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SEPA CARDS STANDARDISATION (SCS) "VOLUME"

BOOK 6

IMPLEMENTATION GUIDELINES

PART OF THE APPROVED VERSION OF SCS VOLUME V7.0

Payments and Cash withdrawals with Cards in SEPA

Applicable Standards and Conformance Processes

Volume v7.0 and its constituent Books supersede the SEPA Cards Standardisation Volume v6.0.

Abstract	This document contains the work on SEPA cards standardisation to date
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1 GENERAL

1.1 Book 6 - Executive summary

1.1.1 Objectives

Books 2 to 5 of the Volume describe all of the functional, data, security and conformance verification process requirements for card payments services initiated in the SEPA area.

The objective of Book 6 is to describe how stakeholders shall implement some or all of the Volume requirements, as appropriate for their business needs. Book 6 also provides migration paths and timelines to assist with the aim of maintaining interoperability in the migration to full Volume conformance. Another objective of Book 6 is to phase out some implementations creating risks to SEPA for Cards implementations.

As not all requirements and Services described in Book 2 of the Volume are offered and supported by all acceptors, common subsets of Services and requirements offered by the acceptors are identified as 'payment contexts'. A payment context is defined as "a set of functional and security requirements described in the Volume applicable to Cards and POIs in a specific 'transaction environment'".

Support of a particular payment context is optional. However, if a payment context is supported then all mandatory requirements defined in Book 6 relating to this context must be met.

This document will provide:

- General Implementation Requirements and options applicable to the Payment Contexts;
- Specific implementation Requirements and Options for each Payment Context;
- Time lines for all newly approved solutions to be conformant to the Volume;
- Sunset dates for the removal of non Volume conforming functions and options.

The requirements per payment context are necessary because several implementations of the same service have evolved in the European markets. Consequently it has been agreed that all card stakeholders shall harmonise on the Volume requirements. If several implementation options are possible for a context the preferred option(s) will be indicated in Book 6.

Based on the volume of transactions or on specific sector or European market needs, a number of payment contexts have been defined. Currently, these are:

1. Cardholder present Payment in attended environment, Cardholder Verification performed and final amount known;
2. Cardholder present Payment; in an unattended environment, Cardholder Verification performed and final amount known;
3. Cardholder present Payment in attended and unattended environment, "No CVM Required" and final amount known;
4. Deferred Payments in an attended and unattended environment with an estimated amount at payment initiation, Cardholder is present with cardholder verification;

5. Cardholder present Pre-authorisation Services in an attended and unattended environment to reserve and secure an amount for a certain time.

The contexts defined in this version of the document are only described for contact acceptance technology. Additional payment contexts and acceptance technologies will be added in future versions of this document.

Additional contexts will be described in future versions including for example transit payments or ATMs.

The creation and maintenance of implementation specifications are out of scope of this book.

1.1.2 Migration Roadmap

The long term vision is that all approved card payment products and solutions for transactions initiated in the SEPA area will in future be conformant with the requirements described in the Volume. A migration roadmap is therefore required to move from the current implementations to the future vision mindful of a desire to maintain interoperability with non SEPA general purpose cards.

All newly approved products and solutions shall conform to the requirements of the latest published Volume release within a maximum of 3 years after publication.

In addition, Book 6 may allow or require alternative timelines for the implementation of a particular function, service or option. These timelines may also be applicable to Issuers, Acquirers and Schemes.

1.1.3 Structure of this book

The General implementation requirements and options are defined in chapter 2 and specific payment contexts implementation requirements are in chapter 3. Both sections include:

- Current requirements and implementation options;
- Future Volume conformant requirements and implementation options with roadmaps for implementing the options by a given date.

1.2 Description of changes since the last version of Book 6

This is the first version of Book 6.

2 GENERAL IMPLEMENTATION GUIDELINES

2.1 Introduction

Books 2 to 5 describe general requirements for card payments. In order to harmonise common implementation options for future implementations, this section describes common implementation requirements valid for all payment contexts for the following topics:

- Card Data Authentication Methods;
- PIN Based Cardholder Verification Methods;
- Data Capture.

In addition, this section covers the agreement on the POI Certification Process.

2.2 Card Data Authentication Method

DDA is the minimum card data authentication method in SEPA. The objective is to cease support of SDA.

2.2.1 Card Data Authentication Method (Issuance)

2.2.1.1 Current Implementations

	SDA	DDA	CDA
Online only cards	Optional	Optional	Optional
Offline with online capability cards	Optional	Required	Optional

TABLE 1: CURRENT CARD DATA AUTHENTICATION METHOD (ISSUANCE)

2.2.1.2 Volume Conformant Implementation

	SDA	DDA	CDA
Online only cards[1]	Not Permitted for all newly issued and replacement cards 2018	Required for all newly issued and replacement cards 2018	Required for all newly issued and replacement cards 2018
Offline with online capability cards	Not Permitted for all newly issued and replacement cards	Required for all newly issued and replacement cards	Required for all newly issued and replacement cards 2018

TABLE 2: VOLUME CONFORMANT CARD DATA AUTHENTICATION METHOD (ISSUANCE)

Note:

- For issuance, all SEPA cards shall support DDA and CDA and shall not support SDA in the future;
- Since offline enciphered PIN is mandated for online only cards supporting PIN, it is not an additional technology requirement to mandate DDA and CDA.

2.2.2 Card Data Authentication Method (Acceptance)

2.2.2.1 Current Implementations

	SDA	DDA	CDA	OMA
Online only terminals	Optional	Optional	Optional	Required
Offline with online capability terminals	Required	Required	Optional	Required

TABLE 3: CURRENT CARD DATA AUTHENTICATION METHOD (ACCEPTANCE)

[1] If the card supports PIN

2.2.2.2 Volume Conformant Implementation

	SDA	DDA	CDA	OMA
Online only terminals	Optional from 2020 (not used for SEPA cards) [2]	Optional	Optional (Recommended)	Required
Offline with online capability terminals	Optional from 2020 (not used for SEPA cards)[2]	Required	Required for newly installed terminals as of 2015	Required

TABLE 4: VOLUME CONFORMANT CARD DATA AUTHENTICATION METHOD (ACCEPTANCE)

2.3 PIN based Cardholder Verification Methods

Plaintext PIN is no longer deemed to be a sufficiently secure cardholder verification method to be supported by the POI. The objective is to remove its support from the POI.

2.3.1 PIN Based Cardholder Verification Methods (Issuance)

2.3.1.1 Current Implementations

There are no mandatory requirements to support a specific CVM from an issuer perspective however within the SEPA area PIN is the recommended method.

[2] SDA is still required by some non SEPA general purpose Card schemes

2.3.1.2 Volume Conformant Implementation

	Offline Plaintext PIN	Offline enciphered PIN	Online PIN
Online only cards	Not used within SEPA as of 2018	Required for newly issued or replacement cards as of 2018	Required
Offline with online capability cards	Not used within SEPA as of 2018	Required for newly issued or replacement cards as of 2018	Required

TABLE 5: VOLUME CONFORMANT CARDHOLDER VERIFICATION METHOD (ISSUANCE)

Note:

- The above guidelines only apply if the card supports PIN as CVM;
- Offline Plaintext PIN may still be present in the CVM list for use outside SEPA, but only with a lower priority than offline enciphered PIN and online PIN.

2.3.2 PIN Based Cardholder Verification Methods (Acceptance)

This section only applies to POIs with PIN pads providing payment services excluding ATMs.

2.3.2.1 Current Implementations

	Offline Plaintext PIN	Offline enciphered PIN	Online PIN
Online only terminals	Conditional[3]	Conditional[3]	Conditional[3]
Offline with online capability terminals	Required[4]	Required	Optional[4]

TABLE 6: CURRENT CARDHOLDER VERIFICATION METHOD (ACCEPTANCE)

2.3.2.2 Volume Conformant Implementation

	Offline Plaintext PIN	Offline enciphered PIN	Online PIN
Online only terminals	Not used for SEPA Cards and shall not be mandatory on the POI from 2020	Conditional[3]	Conditional[3]
Offline with online capability terminals	Not used for SEPA Cards and shall not be mandatory on the POI from 2020	Required	Optional[4]

TABLE 7: VOLUME CONFORMANT CARDHOLDER VERIFICATION METHOD (ACCEPTANCE)

[3] Either

- Offline Plaintext PIN and Offline enciphered PIN
- Online PIN
- all 3

must be supported

[4] Currently only required for some debit brands

2.4 Data Capture

2.4.1 Current Implementations

The Terminal to Host Capture of Online/Offline Transactions is realised with one of the following mechanisms

- Capture by Authorisation;
- Capture through completion message;
- Capture by Batch/File;
- Or can be a combination of these three methods.

2.4.2 Volume Conformant Implementation

The following three configurations, called 'Modes' of the POI Acquirer Protocol are recommended:

Mode 1:

- Online Authorisation without capture for online transactions,

  followed by/or

- Capture immediately after transaction finalisation regardless whether Authorisation was online or offline.

Mode 2:

- Online Authorisation without capture for online transactions,

  followed by/or

- Capture by a batch transfer for a group of transactions regardless whether Authorisation was online or offline.

Mode 3:

- Capture with Authorisation for transactions Authorised online;
- Capture immediately after transaction finalisation if Authorisation was performed offline.

The method used is based on an agreement between Acceptor and Acquirer.

2.4.3 Volume Conformant Implementation – Examples

For each Mode, the typical message flows below show when the Authorisation is performed online. If the Authorisation is performed offline, the online Authorisation request and response in the flows should be disregarded. In Mode 3, if the Authorisation is performed offline, an additional Financial Advice exchange must be executed to perform the Data Capture.

Mode 1: Online Authorisation without Capture Capture immediately after transaction finalisation

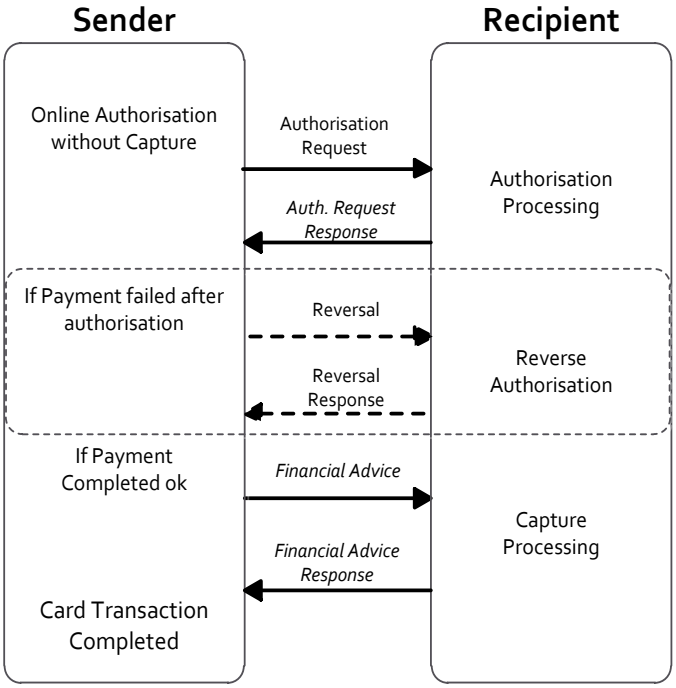


FIGURE 8: MODE 1

Mode 2: Online Authorisation without Capture Capture by Batch

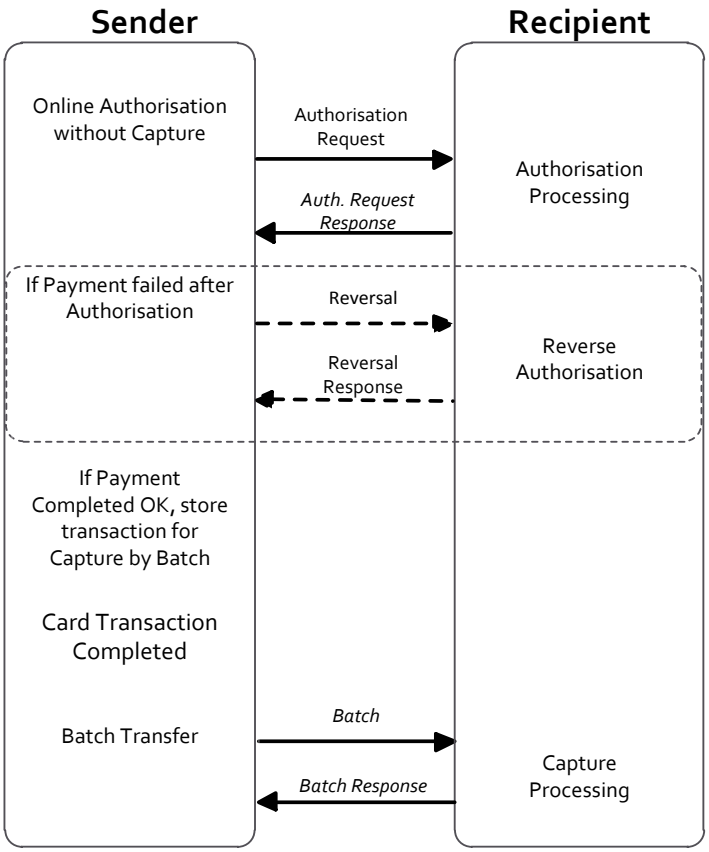


FIGURE 9: MODE 2

Mode 3: Online Authorisation with Capture

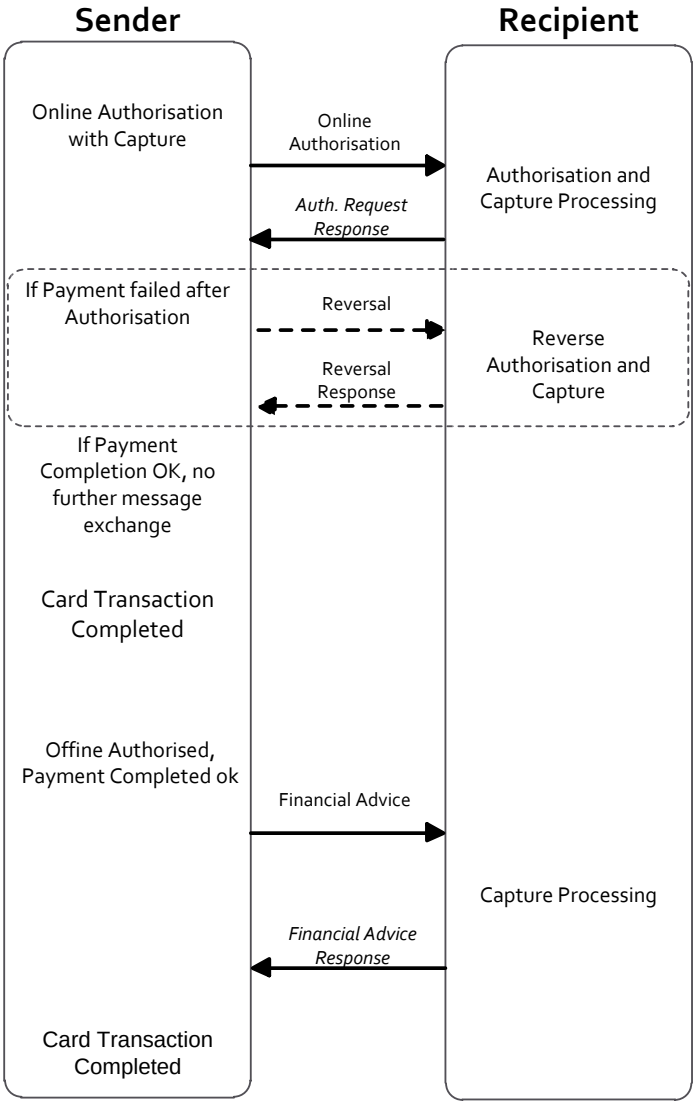


FIGURE 10: MODE 3

2.5 Migration Paths for SEPA Security and Functional Certification

2.5.1 Migration Path for POI Security Certification (Attended, Unattended and Chip only)

For all Volume conformant Card Payment Schemes / Approval Bodies the security requirements as described in Book 4 of the Volume, section 2.6 apply.

Evidence that the security requirements are met is provided by security evaluations performed by laboratories which are accredited by certification bodies; certification bodies issue certificates based on the results of these evaluations. These processes are as described in Book 5 of the Volume.

Security evaluations and certifications can be performed using different evaluation and certification methodologies. These methodologies provide for different levels of assurance for the card CPS/ABs which take the responsibility for transactions being performed by approved POI. The end state target is expected to be achieved through a convergence process whereby ISO 15408 Common Criteria will be used for the evaluation of all Volume conformant POI being newly approved in SEPA. This end state target is subject to a positive outcome of the evaluation of the OSeC pilot by the CSG, based on the evaluation criteria that it has defined, including evidence that a CC evaluation report can be used by PCI PTS. By following this common evaluation process a PCI SSC and a CC certificate may be delivered for newly approved POIs. CPS/ABs can choose to ask for one or the other or both certificates resulting from the CC evaluation process. OSeC protection profiles will be used for evaluation and certification. This applies to attended, unattended, chip only and hybrid POI.

The following Roadmap has been planned for POI Security certification:

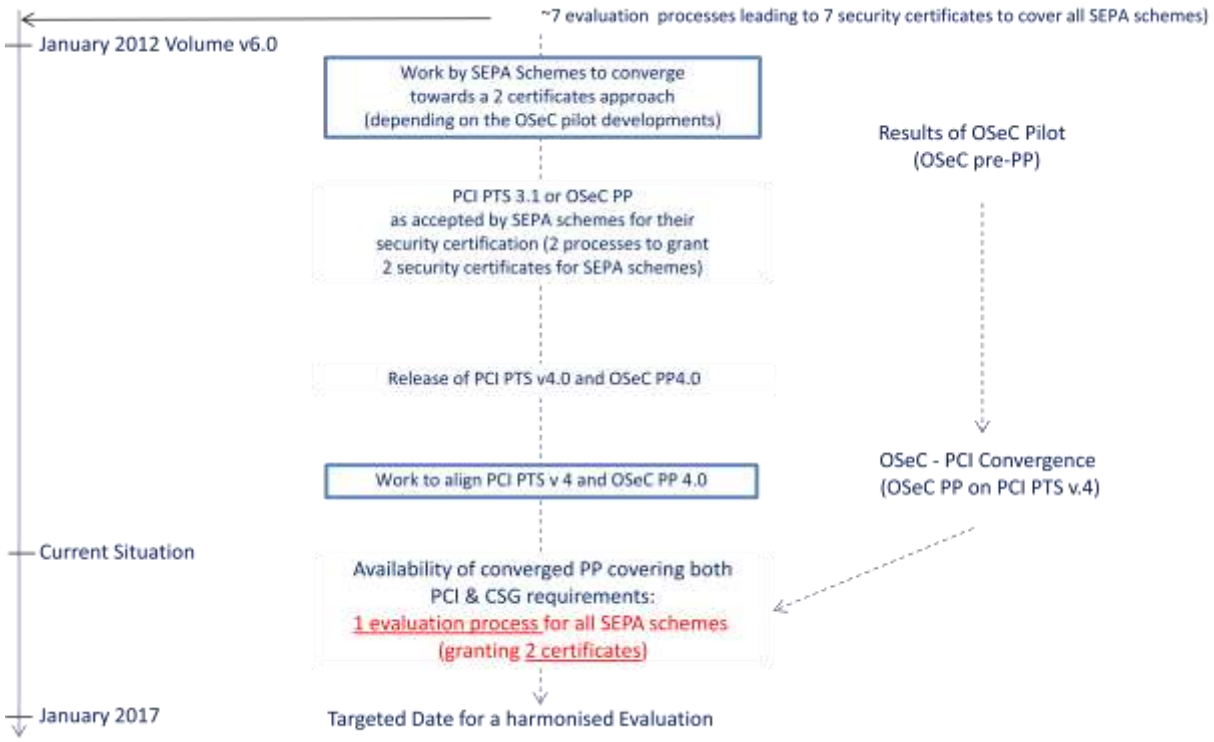


FIGURE 11: MIGRATION PATH FOR POI SECURITY CERTIFICATION

Note:

- This migration path only applies for newly approved POIs;
- It is anticipated that this target outcome in Figure 11 can be reached upon a positive evaluation of the OSeC pilot by the CSG.

2.5.2 Migration Path for Smartcard Security Certification

For all Volume conformant CPS/ABs the security requirements as described in Book 4 of the Volume, section 2.5 apply.

Evidence that the security requirements are met is provided by security evaluations performed by laboratories accredited by certification bodies that in turn issue certificates based on the results of these evaluations. These processes are as described in Book 5 of the Volume.

Security evaluations and certifications can be performed using different evaluation and certification methodologies. These methodologies provide for different levels of assurance for the CPS/ABs which take the responsibility for transactions being performed by approved smartcards.

It will be possible to deliver the required certificates for the evaluation of all Volume conformant smartcards by using a single evaluation laboratory which provides reports accepted for the purpose of issuing these required certificates.

The security evaluation process and methodology to be used for the card payment application is determined by the specification provider of the related application as several application specifications will co-exist.

2.5.3 Migration Path for Functional Certification

The subject of functional certification is currently out of scope for this release of the Volume. It will be developed at a later stage, on the basis of the results of the different works on security certification and on labelling, as well as on the discussions with the different standardisation initiatives working on functional standards in use in SEPA such as: EMVCo, ISO 20022, etc. (non-exhaustive list).

3 IMPLEMENTATION GUIDELINES PER PAYMENT CONTEXT

3.1 Context: Payment in attended environment, Cardholder is present, Cardholder Verification performed and final amount known

3.1.1 Definition of the payment context

This context is used for the majority of card payments. The POI is normally a desktop device that is used by most acceptors providing goods or services. The POI could either be a standalone device or a device integrated with the point of sale.

- Attendant Present (attended/semi-attended);
- Card and Cardholder are present;
- Cardholder verification performed;
- Final amount known;
- POI (Chip and PIN capable).

3.1.2 Implementation Requirements and Options

3.1.2.1 Card services

3.1.2.1.1 Current Implementations

From an acceptance perspective, the following card services are supported for this context:

Service	Issuers	Schemes	Acquirers	Acceptors
Payment	Required	Required	Required	Required
Cancellation	Conditional[5]	Conditional[5]	Conditional[5]	Optional
Refund	Optional	Optional	Optional	Optional

TABLE 12: CARD SERVICES - CURRENT IMPLEMENTATIONS

[5] Issuers, Schemes and Acquirers shall support Cancellation if refund is not supported

3.1.2.1.2 Volume Conformant Implementation

From an acceptance perspective, the following card services shall be supported for this context:

Service	Issuers	Schemes	Acquirers	Acceptors
Payment	Required	Required	Required	Required
Cancellation	Required 2019	Required 2019	Required 2019	Optional
Refund	Required 2019	Required 2019	Required 2019	Optional

TABLE 13: CARD SERVICES - VOLUME CONFORMANT IMPLEMENTATION

3.1.2.2 Acceptance technology

3.1.2.2.1 Current Implementations

POI shall either be:

- Offline with online capability,

  or
- Online only.

3.1.2.2.2 Volume Conformant Implementation

POI shall either be:

- Offline with online capability,

  or
- Online only.

  However, it is recommended to be offline with online capability.

3.1.2.3 Cardholder Verification Method

There are no mandatory requirements to support a specific CVM from an issuer perspective however within the SEPA area PIN is the recommended method.

From an acceptance perspective PIN CVM is required.

3.1.2.4 Data Capture

All 3 modes defined in section 2.4 are applicable

3.1.3 Example of Message Flow

A typical message flow can be seen below. Note that this is just one example of an implementation:

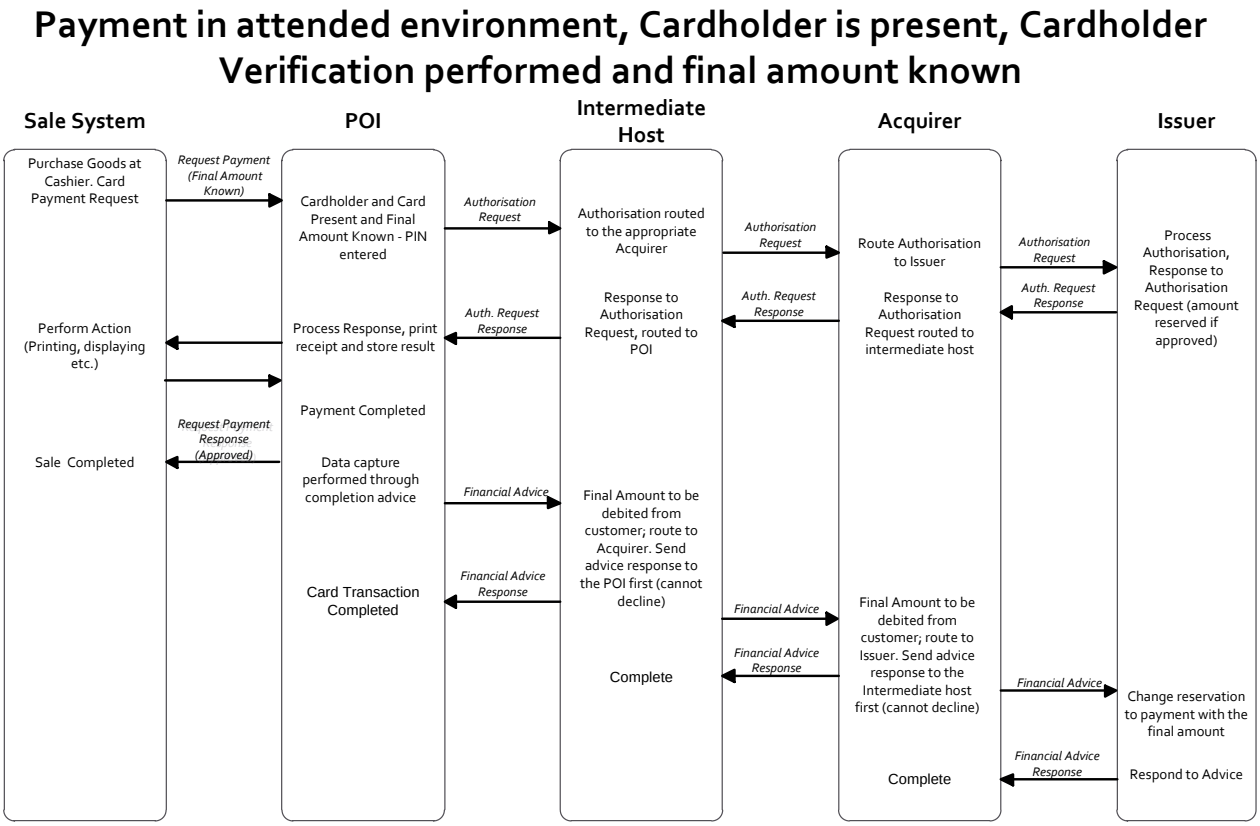


FIGURE 14: EXAMPLE FLOW: PAYMENT IN ATTENDED ENVIRONMENT, CARDHOLDER IS PRESENT ,CARDHOLDER VERIFICATION PERFORMED AND FINAL AMOUNT KNOWN

3.2 Context: Payment in an unattended environment, Cardholder is present Cardholder Verification method is PIN and final amount known

3.2.1 Definition of the payment context

This payment context is used for unattended vending machines, ticketing machines etc. Cardholder is present. The POI is always integrated with a sales system.

- Attendant Not Present (unattended);
- Card and Cardholder are present;
- Cardholder verification Method is PIN;
- Final amount known;
- POI (Chip and PIN capable).

3.2.2 Implementation Requirements and Options

3.2.2.1 Card services

3.2.2.1.1 Current Implementations

From an acceptance perspective, only the following card service is supported for this context:

Service	Issuers	Schemes	Acquirers	Acceptors
Payment	Required	Required	Required	Required

TABLE 15: CARD SERVICES - CURRENT IMPLEMENTATIONS

3.2.2.1.2 Volume Conformant Implementation

From an acceptance perspective, only the following card service shall be supported for this context:

Service	Issuers	Schemes	Acquirers	Acceptors
Payment	Required	Required	Required	Required

TABLE 16: CARD SERVICES - VOLUME CONFORMANT IMPLEMENTATIONS

3.2.2.2 Acceptance technology

3.2.2.2.1 Current Implementations

POI shall either be:

- Offline with online capability,

  or

- Online only.

3.2.2.2.2 Volume Conformant Implementation

POI shall either be:

- Offline with online capability,

  or

- Online only.

However, it is recommended to be offline with online capability.

3.2.2.3 Cardholder Verification Method

3.2.2.3.1 Cardholder Verification Method (Issuance)

3.2.2.3.1.1 Current Implementations

There are no mandatory requirements to support a specific CVM from an issuer perspective however within the SEPA area PIN is the recommended method for this context.

3.2.2.3.1.2 Volume Conformant Implementation

Cards that are intended to be accepted in this context must support PIN.

3.2.2.3.2 Cardholder Verification Method (Acceptance)

3.2.2.3.2.1 Current Implementations

The only CVM method to be supported for this context is PIN.

3.2.2.3.2.2 Volume Conformant Implementation

The only CVM method to be supported for this context is PIN.

3.2.2.4 Data Capture

All 3 modes defined in section 2.4 are applicable

3.2.3 Example of Message Flow

A typical message flow can be seen below. Note that this is just one example of an implementation:

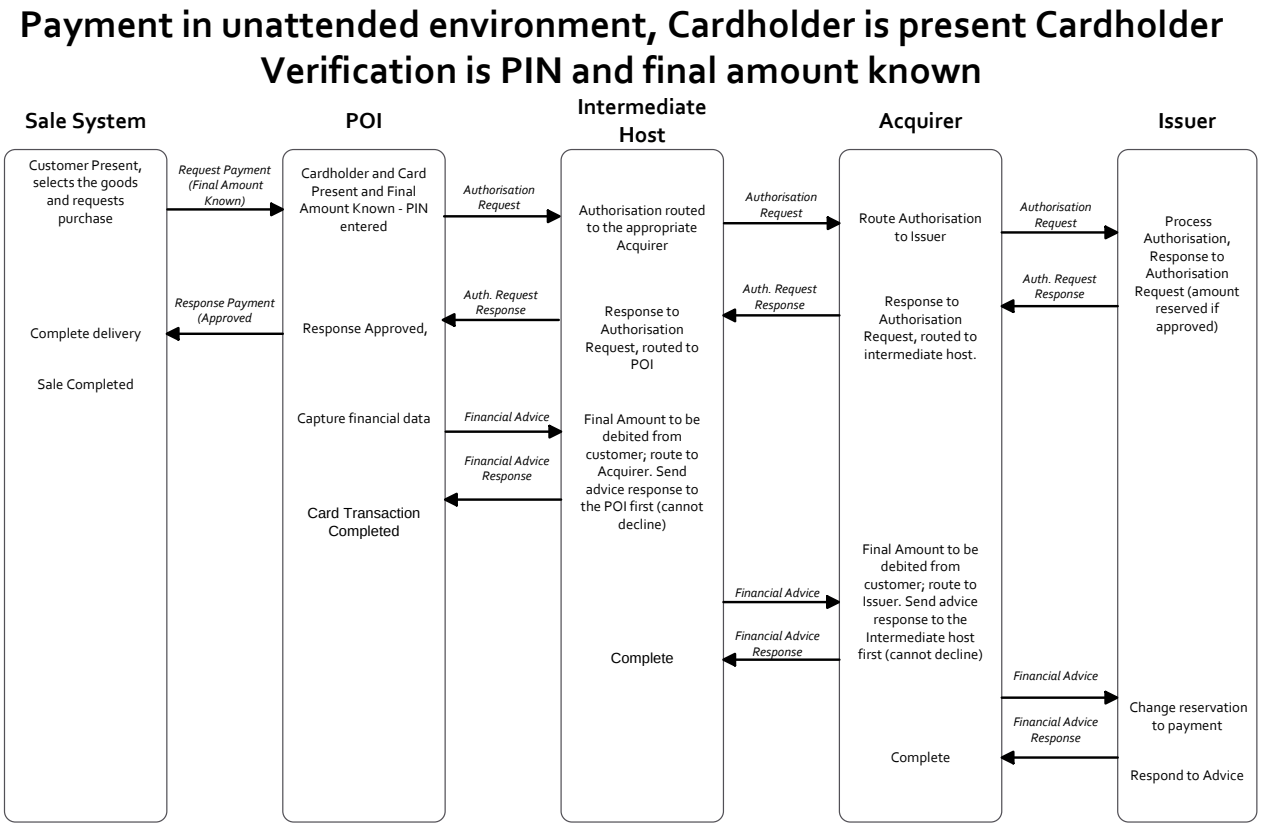


Figure 17: EXAMPLE FLOW: PAYMENT IN AN UNATTENDED ENVIRONMENT, CARDHOLDER IS PRESENT CARDHOLDER VERIFICATION METHOD IS PIN AND FINAL AMOUNT KNOWN

3.3 Context: Payment with 'No CVM Required' in attended or unattended environment, Cardholder is present and final amount known

3.3.1 Definition of the payment context

This payment context is restricted to certain Acceptor Categories where risk assessment allows low value transaction with "No CVM Required". This context can be used for low value transactions where the interaction with the cardholder must be minimized because of the need for speed or safety reasons. A PIN Entry Device is not mandatory.

- Card and Cardholder is present;
- Final amount known;
- Cardholder Consent (by presenting the card);
- Physical POI (Chip capable);
- Attendant Present (attended/semi-attended) and unattended.

3.3.2 Implementation Requirements and Options

3.3.2.1 Card services

3.3.2.1.1 Current Implementations

In an attended environment, the following card services are supported for this context from an acceptance perspective:

Service	Issuers	Schemes	Acquirers	Acceptors
Payment	Required	Required	Required	Required
Cancellation	Conditional[6]	Conditional	Conditional	Optional
Refund	Optional	Optional	Optional	Optional

Table 18: CARD SERVICES - CURRENT IMPLEMENATIONS FOR ATTENDED

[6] Issuers ,Schemes and Acquirers shall support Cancellation if refund is not supported

In an unattended environment, the following card services are supported for this context from an acceptance perspective:

Service	Issuers	Schemes	Acquirers	Acceptors
Payment	Required	Required	Required	Required

Table 19: CARD SERVICES - CURRENT IMPLEMENATIONS FOR UNATTENDED

3.3.2.1.2 Volume Conformant Implementation

For attended environment:

Service	Issuers	Schemes	Acquirers	Acceptors
Payment	Required	Required	Required	Required
Cancellation	Required 2019	Required 2019	Required 2019	Optional
Refund	Required 2019	Required 2019	Required 2019	Optional

Table 20: CARD SERVICES - VOLUME CONFORMANT IMPLEMENTATIONS FOR ATTENDED

For unattended environment:

Service	Issuers	Schemes	Acquirers	Acceptors
Payment	Required	Required	Required	Required

Table 21: CARD SERVICES - VOLUME CONFORMANT IMPLEMENTATIONS FOR UNATTENDED

3.3.2.2 Acceptance technology

3.3.2.2.1 Current Implementations

POI shall be:

- Offline with online capability,

  or

- Online only.

3.3.2.2.2 Volume Conformant Implementation

POI shall be:

- Offline with online capability,

  or

- Online only.

However, it is recommended to be offline with online capability.

3.3.2.3 Cardholder Verification Method

3.3.2.3.1 Cardholder Verification Method (Issuance)

3.3.2.3.1.1 Current Implementations

There are no mandatory requirements to support a specific CVM from an issuer perspective however within the SEPA area "No CVM Required" is the recommended method for this context.

For cards that do not support "No CVM Required", Issuers may receive an authorisation message containing “Cardholder Verification was not successful”. It is up to the Issuer to authorise or decline this message.

3.3.2.3.1.2 Volume Conformant Implementation

Cards that are intended to be accepted in this context must support "No CVM Required".

For cards that do not support "No CVM Required", Issuers may receive an authorisation message containing “Cardholder Verification was not successful”. It is up to the issuer to authorise or decline this message.

3.3.2.3.2 Cardholder Verification Method (Acceptance)

3.3.2.3.2.1 Current Implementations

The CVM method to be supported for this context is "No CVM Required".

3.3.2.3.2.2 Volume Conformant Implementation

The only CVM method to be supported for this context is "No CVM Required".

3.3.2.4 Data Capture

All 3 modes defined in section 2.4 are applicable

3.3.3 Example of Message Flow

A typical message flow can be seen below. Note that this is just one example of an implementation:

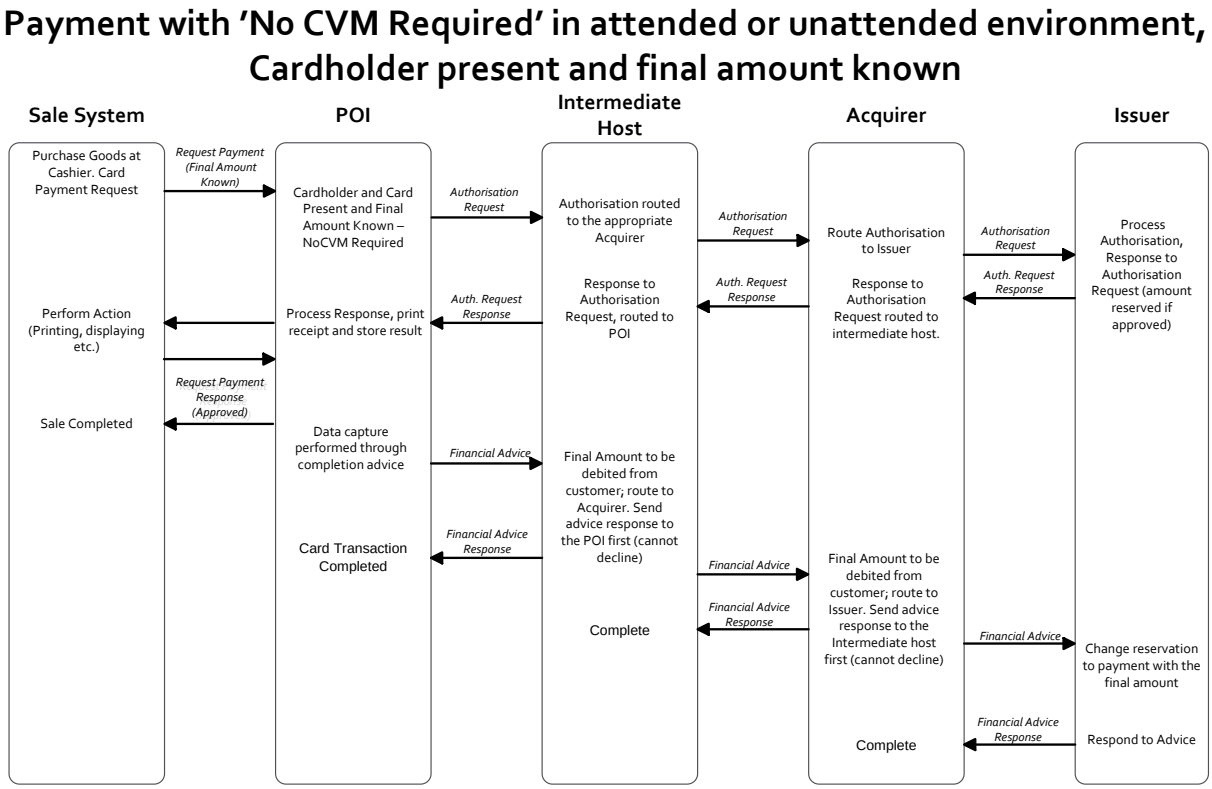


Figure 22: EXAMPLE FLOW: PAYMENT WITH 'NO CVM REQUIRED' IN ATTENDED OR UNATTENDED ENVIRONMENT, CARDHOLDER PRESENT AND FINAL AMOUNT KNOWN

3.4 Context: Deferred Payments in an attended and unattended environment with an estimated amount at payment initiation, cardholder is present with cardholder verification

3.4.1 Definition of the payment context

This context is used in environments where the final amount to be paid for the goods or services is not known by the acceptor at the time online authorisation is performed. The final amount is known on completion of delivery.

- Card and Cardholder are present;
- Final amount is not known at the time of the authorisation;
- Cardholder Consent (by using one cardholder verification method);
- Physical POI (PIN and Chip capable);
- Attendant Present/Not Present (attended/unattended).

The flow described below will provide all necessary information to the issuer allowing them to adjust any reserved amount with the final amount, thereby avoiding cardholder complaints.

This service enables the acceptor to:

- Request an authorisation from the issuer to get a maximum amount available for the transaction where the amount requested may be chosen by the acceptor or cardholder;
- Obtain a full or partial approval when the cardholder has insufficient balance for the amount requested;
- Complete the delivery of goods or use of service to be paid up to the approved amount within a limited time frame (e.g. 20 minutes for petrol);
- Inform the issuer of the payment of these goods or services with the final amount that is less than or equal to the authorised amount in real time.

This service is usually used at petrol pumps (“outdoor petrol”), attended and unattended. The following rules apply:

1) The amount that is requested to be authorised online is, as described in Book 2 T55, to cater for the maximum amount that may be required;
2) In order to avoid transactions being unnecessarily declined, Issuers shall support partial approval in responses when the "open to buy" is lower than the amount requested;
3) All parties in the protocol chain shall forward and/or act on on-line advice messages (or reversal), including zero amounts, so that the available to buy shall be adjusted in real time. If additional messages (e.g. batch clearing messages) are received, they shall not erroneously impact the “open to buy”.

3.4.2 Implementation Requirements and Options

3.4.2.1 Payment services

3.4.2.1.1 Current Implementations

Today there is no commonly accepted method that is used by all schemes and countries. Those that are in use are often incompatible.

3.4.2.1.2 Volume Conformant Implementation

Service	Issuers	Schemes	Acquirers	Acceptors
Deferred Payment with Partial Approval	Required 2019	Required 2019	Required 2019	Required 2019

Table 23: PAYMENT SERVICES - VOLUME CONFORMANT IMPLEMENTATION

3.4.2.2 Acceptance environment

3.4.2.2.1 Current Implementations

POI shall either be:

- Online only

  or

- Offline with online capability

3.4.2.2.2 Volume Conformant Implementation

POI shall either be:

- Online only

  or

- Offline with online capability

3.4.2.3 Card Data Authentication method

See section 2.2

3.4.2.4 Cardholder Verification Method

3.4.2.4.1 Cardholder Verification Method (Issuance)

3.4.2.4.1.1 Current Implementations

There are no mandatory requirements to support a specific CVM from an issuer perspective however within the SEPA area PIN is the recommended method for this context.

3.4.2.4.1.2 Volume Conformant Implementation

Cards that are intended to be used in this payment context shall support PIN.

3.4.2.4.2 Cardholder Verification Method (Acceptance)

3.4.2.4.2.1 Current Implementations

Whether PIN is the only CVM allowed in the unattended environment is a risk management decision depending on the amount value to be authorised, but at petrol stations there are no known implementations without PIN due to the high value of products and high fraud risk. In the attended environment there are no mandatory requirements to support a specific CVM.

3.4.2.4.2.2 Volume Conformant Implementation

For unattended, PIN is the only supported CVM. For attended, PIN is the recommended CVM. For low value transactions e.g. phone booths, "No CVM Required" may be acceptable.

3.4.2.5 Data Capture

3.4.2.5.1 Current Implementations

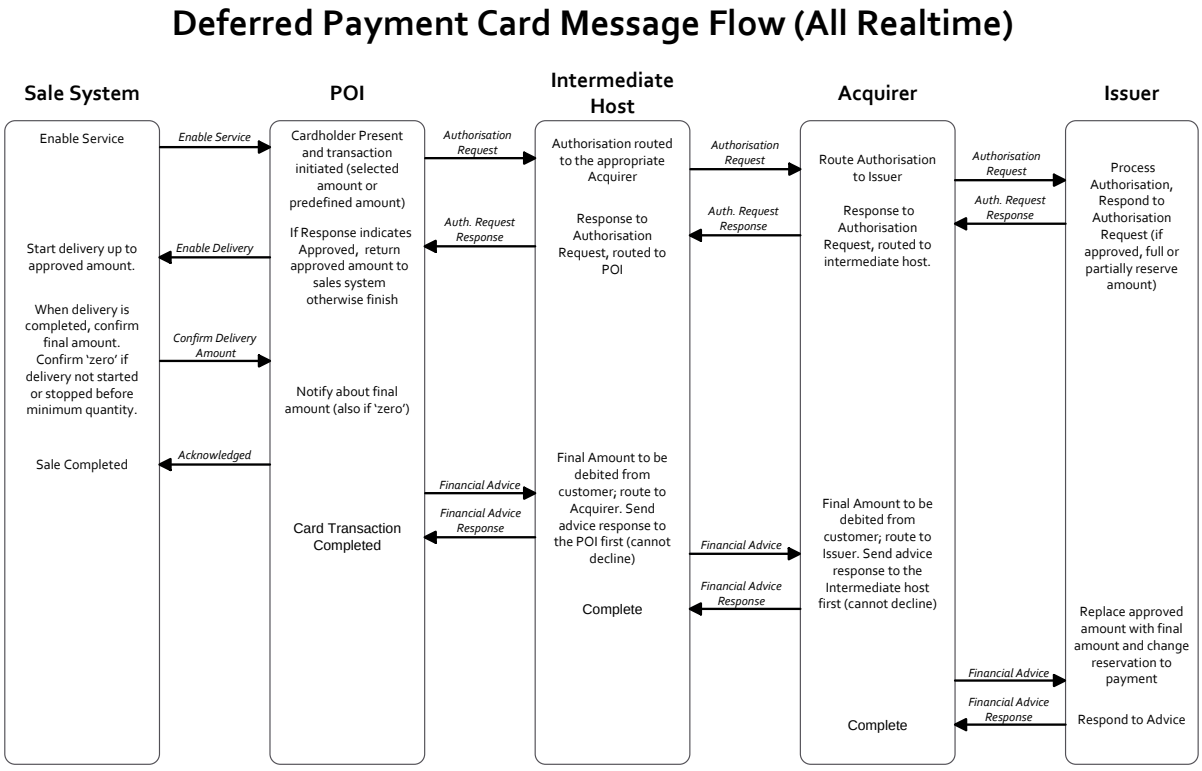
There are many national and/or scheme specific solutions to the basic logic problem of authorising online outdoor petrol card transactions where the amount is not known until the filling is complete. There is currently no commonly agreed approach without seriously disadvantaging the cardholder.

3.4.2.5.2 Volume Conformant Implementation

This context does not apply to off-line situations. For a Volume conformant online implementation of outdoor petrol it is required that the acceptor, acquirer, issuer and all intermediate protocols all support the implementation rules described in 3.4.1. As the authorisation has to be performed online, the Mode 1 as described in section 2.4.2 is the only recommended Data Capture implementation. Mode 3 is not technically possible and Mode 2 does not meet these requirements.

3.4.3 Example of Message Flow

The following diagram illustrates a Deferred Payment Card Message Flow where all authorisation and message advices are online and real-time. Note that this is just one example of an implementation:



Footnote to issuer: if separate batch clearing is used, do not show sale twice.

FIGURE 24: DEFERRED PAYMENT CARD MESSAGE FLOW

3.5 Context: Pre-authorisation Services in an attended or unattended environment to reserve and secure an amount for a certain time, Cardholder present

3.5.1 Definition of the payment context

This payment context is used in an environment where a guarantee of payment is required but the final amount of goods or services is not yet known, for example hotels, car hire or unattended bicycle hire. In this payment context either a reversal message is used or an Update Pre-authorisation transaction is added, replacing an initial Pre-authorisation if there is a need to change the reserved amount or the validity period. A common approach is proposed using Update Pre-Authorisation in the future:

- Card and Cardholder are present;
- Final amount is not known at the time of the authorisation;
- Cardholder Consent (by using one cardholder verification method);
- Physical POI (PIN and Chip capable);
- Attendant Present (attended/semi-attended) and unattended.

3.5.2 Implementation Requirements and Options

3.5.2.1 Card services

3.5.2.1.1 Current Implementations

Today there is no commonly accepted method that is used by all schemes and countries. Those that are in use are often incompatible.

Currently, pre authorisation service may use reversals as described below:

For Pre-Authorisation, Full and Partial Authorisation requests are sent by the acceptor to the issuer to adjust the cardholder open to buy in real-time when the final amount is not known.

Full reversals (cancellations) are usually used:

- If a payment authorised online is cancelled during or immediately after completing the transaction;
- If the authorisation process times out awaiting a response from the authorisation host.

A full reversal cannot occur once the Data Capture has been sent to the acquirer. Once the transaction has been sent to the Acquirer, only a refund can be processed.

Partial reversals are usually used:

- If the amount to be settled is less than the amount authorised. For example, if, during picking, one or more items are not available or have to be substituted;
- A partial reversal cannot be processed once the settlement record has been received by /sent to the acquirer. Once the payment has been sent to the acquirer, a refund only can be processed if the payment needs to be cancelled.

Issuers must:

- Act upon reversals in real-time, (within 60 minutes and no longer than 24 hours of receipt);
- Make the open to buy funds available to the cardholder account as soon as the payment is charged, by releasing the funds blocked by the pre-authorisation(s).

Issuers may:

- Approve the full amount or a partial amount.

The Acceptor may:

- Process a standard authorisation request for an amount even if estimated. This can be in respect of Standard Authorisation or as a Pre-Authorisation request;
- Send an additional Authorisation Request if the Cardholder spends more than was originally authorised, so that the Acceptor can receive the protection of authorisation;
- Process Full or Partial reversals if the payment is cancelled for whatever reason or the final amount is less than the amount(s) authorised.

The acceptor must only process the payment equal to or less than the amount authorised by the issuer especially if the issuer responds with an authorisation for a lesser amount.

From an acceptance perspective, the following card services are supported for this context in attended environments. For unattended only 'Authorisation' and 'Payment completion' is required.

Service	Issuers	Schemes	Acquirers	Acceptors
Authorisation	Required	Required	Required	Required
Reversal	Optional	Optional	Optional	Optional
Update Authorisation	Optional	Optional	Optional	Optional
Payment Completion	Required	Required	Required	Required

Table 25: CARD SERVICES - CURRENT IMPLEMENTATIONS

3.5.2.1.2 Volume Conformant Implementation(s)

All services shall be conformant with the Book 2 requirements.

This table shows one example of how pre-authorisation can be implemented in a Volume comformant way.

Service	Issuers	Schemes	Acquirers	Acceptors
Pre-Authorisation	Required 2021	Required 2021	Required 2021	Required 2021
Update Pre-Authorisation	Required 2021	Required 2021	Required 2021	Optional
Payment Completion	Required 2021	Required 2021	Required 2021	Required 2021

Table 26: CARD SERVICES - VOLUME CONFORMANT IMPLEMENTATIONS

3.5.2.2 Acceptance technology

3.5.2.2.1 Current Implementations

POI shall either be:

- Offline with online capability,

  or

- Online only.

3.5.2.2.2 Volume Conformant Implementation

POI shall either be:

- Offline with online capability,

  or

- Online only.

However, it is recommended to be offline with online capability.

3.5.2.3 Cardholder Verification Method

3.5.2.3.1 Cardholder Verification Method (Issuance)

3.5.2.3.1.1 Current Implementations

There are no mandatory requirements to support a specific CVM from an issuer perspective for this environment.

3.5.2.3.1.2 Volume Conformant Implementation

There are no mandatory requirements to support a specific CVM from an issuer perspective for this environment.

3.5.2.3.2 Cardholder Verification Method (Acceptance)

3.5.2.3.2.1 Current Implementations

Attended and unattended terminal CVM requirements apply. There are no specific CVM requirements for this environment.

3.5.2.3.2.2 Volume Conformant Implementation

Attended and unattended terminal CVM requirements apply. There are no specific CVM requirements for this environment. However, PIN is the recommended CVM for this context.

3.5.2.4 Data Capture

3.5.2.4.1 Current Implementations

The online authorisation cannot be used for capture. Otherwise, refer to section 2.4.

3.5.2.4.2 Volume Conformant Implementation

Capture can only take place after or when the transaction is finalised with a Payment Completion. Therefore, protocol configuration Mode 3 in section 2.4 is not applicable for this context.

3.5.3 Example of Message Flow

Examples of illustrative flows using Pre-Authorisation, update Pre-Authorisation and Payment Completion can be seen below. Note that these constitute just one example of an implementation:

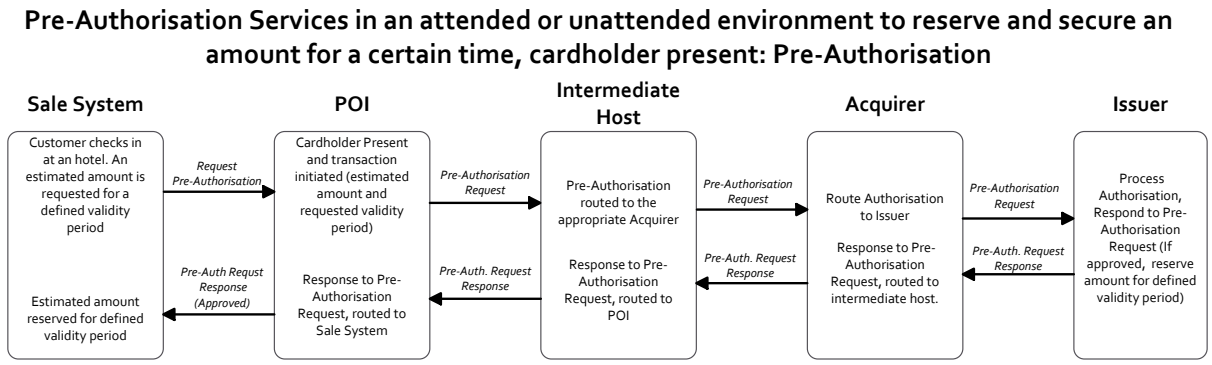


Figure 27: EXAMPLE FLOW: PRE-AUTHORISATION SERVICES IN AN ATTENDED OR UNATTENDED ENVIRONMENT TO RESERVE AND SECURE AN AMOUNT FOR A CERTAIN TIME, CARDHOLDER PRESENT

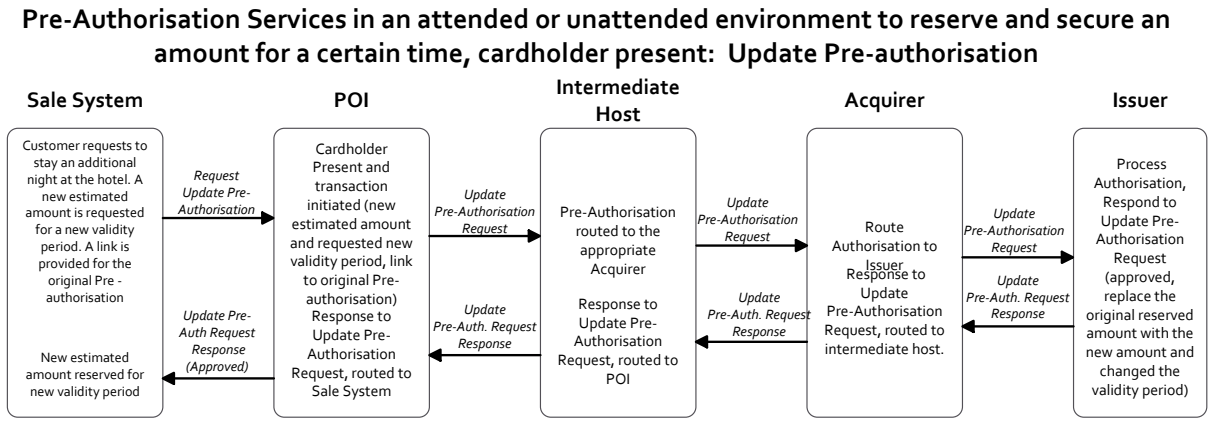


Figure 28: EXAMPLE FLOW: PRE-AUTHORISATION SERVICES IN AN ATTENDED OR UNATTENDED ENVIRONMENT TO RESERVE AND SECURE AN AMOUNT FOR A CERTAIN TIME, CARDHOLDER PRESENT: UPDATE PRE-AUTHORISATION

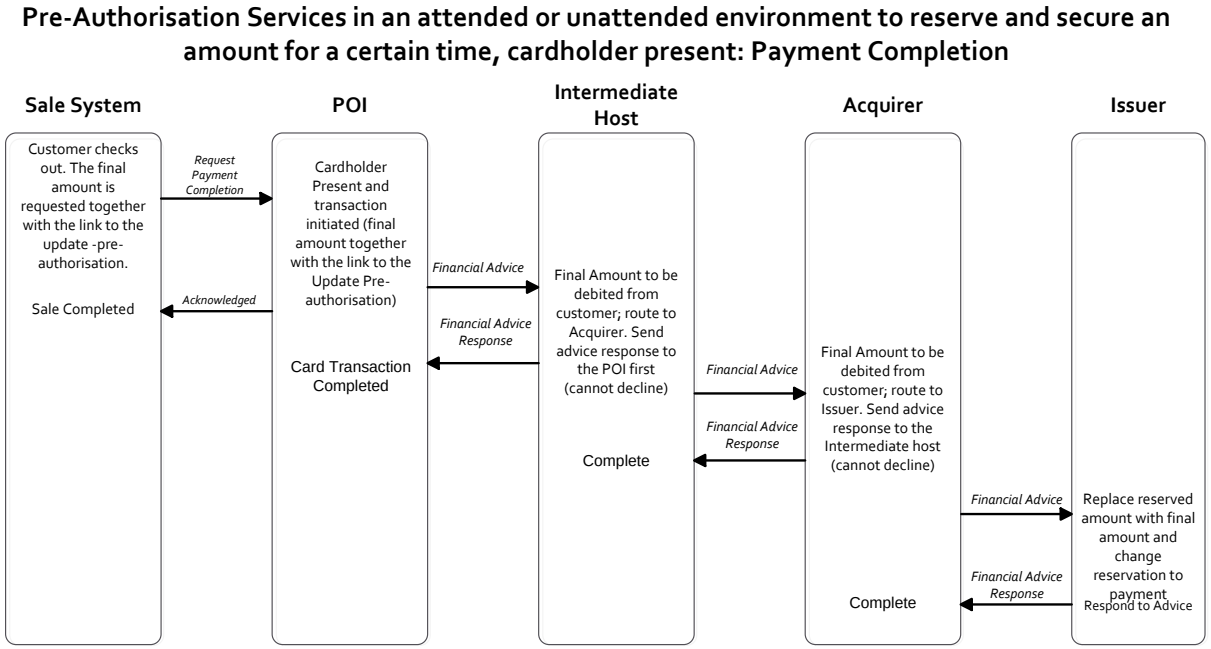


Figure 29: PRE-AUTHORISATION SERVICES IN AN ATTENDED OR UNATTENDED ENVIRONMENT TO RESERVE AND SECURE AN AMOUNT FOR A CERTAIN TIME, CARDHOLDER PRESENT: PAYMENT COMPLETION

4 FIGURES AND TABLES