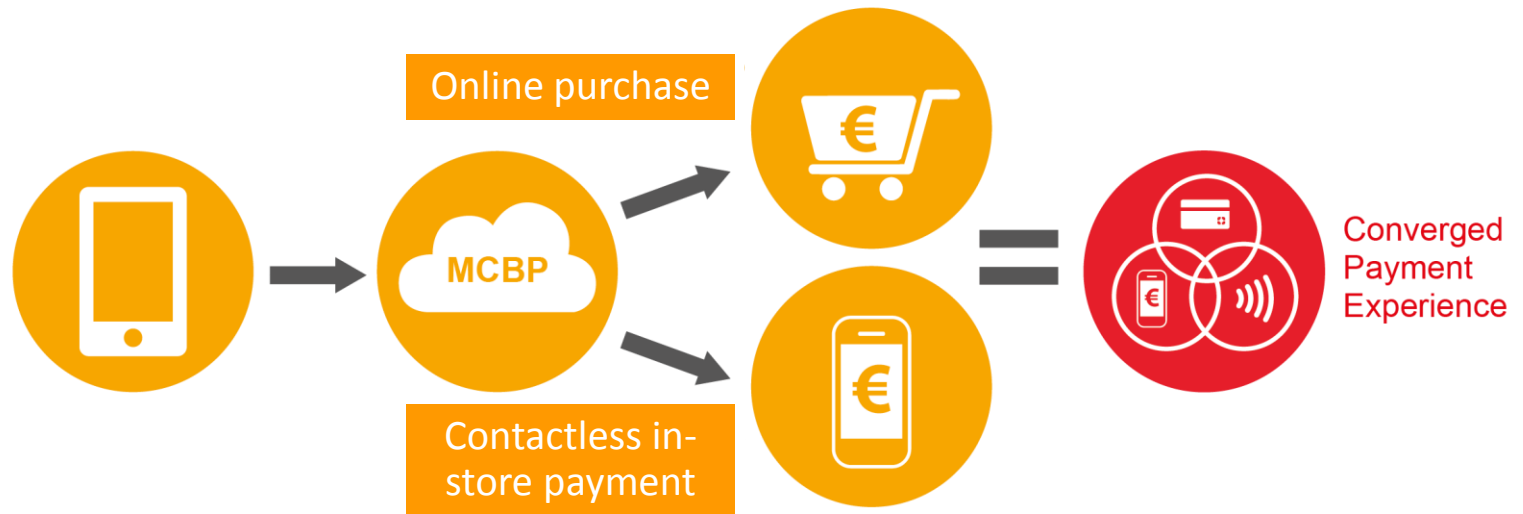
Token Provisioning (once per token)	€0.08 Per token created (valid 3 years)
Token Mapping (at transaction)	1 bps on Transaction amount With a maximum at 0.01€/transaction
Implementation Project (once)	€ 10000 per month Min 6 months

MCBP on MDES

What is MCBP (MasterCard Cloud-Based Payment)?



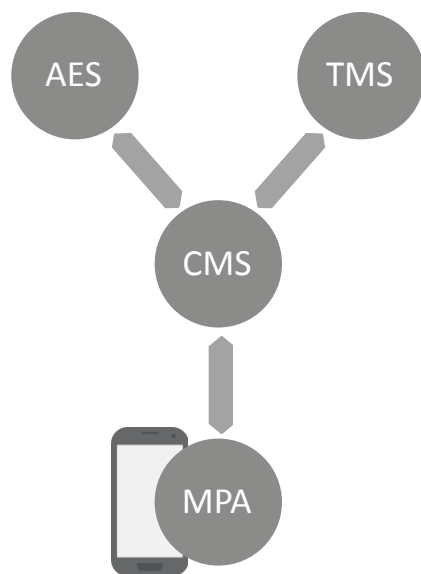
MasterCard Cloud-Based Payments enable consumers to make contactless in-store transactions and secure online purchases.



MCBP Go-To-Market models options

Third party model

(Issuer or Vendor development)

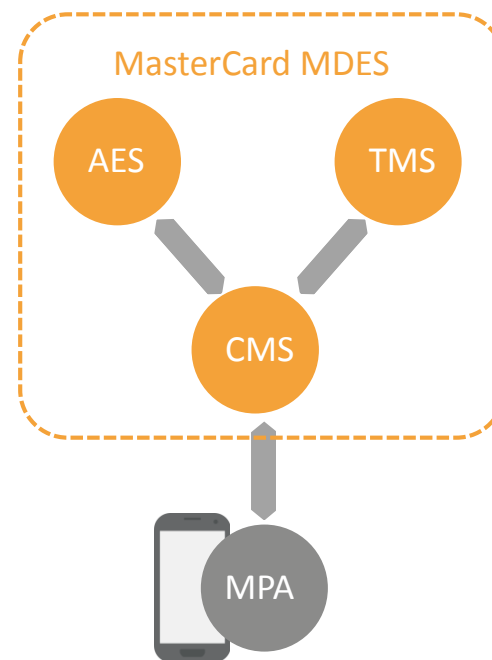
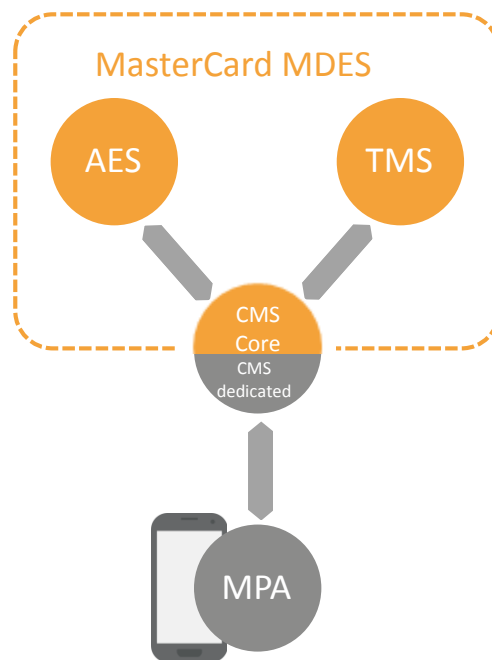


All components delivered by Third Party

MDES-enabled + Third party CMS

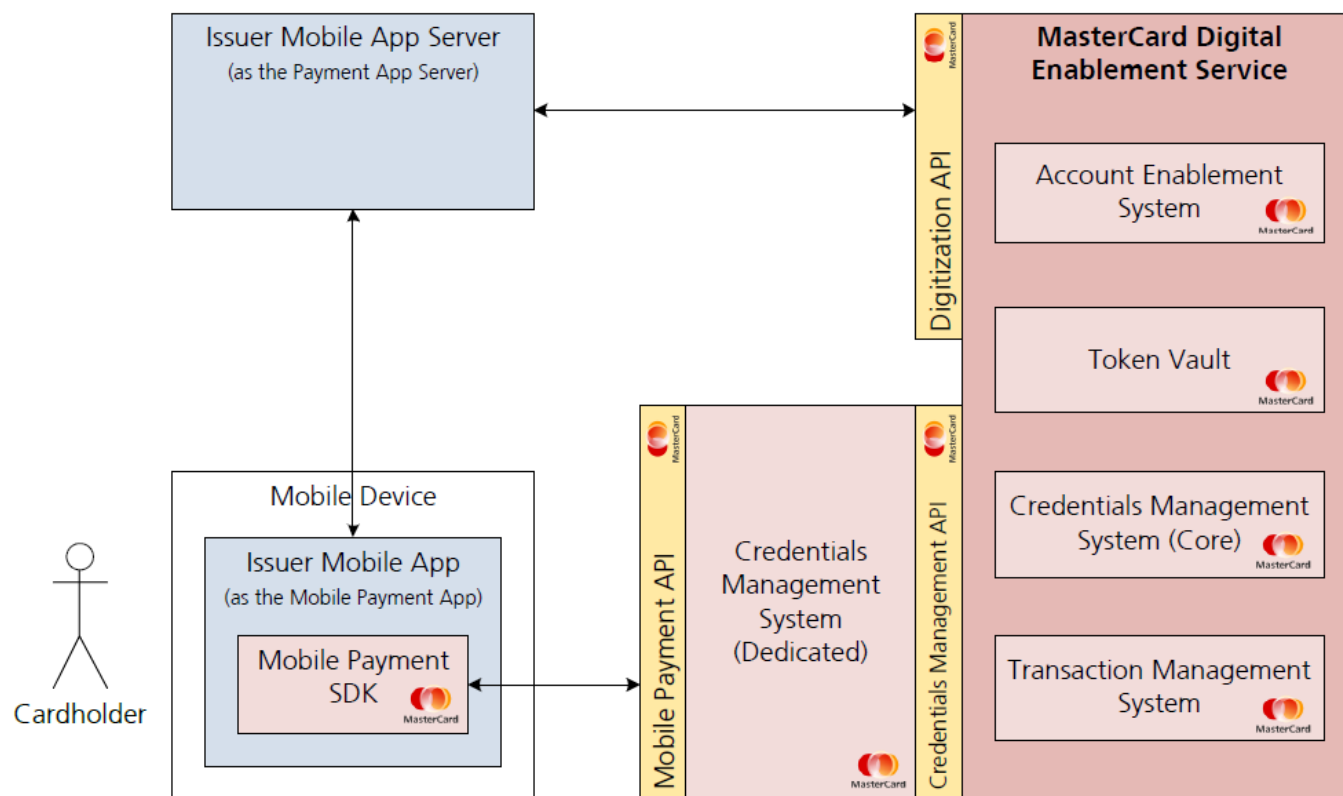
or

MDES-enabled - MDES ONLY



All services provided by MDES, except Mobile Payment Application
(and optionally Credential Management Service Dedicated)

Issuer Mobile App Model



Wrap up & Next Steps

Next Steps

Request project

Define Project Team

Project Kick-off

Develop Project Charter

- Document project scope
- Review and confirm project goals and objectives
- Define key stakeholders and project management team
- Define measures of success

Schedule weekly meetings

Develop project initiation document project plan and agree with all stakeholders



Immediate business considerations for Issuers looking to implement basic MDES functionality



Page 27

Provide to MasterCard

- **Project request via e-mail**
- **Identify BIN ranges** that will be eligible for tokenization
- **Connect** to MC Services: MC Connect for BPMS & Customer Service Portal
- **Define employees** who will need access to the various portals
- Complete BPMS Interview Guide including terms and conditions and **card art**

Decisions

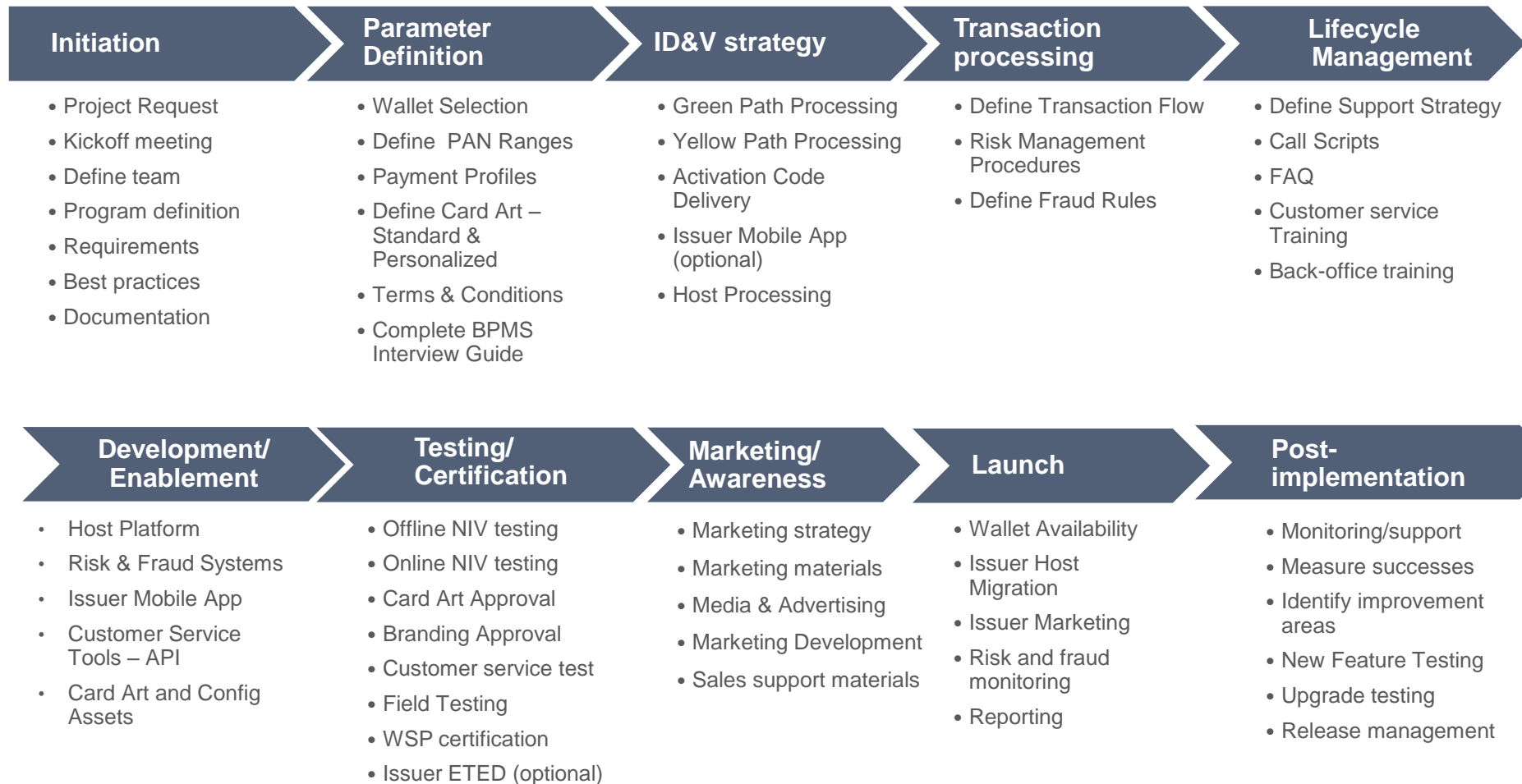
- Define **Identification & Verification (ID&V) strategy** (Green, Yellow [Additional Authentication], Red Path)
- Define **reporting requirements** and options
- **Customer Service solution** – API or Portal
- Define **Fraud Rules**
- **MasterCard Transaction Details Service (TDS)** or issuer own

Internal Prep

- Work with processor or internal IT to **confirm support of MDES network messages** and processing
- Impact on BAU processes (lost/stolen, card reissuance etc)
- Train internal **fraud chargeback team** and fraud desk on MDES implications
- Train **internal customer service teams**
- Define marketing and **consumer education strategy**



MDES Project Structure and Milestones



Summary of Network Requirements



Key Support Requirements & Bulletins

Global Release Note	Publication date	Title	Effective date	Description/scope
Global 561	Apr 17 2013	New Digital Enablement Service	Oct 18 2013	Support of contactless digital transactions
Global 501	Nov 15 2013	Enhancement to MasterCard Digital Enablement Service	10 Jan 2014	Support of Online PIN
Global 510	Oct 9 2013	Enhancement to MasterCard Digital Enablement Service	Apr 11 2014	Support of DSRP with EMV data and pre-digitization network messages for issuers
Global 551	Oct 9 2013	Chip Secured Remote Payment	Apr 11 2014	Support for DSRP with full EMV data
Global 365	Oct 9 2013	Modifications to Full UCAF and Secure E-commerce Interchange Programs to support Chip Secured Remote Payment	Apr 11 2014	Changes to interchange programs to support DSRP
Global 550	Apr 10 2014	MasterCard Digital Enablement Service Network Enhancements	Jul 18 2014	Support of DSRP with UCAF data and partial shipments/recurring payments
Global 596	Apr 15 2014	Introduction and Service Enablement of MasterCard Card on File Token Specification	Oct 17 2014	Support for Card on File Tokenisation
Global 597	Apr 15 2014 (updated 25/09/14)	MasterCard Digital Enablement Service Network Enhancements	Oct 17 2014	MDES updates for contactless and DSRP.
Global 598	Apr 15 2014	Addition of ATC Validation for MasterCard Digital Enablement Service Chip Pre-Validation Service	Oct 17 2014	In-range and replay ATC checks for MDES transactions
Global 350	Sep 23 2014	MDES Clearing Processing for Suspended/Deactivated Tokens	Jan 16 2015	Allow clearing and reversals of suspended/deactivated tokens




Key Support Requirements & Bulletins (cont.)

Global Release Note	Publication date	Title	Effective date	Description/scope
Global 530	Oct14 2014	MDES Enhancements	Apr 17 2015	Acquirers must allow tokenised transactions via Magstripe Induction
Global 571	Nov 13 2014	MDES Cloud Based Payments	Various	Introduces OBS 61 and 62 for MCBP
Global 572	Oct14 2014	MDES Cloud Based Payments – Reminder	Various	Add M/Chip contactless and DSRP to MCBP support
Global 573	Mar 5 2015	MDES Pre- and Post-Digitisation Messages Enhancements	May 17 2015	Updates to DE 124 and DE 120 in pre-digitisation messages
Global 592	Apr 14 2015	MDES Token Requestor ID	16 October 2015	Enhancement to messages to provide acquirers and issuers with a consistent method of identifying token requestors.
Global 591	Apr 14 2015	MDES – Enhancements Reminder	10 Nov 2015 (auth.) 16 Oct 2015 (clearing)	Reminder for customers of their support for the addition of new values to distinguish between DSRP trxs and other trxs.
Global 590	Apr 14 2015	MDES – Transaction Details Service Enhancement	10 November 2015	MasterCard is calculating a token transaction identifier for all MDES authorization requests, financial transaction requests, and advice messages.
Global 596	Apr 16 2015	MDES – Renaming of Activation Code Distribution Method Fields and Positions	17 July 2015	Renaming of the activation code distribution method fields and positions
Global 595	Apr 16 2015	MDES – Support for Maestro and Consumer Prepaid	17 July 2015	Issuers of Maestro cards that participate in the MasterCard Digital Enablement Service may choose to support the enhancements
Global 593	Apr 28 2015	MasterCard Card on File Tokenization Specifications	16 October 2015	Enhancements to Card on File Tokenization Specifications
Global 130	May 12 2015	MDES – Report Enhancements	17 July 2015	New report – Tokens trx data processed with a tokenized PAN in a single report.

Where to get information

- MDES Information Centre on MC Connect:
http://publications.mastercard.int/Manuals_MP/MDES/Menu_MDES.shtm



MasterCard | The Heart of Commerce™

[Contact Us](#)
 Information Centers

What's New?

Recent Updates

Resources

Related Bulletins


MasterCard Digital Enablement Service Release Items

MasterCard Digital Enablement Service Demo Video

MasterCard Digital Enablement Service Process Flow

MasterCard Digital Enablement Service Customer Service Application Video Tutorials

MasterCard Digital Enablement Service Information Center



The MasterCard Digital Enablement Service is a suite of on-behalf services (OBS) that supports the management, generation, and provisioning of digital payment credentials into mobile devices to enable simpler, more secure digital payment experiences.

This MasterCard Digital Enablement Service Information Center is a centralized resource to provide access to all information regarding the MasterCard Digital Enablement Service (including manuals, release items, and bulletins).

For an overview of the MasterCard Digital Enablement Service customer experience, click on the MasterCard Digital Enablement Service Process Flow link. (Note: This presentation must be viewed in Google Chrome browser.)

Documents

- Digital Secure Remote Payment—Acquirer Implementation Guide
- Digital Secure Remote Payment—Issuer Implementation Guide
- MasterCard Digital Enablement Service—Configuring Baseline On-Behalf Services

- MasterCard Digital Enablement Service—Customer Service Application Programming Interface
- MasterCard Digital Enablement Service—Customer Service Application User Guide
- MasterCard Digital Enablement Service—Implementation Quick Reference eLearning
- MasterCard Digital Enablement Service—Implementation Quick Reference Guide

- MasterCard Digital Enablement Service—Issuer Implementation Guide
- MasterCard Digital Enablement Service—Issuer PortfolioAnalytics Reports
- MasterCard Digital Enablement Service—Technical Specifications for Dual and Single Message Systems

Questions?

Appendix A 1/4

- Предварительно, копирую ниже релевантные айтемы из MDES Issuer Implementation Guide:
- https://w201.mastercardconnect.com/hsm3ca267/homememb/library/Manuals_MP/ENG/MIIG/MIIG_Manual.pdf
- Проверка оригинальной карты и загрузка токена(5 items):
- • **“Global 510—Enhancement to MasterCard Digital Enablement Service,” Release 14.Q2 Document**
- • **“Global 550—Enhancements to MasterCard Digital Enablement Service,” Release 14.Q3 Article**
- • **“Global 597—Enhancements to MasterCard Digital Enablement Service,” Release 14.Q4 Document**
- • **“Global 573—MasterCard Digital Enablement Service Pre-and Post-Digitization Messages Enhancements,” Release 15.Q2 Document**
- • **“Global 596—MasterCard Digital Enablement Service Renaming of Activation Code Distribution Method Fields and Positions,” Release 15.Q3 Article**
- Типы сообщений на которые нужно обратить самое пристальное внимание в Issuer Implementation Guide:
- -Token Authorization Request Message
- -Activation Code Notification Message
- -Tokenization Event Notification (опционально)

Appendix A 2/4

- Авторизация, клиринг (7 items, во многом пересекаются с items выше):
- · *“Global 561—New Digital Enablement Service,” Release 13.Q4 Document, must be implemented to support:*
- –Contactless transactions that are validated by MDES and passed to the issuer with a point of service entry mode value 82 (PAN auto entry via server) -Dual Message (Authorization) and Single Message
- –New transaction message field values that describe the transaction validation performed
- –New transaction message field values that indicate if the token was used
- –New advice message values for Account PAN mapping and cryptography failures
- –Changes to Single Message System 250-byte Batch Data File
- –Enhanced reporting that includes maintenance activity for tokens
- –Contactless transactions that are validated by MDES and passed to the issuer with a card data input mode value N (Contactless input, PAN Mapping Service applied) and new field values for the clearing platform that include the token—Dual Message System (Clearing)
- · *“Global 501—Enhancement to MasterCard Digital Enablement Service,” Release 14.Q1 Article*
- –Cardholder can use the same online PIN for transactions initiated with their token as they do with their physical card; MasterCard converts the PIN block submitted by the acquirer to a PIN block based on the primary account number

Appendix A 3/4

- · *“Global 510—Enhancement to MasterCard Digital Enablement Service,” Release 14.Q2 Document and “Global 550—Enhancements to MasterCard Digital Enablement Service,” Release 14.Q3 Article*
- –Support for temporary token suspension as well as token deactivation
- –Support for Digital Secure Remote Payment with full EMV and UCAF—point of service entry modes 09 and 81
- –Support for partial shipments and recurring payments
- –Support for pre-digitization network messages
- · *“Global 597—Enhancements to MasterCard Digital Enablement Service,” Release 14.Q4 Document*
- –Changes in values/comments for the Wallet Service Provider Account ID Hash field in DE 124 (Member-defined Data)
- –Support for issuers to designate the action MasterCard should take if the MasterCard Digital Enablement Service Chip Pre-validation or Dynamic CVC 3 Pre-validation is not successful
- –New subfields in DE 48, subelement33 (PAN Mapping File Information): subfield 5 (Token Assurance Level) and subfield 6 (Token Requestor ID)
- · *“Global 350—MasterCard Digital Enablement Service Clearing Processing for Suspended/Deactivated Tokens,” Release 15.Q1 Document.* MasterCard is not enforcing an edit introduced in Release 14.Q2 that rejects first presentments and clearing reversals when a token is in suspended or deactivated status.

Appendix A 4/4

- · “Global 516—MasterCard Digital Enablement Service Implementation of Request/Response and Advice Messages—Reminder,” Release 15.Q1 Document. MasterCard reminded Dual Message System and Single Message System issuers of enhancements to Token Notification Advices and Issuer Token Maintenance Requests.
- · “Global 570—Digital Secure Remote Payment Enhancements,” Release 15.Q2 Document. MasterCard added new indicator values to classify Digital Secure Remote Payment and SecureCodetransactions for different interchange rates.

Авторизация, клиринг (в дополнение к 7 items выше, специфично для MCBP/HCE, не ApplePay):

- · “Global 571—MasterCard Digital Enablement Service Cloud-Based Payments,” Release 15.Q1 Document. MasterCard modified the Dual Message System (Authorization and Clearing) and Single Message System to support the processing of contactless and remote mobile payment transactions originating from a MasterCard Cloud-Based Payment mobile device that was provisioned via the MasterCard Digital Enablement Service.
- · “Global 572—MasterCard Digital Enablement Service Cloud-Based Payments—Reminder,” Release 15.Q2 Document. MasterCard further enhanced the MasterCard Digital Enablement Service to support MasterCard Cloud-Based Payments M/Chip Mobile and Digital Secure Remote Payments (DSRP) Chip transactions.
- Максимум инфо про MDESздесь:
- https://w201.mastercardconnect.com/hsm3ca267/homememb/library/Manuals_MP/MDES/Menu_MDES.shtm
- Все MDES relatedаытемыможно посмотреть здесь, отсортировав по MDES:
- https://w201.mastercardconnect.com/hsm3ca267/homememb/library/shared/RIC/Menu_RIC.shtm

© 2015 MasterCard. The information contained in this document is proprietary and confidential to MasterCard International Incorporated, one or more of its affiliated entities (collectively “MasterCard”), or both. This material is intended to be used internally within your organization, and may not be duplicated, published, or disclosed, in whole or in part, without the prior written permission of MasterCard.

The information, including all forecasts, projections, or indications of financial opportunities are provided to you on an "AS IS" basis for use at your own risk. MasterCard will not be responsible for any action you take as a result of this presentation, or any inaccuracies, inconsistencies, formatting errors, or omissions in this presentation. MasterCard makes no representations or warranties of any kind, express or implied, with respect to the contents of this document. Without limitation, MasterCard specifically disclaims all representations and warranties with respect to this document and any intellectual property rights subsisting therein or any part thereof, including but not limited to any and all implied warranties of title, non-infringement, or suitability for any purpose (whether or not MasterCard has been advised, has reason to know, or is otherwise in fact aware of any information) or achievement of any particular result. Without limitation, MasterCard specifically disclaims all representations and warranties that any practice or implementation of this document will not infringe any third party patents, copyrights, trade secrets or other rights.