**ISO 20022**

Card Payments Exchanges - Acceptor to Acquirer

Approved by the Cards and Related Retail Financial Services SEG on 1 February 2022

**Message Definition Report** **- Part 1**

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**Preliminary note:**

The Message Definition Report (MDR) is made of three parts:

* **MDR - Part 1** describes the contextual background required to understand the functionality of the proposed message set. Part 1 is produced by the submitting organisation that developed or maintained the message set in line with a MDR Part1 template provided by the ISO 20022 Registration Authority (RA) on [www.iso20022.org](http://www.iso20022.org/)
* **MDR – Part 2** is the detailed description of each message definition of the message set. Part 2 is produced by the RA using the model developed by the submitting organisation.
* **MDR – Part 3** is an extract of the ISO 20022 Business Model describing the business concepts used in the message set. Part 3 is an Excel document produced by the RA.

# Introduction

## Terms and definitions

The following terms are reserved words defined in ISO 20022 – Part1. When used in this document, they will follow the UpperCamelCase notation.

|  |  |
| --- | --- |
| Term | Definition |
| BusinessRole | functional role played by a business actor in a particular BusinessProcess or BusinessTransaction |
| Participant | involvement of a BusinessRole in a BusinessTransaction |
| BusinessProcess | unrealized definition of the business activities undertaken by BusinessRoles within a BusinessArea whereby each BusinessProcess fulfils one type of business activity and whereby a BusinessProcess may include and extend other BusinessProcesses |
| BusinessTransaction | particular solution that meets the communication requirements and the interaction requirements of a particular BusinessProcess and BusinessArea |
| MessageDefinition | formal description of the structure of a MessageInstance |

## Glossary

**Acronyms**

|  |  |
| --- | --- |
| **Acronym** | **Definition** |
| **AES** | Advanced Encryption Standard |
| **ASN.1** | Abstract Syntax Notation 1 |
| **caaa** | CArd Acceptor to Acquirer |
| **CAPE** | Card Payment Exchanges |
| **DES** | Data Encryption Standard |
| **DUKPT** | Derived Unique Key Per Transaction |
| **EMV** | Europay, MasterCard, Visa |
| **FIPS** | Federal Information Processing Standard |
| **FTP** | File Transfer Protocol |
| **ICC** | Integrated Circuit Card |
| **IP** | Internet Protocol |
| **ISO** | International Organization for Standardization |
| **KEK** | Key Encryption Key |
| **MAC** | Message Authentication Code |
| **MDR** | Message Definition Report |
| **MOTO** | Mail Order, Telephone Order |
| **PAN** | Primary Account Number |
| **PED** | PIN Entry Device |
| **PIN** | Personal Identification Number |
| **PKI** | Public Key Infrastructure |
| **POI** | Point Of Interaction |
| **POS** | Point Of Sales |
| **PSP** | Payment Service Provider |
| **RFID** | Radio Frequency Identification |
| **RSA** | Rivest Shamir Adleman |
| **SC2** | TC 68/SC2 Financial Services, security |
| **SHA** | Secure Hash Algorithm |
| **STIP** | STand-In processing |
| **TMS** | Terminal Management System |
| **UKPT** | Unique Key Per Transaction |
| **UML** | Unified Modelling Language |
| **XML** | eXtensible Mark-up Language |

## Document Scope and Objectives

This document is the first part of the ISO 20022 Message Definition Report (MDR) that describes the BusinessTransactions and underlying message set. For the sake of completeness, the document may also describe BusinessActivities that are not in the scope of the project.

This document sets:

* The BusinessProcess scope (business processes addressed or impacted by the project)
* The BusinessRoles involved in these BusinessProcesses

The main objectives of this document are:

* To explain what BusinessProcesses and BusinessActivities these MessageDefinitions have addressed
* To give a high level description of BusinessProcesses and the associated BusinessRoles
* To document the BusinessTransactions and their Participants (sequence diagrams)
* To list the MessageDefinitions

## References

| Document | Version | Date | Author |
| --- | --- | --- | --- |
| ISO 20022 Business Justification – Card Payments Exchanges (CAPE) | 2009 | 2009-10-06 | Nexo |
| Card Payment Protocols Security[[1]](#footnote-1) | 3.0 | 2019 | Nexo |
| Card Payments Message Usage Guide[[2]](#footnote-2) | 10.0 |  | Nexo |

# Scope and Functionality

## Background

This Message Definition Report covers a set of 25 ISO 20022 MessageDefinitions developed by nexo in close collaboration with card payment industry and submitted to the approval of the Cards and Related Retail Financial Service Standards Evaluation Group (SEG).

## Scope

These messages are specifically designed to support exchanges between acceptor and acquirer for card payments.

## Groups of MessageDefinitions and Functionality

A card payment is the basic business service allowing a cardholder to pay for the purchase of goods and services from a card acceptor using his card. Other services are provided in addition to the basic card payment business service.

These services are supported by the following exchanges of messages.

**Card Payment messages:**

* The *AcceptorAuthorisationRequest* (caaa.001): to request authorisation of a card payment transaction;
* The *AcceptorAuthorisationResponse* (caaa.002): to return the results of an AcceptorAuthorisationRequest;
* The *AcceptorCompletionAdvice*  (caaa.003): to advise the acquirer of the outcome of a card payment transaction at the acceptor;
* The *AcceptorCompletionAdviceResponse*  (caaa.004): to reply to a AcceptorCompletionAdvice;
* The *AcceptorBatchTransfer* (caaa.011): to send a group of transactions;
* The *AcceptorBatchTransferResponse* (caaa.012): to reply to a AcceptorBatchTransfer.

**Card Payment related messages:**

* The *AcceptorCancellationRequest* (caaa.005): to request the cancellation of a transaction.
* The *AcceptorCancellationResponse* (caaa.006): to return the results of a AcceptorCancellationRequest;
* The *AcceptorCancellationAdvice* (caaa.007): to advise the acquirer of the outcome of a cancellation;
* The *AcceptorCancellationAdviceResponse* (caaa.008): to reply to an *AcceptorCancellationAdvice*;
* The *AcceptorReconciliationRequest* (caaa.009): to send the acceptor’s reconciliation data to the acquirer and, optionally, initiate a reconciliation;
* The *AcceptorReconciliationResponse* (caaa.010): to reply to the acceptor’s reconciliation request;
* The *AcceptorDiagnosticRequest* (caaa.013): to test connectivity, availability and check configuration between parties;
* The *AcceptorDiagnosticResponse* (caaa.014): to confirm connectivity and availability, and provide configuration information to the requesting party;
* The *AcceptorRejection* (caaa.015): used when the recipient cannot interpret the incoming message; may also be sent by the recipient when the message cannot be processed due to technical failure.
* The *AcceptorCurrencyConversionRequest* (caaa.016): to request a conversion of the purchase amount to the currency of the cardholder;
* The *AcceptorCurrencyConversionResponse* (caaa.017): to provide the conditions of currency conversion;
* The *AcceptorCurrencyConversionAdvice* (caaa.018): to inform the currency conversion service provider of the outcome of the card currency conversion;
* The *AcceptorCurrencyConversionAdviceResponse* (caaa.019): to acknowledge the notification of the reception of the currency conversion advice;
* The *TransactionAdvice* (caaa.020): sent by the acquirer to the acceptor in order to advise of the end of the transaction.
* The *TransactionAdviceResponse* (caaa.021):sent by the acceptor to the acquirer to acknowledge the notification of the end of the transaction.
* The *AcceptorNonFinancialRequest* (caaa.022) to request additional information to a service provider before processing a payment.
* The *AcceptorNonFinancialResponse* (caaa.023) to provide the additional information to process a payment.
* The *AcceptorTransactionLogReportRequest* (caaa,024) to request list of transactions recorded by the Agent or the Acceptor according to some non sensitive information.
* The *AcceptorTransactionLogReportResponse* (caaa.025) to provide the sanitized requested transactions report

# BusinessRoles and Participants

A BusinessRole represents an entity (or a class of entities) of the real world, physical or legal, a person, a group of persons, a corporation. Examples of BusinessRoles: “Financial Institution”, “ACH”, “CSD”.

A Participant is a functional role performed by a BusinessRole in a particular BusinessProcess or BusinessTransaction: for example the “user” of a system, “debtor”, “creditor”, “investor” etc.

The relationship between BusinessRoles and Participants is many-to-many. One BusinessRole (that is, a person) can be involved as different Participants at different moments in time or at the same time: "user", "debtor”, "creditor", "investor", etc. Different BusinessRoles can be involved as the same Participant.



| **Participants and BusinessRoles definitions** | |
| --- | --- |
| **Description** | **Definition** |
| Participants | |
| Acceptor | Card acceptor or acceptor is an entity accepting payment related cards. |
| Acquirer | An entity acquiring card payment transactions. |
| Cardholder | The person who presents the card to the acceptor for provision of goods or services. The cardholder signs the agreement with the card issuer to use a card linked to an account. |
| Service Provider | This entity provides additional information to process a payment. These elements could be financial or not. For instance, it could be a financial service provider allowing a card holder who makes a payment in a foreign country to pay in its home currency, or a non financial service provider to identify the most relevant acquirer for an acceptor to process the current payment.  Some acquiring institutions may act as Service Provider |
| BusinessRoles | |
| Agent | An entity which processes card payment transactions on behalf of an acceptor, a service provider or an acquirer. It could be a payment service provider or processor. |
| Acquiring Institution | A financial or related institution acquiring card payment transactions and performing the settlement for merchant accounts. |
| Customer | A party purchasing goods or services at a merchant. |
| Financial Service Organisation | An entity which provides currency conversion service. The merchant signs a contract with one or several Financial Service Organisation. |
| Merchant | An entity which provides goods and/or services at one or several sites (physical or virtual). The merchant signs a contract with one or several acquirers. The merchant can perform the role of an acceptor or delegate it to another party (agent). |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **BusinessRoles/Participants Matrix Table** | | | | |
| Participants  BusinessRoles | Acceptor | Acquirer | Cardholder | Service Provider |
| Acquiring Institution |  | X |  | X |
| Agent | X | X |  |  |
| Customer |  |  | X |  |
| Financial Service Organisation |  |  |  | X |
| Merchant | X |  |  |  |

# BusinessProcess Description

## BusinessProcess Diagram

This diagram shows the high level BusinessProcess covered by card payment business.



**Card payment process:**

* *Definition*: The process of performing a payment of good or services with a card. The process starts with the acceptance of the payment card, involves the authorisation of the payment transaction, and the transfer of financial information (capture) from the acceptor to the acquirer. In some error situations, it is necessary to reverse the authorisation.
* *Trigger*: The acceptance of the card presented by the customer to the merchant for the payment of goods or services.
* *Pre-conditions*: Presentation of the card by the acceptor for payment.
* *Post-conditions*: If the payment is successful, the acquirer is in the position of initiating the procedure to credit the merchant account and debit the customer account.
* *Role*: Cardholder, Acceptor and Acquirer.

## BusinessProcess Process Flows

The process flows hereafter describe a possible high level sequence of the BusinessProcess defined in the previous chapter.



# Description of BusinessActivities

This section presents the different BusinessActivities within each BusinessProcess. BusinessActivities of a process are described in swim lane diagrams and are referred in this document as activity diagrams.

The development of an activity diagram is part of the ISO 20022 modelling process and allows capturing the requirements.

The activity diagram provides a zoom-in on the BusinessActivities taking place during each of the BusinessProcesses described in Section 4.. It also shows the BusinessActivities that are triggered when another BusinessActivity has a negative result.

What is the activity diagram about?

* It is a diagram representing the ‘common lifecycle’ of a BusinessProcess
* A start point  shows where the lifecycle of the BusinessProcess commences and the end points show End point where the lifecycle may possibly end
* A lozenge means that a choice between several actions can be made
* A bar means that several actions are initiated in parallel
* The flow of activities between the involved Participants (parties)
* BusinessActivities may result in different actions, that is, information is conveyed from one party to another party.

Both in-scope and out-of-scope activities are included, with a different level of details. There are no information requirements for out-of-scope activities, except that they should be clearly identified in the diagram.

Activity diagrams are always accompanied with a text describing the BusinessActivities and their interactions.

## BusinessProcess – Generic Card Payment Process



|  |  |
| --- | --- |
| **Descriptions of the BusinessActivities** | |
|  | **Initiator** |
| **Payment Card Presentation**: The cardholder presents a payment card to the merchant for the payment of goods and/or services. | **Cardholder** |
| **Card Acceptance**: The card acceptor verifies that the payment of the goods and/or services may be performed by the presented card. | **Acceptor** |
| **Cardholder Authentication**: The card acceptor verifies that the cardholder is allowed to use the card for the payment. | **Acceptor** |
| **Acceptor Payment Processing**: The payment service is performed by the card acceptor according to the rules of the acquirers and schemes. | **Acceptor** |
| **Authorisation**: If the authorisation must be performed online, the acquirer approves or declines the card payment transaction. | **Acceptor** |
| **Reversal**: The acquirer reverses the authorisation at the request of the card acceptor when :   * the acceptor received no acceptable response, or * the approved payment transaction did not complete successfully at the acceptor. | **Acceptor** |
| **Payment Failure**: The payment transaction did not succeed when:   * The online authorisation cannot be processed by the acquirer, or * The authorisation of the payment transaction is declined, or * The payment does not complete (e.g. the cardholder has cancelled the payment or the chip card declines the transaction after the authorisation). | **Acceptor** |
| **Payment Completion**: The card acceptor finalises the approved transaction after the authorisation. | **Acceptor** |
| **Payment Capture**: The transfer of the financial information from the acceptor to the acquirer. | **Acceptor** |
| **Acquirer Payment Processing**: The payment transaction is successfully completed by the card acceptor. The fund transfer may be initiated by the payment acquirer. | **Acquirer** |

## BusinessProcess – Merchant Presented QR Code Payment Process



|  |  |
| --- | --- |
| **Descriptions of the BusinessActivities** | |
|  | **Initiator** |
| **Display QR Code**: The acceptor presents a QR Code to the cardholder for the payment of goods and/or services. | **Merchant** |
| **Scan QR Code**: The cardholder scans the QR Code presented by the acceptor and asks for the payment processing. | **Cardholder** |
| **Capture Transaction**: The acquirer receives the result of the payment processing initiated by the cardholder and must warns the acceptor of the result of the transaction. | **Cardholder** |

# BusinessTransactions

This section describes the message flows based on the activity diagrams documented above. It shows the typical exchanges of information in the context of a BusinessTransaction.

## Card Payment BusinessTransactions

### Introduction

The following card payment BusinessTransactionsshow how a cardholder can pay for the purchase of goods and services from an acceptor by using his card. These BusinessTransactionsscenarios are typical card payment ones without being an exhaustive list. They are supported by exchanges of messages.

A card payment is supported by an authorisation process to request the approval of the BusinessTransaction. This authorisation process can be carried out either remotely (e.g. sections 6.1.2 and 6.1.3) or locally (e.g. section 6.1.6) depending on the business context.

A completion exchange is required when the acquirer has to be notified on-line of the outcome of the payment.

The financial data of the BusinessTransaction must be transferred to the acquirer through a process called capture. This can be done:

* within the authorisation exchange;
* within the completion exchange;
* through a batch file transfer.

A completion exchange is also used to reverse a BusinessTransaction which was not successfully completed at the acceptor (for example: signature verification failed, cancellation of BusinessTransaction by the cardholder, timeouts, etc.), but where an authorisation had been previously given by the acquirer.

### Online authorisation with online capture successfully completed



1. The *AcceptorAuthorisationRequest* is sent by the card acceptor to the acquirer to request authorisation.
2. The *AcceptorAuthorisationResponse* is returned by the acquirer to inform the acceptor about the successful outcome of the request; once the acquirer has authorised the BusinessTransaction and has captured the financial data of the transaction for clearing.

### Reversed online authorisation with online capture



1. The *AcceptorAuthorisationRequest* is sent by the card acceptor to the acquirer to request authorisation.
2. The *AcceptorAuthorisationResponse* is returned by the acquirer to inform the acceptor about the successful outcome of the request; once the acquirer has authorised the BusinessTransaction and has captured the financial data of the transaction for clearing.
3. The BusinessTransaction fails at the acceptor. An *AcceptorCompletionAdvice* is then sent to the acquirer to reverse the BusinessTransaction (both authorisation and capture).
4. The acquirer sends back an *AcceptorCompletionAdviceResponse* to acknowledge the reversal.

### Online authorisation with capture through online completion



1. The card acceptor sends an *AcceptorAuthorisationRequest* to the acquirer to request authorisation of the BusinessTransaction.
2. The *AcceptorAuthorisationResponse* is returned by the acquirer to inform the acceptor of the successful outcome of the authorisation.
3. The BusinessTransaction completes successfully at the acceptor side. The card acceptor sends an *AcceptorCompletionAdvice* to inform the acquirer about the successful outcome of the BusinessTransaction and to provide the financial data for capture.
4. The acquirer returns an *AcceptorCompletionAdviceResponse* to acknowledge the outcome and financial capture of the BusinessTransaction.

### Reversed online authorisation with capture through online completion



1. The card acceptor sends an *AcceptorAuthorisationRequest* to the acquirer to request authorisation of the BusinessTransaction.
2. The *AcceptorAuthorisationResponse* is returned by the acquirer to approve the BusinessTransaction.
3. The BusinessTransaction fails at the acceptor’s side. The *AcceptorCompletionAdvice* is then sent back to the acquirer to reverse the BusinessTransaction (authorisation).
4. The acquirer sends an *AcceptorCompletionAdviceResponse* to acknowledge the reversal.

### Off-line authorisation with capture by online completion.



In this BusinessTransaction, the authorisation is approved locally (offline authorisation).

Once the BusinessTransaction completes successfully:

1. The *AcceptorCompletionAdvice* is used to inform the acquirer about the outcome of the offline-authorised BusinessTransaction and to provide the financial data for capture.
2. The acquirer sends back an *AcceptorCompletionAdviceResponse* to acknowledge the completion and the capture.

### Off- and/or on-line authorisation with capture through batch



A card acceptor processes off- and/or on-line BusinessTransactions without capture.

1. The *AcceptorBatchTransfer* is used by the card acceptor to send the financial data of the processed BusinessTransactions for capture.
2. The *AcceptorBatchTransferResponse* is returned by the acquirer to inform the acceptor about the outcome of this process.

### Capture through batch of off-line only authorised BusinessTransactions



A card acceptor processes off-line BusinessTransactions only.

1. The *AcceptorBatchTransfer* is used by the card acceptor to send the financial data of the processed BusinessTransactions for capture.
2. The *AcceptorBatchTransferResponse* is returned by the acquirer to inform the acceptor about the outcome of this process.

### Authorisation and completion through an intermediary agent



Intermediary agents may appear as part of the path between a card acceptor and an acquirer to provide value-added services such as switching to different acquirers, loyalty processing, aggregation of low value payments, etc.

1. The acceptor sends the *AcceptorAuthorisationRequest* to an intermediary agent.
2. The intermediary agent sends an *AcceptorAuthorisationRequest* to the appropriate acquirer.
3. The acquirer returns the *AcceptorAuthorisationResponse* to the intermediary agent.
4. The intermediary agent sends back the outcome of the authorisation to the acceptor through an *AcceptorAuthorisationResponse*.
5. The acceptor sends the *AcceptorCompletionAdvice* once the BusinessTransaction has been completed.
6. The intermediary agent acknowledges this completion to the acceptor with an *AcceptorCompletionAdviceResponse*.
7. As an outcome of this process, the intermediary agent sends to the acquirer an *AcceptorCompletionAdvice*.
8. The *AcceptorCompletionAdviceResponse* is then returned by the acquirer to the intermediary agent.

### Stand-in processing by an intermediary agent



The intermediary agent is mandated to perform a stand-in authorisation[[3]](#footnote-3).

1. The card acceptor sends an *AcceptorAuthorisationRequest* to the intermediary agent.
2. The intermediary agent performs the stand-in authorisation. It sends back an *AcceptorAuthorisationResponse* to the acceptor (including the stand-in processing information).

The BusinessTransaction is completed and terminates with a completion exchange between the intermediary agent and the acquirer as described in the previous section.

## Cancellation BusinessTransactions

### Introduction

Cancellation is a service which allows a card acceptor to cancel a successfully completed BusinessTransaction before the BusinessTransaction has been cleared. A cancellation is sometimes called a manual reversal.

**Cancellation advice exchange without a prior cancellation request exchange**

A cancellation is carried out through a cancellation advice exchange without a prior cancellation request when either:

* no financial capture of the original BusinessTransaction occurred (by message or by batch), or
* a financial capture of the original BusinessTransaction actually occurred, but the acceptor is aware that the original BusinessTransaction was not already cleared by the acquirer.

The acceptor may be aware that the acquirer did not clear the BusinessTransaction as:

* the clearing of the BusinessTransactions is only allowed after closing the corresponding reconciliation period by a reconciliation exchange, and
* a reconciliation message to close the reconciliation period was not sent for the reconciliation period that includes the BusinessTransaction.

**Cancellation request exchange followed by a cancellation advice exchange**

An *AcceptorCancellationRequest* is used by an acceptor to ask the acquirer whether a cancellation can be performed, before sending an *AcceptorCancellationAdvice*.

Should the acquirer decline an *AcceptorCancellationRequest*, the acceptor has always the possibility to refund the BusinessTransaction to the cardholder by cash or with a refund.

An *AcceptorCancellationAdvice* is used by an acceptor to inform the acquirer that the cancellation was completed. It is also used to indicate that no response to an *AcceptorCancellationRequest* was received and that the cancellation was declined.

### Cancellation of online authorised BusinessTransactions before batch capture



1. The card acceptor sends an *AcceptorAuthorisationRequest* to the acquirer to request authorisation of the BusinessTransaction.
2. The *AcceptorAuthorisationResponse* is returned by the acquirer to inform the acceptor of the successful outcome of the authorisation.   
   The BusinessTransaction completes successfully at the acceptor side and it is stored for a further batch transmission.
3. The BusinessTransaction is successfully cancelled and for this BusinessTransactions removed from the batch. The acceptor sends an *AcceptorCancellationAdvice* to inform the acquirer that the online authorised BusinessTransaction was cancelled.
4. The acquirer sends back an *AcceptorCancellationAdviceResponse* to acknowledge the cancellation.
5. The *AcceptorBatchTransfer* is then sent by the acceptor to the acquirer without the cancelled BusinessTransaction.
6. The *AcceptorBatchTransferResponse* is returned by the acquirer to inform the acceptor about the outcome of this process.

In case of batch capture, the cancellation advice may or may not be exchanged during the cancellation BusinessTransaction depending on the configuration of the acceptor.

Depending on the configuration, there are three different ways to cancel the BusinessTransaction in the batch:

* The cancelled BusinessTransaction is not sent in the batch, or
* The cancelled BusinessTransaction is removed from the batch and replaced by the cancellation BusinessTransaction, or
* The cancelled BusinessTransaction remains in the batch, and the cancellation BusinessTransaction is added to the batch.

### Capture by completion and cancellation through advice



A card payment BusinessTransaction is performed with an online authorisation and captured through a completion exchange at the end of the BusinessTransaction:

1. The card acceptor sends an *AcceptorAuthorisationRequest* to the acquirer to request authorisation of the BusinessTransaction.
2. The *AcceptorAuthorisationResponse* is returned by the acquirer to approve the BusinessTransaction.
3. The *AcceptorCompletionAdvice* is used to inform the acquirer about the outcome of the BusinessTransaction and to provide the financial data for capture.
4. The acquirer sends back an *AcceptorCompletionAdviceResponse* to acknowledge the completion and the capture.

A cancellation is performed by the acceptor before the reconciliation of the BusinessTransaction. In this BusinessTransaction, the acceptor is aware that the acquirer initiates the clearing of the BusinessTransactions only after the reconciliation. He may then perform the cancellation without any cancellation request exchange to the acquirer:

1. When the BusinessTransaction is successfully cancelled, the acceptor sends an *AcceptorCancellationAdvice* to inform the acquirer that the online authorised BusinessTransaction was cancelled.
2. The acquirer sends back an *AcceptorCancellationAdviceResponse* to acknowledge the cancellation and performs the necessary adjustments (reverse the authorisation and the capture).

After closing the reconciliation period, a new reconciliation exchange is initiated by the acceptor:

1. The acceptor sends an *AcceptorReconciliationRequest* to close the current reconciliation period and provides the totals for this period. The original BusinessTransaction is not counted in the “debit/credit” totals and the cancellation BusinessTransaction is counted in the “debit/credit reverse” totals.
2. The acquirer sends back an *AcceptorReconciliationResponse* to acknowledge the reconciliation and may return the totals for this period.

### Capture by completion and cancellation through request



As for the section 6.1.3, a card payment BusinessTransaction is performed with an online authorisation and captured through a completion exchange at the end of the BusinessTransaction:

1. The card acceptor sends an *AcceptorAuthorisationRequest* to the acquirer to request authorisation of the BusinessTransaction.
2. The *AcceptorAuthorisationResponse* is returned by the acquirer to approve the BusinessTransaction.
3. The *AcceptorCompletionAdvice* is used to inform the acquirer about the outcome of the BusinessTransaction and to provide the financial data for capture.
4. The acquirer sends back an *AcceptorCompletionAdviceResponse* to acknowledge the completion and capture.

A cancellation is performed by the acceptor before the reconciliation of the BusinessTransaction. In this BusinessTransaction, the acceptor sends a cancellation request to assess whether a cancellation is possible or not (e.g. the clearing of the BusinessTransaction has not been performed):

1. The acceptor sends an *AcceptorCancellationRequest* to assess whether the cancellation is possible or not.
2. The acquirer sends back an *AcceptorCancellationResponse* to allow the cancellation; should the clearing of the BusinessTransaction not been performed yet.
3. Once the BusinessTransaction has been successfully cancelled at the acceptor side, a*n AcceptorCancellationAdvice* is sent by the acceptor to the acquirer to confirm that the BusinessTransaction was actually cancelled.
4. The acquirer sends back an *AcceptorCancellationAdviceResponse* to acknowledge the cancellation and performs the necessary adjustments (reverse both the authorisation and capture).

## Reconciliation BusinessTransactions

Reconciliation is the process of performing checks and balances between the acceptor and the acquirer for a reconciliation period. The reconciliation period can be closed with a reconciliation exchange.

An acceptor initiates a reconciliation exchange to ensure that the debits and credits match the computed balances by the acquirer for the same reconciliation period.

The acquirer acknowledges the receipt of the totals, and may return its own totals for the period.

Should the acceptor or the acquirer detect a difference in totals, the discrepancy will then be resolved by other means (outside the scope of this protocol).

A Reconciliation may not contain any BusinessTransactions.

A Reconciliation is not mandatory.

### Reconciliation with closure of the reconciliation period



Card payment BusinessTransactions are captured online during the authorisation exchange as described in section 6.1.2 (Online authorisation with online capture successfully completed).

1. The acceptor sends an *AcceptorReconciliationRequest* to close the reconciliation period.
2. The acquirer returns an *AcceptorReconciliationResponse* to close the current reconciliation period and open a new one.

A series of BusinessTransactions is exchanged during the new reconciliation period (BusinessTransactions 1 to n).

1. An *AcceptorReconciliationRequest* is sent by the acceptor to inform the acquirer about the totals accumulated during the reconciliation period and to close the current reconciliation period.
2. An *AcceptorReconciliationResponse* is returned by the acquirer to inform the acceptor about the totals accumulated during the reconciliation period and to open a new one.

### Reconciliation without closure of the period



This BusinessTransaction adds a reconciliation exchange without closure to the previous reconciliation BusinessTransaction:

1. The acceptor sends an *AcceptorReconciliationRequest* to inform the acquirer about intermediate totals accumulated during the reconciliation period.
2. The acquirer returns an *AcceptorReconciliationResponse* to inform the acceptor about intermediate totals accumulated during the same reconciliation period.

## Diagnostic BusinessTransactions

A diagnostic is initiated by an acceptor or an intermediary agent to test:

* Availability (communication with partners)
* Security (protection of the messages)
* Configuration (configuration parameters of the acquirer).

A diagnostic may contain the details of the components (hardware, software and sets of configuration parameters) which perform card payment transactions at the acceptor side.

### Request of a diagnostic



1. An acceptor sends an *AcceptorDiagnosticRequest* to test the communication with the acquirer.
2. The receipt of the *AcceptorDiagnosticResponse* by the acceptor validates the end-to-end communication with the acquirer.

### Request of a diagnostic to an agent



1. An acceptor sends an *AcceptorDiagnosticRequest* to an agent.
2. The agent returns an *AcceptorDiagnosticResponse* to the acceptor without the need to forward the request to the acquirer[[4]](#footnote-4).

### Request of a diagnostic by the agent to an acquirer



1. The agent sends the *AcceptorDiagnosticRequest* message to the acquirer to test the availability of this acquirer.
2. The acquirer returns an *AcceptorDiagnosticResponse* to the agent to confirm its availability.

## BusinessTransactionRejections

A rejection is sent by an acquirer to an acceptor to indicate that the received message (request or advice) could not be processed by the acquirer (e.g. unable to read or process the message, security error, duplicate message, etc.).

### Rejection of an AcceptorDiagnosticRequest message



1. The acquirer cannot process the *AcceptorDiagnosticRequest* sent by the acceptor.
2. The acquirer sends back an *AcceptorRejection* in place of an *AcceptorDiagnosticResponse*.

### Rejection of an AcceptorAuthorisationRequest issued by an agent



1. An acceptor sends an *AcceptorAuthorisationRequest* to an agent.
2. The agent forwards the *AcceptorAuthorisationRequest* issued by the acceptor to the relevant acquirer.
3. The acquirer cannot process the authorisation request and sends back to the agent an *AcceptorRejection* instead of an *AcceptorAuthorisationResponse*.
4. The Agent processes the rejection and returns to the acceptor an *AcceptorAuthorisationResponse* message notifying a technical error.

## Deferred Payment BusinessTransactions

Deferred payment enables the card acceptor to perform an online authorisation through an *AcceptorAuthorisationRequest* for an estimated or maximum amount. After the delivery of goods and/or provision of services, the acceptor shall send an *AcceptorCompletionAdvice* for the final amount of the BusinessTransaction.

The capture occurs either within the completion exchange or as a separate batch transfer.

This service is usually used at petrol pumps and phone booths.

### Deferred payment with capture through online completion



1. The card acceptor sends an *AcceptorAuthorisationRequest* for a maximum amount.
2. The authorisation is approved by the acquirer with an *AcceptorAuthorisationResponse* for the same or a different amount.
3. After the delivery of goods and/or the provision of the service, the acceptor sends an *AcceptorCompletionAdvice* to the acquirer for the final amount and for capture.
4. The acquirer acknowledges the completion of the BusinessTransaction with an *AcceptorCompletionAdviceResponse* sent to the acceptor.

### Deferred payment with capture through batch transfer



1. A card acceptor sends an *AcceptorAuthorisationRequest* for a maximum amount.
2. The acquirer returns an *AcceptorAuthorisationResponse* for the authorised maximum amount.
3. After the delivery of goods and/or the provision of the service, the acceptor sends an *AcceptorCompletionAdvice* to the acquirer without capture for the final amount.
4. The acquirer returns an *AcceptorCompletionAdviceResponse* to the acceptor and adjusts the card limit.
5. Later, the acceptor sends an *AcceptorBatchTransfer* to the acquirer for capture.
6. The acquirer acknowledges the request for capture with an *AcceptorBatchTransferResponse* sent to the acceptor.

## Reservation BusinessTransactions

### Introduction

The reservation service allows the card acceptor to reserve an amount for a specified period of time in order to secure sufficient funds for the subsequent payment. The card acceptor has the option to change the reserved amount and the validity period.

This service is mainly used in hotel and car rental environments.

It is a service composed of the following steps:

* Initial reservation
* Update reservation (optional and potentially with several occurrences)
* Payment after reservation.

Reservation is also called pre-authorisation (pre-authorisation, update pre-authorisation and payment completion).

1. **Initial Reservation**

An online authorisation is required and the card acceptor sends an *AcceptorAuthorisationRequest* to the acquirer.

A completion exchange without capture can take place when:

* requested by the acquirer in the *AcceptorAuthorisationResponse* or by configuration,
* the approved or authorised BusinessTransaction did not complete successfully at the acceptor side.

1. **Update Reservation**

The prerequisite for an update reservation is an approved and valid reservation. An update reservation is used to modify the reserved amount or the validity period of the reservation BusinessTransaction.

An online authorisation is required and the card acceptor must send an *AcceptorAuthorisationRequest* to the acquirer which includes a link to the initial reservation or its last update, if any.

A completion exchange without capture can take place when:

* requested by the acquirer in the *AcceptorAuthorisationResponse* or by configuration,
* the approved or authorised BusinessTransaction did not complete successfully at the acceptor side.

If the update reservation is not approved, the previous BusinessTransaction (initial reservation or last update reservation) remains valid subject to being within its validity period and for the authorised amount.

1. **Payment after Reservation**

A payment after reservation terminates a BusinessTransaction after an initial reservation or after an update reservation.

### Initial reservation and payment after reservation



1. The card acceptor performs a reservation BusinessTransaction, starting with an initial reservation by sending an *AcceptorAuthorisationRequest* to the acquirer.
2. The acquirer processes the reservation and returns the outcome of the BusinessTransaction in an *AcceptorAuthorisationResponse*.
3. After the provision of service by the card acceptor, the reservation BusinessTransaction is finalised. with the payment after reservation step by sending an *AcceptorCompletionAdvice* to the acquirer.
4. The acquirer captures financial data for clearing, and sends an *AcceptorCompletionAdviceResponse* to acknowledge the completion and the capture.

### Reservation with an update reservation



A reservation BusinessTransaction is performed through the following process:

1. An initial reservation through an *AcceptorAuthorisationRequest* sent to the acquirer.
2. The acquirer processes the reservation and sends back the outcome of the BusinessTransaction in an *AcceptorAuthorisationResponse*.

An update reservation occurs between the initial reservation and the payment to change the amount of the reservation:

1. The acceptor sends an *AcceptorAuthorisationRequest* to the acquirer with the updated amount.
2. The acquirer sends back an *AcceptorAuthorisationResponse* to the acceptor for the authorised updated amount.

The reservation BusinessTransaction is finalised with the provision of the service by the acceptor:

1. The acceptor performs a payment after reservation by sending an *AcceptorCompletionAdvice* to the acquirer.
2. The acquirer captures the financial data of the BusinessTransaction for a further clearing, and sends back an *AcceptorCompletionAdviceResponse* to acknowledge the completion and the capture of the BusinessTransaction.

### Reservation with a declined update reservation



A reservation BusinessTransaction is performed through the following process:

1. An initial reservation through an *AcceptorAuthorisationRequest* sent to the acquirer.
2. The acquirer processes the reservation and sends back the outcome of the BusinessTransaction in an *AcceptorAuthorisationResponse*.

An update reservation occurs between the initial reservation and the payment by updating the validity period of the reservation:

1. The acceptor sends an *AcceptorAuthorisationRequest* to the acquirer with the new validity period.
2. The acquirer declines the update of the validity period and sends back an *AcceptorAuthorisationResponse* to the acceptor to maintain the initial validity period authorised during the reservation.

The reservation BusinessTransaction is finalised with the provision of the service by the acceptor:

1. The acceptor performs a payment after reservation by sending an *AcceptorCompletionAdvice* to the acquirer.
2. The acquirer captures the financial data of the BusinessTransaction for a further clearing, and sends back an *AcceptorCompletionAdviceResponse* to acknowledge the completion and the capture of the BusinessTransaction.

## Currency Conversion BusinessTransactions

This is a BusinessTransaction where the cardholder can opt to use the currency of his card as the currency of payment instead of the acceptor’s currency.

### Currency Conversion before the Authorisation



1. The Acceptor sends an *AcceptorCurrencyConversionRequest* message to an Agent or an Acquirer to ask whether the card is eligible for a currency conversion.
2. The Agent or Acquirer detects whether the transaction is eligible for currency conversion and, if eligible, forwards the *AcceptorCurrencyConversionRequest* message to the Service Provider to ensure eligibility of the card and to get the conversion rate for the transaction.
3. The Service Provider answers with an *AcceptorCurrencyConversionResponse* message with the requested information.
4. The Agent or Acquirer forwards the *AcceptorCurrencyConversionResponse* message to the Acceptor with the proposed currency conversion data.
5. The Cardholder accepts the proposed currency conversion.
6. The Acceptor sends an *AcceptorAuthorisationRequest* message to the Agent or Acquirer with the accepted converted amount and all relevant information related to the conversion process.
7. The Agent or Acquirer forwards the *AcceptorAuthorisationRequest* message for authorisation.
8. The next steps follow a normal transaction flow (i.e. Completion capture, batch capture, etc.) with some additional information related to the currency conversion process.
9. The Agent or Acquirer advises the Service Provider with an *AcceptorCurrencyConversionAdvice* message that the currency conversion transaction was completed.
10. The Service Provider responses with an *AcceptorCurrencyConversionAdviceResponse* message about the completion of the transaction on his side.

### Currency Conversion during the Authorisation



1. The Acceptor sends an *AcceptorAuthorisationRequest* message to an Agent or an Acquirer.
2. The Agent or Acquirer detects whether the transaction is eligible for Currency Conversion and sends an *AcceptorCurrencyConversionRequest* message to the Service Provider to ensure the eligibility of the card and to get the conversion rate for the transaction in case of eligibility.
3. The Service Provider answers with an *AcceptorCurrencyConversionResponse* message with the requested information.
4. The Agent or Acquirer sends back an *AcceptorAuthorisationResponse* message to the Acceptor with the proposed currency conversion data when eligibility has been confirmed.
5. The Cardholder accepts the proposed currency conversion.
6. The Acceptor sends an *AcceptorAuthorisationRequest* message to the Agent or Acquirer with the accepted converted amount and all relevant information related to the conversion process.
7. The Agent or Acquirer forwards the *AcceptorAuthorisationRequest* for authorisation.
8. The next steps follow a normal transaction flow (i.e. Completion capture, batch capture, etc.) with some additional information related to the conversion process.
9. If the Currency Conversion service was accepted or not by the cardholder, the Agent or Acquirer advises the Service Provider with an *AcceptorCurrencyConversionAdvice* that the Currency Conversion transaction was completed
10. The Service Provider responses with an *AcceptorCurrencyConversionAdviceResponse* about the completion of the transaction on his side.

## Merchant presented QR Code Transactions

This is a Business Transaction mainly processed outside of the acceptor to acquirer domain. Warned of the transaction's result, the acquirer or agent relay it to the acquirer.



1. The Acquirer or an Agent sends a *TransactionAdvice* message to the Acceptor to inform him of the payment initiated by the cardholder.
2. The Acceptor responds with a *TransactionAdviceResponse*.

## Non Financial Request.

### Prior to card payment message.

Objet OLE

1. The Acceptor sends an *AcceptorNonFinancialRequest* message to a Service Provider in order to get additional information to process a payment.
2. The Service Provider provides the requested information to the Acceptor through an *AcceptorNonFinancialResponse*.
3. The Acceptor starts the payment and sends an AcceptorAuthorisationRequest to the Agent or Acquirer.
4. The Agent forwards the *AcceptorAuthorisationRequest* message to the Acquirer.
5. The Acquirer answers with an *AcceptorAuthorisationResponse*.
6. The Acceptor receives an *AcceptorAuthorisationResponse* message from the Agent or Acquirer. The next steps follow a normal transaction flow (i.e. Completion capture, batch capture, etc.).

### Prior to card payment related message.

This use case will be illustrated with an *AcceptorTransactionLogReportRequest.*

Objet OLE

1. The Acceptor sends an *AcceptorNonFinancialRequest* message to a Service Provider in order to get additional information to process a payment related task.
2. The Service Provider provides the requested information to the Acceptor through an *AcceptorNonFinancialResponse*.
3. The Acceptor sends an *AcceptorTransactionLogReportRequest* to the Agent with information received previously (e.g a Token).
4. The Agent replies with the *AcceptorTransactionLogReportResponse*.

# Examples

Examples of the use of various MessageDefinitions can be found in the Message Usage Guide "Card Payments Message Usage Guide".

# Revision Record

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Revision** | **Date** | **Author** | **Description** | **Sections affected** |
| V1 | 08/01/2021 | Nexo |  | All |
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1. Available on www.nexo-standards.org [↑](#footnote-ref-1)
2. Available on www.nexo-standards.org [↑](#footnote-ref-2)
3. Stand-in processing (STIP): a mandate given by an issuer to a party to authorise transactions on its behalf. [↑](#footnote-ref-3)
4. If required in the AcceptorDiagnosticRequest, the agent returns the availability status of the acquirer with the AcceptorDiagnosticResponse. [↑](#footnote-ref-4)