# EHI Guide (JSON version)

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For the latest technical documentation, see the Documentation Portal.

Thredd, 33 Kingsway, London, WC2B 6UF, UK

**Support Email**: occ@thredd.com

**Support Phone**: +44 (0) 203 740 9682

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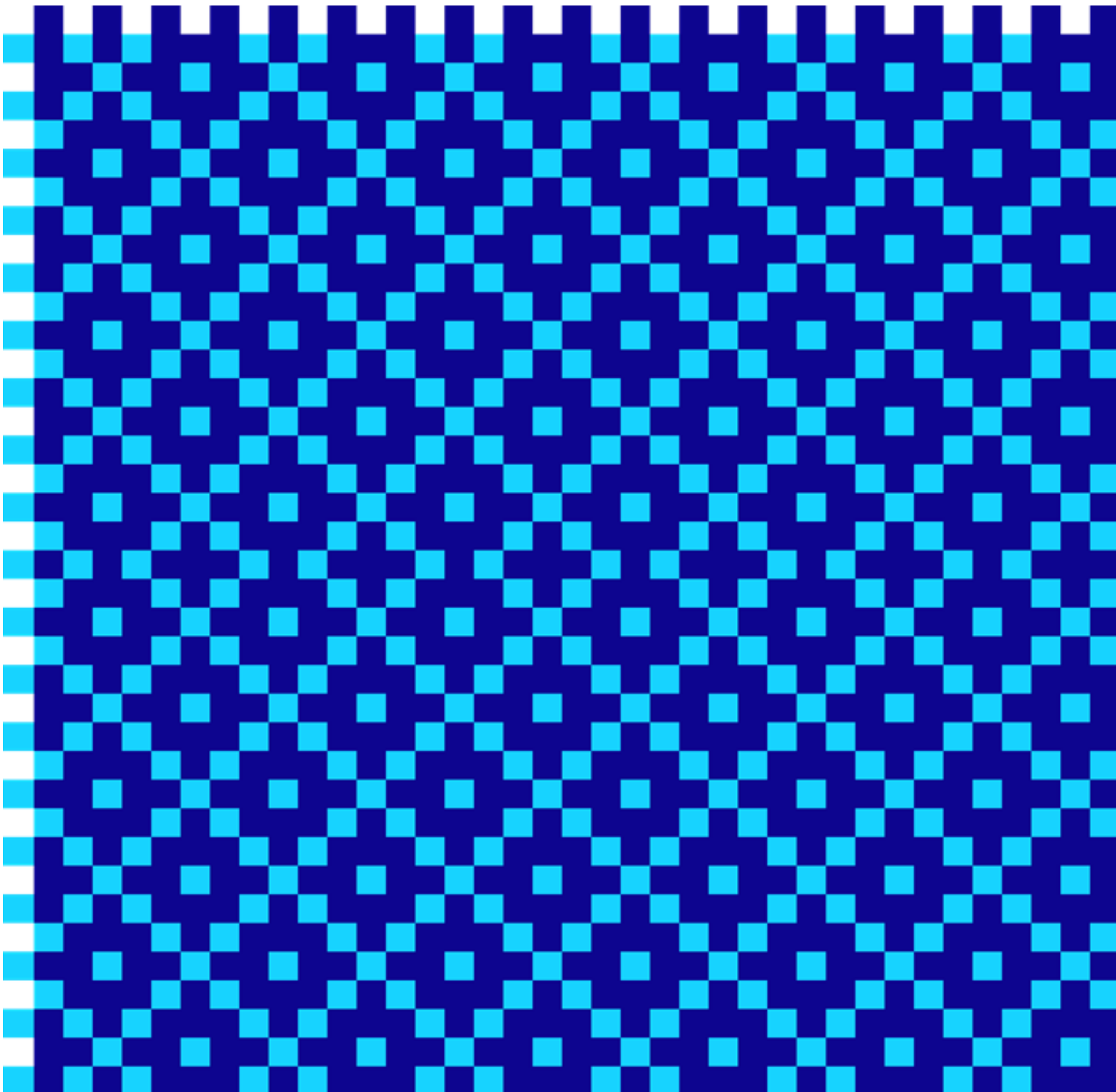

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# About this Guide

This guide describes the Thredd External Host Interface (EHI) and provides technical specifications on how to integrate your systems to EHI.

The guide provides details of how to receive and respond to EHI messages in JSON format.

## Document Scope

You should read this guide if you are using EHI for payment transaction authorisation and/or subscription to the EHI real-time payment transaction data feed.

## Target Audience

This guide is aimed at developers who need to integrate their applications to Thredd, using EHI.

## What's Changed?

If you want to find out what's changed since the previous release, see the Document History section.

For a list of EHI fields available with each of the supported EHI versions, see EHI Versions.

## How to use this Guide

If you are new to EHI and want to understand how EHI works, we suggest you start with following topics: Overview, EHI Operating Modes and typical Transaction Flow Scenarios. See also the other topics in the Getting Started section, including our Best Practise for Customer Implementations.

If you are an experienced EHI developer or want to find out how to process EHI messages, see Processing EHI Transactions.

To view message examples for different types of transactions, see Example Messages.

## Conventions used in this Guide

When reading the tables in this guide, note the following information may be provided.

| Element | Description |
|---|---|
| Usage | • **Omitted** - can be omitted (fields not included) or included with an empty value (e.g., `"Bill_Ccy": ""`)<br>• **Optional** - can be omitted (fields not included) or included with an empty value. Can be present (e.g., `"Bill_Ccy":"0"`)<br>• **Mandatory** - field must be present. For example: `"Bill_Ccy": "978"` |
| Key | The field name. Please pay particular attention to the capitalisation and spelling. Where a field name is used within text, this is formatted as in the following example: `Bill_Ccy` or `Bill_Ccy` (when used in a table note). |
| Data Types | The type of field data type supported. For details, including minimum and maximum lengths, see Data Types. |

## Related Documents

Refer to the table below for a list of other relevant documents that should be used together with this guide.

| Document | Description |
|---|---|
| Web Services Guide | Provides details of the Thredd Web Services API. |

| Document | Description |
| --- | --- |
| Cards API Documentation | For customers using the Thredd REST-based Cards API, see the Cards API Docs Website. |
| Thredd Portal Guide | Describes how to use the Thredd Portal to manage your cards and transactions. |
| Smart Client Guide | Describes how to use the legacy Thredd Smart Client desktop application to manage your account. |
| Chargeback Guide | Describes the chargeback process and options for managing chargebacks. |
| Transaction XML Reporting Guide | Describes the transaction XML report sent to Program Managers. |
| 3D Secure Guide | Describes the Thredd 3D Secure service. |
| Card Transaction System Guide | Describes how to submit card test transactions in the UAT environment. |

**Tip:** For the latest technical documentation, see the Documentation Portal.

# SECTION 1: GETTING STARTED

You should read this section if you are new to the ExternaL Host Interface (EHI) and want to understand how it works and how EHI is configured.

Topics covered in this section:

- About this Guide
- Overview
- EHI Operating Modes
- EHI Connection and Messages
- Card Payment Networks
- Transaction Flow Scenarios
- EHI Data Feeds
- Transaction Types
- EHI Version Control
- EHI Configuration Options
- Integration Steps

**Tip:** To find out how to integrate your external host system to EHI, see Processing EHI Transactions.

**Tip:** If you are upgrading your EHI version and want to understand what has changed, see Document History.

# 1.1 Overview

The External Host Interface (EHI) provides a way to exchange transactional data between the Thredd processing system and the Program Manager's externally hosted systems. All transaction data processed by Thredd is transferred to the external host system via EHI in real time. EHI provides two main functions:

- A real-time transaction notification data feed
- Payment authorisation control

**Note:** Thredd supports Visa, Mastercard and Discover networks, as well as smaller networks that use the Mastercard Network Exchange (MNE), such as STAR and Pulse[1] . EHI provides a single, unified message format, which enables your systems to receive and process messages using a single integration to Thredd. For more information, see Card Payment Networks.

## 1.1.1 Real-time Transactional Data Feed

Thredd receives global real-time card and payment-related notifications from the card schemes (Visa and Mastercard networks). These notifications are merged into a single Thredd message format which your systems can process. The real-time notifications are sent via a secure connection to the external host URL endpoint you have requested for your programme. These include notifications for: *Authorisations*, *Presentments*, *Financial* messages, *Load* and *Balance Transfers* and *Expired Cards*. For details see Transaction Types.

Your systems should respond with an acknowledgement of receipt of the message. The EHI data feed can be used to ensure you can provide your cardholders with real-time information.

For more information on the fields and attributes included in the data feeds, see EHI Data Feeds.

**Note:** In addition to the real-time data feed, Thredd also provides daily batch XML reports, via sFTP. You can use this data to support your payment reconciliations. See the *XML Transaction Reports Specifications*.

## 1.1.2 Payment Authorisation Control

The payment authorisation process is initiated when a cardholder makes a purchase with a merchant , who then seeks authorisation for the card payment via their acquirer. See the figure below.

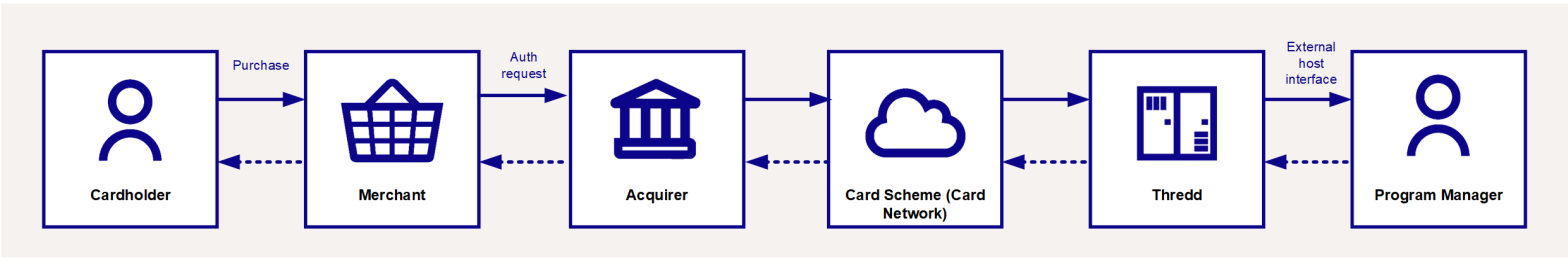


*Figure 1: Parties involved in the payment authorisation process*

When a payment authorisation request is received from the card schemes, Thredd first performs conventional transaction-related card and cardholder checks, such as EMV data, PIN, CVV2, velocity checks, fraud checks and card product checks. Your EHI setup option determines whether Thredd or your systems manage the payment authorisation. For example:

- **Gateway Processing (Mode 1)**: Your systems maintain the card balance. You make the authorisation decision and respond to Thredd to indicate whether the transaction can be approved or declined.
- **Cooperative Processing (Mode 2)**: Thredd maintains the card balance. Thredd approves or declines and sends to you the transaction. This enables you to overrule any approved decision.
- **Full Service Processing (Mode 3)**: Thredd maintains the card balance. Thredd makes the authorisation decision and provides you with the response.
- **Gateway Processing with STIP (Mode 4 )**: Your systems maintain the card balance. You perform authorisation. Thredd delivers Stand-In Processing (STIP) if your systems are unavailable.

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[1] Contact your account manager for information on Discover network availability and restrictions. Mastercard Network Exchange enables smaller networks to use Mastercard as a routing platform for payments.

Thredd provides other flexible mode options, where a combination of Thredd and external host authorisation can be used. See EHI Operating Modes. Thredd will process your response and respond to the card scheme (Mastercard or Visa). The authorisation decision process is in real time.

# 1.2 EHI Version Control

The currently supported EHI versions are 3.x, 4.x and 5.x.

Thredd creates new EHI versions for new functionality as required by scheme and regulatory changes and/or client enhancements. These are available to all customers.

We distinguish between the following versions:

- *Major versions*: add significant functionality (e.g. MDES). Examples of major version numbers are: 3.0, 4.0, 5.0, and so on.
- *Minor versions*: add minimal functionality (e.g. new field). Examples of minor version numbers are: 4.1, 4.2, 4.3, 5.1. and so on.
- *Document versions*: reflect guide update. Examples of document version numbers are: 4.0.1, 4.0.2, 4.0.3. and so on.

We send notifications out to you whenever there is a new release. To upgrade your EHI version, contact your Thredd account manager or Thredd implementation manager.

## 1.2.1 Adding New Fields

When Thredd needs to add new fields, we increase the minor version. We keep a record of which EHI version requires which fields. When you connect to the EHI, the system looks up your current EHI version and sends you only the fields that are associated with that version.

> **Note:** If we add new values to an existing field, you receive the new values (that is, the EHI version protects which fields you receive, not the values inside existing fields.)

For a list of EHI fields available with each of the supported EHI versions, see EHI Versions.

## 1.2.2 Upgrading your EHI Version

Thredd recommends that you upgrade your EHI version to one of the currently supported versions. Versions 3 onwards provide access to ThreddNet, with enhanced EHI features such as load balancing, a streamlined service architecture, support for multiple external host endpoints, faster response times and reduced connection timeouts.

### Decommissioning of old EHI Versions

If you are on an older version of EHI, prior to 3.x, we recommend you upgrade. Older versions that are no longer supported may be decommissioned in the future.

## 1.2.3 Best Practise for Customer Implementations

- Regularly upgrade to ensure you are on a supported EHI version. You should develop EHI integration with an awareness that older, unsupported versions are no longer being tested.
- Ignore all fields you are not expecting, and do not treat this as an error. This will mean that you can upgrade to a new EHI version, without making any changes on your side.
- In order to use any new EHI fields and functionality you may need to update your systems. For details of new fields that have been added to a release, see EHI Versions. For details of additional changes, see the Documentation History.

# 1.3 EHI Operating Modes

For authorisation types of transactions, the external host interface can operate in one of four supported modes. See the table below:

| Setup type | Mode | Ledger / Balance | Transaction Processing | Authorisation Decisioning | Authorisation Override | Thredd STIP | Real Time Event Messaging |
|---|---|---|---|---|---|---|---|
| Gateway Processing | 1 | External Host | Thredd | External Host | N/A | No | Included |
| Cooperative Processing | 2 | Thredd | Thredd / External Host | External Host | External Host | Optional | Included |
| Full Service Processing | 3 | Thredd | Thredd | Thredd | N/A | N/A | Optional (webhooks included) |
| Gateway Processing with STIP | 4 | External Host | Thredd | External Host | N/A | Yes | Included |

Each mode is described in more detail below.

## 1.3.1 Gateway Processing (Mode 1) - External Host Maintains Balances

You manage the cardholder balances and approve or decline a payment authorisation request.

Your system should always calculate the total balance impact of the transaction, for example billing amount and fees, when determining whether to approve the transaction. (See Calculating the Total Cost.)

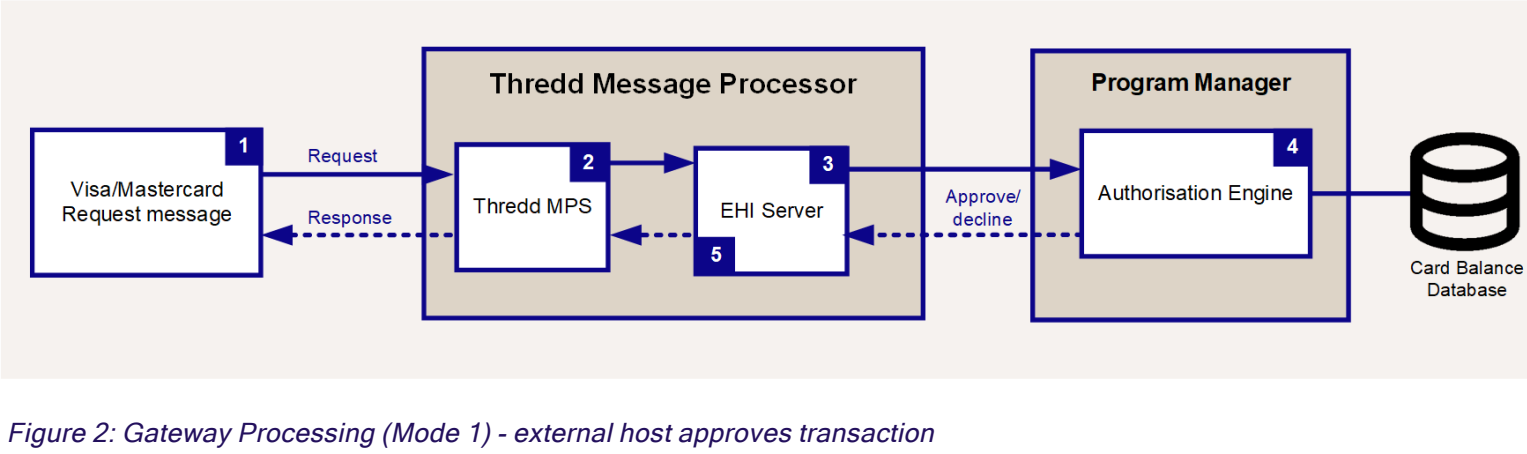


*Figure 2: Gateway Processing (Mode 1) - external host approves transaction*

1. The card scheme (Visa or Mastercard) sends an authorisation request.
2. The Thredd Message Processing System (MPS) performs checks such as authentication, validation and fraud protection[1], as well as checks based on your product configuration. (This results in a decline if the checks fail. In this case Thredd sends an advice only to the Program Manager and no authorisation decision is required.)
3. The EHI server sends the request to the external host URL endpoint configured for the Program Manager.
4. The external host (i.e., Program Manager's systems) then decides whether to approve or decline the transaction, by checking details of the balance held on the card.
5. The EHI server waits for a response from the external host. The response must be received within the allowed time period (see EHI Configuration Options) or the transaction is declined. When received, this is forwarded to the card scheme.

[1]Fraud protection is based on whether you are using Thredd's real-time Fraud Transaction Monitoring service. If a rule is triggered it can decline the card transaction.

# 1.3.2 Cooperative Processing (Mode 2) - Thredd Maintains Balances

Thredd performs all types of checks (card, cardholder and balance). But the external host can overrule the Thredd decision and advise to decline the transaction.

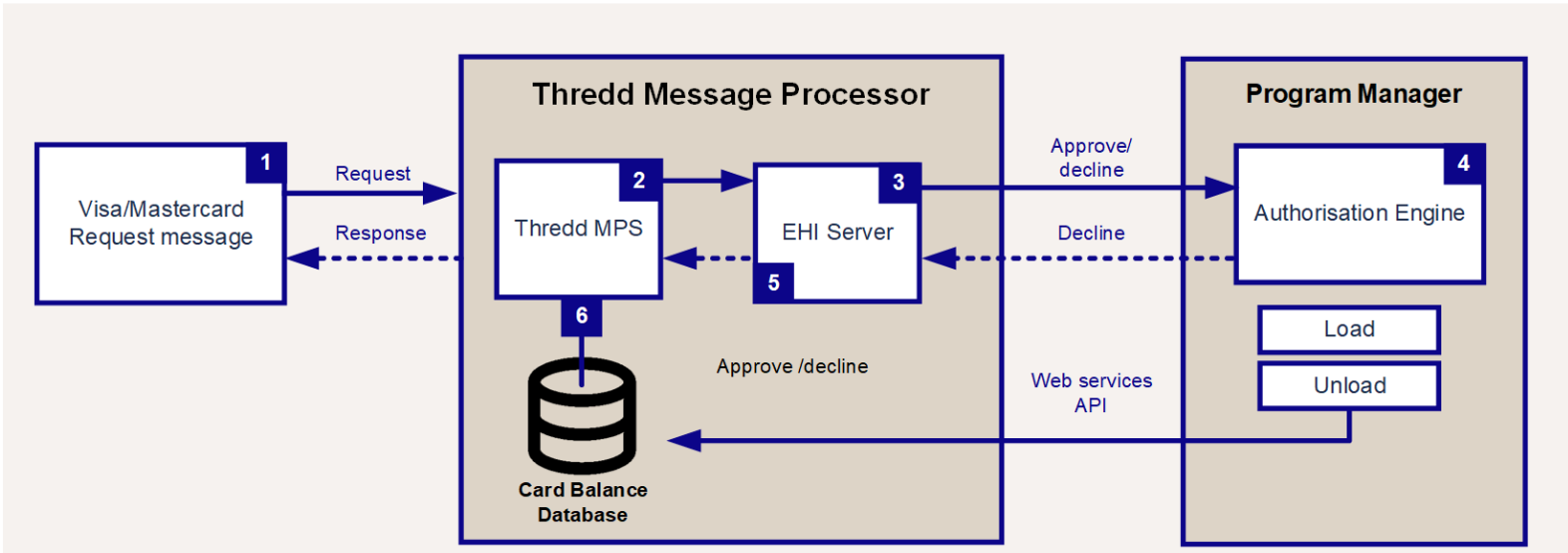


*Figure 3: Cooperative Processing (Mode 2) - Thredd approves in first instance*

1. The card scheme (Visa or Mastercard) sends an authorisation request.
2. The Thredd Message Processing System (MPS) performs checks such as authentication, validation and fraud protection, as well as checks based on your product configuration.
3. Thredd decides whether to approve or decline the transaction, based on the balance details held by Thredd.
4. The EHI server sends the Thredd response (approve or decline) to the external host URL endpoint configured for the Program Manager.
    - If declined, you can overrule the Thredd decision only for a balance decline (where *Approve with Load* is enabled)[2].
    - If approved, you can decide whether to overrule the Thredd decision and decline the transaction.
    - You can approve for a partial amount if the transaction satisfies the conditions for partial amount approval.
5. The approve or decline response is sent to the card scheme.

Since Thredd maintains the balance, we update the balance as part of the payment transaction life-cycle.

**Note:** In Mode 2, you can override a Thredd decline code of 51 (Insufficient Funds) with another decline code by passing this in the `ResponseStatus` field of your EHI response. Adding a different decline code is useful for passing to a cardholder a more specific decline reason. However, note that if the Thredd response status is not 51 (Insufficient Funds), then any response status from your end is ignored and the original Thredd response status (as provided in the `Status_Code` field) is preserved.

## Stand In

In Mode 2 EHI supports authorisation *Stand-In* where Thredd can fully approve transactions at times where there is no connection to the external host. If *Stand In* is enabled and there is no response from the external host during the allocated time-out period, Thredd approves or declines the transaction, based on Thredd data (such as available balance, card usage rules and risk settings). 'On behalf' approved transactions have the `Authorised by Thredd` flag set to '*Yes*' and when delivered to the external host, Thredd only requires an acknowledgement response.

## Approval with Load

Your external host systems can approve a card transaction with a simultaneous instruction to Thredd for loading an amount to the card (in order to update the Thredd-maintained card balance ledger).
If this is required and the product is enabled with the *Approval with Load* option, the response message of the approved transaction must contain the '*0A*' response code and the amount to load. The load is done before the transaction amount is debited from the current balance.

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[2]In mode 2 - Approval with Load you can override a balance decline, where Thredd declined because the Thredd held balance indicated insufficient available funds to cover the authorisation; in this case, you should follow up the override by loading the amount to the card, to update the Thredd held balance.

Your external host systems should take into account the total balance impact of the transaction (billing amount, fees and padding) when determining whether to approve the transaction. (See Calculating the Total Cost.)

**Note:** Multi-currency FX cards do not support *Approval with load*.

**Note:** For clients using Master Virtual Cards (MVCs). MVC setup is restricted to the *Separate Balance* option, which supports loading funds to a single MVC card during the authorisation approval and load process. A *Shared Balance* setup, where funds are automatically transferred between primary and secondary cards, is not supported. For more information, see the Master Virtual Cards Guide: MVC Setup Options.

**Note:** The Card Schemes (Mastercard and Visa) must approve any *Approve with Load* programmes.

## 1.3.3 Full Service Processing (Mode 3) - Read-only Data Subscription

**Note:** Full Service Processing is available for customers who have the Real Time Event Messaging add on.

Thredd manages the card transaction request and approves or declines. The external host interface is used only as a transaction data feed from the Thredd system to the Program Manager's system.

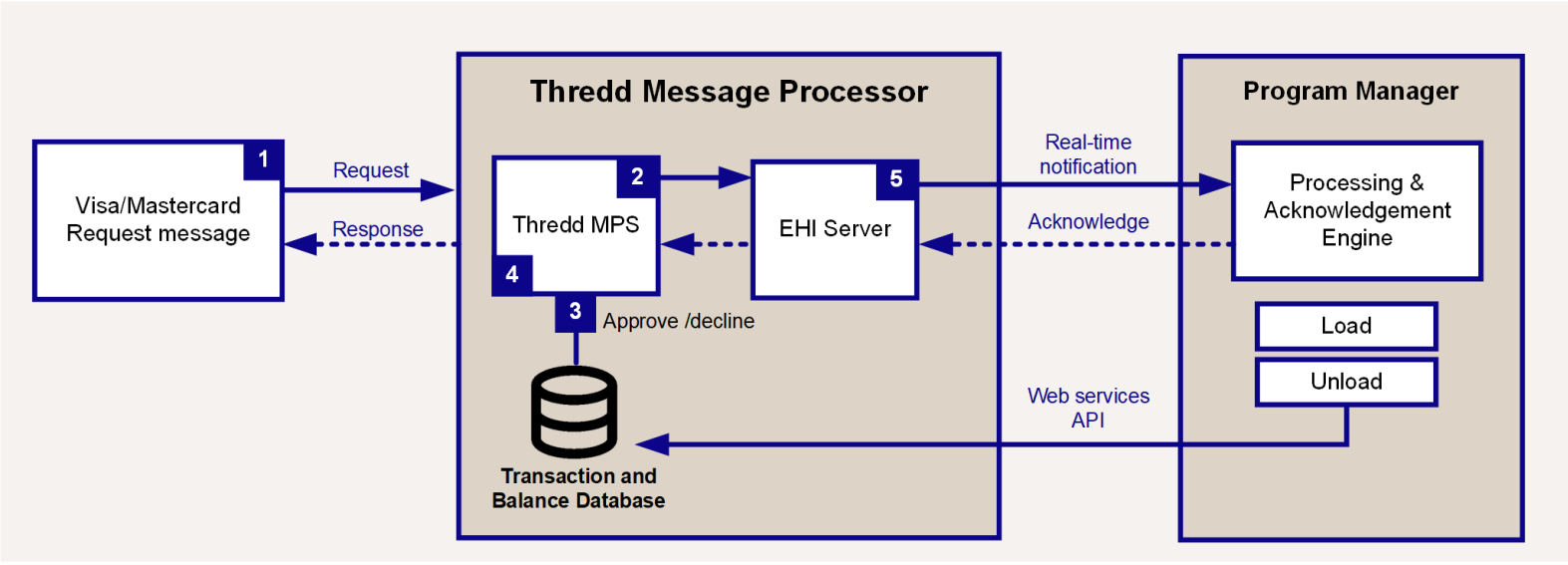


*Figure 4: Full Service Processing (Mode 3) - Thredd approves and external host receives data subscription service only*

1. The card scheme (Visa or Mastercard) sends an authorisation request.
2. The Thredd Message Processing System (MPS) performs checks such as authentication, validation and fraud protection, as well as checks based on your product configuration.
3. Thredd decides whether to approve or decline the transaction, based on the balance details held by Thredd. Thredd updates the balance.
4. The approve or decline response is sent to the card scheme.
5. The EHI server sends an advice with the transaction outcome, including the latest card balance, to the external host URL endpoint configured for the Program Manager.

## 1.3.4 Gateway Processing with STIP (Mode 4) – External Host Maintains Balance (with Thredd Stand-in)

EHI Mode 4 is the same as EHI Mode 1 (where you approve the transaction), except that the external host can maintain the Thredd stand-in balances. If the external host cannot be contacted, then Thredd approves or declines using the current Thredd stand-in balance. The Thredd stand-in balances can be updated by any of the below options:

- EHI response messages (see `Update_Balance` field).
- Balance Update Web Service (see `ws_BalanceUpdate` in the *Web Services Guide*).
- STIP Balance Update endpoint (see the API Hub documentation).

In EHI Mode 4, all transactions (authorisations and financials) update the Thredd stand-in balance.

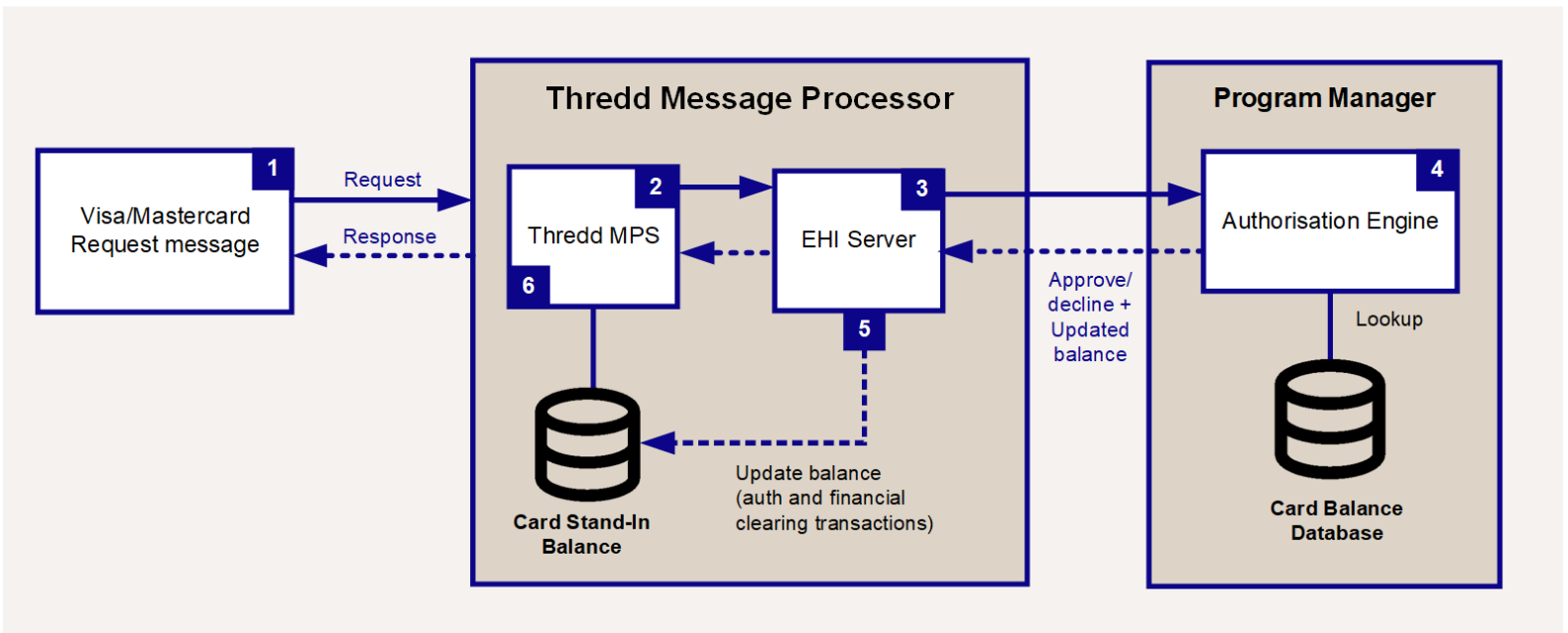


*Figure 5: Gateway Processing with STIP (Mode 4) - External host approves, but Thredd can stand in if external host is not available*

1. The card scheme (Visa or Mastercard) sends an authorisation request.
2. The Thredd Message Processing System (MPS) performs checks such as authentication, validation and fraud protection, as well as checks based on your product configuration. This result in a decline if the checks fail. In this case Thredd send an advice only to the Program Manager and no authorisation decision is required.
3. The EHI server sends the card transaction request to the external host URL endpoint configured for the Program Manager.
4. The external host (or the Program Manager's systems) decides whether to approve or decline the transaction, by checking details of the balance held on the card.
5. The EHI server waits for a response from the external host. If EHI receives an approve or decline response, the response is returned to the card scheme.
6. If no response is received, then Thredd does stand-in authorisation on behalf of the Program Manager and sends this to the card scheme.

# 1.4 EHI Connection and Messages

The External Host Interface messaging system is based on RESTful principles. The API accepts JSON-encoded request bodies and returns JSON-encoded responses. The API uses standard HTTP Response codes and verbs. All requests to the API must be made over HTTPS.

See the figure below, illustrating the Thredd system components and typical message flow.

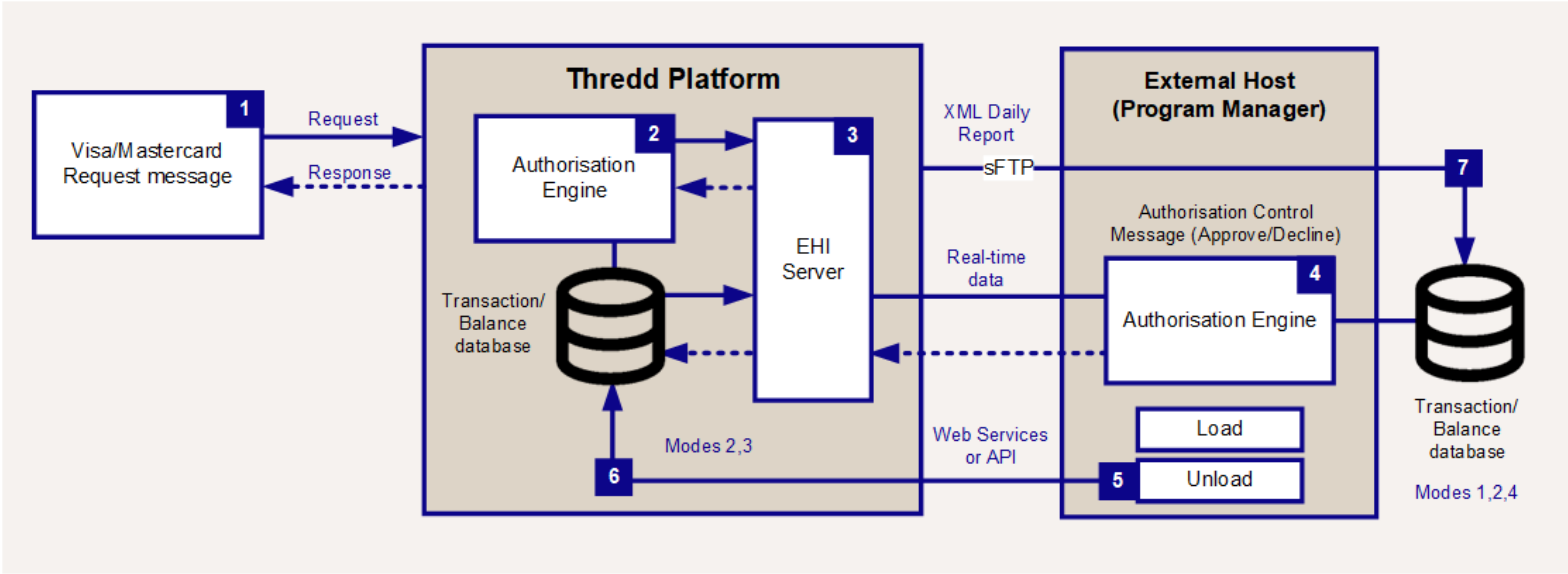


*Figure 6: Thredd System Components and External Host Interface Message Flow*

Below is a generic summary of this process, which may differ depending on your EHI mode. For more information, see EHI Operating Modes.

1. The card scheme (Visa or Mastercard) sends real-time payment authorisation requests, as well as batch clearing file and financial transaction notifications to Thredd.
2. The Thredd Message Processing System (MPS) performs authentication, validation, velocity controls, fraud protection and product configuration checks.
3. The EHI server sends the card transaction requests and any financial notifications to the external host URL endpoint configured for your programme.
4. Depending on your EHI mode, Thredd may be involved in the card transaction approval decision. For example, in EHI mode 1 (Gateway Processing), mode 4 (Gateway Processing with STIP) the external host (i.e., Program Manager's systems) decides whether to approve or decline the transaction, by checking details of the balance held on the card. In EHI mode 3 (Full Service Processing) Thredd makes the approval decision.
5. The EHI server waits for an approve or decline response or a financial message acknowledgement from the external host. When received, this is processed. Card transaction decline or approve responses are forwarded to the card scheme.
6. Where Thredd maintains the balance on the card, the Program Manager can perform load and unload transactions via the Thredd web services, to update the balance (for details, refer to the *Web Services Guide*).
7. In addition to the real-time data feed, Thredd also provides a daily batch XML transactional data feed via sFTP. You can use this data to support your payment reconciliation process.

**Note:** Due to the real-time nature of authorisation or online financial requests, in EHI modes where your systems need to process the request, they must respond within the configured time limit for a request (see EHI Configuration Options) or the transaction will be declined.

## 1.4.1 Types of EHI Messages

EHI sends the following types of messages to the external host (Program Manager's systems):

- **Real-time authorisation requests** - which require an immediate approve or decline decision and response. If not responded to in time, Thredd or the Card Scheme may provide Stand-In Processing (STIP)
- **Real-time reversal requests** - which require an immediate acknowledgement
- **Real-time advices** - which require an immediate acknowledgement (e.g, authorisation advices)
- **Financial notifications** - such as presentments and chargebacks. These require an acknowledgement. An additional response status is optional.
- **Cut off messages** (optional) - batch report showing all messages you should have received in a defined period. See Cut Off Messages.

For most message types, EHI waits for an acknowledgement from the external host to confirm that the message has been received. If no response is received, EHI resends the message. See Processing EHI Transactions.

For details of the fields included in each type of transaction, see EHI Data Feeds.

## 1.4.2 Transmission Control Protocol (TCP) Connection

For each message sent via the EHI, the following occurs:

1. The EHI makes a TCP connection to the external host URL configured for your program. Thredd is always the TCP client, the external host (your system) is always the TCP server.
2. Using the HTTP POST method, EHI sends an HTTP message to this TCP connection with the SOAP XML message as the message body. The message body is XML encoded to the UTF-8 format. See https://www.w3.org/TR/REC-xml for specifications.
3. The response from your system must be a valid HTTP response with the HTTP response body containing the valid XML response data.
4. In the production environment EHI uses Thredd's Trust Framework, which leverages the **Mutual Transport Layer** (**mTLS**) protocol. .

## 1.4.3 mTLS Connection

EHI uses Thredd's Secure Connectivity Framework, which leverages the **Mutual Transport Layer** (**mTLS**) protocol. You will need to set up your mTLS termination point to validate the mTLS Transport Certificates. For more information, see the Connecting to Thredd Guide.

# 1.5 Card Payment Networks

Thredd supports cards enabled for use on Visa, Mastercard and Discover networks, as well as smaller networks that use the Mastercard Network Exchange (MNE), such as STAR and Pulse[1]. These global card payment networks are operated by Card Scheme organisations, which regulate and manage activity on their networks. The payment networks are open to financial institutions and processors, and allow cardholders to pay with Scheme-issued cards and merchants to accept card payments in their businesses worldwide. Thredd operates on the card Issuing side, acting as the gateway between the Card Schemes and the card issuers/Program Managers.

The payment networks are highly standardised and strictly regulated, so interested parties must be certified to be able to participate. Thredd is a certified *Issuer Processor*, which enables us to process various types of card payment transactions from the payment networks we support. Thredd transforms messages from payment networks and other sources into a simplified and unique internal format, available via EHI. Integrating to EHI enables you receive all Thredd supported payment network messages.

EHI content is evolving with the changes introduced by the Card Schemes via periodical releases and ad-hoc announcements. Thredd provides you with notifications of these changes and new EHI version releases.

## 1.5.1 Card Payment (Network) Transactions

In regions which support the Dual Message System (e.g., UK, Europe and Australia) there are two main steps in a typical card payment transaction:

### Step 1: Request for Authorisation

The card scheme sends an authorisation request to Thredd. Thredd receives the authorisation request via the network and responds in realtime after checks done by Thredd and your systems. The result may be approval or decline.

- An approved authorisation does not move any funds, but only blocks/unblocks the authorised amount. Approved authorisations are normally cleared later by financial message to finalise the transaction. If the financial message does not arrive in a defined period, the block is removed.
- Some messages such as balance enquiries are also Authorisation messages, but there are no complementary financial messages for those messages.

### Step 2: Financial/Clearing Message

The card scheme sends a financial (or clearing) message to Thredd. Most common financial messages are presentments, which mostly match with an authorisation received previously. Financial messages require a change to the actual balance of the cardholder account. If there is a linked authorisation, financial message must clear the blocking applied for the matching authorisation.

Note that the authorisation amount and financial amount may differ, and blocked amount actual balance mechanisms should ideally be managed independently.

In the life-cycle of a transaction, there may be several financial messages. These messages include chargebacks for disputed financial transactions and reversals of presentments and chargebacks. The figure below lists possible message types and their phases and orders in a transaction life cycle.

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1 Please contact your account manager for information on Discover network availability and restrictions. Mastercard Network Exchange enables smaller networks to use Mastercard as a routing platform for payments.

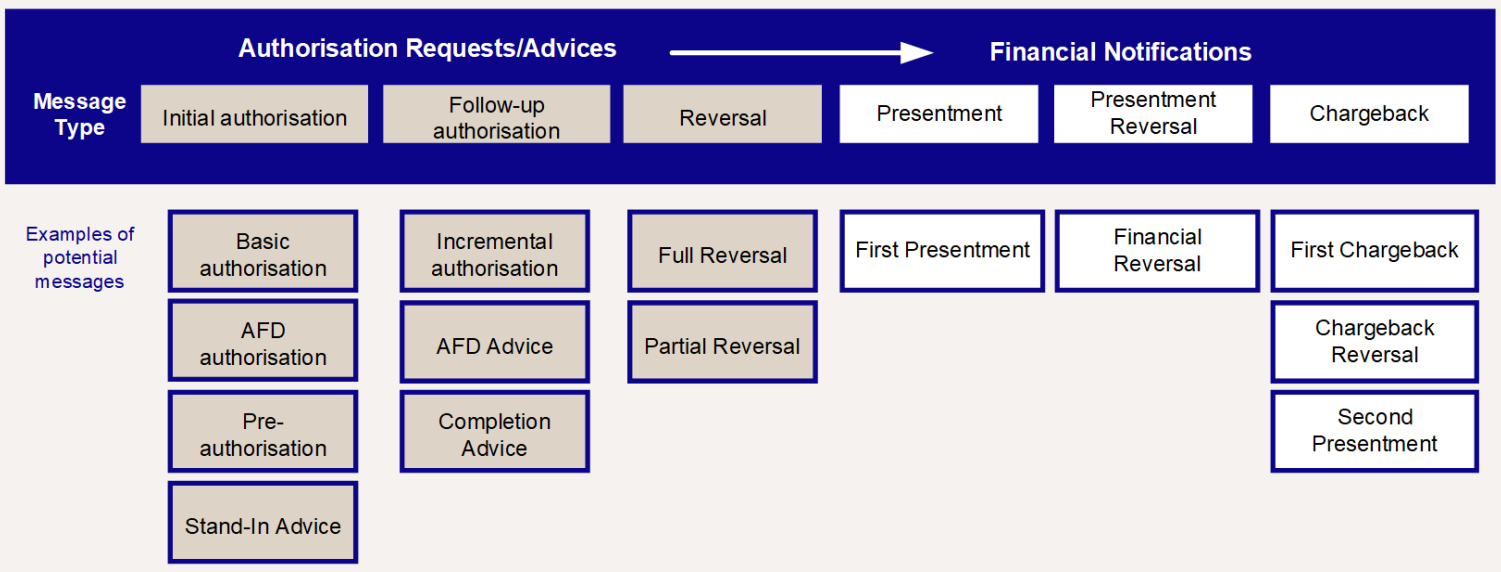


*Figure 7: Examples of typical authorisation and financial messages - Dual Message Systems*

Most transaction life-cycles consist of a single authorisation and first presentment. However, there are more complex combinations that needs to be supported by EHI. For more information on the transaction types and the steps in processing, see Transaction Flow Scenarios - Dual Message Systems.

## 1.5.2 Non-Card-Network Transactions

These are transactions that are not originated via the payment networks we support, but by another means, such as Web Services and BACS, CHAPS or Faster Payments. Examples include: load of funds into an account, payments to an account via Faster Payments or card expiry notifications.

# 1.6 Transaction Flow Scenarios

This section provides examples of typical transaction flows with Message Transaction IDs (MTIDs) for Dual Message systems. This provides a flavour of the type of messages you can expect to receive from the Thredd system.

## 1.6.1 Authorisations

Authorisation is the stage in a transaction life-cycle where a merchant requests approval for a card payment amount. If the authorisation is approved, the amount is ring-fenced on the card. Typically, the merchant then has 7-10 days to request the transfer of the authorised funds (although this can be up to 28 days for certain merchant category codes). For additional information see What are Authorisations and how do they work?

### Authorisation with Approve

The following scenario illustrates a typical approve journey for EHI modes 1, 2 and 4 (Gateway and Cooperative Processing).

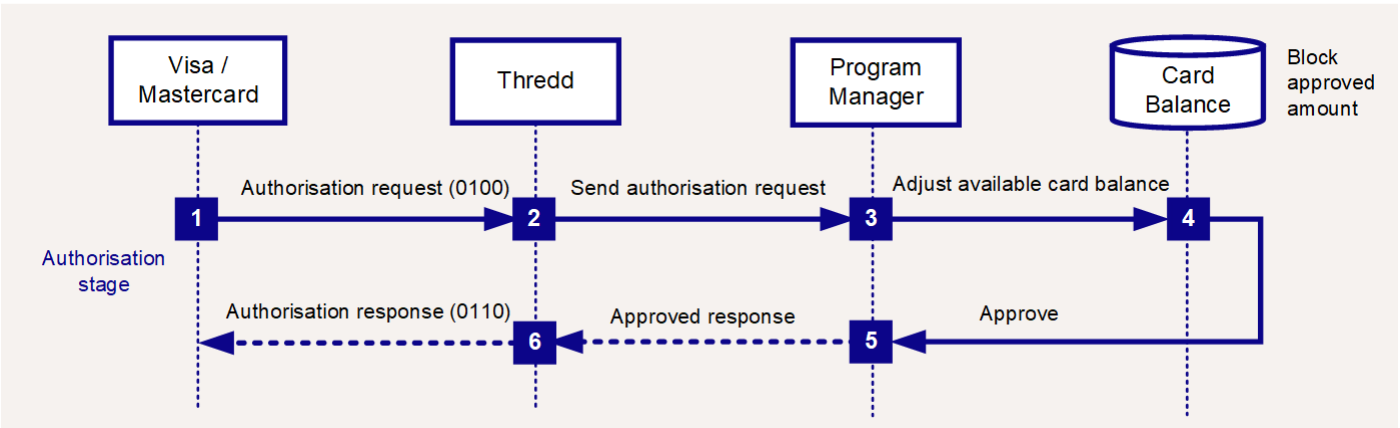


*Figure 8: Authorisation Flow - Approve*

1. The scheme sends an 0100 authorisation request to Thredd.
2. Thredd carries out validation checks and sends the request to the external host (Program Manager).
3. The Program Manager approves the request.
4. The Program Manager blocks the approved amount (including fees) on the card and reduces the available balance.
5. The Program Manager returns an approved response:

   *"Responsestatus": "00"* and *"Acknowledgement": "1"*.*
6. Thredd responds to the scheme with an 0110 message (with response status 00 indicating an approval).

* Responsestatus = 00 indicates the request is approved; Acknowledgement = 1 informs Thredd that the message was received and Thredd does not need to resend.

### Partial Amount Approval

Partial amount approval is allowed for authorisation requests that have a response code status of 10 and where Thredd_POS_Capability position 1 (partial approval support indicator) is 1. This feature is available for all EHI modes. You can use the Bill_Amt_Approved field to return the partially approved amount. See GetTransaction Message Fields: Bill_Amt_Approved.

### Authorisation Resulting in a Decline

The following scenario illustrates a typical decline journey for EHI modes 1, 2 and 4 (Gateway and Cooperative Processing).

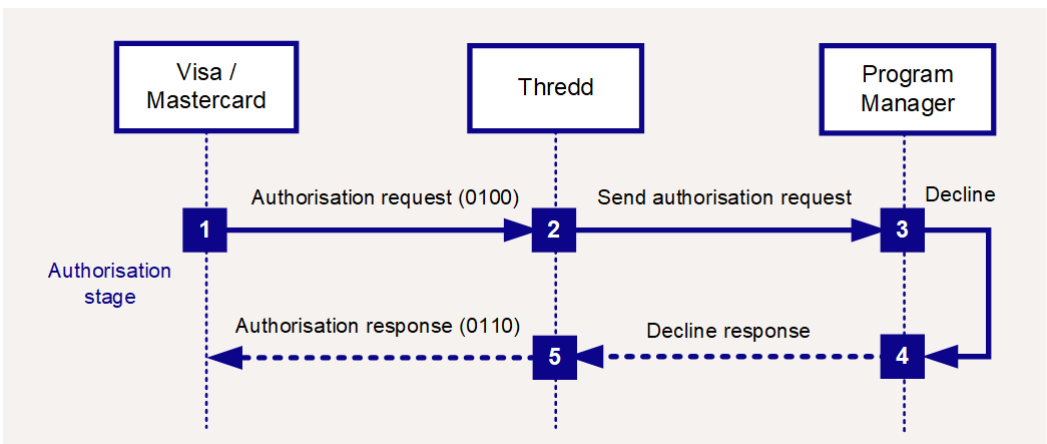


*Figure 9: Authorisation Flow - Decline*

1. The scheme sends an 0100 authorisation request to Thredd.
2. Thredd carries out validation checks and sends the request to the external host (Program Manager).
3. The Program Manager declines the request.
4. The Program Manager returns a declined response, for example:

   *"Responsestatus": "05" and "Acknowledgement": "1".**
5. Thredd responds to the scheme with an 0110 message (with an appropriate response status, e.g. 05, indicating a decline).

* Responsestatus = 05 indicates Do not honour. You can return any suitable decline response code. See Response Codes.

Acknowledgement = 1 informs Thredd that the message was received and Thredd does not need to resend.

## Authorisation Reversal (network)

This type of transaction occurs when the merchant, acquirer or card scheme requests a reversal of the original authorisation. This should result in the amount previously ring-fenced on the card being unblocked.

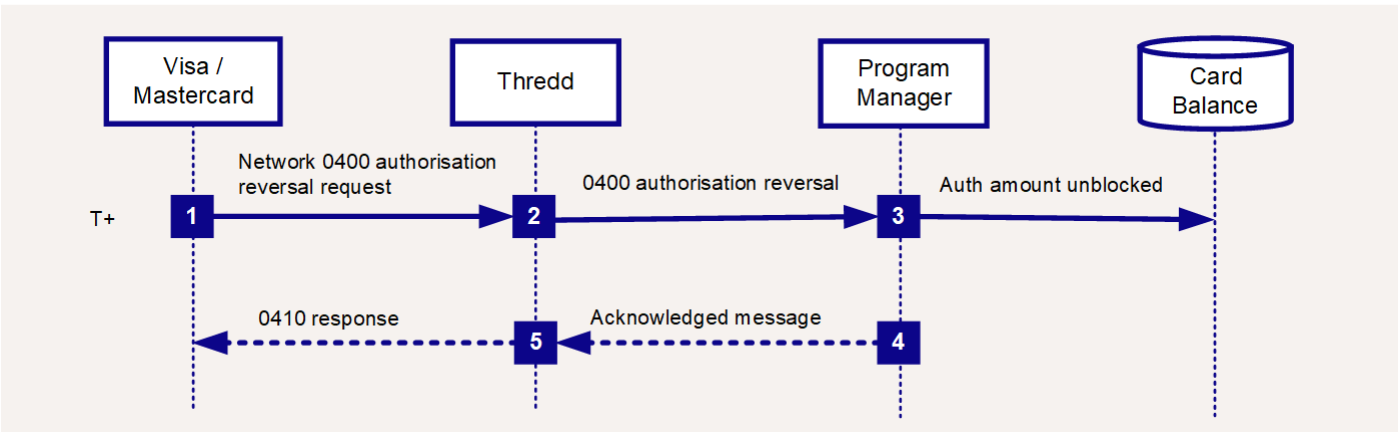


*Figure 10: Authorisation Reversal Flow*

1. The scheme sends an 0400 authorisation reversal request to Thredd.
2. Thredd sends the request to the external host (Program Manager).
3. Thredd responds to the scheme with an 0410 message.
4. The Program Manager matches the reversal message to the original authorisation message. See Transaction Matching.
   The Program Manager unblocks the authorised amount and updates the cardholder's available balance.
5. The Program Manager acknowledges the message: *acknowledgement = 1.*

## Authorisation Reversal (non-network)

If no presentment (request to settle the amount previously authorised) is received within the Thredd hanging filter period, Thredd automatically reverses the authorisation.

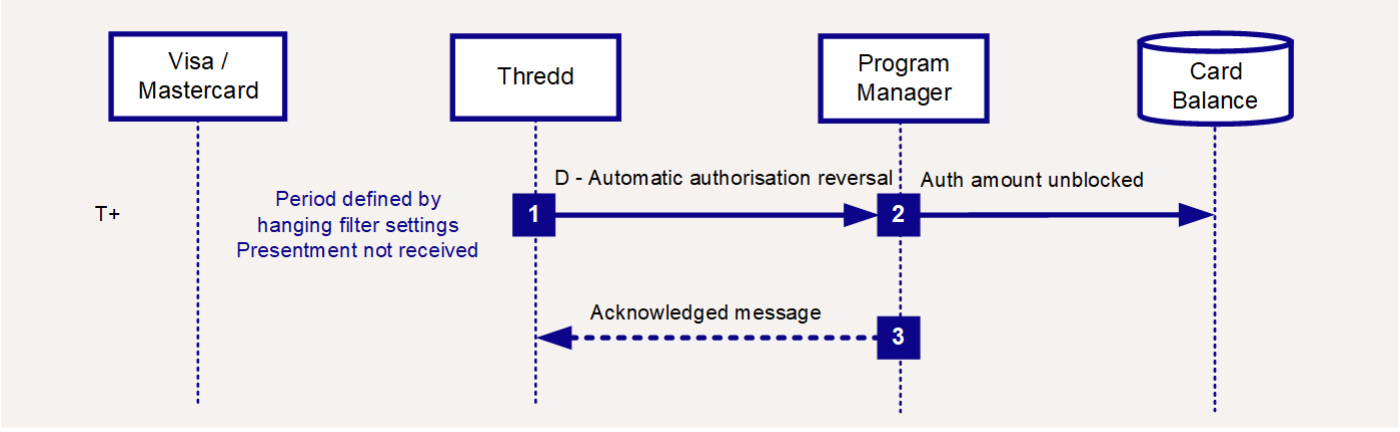


*Figure 11: Authorisation Reversal Flow*

1. If no presentment is received within the time period set by the hanging filter, EHI sends a financial reversal message to the external host (Program Manager).
2. The Program Manager matches the reversal message to the original authorisation. See Transaction Matching.
3. The Program Manager unblocks the authorised amount and updates the cardholder's available balance.
4. The Program Manager acknowledges the message: *acknowledgement = 1.*

## Incremental Authorisation

An incremental authorisation is an additional authorisation, following a previous transaction authorisation, which is used to request an additional amount for the same product or service purchased by the cardholder. See What is an incremental authorisation and how do I identify it?

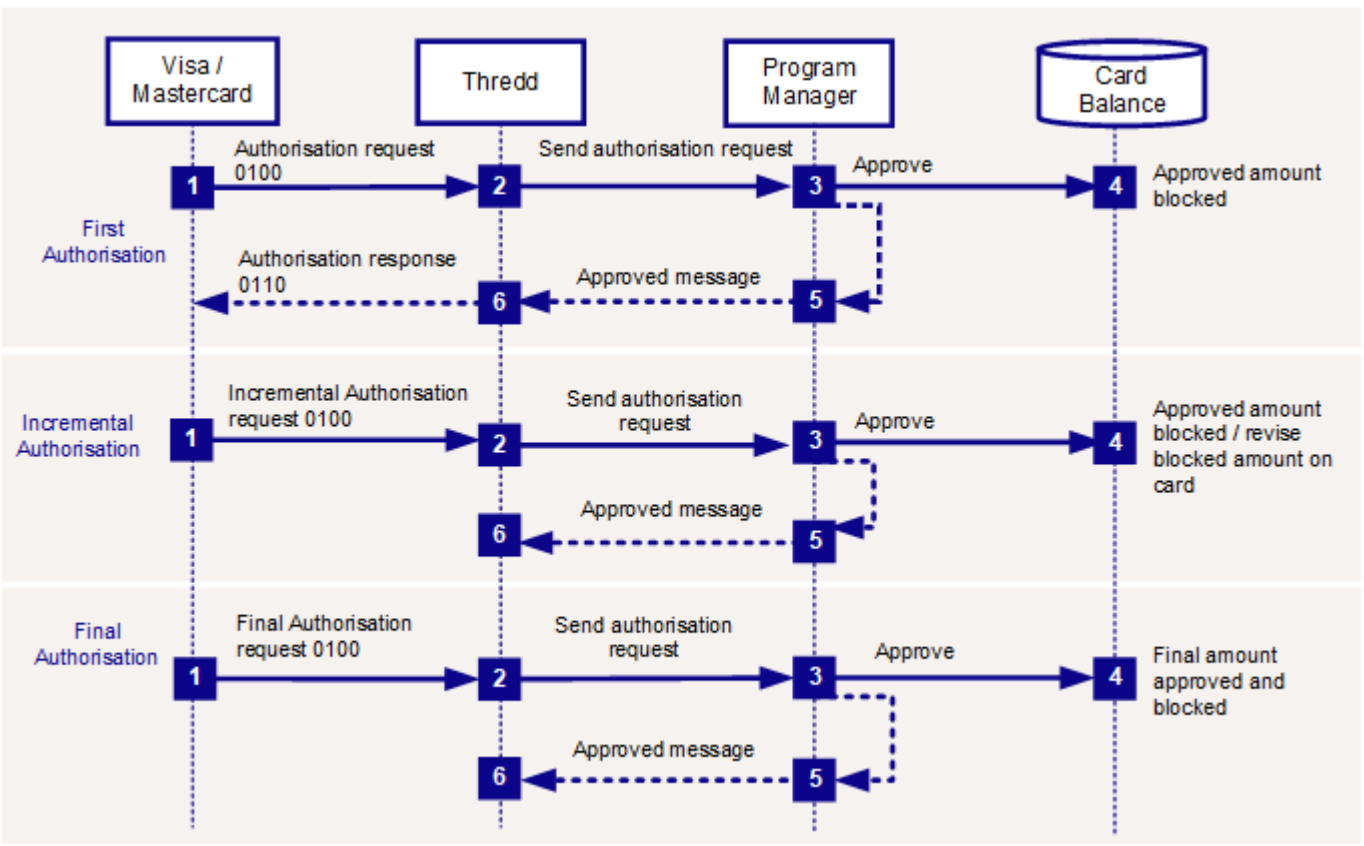


*Figure 12: Incremental Authorisation Reversal Flow*

- A request for the first authorisation is received, and follows the steps of a normal authorisation. See Authorisation with Approve.
- When you receive the incremental authorisation (`auth_type` = P or 0), where you maintain the card balance and approve, you should block the additional amount.
- If you receive the final authorisation (`auth_type` = F), where you maintain the card balance and approve, you should revise the amount blocked on the card based on the final amount.

You will receive a single financial presentment, which includes the sum of all incremental authorisations.

## AFD Authorisations

Automated Fuel Dispensers (AFD) are unattended terminals at fuel stations that allow cardholders to purchase fuel without requiring an attendant. Authorisations from AFDs work slightly differently to other types of authorisations. The initial amount authorised may be followed by an authorisation completion advice for either a higher or a lower amount. In EHI modes where you maintain the card balance, you should return an authorisation decision (approve or decline) and then update the blocked amount on the card, to reflect the new authorised amount.

**Note:** AFD transactions (MCC 5542) are blocked by default on the Thredd platform. This will result in an automatic decline for AFD authorisations. To enable AFD transactions, contact your account manager or implementation manager.

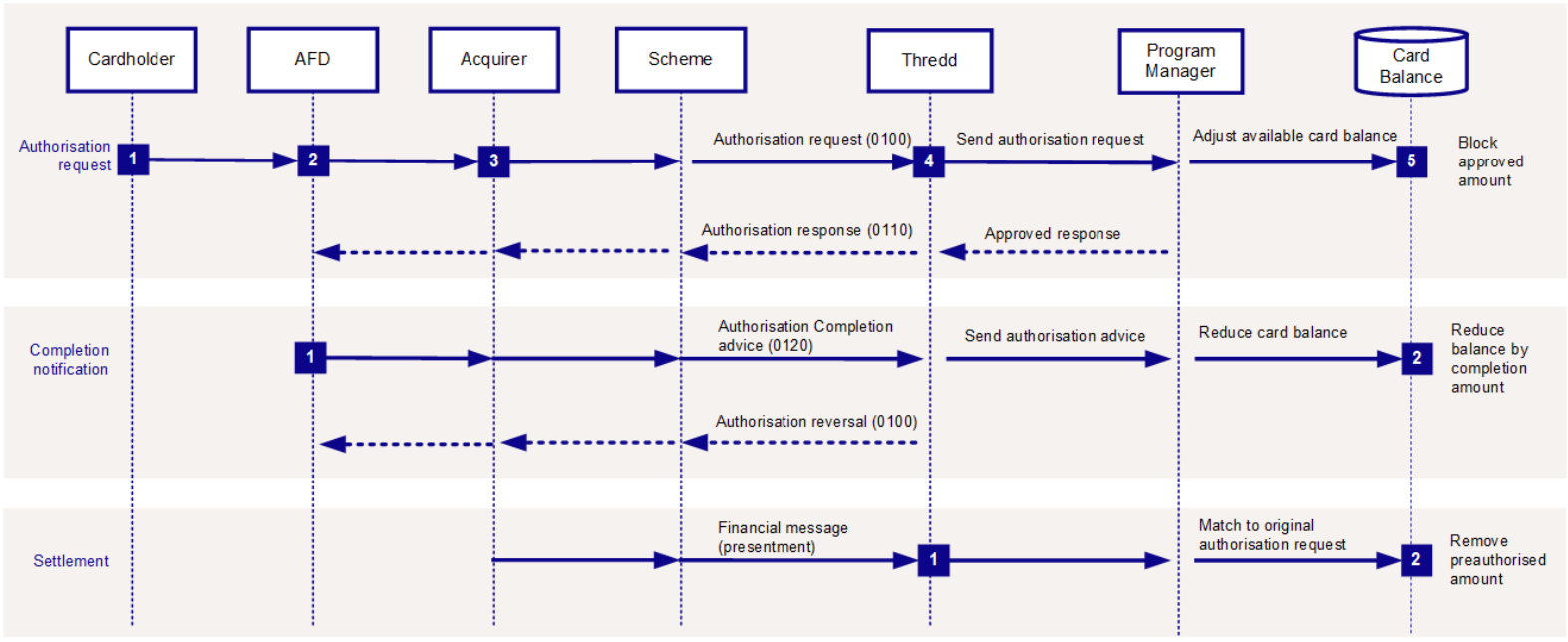


*Figure 13: AFD Authorisation and Settlement Flow*

**Note:** The general AFD process described in this section may differ, depending on the fuel dispenser.

## Scenario 1: Maximum preauthorisation example

**Step 1: Authorisation Request**

1. The cardholder inserts or taps their card at an Automated Fuel Dispenser (AFD).
2. The AFD requests either a pre-set fixed preauthorisation amount or a maximum preauthorisation amount (e.g., 100.00 GBP).
3. The Acquirer sends an authorisation request message. The message may contain a partial authorisation indicator, which allows a partial approval response from the issuer to be returned.
4. Thredd or the Program Manager approves or declines the preauthorisation amount. An approval will either be for the full requested amount or, if the issuer supports partial authorisation, an amount based on the cardholder's available funds if less than the amount of the authorisation request.
5. If approved, then Thredd or the Program Manager blocks the approved amount on the card and reduces the available balance (e.g., by 100 GBP).

**Step 2: Authorisation Confirmation Advice**

1. The fuel is dispensed and costs 90 GBP. The AFD confirms the amount with the Acquirer. The Acquirer sends a completion advice for 90 GBP to Thredd.
2. Thredd generates a partial authorisation reversal for 10 GBP (`Txn_Type` = D, Credit) linked to the original preauthorisation (reducing the full authorised amount from 100 GBP to 90 GBP).

**Step 3: Settlement and Reconciliation**

1. Thredd or the Program Manager receives the clearing file and matches the financial transaction (presentment) to the original authorisation.
2. Thredd or the Program Manager removes the authorisation amount of 90 GBP. The card now has an authorisation for 90 GBP and a financial message of 90 GBP.

## Scenario 2: Nominal preauthorisation example

**Step 1: Authorisation Request**

1. The cardholder inserts or taps their card at an Automated Fuel Dispenser (AFD).
2. The AFD requests an authorisation for a nominal amount (e.g., 1.00 USD).
3. The Acquirer sends a preauthorisation request message, indicating that the actual maximum amount expected is higher (e.g., 100 USD chargeback protection amount).
4. Thredd or the Program Manager approves or declines the preauthorisation, treating the nominal amount request as a request for the maximum predetermined amount (e.g., 100 USD) to hold funds for the transaction, even though the request amount is 1 USD. Thredd/The Program Manager may partially approve an amount based on available funds (e.g., approving 50 USD out of 100 USD if the account balance is limited).
5. The authorisation response sent back to the merchant reflects the approved amount, which may be less than the maximum or nominal amount requested, indicating a partial approval if applicable.

**Step 2: Authorisation Confirmation Advice**

1. The fuel is dispensed and costs 90 USD. The AFD confirms the amount with the Acquirer. The Acquirer sends a completion advice for 90 USD to Thredd.
2. Thredd generates a partial authorisation reversal for 10 USD (`Txn_Type` = D, Credit) linked to the original preauthorisation (reducing the full authorised amount from 100 USD to 90 USD).

**Step 3: Settlement and Reconciliation**

1. Thredd or the Program Manager receives the clearing file and matches the financial transaction (presentment) to the original authorisation.
2. Thredd or the Program Manager removes the authorisation amount of 90 GBP. The card now has an authorisation for 90 USD and a financial message of 90 USD.

### Refund

A refund transaction occurs when a merchant refunds money to the cardholder, typically relating to a previously processed transaction. The merchant/acquirer submits a request for a *partial* or a *full* refund of a previously paid amount. This is typically processed as an 0100 Authorisation request for a negative billed amount, with the DE3 processing code of *20*. This 2-digit code is displayed in the Thredd (`Proc_Code`) transaction field.

**Note:** It is not recommended to update the available balance until the linked financial notification is received. You must make information about any pending refund transactions available to cardholders.

## 1.6.2 Financials

Thredd receives batch clearing files containing financial transactions (presentments) for authorisations that need settlement. Typically the authorisations happened the previous day. Thredd processes the clearing files and sends a separate notification via EHI for each presentment transaction. For additional information see What are Presentments and how do they work?

### First Presentment

First presentment occurs when the merchant sends a request to take either part or all of the amount previously authorised on the card[1]. This can happen at the same time as the authorisation request or in some cases it can be much later. The Program Manager should attempt to match the presentment to the original authorisation request.

[1] You should be aware that in some cases it is possible for merchants to submit a presentment for more than the authorised amount. This is permitted for certain Merchant Category Codes (MCC), but it may also indicate a fraudulent transaction.

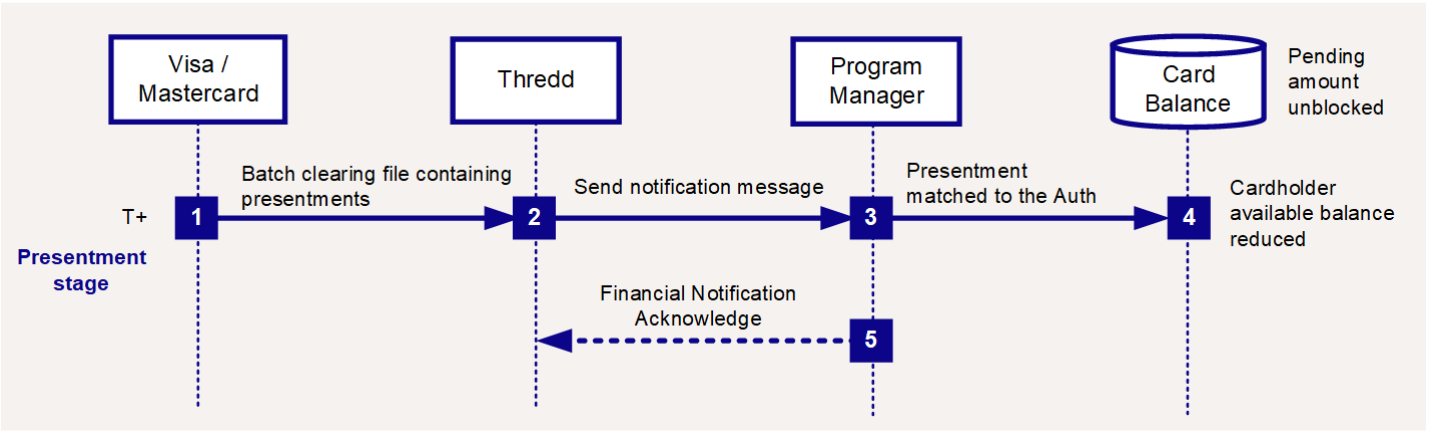


*Figure 14: Presenment Flow*

1. The scheme sends a batch clearing file to Thredd.
2. Thredd processes the file and sends a notification message per presentment, via EHI, to the external host (Program Manager).
3. The Program Manager matches the presentment to the original authorisation. See Transaction Matching.
4. The Program Manager unblocks the pending amount and reduces the cardholder's available balance.
5. The Program Manager acknowledges the message: *acknowledgement= 1.*

## First Presentment for an Offline Transaction

In an offline transaction, Thredd has not received a previous authorisation transaction, so when a financial presentment message is received from the card schemes, we are unable to match to an 0100 authorisation transaction. In this case, Thredd creates a new authorisation transaction and sends this to the Program Manager, followed by the linked presentment message.

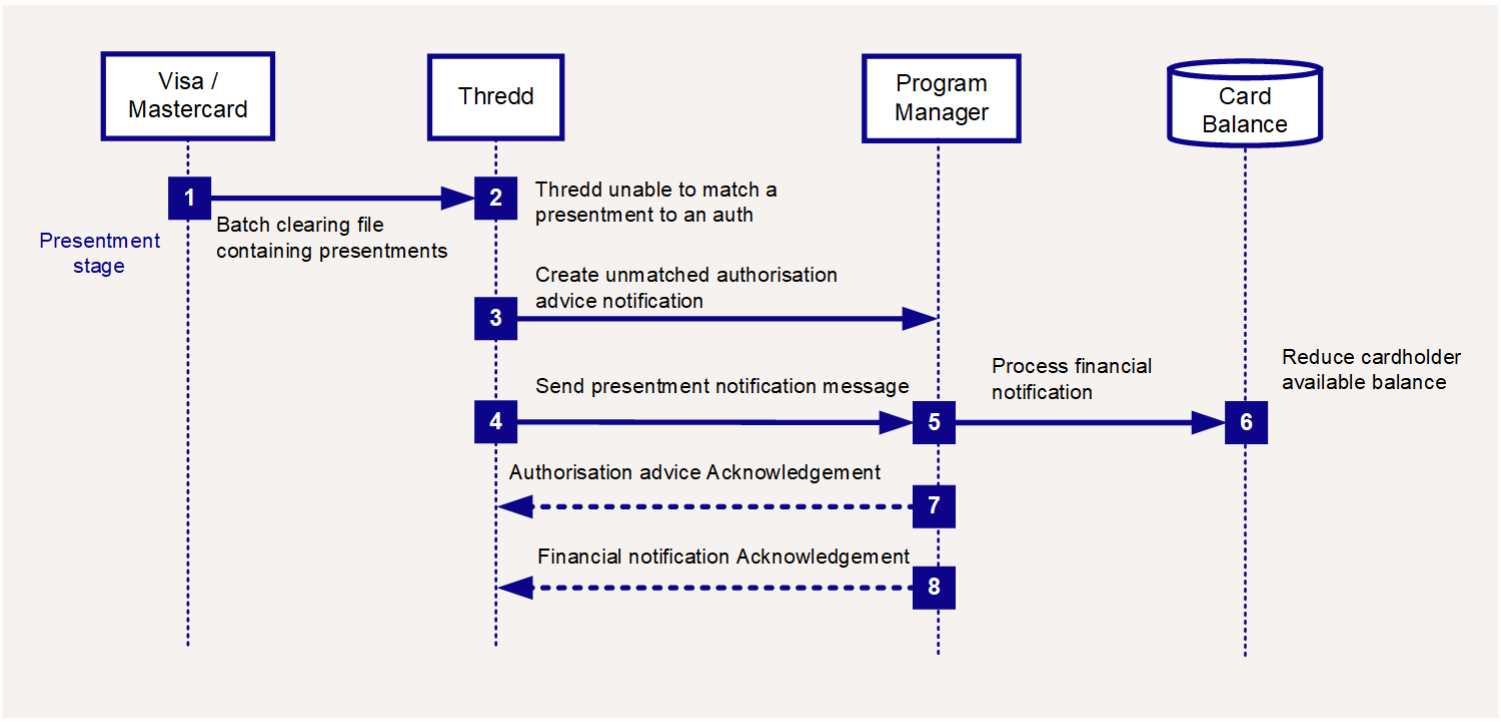


*Figure 15: Offline Transaction - Presentment Flow*

1. The scheme sends a batch clearing file to Thredd.
2. Thredd carries out validation checks. Since this is an offline transaction, Thredd will not be able to match to an existing 0100 authorisation.
3. Thredd creates an Unmatched Authorisation Advice Notification and sends it the external host (Program Manager).
4. Thredd sends a presentment notification to the Program Manager.
5. The Program Manager processes the financial notification (matching it to the Unmatched Authorisation Advice Notification).
6. The Program Manager reduces the cardholder's available balance by the amount of the presentment.
7. The Program Manager acknowledges the authorisation message: *acknowledgement= 1.*
8. The Program Manager returns a financial notification acknowledgement:*acknowledgement= 1.*

## Incremental Presentment

An incremental presentment may occur when a merchant requests an authorisation for a specific amount, but then submits multiple presentments for different partial amounts. An incremental presentment has one authorisation and multiple presentment files. The final presentment total usually equals the total of the original authorised amount. For more information, see What are incremental presentments and how do I handle them?

## Financial Reversal

A financial reversal occurs when the acquirer cancels all or part of a prior transaction (which may be a purchase, refund, cashback, cash, PIN change, or any other transaction type).

For example, if the acquirer has already taken the funds and are aware of a processing error (e.g., double charging), they can submit an 1240 Financial Reversal. You must return any deducted amounts back to the card.

**Note:** For a financial reversal, if the card has subsequently been lost, stolen or replaced, then the card record will be in a blocked and inactive/archived status, and you will not be able to update the card status or process transactions on the card. You should have a process in place to provide the reversed funds to your customer (e.g., move money to another account belonging to your customer).

# 1.6.3 Chargebacks

A chargeback is a mechanism available to cardholders who dispute a transaction on the card and want part or all of a card payment returned. The chargeback is always issued by the card issuer or Program Manager. The creation of chargebacks is outside of the EHI flow; you can create a chargeback using either the Visa or Mastercard online Dispute Management portals or the Thredd Smart Client. For more information, refer to the *Thredd Chargeback Guide*.

## Chargeback and Second Presentment

A chargeback can only be created for a transaction that has a linked presentment. The Program Manager or card issuer creates the chargeback request, which is sent to the card scheme (Visa or Mastercard). This triggers the process described below.

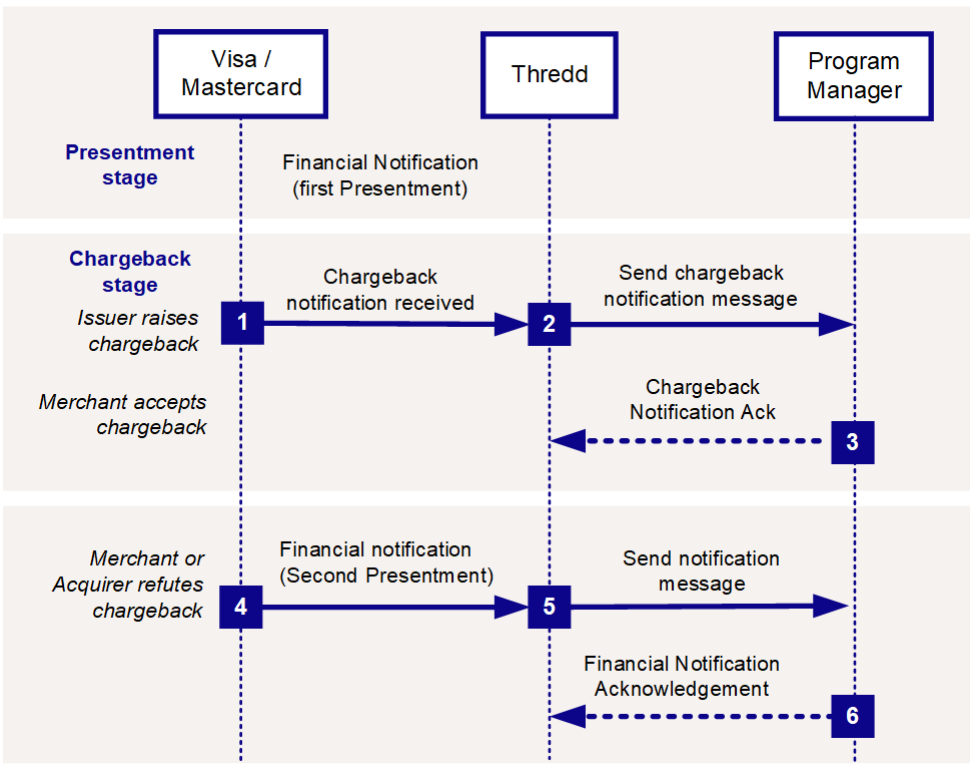


*Figure 16: Chargeback Transaction Flow*

1. Thredd receives a chargeback notification from the card scheme (Visa or Mastercard).
2. Thredd sends the chargeback notification message to the external host (Program Manager).
3. The Program Manager returns a chargeback notification acknowledgement.

4. If the merchant or acquirer accepts the chargeback, no further EHI messages are sent. (The Program Manager receives additional transaction notifications via the card scheme's dispute management portal or via Smart Client.)
5. If the merchant or acquirer does not accept the chargeback, Thredd receives a second presentment notification from the card scheme.
6. Thredd sends the second presentment notification message to the Program Manager.
7. The Program Manager returns a notification acknowledgement.

**Note:** When a chargeback is raised, you should always return the disputed amount to the cardholder within the time period prescribed by the card scheme and issuer regulations relevant to your region.

# 1.7 Transaction Types

EHI sends the following transaction type messages to the external host:

| Message Type | Description | How to Process | How you should respond |
|---|---|---|---|
| Authorisation | A request message to approve or decline a payment. Authorisation type transactions include normal authorisation requests and authorisation reversals. An authorisation request message should result in blocking the approved amount on the card to cover a later financial message which is expected to follow. | Gateway or Cooperative Processing (modes 1, 2 and 4): Approve or decline. If approved and you maintain the balance, block the approved amount on the customer's card. | Gateway or Cooperative Processing (modes 1, 2 and 4): Return a decision (approve or decline) and an acknowledgement.<br>Full Service Processing (mode 3): Return an acknowledgement. |
| Financial | A notification message which Thredd generates based on the batch clearing files received from the card schemes. Financial type transactions include: First Presentment, Financial Reversal, Second Presentment, Chargeback, Chargeback Reversal and Fees. | Match to an existing authorisation or financial.<br>Gateway or Cooperative Processing (modes 1, 2 and 4): Update the card balance | Return an acknowledgement. |
| Load | A notification that the customer's card balance has been credited (via a Web Service, Cards API, Thredd Portal or Smart Client). | Full Service Processing (mode 3): just acknowledge<br>Gateway Processing (modes 1 and 4): not applicable<br>Cooperative Processing (mode 2): Only applicable if Thredd maintains the balance. | Return an acknowledgement. |
| Unload | A notification that the customer's card balance has been debited (via a Web Service, Cards API, Thredd Portal or Smart Client). | Full Service Processing (mode 3): just acknowledge<br>Gateway Processing (modes 1 and 4): not applicable<br>Cooperative Processing (mode 2): Only applicable if Thredd maintains the balance. | Return an acknowledgement. |
| Payment | A notification of a payment originating from a non-card network entity (e.g. Faster Payment or direct debit), paying funds into or out of the customer's card.<br>**Note**: Only relevant to Agency Banking transactions. | Full Service Processing (mode 3): just acknowledge<br>Gateway Processing (modes 1 and 4): acknowledge and process (update balance)<br>Cooperative Processing (mode 2): Please check with your Implementation Manager. | Return an acknowledgement. |
| Balance Adjustment | A notification that the customer's balance has been updated (via a Web Service, Cards API, Thredd Portal or Smart Client). This can be either a credit or debit. | Full Service Processing (mode 3): just acknowledge<br>Gateway Processing (modes 1 and 4): not applicable<br>Cooperative Processing (mode 2): Only applicable if Thredd maintains the balance. | Return an acknowledgement. |
| Card Expiry | A notification that the customer's card has expired. Thredd | Just acknowledge. You can decide whether to renew the card (using | Return an acknowledgement. |

| Message Type | Description | How to Process | How you should respond |
| --- | --- | --- | --- |
| | generates this based on the expiry date configured for the card. | the Thredd API) | |

# 1.8 EHI Data Feeds

The EHI can be used as a source of read-only transactional data. For each transaction that Thredd processed, the EHI sends a notification message to your external host system (i.e., to the external host URL endpoint you have requested for your programme). The notification message contains all key attributes of the processed transaction. As with the authorisation advice, the notifications are sent to the external host in real time.

The sections below list the most important fields for each type of message. For details of all the fields in the GetTransaction message, see GetTransaction Messages. For details of the fields in the Cut Off message, see Cut Off Message.

## 1.8.1 GetTransaction message: Real-time transactional data feed fields

Data that is passed to the external host in transaction messages includes the following fields:

| | | |
|---|---|---|
| Actual Balance (ActBal) | Available Balance (Avl_Bal) | Billing Amount (Bill_Amt) |
| Billing Currency (Bill_Ccy) | Blocked Amount (BlkAmt) | Customer Reference (Cust_Ref) |
| FX Padding (FX_Pad) | Fixed Fee (Fee_Fixed) | Rate Fee (Fee_Rate) |
| Merchant Category Code (MCC_Code) | Padding (FX_Pad) | Note (Note) |
| Settlement Amount (Settle_Amt) | Settlement Currency (Settle_Ccy) | Token (Token) |
| Transaction Link ID (Trans_link) | Transaction Amount (Txn_Amt) | Transaction Currency (Txn_CCy) |
| Transaction Country (Txn_Ctry) | Transaction Description (Txn_Desc) | Transaction ID (TXn_ID) |
| Transaction Date (Txn_Thredd_Date) | Transaction Status (Txn_Stat_Code) | Transaction Type (Txn_Type) |
| Status Code (Status_Code) | Processing Code (Proc_Code) | |

## 1.8.2 GetTransaction message: Authorisation, presentment and financial transactions fields

Authorisation, presentment and online financial transactions include the following additional attributes:

| | | |
|---|---|---|
| Transmission Date and Time (TXN_Time_DE07) | Local Transaction Date and Time (POS_Time_DE12) | Acquiring Institution ID (Acquirer_id_DE32) |
| Authorisation Code (Auth_Code_DE38) | POS Terminal ID (POS_Termnl_DE41) | Merchant ID (Merch_Net_id) |
| Merchant Name (Merch_Name) | Card Network Reference (Traceid_Message) | Response Code (Responsestatus) |
| Point-of-Service (POS) Data (POS_Data_DE22) | MCC Code (MCC_Code) | MCC Description (MCC_Desc) |

## 1.8.3 Cut off message fields

In addition to the real-time transaction data feed, you can opt to receive cut off messages (Cut_Off) at predefined intervals which contain the following data:

| | | |
|---|---|---|
| Product ID (ProductID) | Cut off Date (CutoffDate) | Authorisations Acknowledged (Auths_Acknowledged) |

| | | |
|---|---|---|
| Authorisations Not Acknowledged (Auths_NotAcknowledged) | Financials Acknowledged (Financials_Acknowledged) | Financials Not Acknowledged (Financials_NotAcknowledged) |
| Loads Acknowledged (LoadsUnloads_Acknowledged) | Loads Not Acknowledged (LoadsUnloads_NotAcknowledged) | |
| Balance Adjustment Expiry Acknowledged (BalanceAdjustExpiry_Acknowledged) | First Transaction ID (FirstTxn_ID) | |

# 1.9 EHI Configuration Options

This section provides information on the available EHI configuration options. Your implementation manager will set up EHI based on the options you selected in the product setup form.

**Note:** Thredd offers an optional Enhancement to Core Processing feature flag to assist in edge case scenarios where programmes receive data from multiple sources. For example, where you receive API calls and authorisation requests, you can enable this flag in order to ensure they are processed in a timely manner with additional validation checks to prevent cards from going into a negative balance.

If you want to enable this flag, contact the Thredd Support Team.

| Option | Description |
|---|---|
| Mode | Your EHI mode (setup option, such as Gateway, Cooperative or Full Service Processing). See EHI Operating Modes. |
| Include Declined Transactions | Whether to include declined authorisation transactions in EHI messages (used for information purposes only). |
| Stand In | In Cooperative Processing (mode 2): If this is enabled and there is no connection to Host then we operate as we would if there was no external host at all and authorise/decline based on balance and other information we have in our system. |
| Approve with Load | In Cooperative Processing (mode 2): The authorisation can be approved with simultaneous instructing to load certain amount to a card. If this is required and the product is enabled with the 'Approval with Load' feature, the authorisation response message of the approved transactions has to contain '0A' response code and amount to load. The Load will be done before the transaction amount is debited from the current balance.<br>**Note**: Multi-Fx cards are not supported. |
| Delay Send | Applicable in Mode 3 (Full Service Processing) only: If enabled, EHI messages only sends messages after the defined time period. If not enabled. EHI attempts to send messages in real-time first, with subsequent attempts after the defined delay. |
| Transaction Types | The transaction types you want EHI to send:<br>• Authorisation<br>• Financial (mandatory for modes 1 and 2 - Gateway and Cooperative Processing)<br>• Load/ Unload<br>• Balance Adjustment / Expiry<br>• Authorisation advice<br>• TAR (transaction authorisation request for a token creation request) |
| External Host URL (Single EHI Endpoint) | The URL EHI uses to send messages to your external host if you have configured a single EHI endpoint to receive all messages from Thredd. Different endpoints (URLs) can be set up for each product. |
| Decisional URL (Multiple EHI endpoints) | The URL EHI uses to send all time-critical (real-time) messages such as Authorisations, Authorisation Reversals and Advices. Different endpoints can be set up for each product.<br>**Note:** Discontinued. |
| Informational URL (Multiple EHI endpoints) | The URL EHI uses to send non-time-critical messages such as Chargebacks, Balance Adjustments, Loads/Unloads, Fees and Presentments. Different endpoints can be set up for each product.<br>**Note:** Discontinued. |

| Option | Description |
| --- | --- |
| Clearing URL (Multiple EHI endpoints) | The URL EHI uses to send presentments. Only First Presentments and Second Presentments are sent to this endpoint. Different endpoints can be set up for each product. This optional field can be used to receive presentments in a separate EHI endpoint.<br>If a Clearing URL is not provided, but an Informational URL is provided, then all presentments are sent to the Informational URL.<br>**Note:** Discontinued. |
| Timeout after | Determines how long EHI waits for a response from the external host before timing out. The default timeout is 800 milliseconds. This can be changed to meet your system requirements. Please contact your account manager or implementations manager to discuss. |
| Repeat after | Indicates how long EHI waits to resend the message when it does receive any acknowledgement from the external host. The default is 2 minutes. |
| Times | Indicate how many times EHI needs to resend the message. Default value is 5. |
| Remove from buffer table after | Indicates the number of days your transaction data is stored in the Thredd buffer table. This can be useful in the scenario where your system is down and you need time to fix it. When the system is back up, Thredd can flush all data from the buffer. Default is 3 days. Maximum is 7 days. |
| Send Cut of Message | Whether to send a cut off message. See Cut Off Messages. |
| Cut off Interval | The cut-off period in hours (e.g. if it is set to 4 hours EHI sends a cut-off message every 4 hours). Default is 4 hours. |
| Cut off URL | The URL EHI uses to send Cut Off messages to your external host. |
| Version | The EHI version you are using. |
| Optional fields in Authorisation request message | Select the optional fields you would like sent in Authorisation messages:<br>• Send CVV2<br>• Send PIN (If selected, please provide the PIN Key File)<br>• Send Expiry Date<br>• Send PAN Sequence Number |
| Notify | The email address to notify you If EHI cannot reach the external host. |
| DR EHI URL | The URL EHI uses to send messages to your external host if the primary URL is unavailable (i.e. Disaster Recovery). |
| DR Cut off URL | The URL EHI uses to send Cut Off messages to your external host if the primary URL is unavailable (i.e. Disaster Recovery). |
| SSL Key | SSL certification key to use, where SSL is enabled on your external host. |
| PIN Key File | PIN key file to be used where the *send PIN* field is enabled for inclusion in authorisation request messages. Triple DES keys are used to encrypt PINs in EHI messages. They can be generated either by Thredd or the Program Manager, and must be stored in a separate file. For details, see PIN Block Formats. |
| JSON format | EHI can be enabled to send and receive messages in JSON format.<br>**Note**: You must be on EHI version 5.0 or above to receive this feature. |

# 1.10 Integration Steps

This section describes the steps in integrating your external host system to the External Host Interface (EHI).

## 1.10.1 Setting up in the Test Environment

1. Complete your Thredd product setup form. See EHI Configuration Options.
2. Provide Thredd with a list of static IP addresses to your external host server for Thredd to allow access to.
3. Your implementation manager will set you up on the Thredd Test system and will:
    - Provide you with your user credentials to access the Thredd Test system.
    - Set up your External Host URL on EHI for sending GetTransaction messages.
    - Set up your External Host URL on EHI for sending CutOff messages.
    - Provide you with details of how to access Thredd Portal, where you can manage your cards and transactions.

    **Note:** The External Host URLs you provide need to resolve to the static IP addresses you provided to Thredd.
4. You will need to be set up with secure access to Thredd systems.
5. Integrate to Thredd using the Web Services API (SOAP) or Cards API (REST), in order to create cards and load them with funds. For details, see the *Web Services Guide* or the Cards API Website.
6. Set up your external host systems to be able to receive and process messages from EHI. Your systems should be able to:
    - Check for duplicate messages, respond to and acknowledge EHI messages. See Processing EHI Transactions.
    - Match and process transactions. See Transaction Matching.
    - Process GetMessage fields. See GetTransaction Messages.
    - Receive CutOf messages. See CutOff messages.
7. For EHI modes 1, 2 and 4 (Gateway and Cooperative Processing) where you provide the approve or decline decision for an authorisation transaction, make sure your systems can process the GetTransaction messages and block the available card balance accordingly.
8. For EHI modes 1, 2 and 4 (Gateway and Cooperative Processing) where you maintain the balance, make sure your systems can process the GetTransaction financial messages and update the card balance accordingly.
9. Submit test authorisation and financial transactions to the test environment:
    - You can requests test transactions from your implementation manager.
    - You can use the Card Transaction System (CTS) to create test transactions for different use case scenarios (e.g., POS, ATM, ecommerce and MOTO payments). See the *Card Transaction System (CTS) User Guide*.

## 1.10.2 Setting up in Production

When you have completed your integration and your card issuer has approved your Product Setup Form (PSF), we can set you up in the live environment.

1. A secure connection to Thredd is required to connect to the production system.
2. You will need to generate some live cards (i.e., internal pilot cards) from your card manufacturer in order to run live transactions. For more information on how to generate cards, see the *Web Services Guide* or contact your Implementation Manager.
3. Run card tests on live cards for different use case scenarios and check the end-to-end process. See Testing Use Case Scenarios below. Make sure your service works before rolling out!

**Tip:** Your first live cards should be for internal, pilot use only and Thredd recommend you complete your programme testing first before launching your service to cardholders and investors.

### Testing Use Case Scenarios

Below are details of the type of test scenarios which Thredd recommends you complete:

- Do the cards support the functionality and behaviour you expect?
- Are the CHIP profiles on the cards correctly set up? (i.e., is the card working and card validation working as expected.)
- Is your mobile app behaving as expected? (e.g., displaying real-time details of card status, card transactions and account balances.)
- If you are using mobile tokenisation services such as VDEP and MDES have you tested different use case scenarios?
- Have you tested other components of your card service, such as:
    - Recurring payments
    - Fees
    - Cardholder authentication (3D Secure)
    - Exception flows, such as reversals, refunds and chargebacks.
- Have you checked the cardholder journey from an end-to-end perspective?

### Thredd Card Tests

Thredd runs a set of generic pavement tests where we check a range of card functionality, such as:

- Keys are set up correctly
- Both contact and contactless card transactions are working
- The card usage groups set up for your programme are declining as expected
- General authorisations are being received, refunds are working correctly, authorisation requests are being declined and approved as expected.

**Note:** In order to check the Thredd platform is behaving according to how configured in your product setup form, we require a selection of cards per programme. Cards should be loaded with sufficient funds to enable testing.

## 1.10.3 Troubleshooting

Below are examples of some of the types of issues your systems need to be able to handle:

- System timeouts and connection issues
- Duplicate transactions and unmatchable transactions
- Reversals (0400 messages), where you need to approve and unblock funds
- Balance enquiries and issues relating to the card balance
- Cryptogram failures on the CHIP for a new chip profile being launched; this is normally resolved by the Card Manufacturer

For more information see the Troubleshooting FAQs.

# SECTION 2: PROCESSING EHI TRANSACTIONS

You should read this section to understand how to integrate your external host system to EHI.

This section covers the following topics:

- Processing EHI Transactions
- Transaction Matching
- Data Types
- GetTransaction Message
- Cut_Off Messages

**Tip:** If you are new to EHI and want to understand how EHI works and the available configuration options, see the Getting Started section.

# 2.1 Processing EHI Transactions

This section describes how to process the real-time transactional data sent from EHI to your external host system. When your external host system receives a message from EHI, it must be able to implement the following:

- Return an acknowledgement to EHI - within the time limit set for a response
- Respond to requests - including updating the card balance (where required by your EHI mode).
- Respond to cut-off messages (optional)
- Check for duplicate requests - and respond to EHI accordingly
- Check fields used for 3D Secure Authentication (if applicable) - to verify that the merchant, currency and amount match the details in the authorisation
- Update the STIP balance if required - only relevant to EHI Mode 4 (Gateway Processing with STIP) where Thredd provides Stand-In Processing (STIP)
- Perform transaction matching and processing - this is internal to your systems and no response to EHI is required. For details, see Transaction Matching.

## 2.1.1 Returning an Acknowledgement to EHI

When you receive a GetTransaction message, your external host system must respond to EHI within the allowed time limit for a response (for the default timeout, see EHI Configuration Options), with the Acknowledgement field set to “1” to indicate that you have successfully processed the transaction.

EHI waits for a response with the Acknowledgement field set to “1” and if no response is received (or an acknowledgement = 0 is received), it continues to re-send the message until either:

- It receives a response with the Acknowledgement field set to “1”.

  Or

- The maximum number of permitted re-tries configured in Thredd has been reached for this message.

## 2.1.2 Responding to Requests

### Responding to Authorisation Requests or Online Financial Requests

In an authorisation request message, the Message Type Identifier (MTID) = *0100* and the transaction type (Txn_Type) = *A*.

In all EHI modes, your systems should always acknowledge the request. In EHI modes 1, 2 and 4 (Gateway and Cooperative Processing) your systems should respond with a decision (*approve* or *decline*). See EHI Operating Modes.

- For a request where you approve, your response to EHI should look like this:

  *"Responsestatus": "00"* and *"Acknowledgement": "1"*

- For a request where you decline, your response to EHI should look something like this:

  *"Responsestatus": "05"*and *"Acknowledgement": "1"* *

* Responsestatus = 00 indicates the request is approved.

* Responsestatus = 05 indicates *Do not honour* (decline) – you can chose any suitable decline response code. See Response Status Values.

Acknowledgement = 1 informs Thredd that the message was received and Thredd does not need to resend.

For EHI mode 3 (Full Service Processing - advice only), your response should look like this:

*"Acknowledgement": "1"*

#### Response fields

For details of mandatory and optional fields that can be included in your response, see Response Message Fields.

**IMPORTANT:** Do not return the value "null" in any response fields which require numeric values, as this results in EHI declining the transaction. Exclude fields that are optional, if you do not want to return any values.

## What happens if EHI does not receive a response?

If no response is received in the time limit for an authorisation or online financial request then the following happens in these EHI modes:

- Gateway Processing (mode 1): Thredd declines the transaction.
- Cooperative Processing (mode 2): If Stand-In processing is not enabled, Thredd declines the transaction. If Stand-In processing is enabled, Thredd makes the decision, which could be *Approve* or *Decline*.
- Gateway Processing with STIP (mode 4): Thredd makes a stand-in processing decision, which could be *Approve* or *Decline*.
- Full Service Processing (mode 3) is advice only.

Thredd then resends the transaction to notify you of the decision made, with these changes:

- `SendingAttemptCount` field is:
  - EHI modes 1 and 2: “1” (1st repeat) or higher (“n” nth repeat)
  - EHI mode 4: “0” on first message, (and +1 for each time re-attempted)
- `Authorised_by_GPS` field is set to “Y”
- `Txn_Stat_Code` field is set to “A” (Approved) or “I” (Declined)
- `Resp_Code_DE39` field is set to the response code sent back to the network (normally “00” if approved, or “05” (declined) in most cases.)

**Note:** If you get an advice that has changed the decision you originally made, this may indicate that Thredd did not receive or could not process your original decision (example, due to a network timeout or invalid response format) and has therefore applied the default response for your mode. In this case you should acknowledge the advice and reverse the effect of the original approval (example, by unblocking any previously reserved amounts or reversing a previous debit).

## How Thredd responds to the External Host

The table below shows a summary of the type of message content sent to the external host *after* the initial authorisation request.

| Setup Option | Mode | Reponse Received from external host* | Thredd Response | Acknowledgement Message to External Host Includes | How you should Respond |
|---|---|---|---|---|---|
| Gateway Processing | 1 | No | Decline | Declined: 0100A - Authorised by Thredd "Y", Txn_Stat_Code "I" <DE39 Reason code>, Sending attempt count 1. | Acknowledge |
| Gateway Processing | 1 | Yes (approve or decline) | Pass on to scheme | No message sent to external host. | Not applicable |
| Cooperative Processing | 2 | N/a ** | Thredd approved | Approved: 0100A - Authorised by Thredd "Y", Txn_Stat_Code "A" <DE39 Reason code 00>, Sending attempt count 0. | Approve or decline |
| Cooperative Processing | 2 | N/a ** | Thredd declined | Declined: 0100A - Authorised by Thredd "Y", Txn_Stat_Code "I" <DE39 Reason code>, Sending attempt count 0. | Acknowledge or override[1] |
| Cooperative Processing | 2 | Yes | Pass on to scheme | No message sent to external host. | Not applicable |
| Full Service Processing | 3 | N/a ** | Thredd approved | Approved: 0100A - Authorised by Thredd "Y", Txn_Stat_Code "A" <DE39 Reason code 00>, Sending attempt count 0. | Acknowledge |

[1] In mode 2 - Approve with Load, you can override a Thredd decline decision if the reason for the decline is insufficient balance (e.g., where the card balance held on your systems indicates the card has sufficient funds). In this case you should use the load card web service to update the Thredd held balance.

| Setup Option | Mode | Reponse Received from external host* | Thredd Response | Acknowledgement Message to External Host Includes | How you should Respond |
|---|---|---|---|---|---|
| Full Service Processing | 3 | N/a ** | Thredd declined | Declined: 0100A - Authorised by Thredd "Y", Txn_Stat_Code "I" <DE39 Reason code>, Sending attempt count 0. | Acknowledge |
| Gateway Processing with STIP | 4 | No | STIP approved | Approved: 0100A - Authorised by Thredd "Y", Txn_Stat_Code "A" <DE39 Reason code 00>, Sending attempt count 0. | Acknowledge |
| Gateway Processing with STIP | 4 | No | STIP declined | Declined: 0100A - Authorised by Thredd "Y", Txn_Stat_Code "I" <DE39 Reason code>, Sending attempt count 0. | Acknowledge |
| Gateway Processing with STIP | 4 | Yes | Pass on to scheme | No message sent to external host. | Not applicable |

## Notes

* Your response must be received within the default time limit for a response (see EHI Configuration Options). **Note**: although you may have responded within the time limit, in some circumstances Thredd may not have received or processed your response due to a network timeout or invalid response format.

** An approve or decline response is not applicable to Cooperative Processing (mode 2) and Full Service Processing (mode 3) where Thredd makes the initial approval or decline decision. In EHI Mode 3 Thredd sends the response directly to the card scheme and sends the external host an acknowledgement. In Cooperative Processing (mode 2) Thredd first sends any approved decision to the external host, which can override the decision.

## Responding to Authorisation Reversals or Online Financial Reversals

A reversal occurs when a merchant wants to reverse a previously submitted authorisation or inline financial request (for example, because the requested amount was entered incorrectly or the customer cancelled the order). The reversal normally occurs soon after the original authorisation or online financial message (or same day) and can be matched to the original authorisation or online financial message using the `traceid_lifecycle` field.

If you receive an authorisation reversal request (`MTID` = *0400* and `Txn_Type` = *D*), authorisation reversal advice (`MTID` = *0420* and `Txn_Type` = *D*) , your response to EHI should look like this:

*"Responsestatus": "00"* and *"Acknowledgement": "1"*.

Note that if your system was unable to process the request (For example, your database connection was down, so you could not update any outstanding blocks) you can request the message to be resent. In this case, your response to EHI should look like this:

*"Responsestatus": "96"* and *"Acknowledgement": "0"*. (You can use codes '91', '92' or '96'.)

## Responding to Thredd Declines

In scenarios where Thredd initially declines an authorisation or online financial request, you can respond as follows:

- In Gateway Processing (mode 1), you are not able to overrule the decline, you should return a `Responsestatus` with the same `responsecodeDe39` value that Thredd sent.
- In Full Service Processing (mode 3), you can just acknowledge the message.
- In Cooperative Processing (mode 2), you can overrule the Thredd insufficient balance decline. If you send a `Responsestatus` of "*0A*", Thredd will load the amount you sent in `LoadAmount` field to the card, and recheck the balance is sufficient. Partial approval is also possible in this mode (see Responding to Partial Approvals.)
- In Gateway Processing with STIP (mode 4), you cannot overrule our decline (except for a partial approval).

# 2.1.3 Responding to Partial Approvals

A partial transaction approval occurs where the Program Manager approves part of the transaction amount only, for example, because the initial approval request was declined due to insufficient funds. For EHI modes where you can overrule the decline decision with a partial approval (Cooperative Processing - mode 2 , Gateway Processing with STIP - mode 4) the process is as follows:

1. Thredd receives an authorisation or online financial request from the card scheme.
2. Thredd initially declines the request due to insufficient funds.
3. The Program Manager overrides the decline, with a partial approval via EHI.
4. Thredd partially approves the request and returns the response to the card scheme.
5. Thredd sends an updated EHI message with the actual result (*Partially Approved*).
6. The Program Manager replies to the updated EHI message with an acknowledgement.

## Example

The initial request is declined due to insufficient funds, for example: settlementBillingAmount= -60.00 and Responsestatus = 51.

For a partial approval, your response to EHI to override the decline should look like this:

*"Responsestatus": "10"* and *"Acknowledgement": "1"*

Thredd then sends the partial approval, for example: Bill_Amt = -50.00 and Resp_Code_DE39 = 10.

You will receive an authorisation or online financial advice and should respond as normal.

### Partial Approvals - Mode 1 Clients

For Gateway Processing (mode 1) clients who make the authorisation decision, partial approval works as follows:

1. Thredd receives an authorisation or online financial request from the card scheme.
2. Thredd sends the authorisation or online financial request to the Program Manager, via EHI.
3. The Program Manager partially approves via EHI.
4. Thredd sends the response back to the card scheme.

# 2.1.4 Responding to Financial Notifications

Financial notifications include transactions such as first presentments (MTID/Txn_Type= 1240/P or 05/P, 06/P, 07/P), financial reversals (MTID/Txn_Type = 1240/ E or 25/E, 26/E, 27/E), chargebacks (MTID/Txn_Type = 1240/C or 1240/H).

Your response to EHI could look like this:

*"Acknowledgement": "1"*.

# 2.1.5 Responding to Cut_Off Messages

When responding to Cut_Off messages, if you have successfully processed, Cut_OffResult should = “1”.

If a response with Cut_OffResult is received with “0” (or no valid response), EHI does not resend the message. (However, not that in a future version Thredd may re-send the Cut_Off message, as this indicates you have failed to process it and it requires re-sending.)

# 2.1.6 Checking for Duplicates

**Note:** In some cases it is possible that when your external host responds to EHI with a valid acknowledgement (Acknowledgement = 1), due to network issues, your acknowledgement may not be received by EHI. In this case EHI will re-send the message, resulting in a duplicate.

### How to Identify a Duplicate Message

For GetTransaction messages, if either of the following conditions is true, then the message is a duplicate:

- If the SendingAttemptCount field is “1” or higher (i.e. non-zero)
- If you have already received a message with the same transaction ID (txn_id).

## How to Process a Duplicate Message

1. First check to see if the SendingAttemptCount field is “1” or higher (i.e. non-zero).
2. If it is higher than 1, then check the transaction ID (TXn_ID) field. This is unique for every transaction (for the GetTransaction messages.)
3. If the transaction ID matches the transaction ID of an existing record in your database, this indicates a duplicate, which you should process as follows:

- If the original message was an advice, and your external host already has it then:
    - No need to re-process this
    - Respond with *"Acknowledgement": "1"*
- If the original message was an advice, and your external host does not have it then:
    - Process it
    - Respond with *"Acknowledgement": "1"*
- If the original message was an authorisation request (your external host is asked approve or decline), but the repeat is an advice, it will still have the same MTID. This table explains what to do:

| External Host Originally: | Advice Indicates that Thredd: | Action required by the External Host |
|---|---|---|
| Approved transaction | Approved transaction | Nothing to do |
| Approved transaction | Declined transaction | Reverse effect of original approval |
| Declined transaction | Approved transaction | Action the approval |
| Declined transaction | Declined transaction | Nothing to do |
| Never received transaction | Approved transaction | Action the approval |
| Never received transaction | Declined transaction | Nothing to do (but it can be logged) |

## Cut_Off Duplicate Checking

For Cut_Off messages, since the CutoffID field is unique, you can use this field to detect if the message is a repeat.

**Note:** EHI currently does not re-send a Cut_Off message if it does not receive a valid response with Cut_OffResult of “1”. However, this may be added in a future version, so you should configure your systems to expect this.

# 2.1.7 Checking fields used for 3D Secure Authentication

The following fields in the authorisation message relate to the 3D Secure authentication data arriving in the authorisation message. You can use these fields to confirm whether the authorised transaction amount is equivalent to the 3D Secure authenticated amount. [2]

- AuthenticationCurrency
- AuthenticationAmountUpper
- AuthenticationMerchantHash

These fields can also be used to comply with the PSD2 Strong Customer Authentication (SCA) dynamic linking requirements (see Directive (EU) 2015/2366 Article 5 Dynamic Linking). See the figure below.

---

[2] This check ensures that important transaction details presented to the cardholder during a 3D Secure session (such as amount and currency) match the final details authorised by Thredd or the Program Manager. Significant discrepancies may indicate a potentially fraudulent transaction.

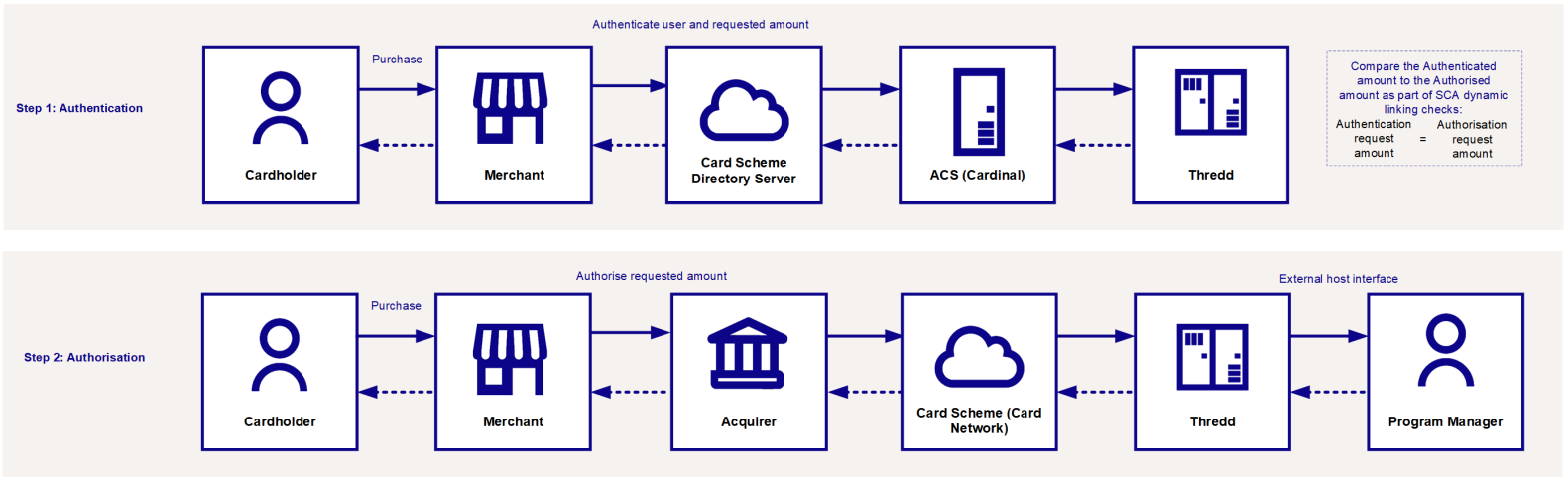


*Figure 17: Matching the Authorisation amount to the authentication amount as part of SCA Dynamic Linking checks*

**Note:** You can also use the indicators provided in the GPS_POS_DATA field positions 25 and 26 to check whether the transaction is exempt from SCA and to identify whether the authorisation and authentication amount and currency fields match.

### Matching Authentications to Authorisations

The table below provides details of fields you can use to match the 3D Secure authentication details to the linked Authorisation or Online Financial transaction:

| 3D Secure Authentication Field | Authorisation / Online Financial Fields |
|---|---|
| AuthenticationCurrency | Txn_CCy |
| AuthenticationAmountUpper | Txn_Amt |
| AuthenticationMerchantHash | SHA 256 hash of Merch_Name<br>**Note**: This only works if the identical name was provided at authentication. (e.g., Microsoft and MICROSOFT will be hashed differently) |

**Note:** You can use the above fields to supplement or replace any authentication checks set up for your programme on Thredd systems. For more information, see the PSD2 and SCA Guide > PSD2 Product Settings.

## 2.1.8 Updating the STIP Balance

**Note:** Only relevant to EHI Modes where Thredd provides real-time Stand In Processing (STIP) if your systems are unavailable (Gateway Processing with STIP - mode 4).

Thredd approves or declines the transaction amount based on the available card balance in the Thredd database. The Thredd stand-in balances can be updated by any of the below options:

- EHI response messages (see Update_Balance field).
- Balance Update Web Service (see ws_BalanceUpdate in the *Web Services Guide*).
- STIP Balance Update endpoint (see the API Hub documentation).

Below is an example code snippet of a response returned by the Program Manager's systems, requesting a balance update:

```
<GetTransactionResult>
          <Responsestatus>00</Responsestatus>
          <CurBalance>0</CurBalance>
          <AvlBalance>100</AvlBalance>
          <Acknowledgement>1</Acknowledgement>
          <LoadAmount>50</LoadAmount>
          <Bill_Amt_Approved>0</Bill_Amt_Approved>
          <Update_Balance>1</Update_Balance>
          <New_Balance_Sequence_Exthost>200</New_Balance_Sequence_Exthost>
```

```
        <CVV2_Result>400</CVV2_Result>
        <CurBalance_GPS_STIP>0</CurBalance_GPS_STIP>
        <AvlBalance_GPS_STIP>100</AvlBalance_GPS_STIP>
</GetTransactionResult>
```

**Note:** You should only respond with `Update_Balance` = '1' (update balance) if you have received both `Balance_Sequence` and `Balance_Sequence_Exthost` in the EHI request message. These balance sequence fields are only relevant to real-time transactions where balance adjustments can be made in the response. If you receive a financial notification and need to adjust the Thredd-held balance, you must use the Balance Update Web Service or STIP Balance Update API.

# 2.2 Transaction Matching

A typical card payment transaction generates multiple messages during its life cycle. The GetTransaction message types you receive for a transaction must be linked to the previous messages for that transaction. This matching enables you to track the history of the transaction, compare the financial effect of a new messages with previous messages and re-calculate card balances.

**Note:** In Full Service Processing (mode 3) and Cooperative Processing (mode 2), Thredd manages transaction matching.

## 2.2.1 Matching Overview

Your systems should match new to previous transactions as follows:

| New Message | ..match to.. | Previous Message |
|---|---|---|
| Authorization Request (A) | → | Authorization Request (A) |
| Authorization Reversal (D) | → | Authorization Request (A) |
| Authorization Advice (J) | → | Authorization Request (A) |
| Financial Notification (P) | → | Authorization Request (A) or Authorization Advice (J) |
| Financial Reversal (E) | → | Financial Notification (P, N) |
| Chargeback (C, H) | → | Financial Notification (P, N) |
| Chargeback Reversal (K) | → | Chargeback (C, H) |
| Financial Notification (N) | → | Chargeback (C, H) |

*Figure 18: Transaction Matching Criteria*

For further details, see the Transaction Matching Criteria below.

Where 3D Secure authentication applies, additional transaction matching should be performed to match details in the authorisation to the 3D Secure authentication details. For detail see Transaction Matching - Authentications and Authorisations.

### Matching Criteria and Accuracy

**Note:** Matching a transaction to its original (e.g., *Presentment* to matching *Authorisation*, or *Authorisation Reversal* to matching *Authorisation*) is based on the information received. In most cases transactions match. However, acquirers do not always send accurate information, so mistakes can occur.[1]

You can use the following options to find a match:

- The matching criteria recommended in the section Transaction Matching Criteria
- Your own matching criteria
- A combination of both the above.

As a general rule, the more matching fields that correctly match, the more reliable the match. If some fields match and some do not, this indicates an 'unreliable' match.

### Transaction Matching Criteria

The table below provides best-practise guidelines on how to match transactions.

Match Criteria:

- If "*Match to*" is "-", this means there is nothing to match against.
- "THIS" = this transaction (i.e., the one with MTID + Txn_Type from the same row) is the transaction you have just received in the EHI message
- "OTHER" = the other transaction (in the "Match to" column) that is being found by matching (to match to THIS)
- Syntax: *OTHER.other_field_name = THIS.this_field_name* where the field names refer to the GetTransaction Message Fields.

| MTID | Txn_Type | Description | Match to? | Match Criteria |
|---|---|---|---|---|
| 0100 | A | Authorisation Request | -<br>(For an incremental authorisation, match to Authorisation Request. | OTHER.token=THIS.token<br>AND<br>OTHER.traceid_lifecycle = THIS.traceid_lifecycle<br><br>**Tip:** For an incremental authorisation, check for a transaction of Txn_Type 'A' arriving with the same traceid_lifecycle as a previous authorisation request. For more information, see What is an incremental authorisation and how do I identify it? |
| - | D | Automatic Authorisation Reversal | Authorisation Request | OTHER.token=THIS.token<br>AND<br>OTHER.trans_link = THIS.trans_link |
| 0101 | A | Authorisation Repeat (Visa Only)<br>**Note**: This transaction is uncommon as only a few acquirers use it.<br>You should respond to a repeat request in the same way as you respond to an original authorisation request. If you decline the repeat authorisation, the terminal may send a new 0100 authorisation, however, you should not assume that this will always occur. | Authorisation Request | OTHER.mtid='0100'<br>AND<br>OTHER.traceid_lifecycle=THIS.traceid_lifecycle<br>AND<br>OTHER.trans_link=THIS.trans_link<br>AND<br>OTHER.Ret_Ref_No_DE37=THIS.Ret_Ref_No_DE37<br>AND<br>OTHER.TXN_Time_DE07=THIS.TXN_Time_DE07<br>AND<br>OTHER.POS_Termnl_DE41=THIS.POS_Termnl_DE41<br>AND<br>OTHER.Token=THIS.Token |
| 0120 | J | Authorisation Advice | Authorisation Request<br>(Auth request may not exist) | OTHER.token=THIS.token<br>AND (if THIS.traceid_lifecycle exists)<br>OTHER.traceid_lifecycle = THIS.traceid_lifecycle<br>OR (if THIS.Auth_Code_DE38 exists)<br>OTHER. Auth_Code_DE38 = THIS.Auth_Code_DE38<br>OR (if THIS.trans_link exists)<br>OTHER.trans_link = THIS.trans_link<br>**Note**: If neither THIS.traceid_lifecycle or THIS.trans_link is present, then there is no match. Normally traceid_lifecycle will always be present if an authorisation exists. For most authorisation advices, Auth_Code_DE38 and trans_link will probably be missing. |
| 0120 | D | Authorisation reversal due to a 0120 Automated Fuel | Authorisation Request | OTHER.token=THIS.token<br>AND (if THIS.traceid_lifecycle exists) |

| MTID | Txn_Type | Description | Match to? | Match Criteria |
|---|---|---|---|---|
| | | Dispenser Advice | | OTHER.traceid_lifecycle = THIS.traceid_lifecycle<br>AND (if THIS.Auth_Code_DE38 exists)<br>OTHER. Auth_Code_DE38 = THIS.Auth_Code_DE38<br>AND (if THIS.trans_link exists)<br>OTHER.trans_link = THIS.trans_link<br>**Note**: If neither THIS.traceid_lifecycle or THIS.trans_link is present, then there is no match. Normally traceid_lifecycle will always be present if an authorisation exists. |
| 0400<br>0420 | D | Authorisation Reversal Request<br>Authorisation Reversal Advice | Authorisation Request | OTHER.token=THIS.token<br>AND (if THIS.traceid_lifecycle exists)<br>OTHER.traceid_lifecycle = THIS.traceid_lifecycle<br>AND (if THIS.Auth_Code_DE38 exists)<br>OTHER. Auth_Code_DE38 = THIS.Auth_Code_DE38<br>AND (if THIS.trans_link exists)<br>OTHER.trans_link = THIS.trans_link<br>**Note**: If neither THIS.traceid_lifecycle or THIS.trans_link is present, then there is no match. If the reversal is due to timeout at the acquirer, THIS.traceid_lifecycle may not exist.<br>**Note**: The Auth_Code_DE38 is not mandatory for Visa authorisation reversal transactions and therefore acquirers can choose to send it or not.; In some cases, the auth code is sent in the original request but not in the authorisation reversal. In this case treat *Auth_Code_DE38 = '000000'* as you would do when it is blank. |
| 1240<br>05pp | A | Authorisation Advice Notification | - | This message should be ignored. It indicates an offline transaction where Thredd has not received a previous authorisation request. |

| MTID | Txn_Type | Description | Match to? | Match Criteria |
|---|---|---|---|---|
| 06pp<br>07pp<br><br>(p=space) | | (New dummy authorisation created if a financial notification has no matching authorisation.)<br>1240 for Mastercard<br>05pp, 06pp or 07pp for Visa where p=space | | See First Presentment for an Offline Transaction.<br><br>You will receive the financial notification corresponding to authorisation advice, which has all the information required. |
| 1240 | E | Financial Reversal<br>**Note:** Some credit/refund transactions may be reported as MTID '1240', Txn_type 'P' (with processing code 20xxxx). | Financial Notification | OTHER.Acquirer_Reference_Data_031 = THIS.Acquirer_Reference_Data_031<br>AND<br>OTHER.Txn_Amt=THIS.Txn_Amt<br>AND<br>OTHER.Txn_CCy=THIS.Txn_CCy<br>AND<br>OTHER. Auth_Code_DE38 = THIS.Auth_Code_DE38<br>AND<br>OTHER.POS_Time_DE12=THIS.POS_Time_DE12<br>AND<br>OTHER.Ret_Ref_No_DE37=THIS. Ret_Ref_No_DE37<br>**Note**: In some cases both OTHER.Auth_Code_DE38 and THIS.Auth_Code_DE38 are not present. |
| 1240 | C | Chargeback Notification | Financial Notification | OTHER.Acquirer_Reference_Data_031 = THIS.Acquirer_Reference_Data_031<br>AND<br>OTHER.token=THIS.token<br>AND<br>OTHER. Auth_Code_DE38 = THIS.Auth_Code_DE38<br>AND<br>OTHER.trans_link = THIS.trans_link<br>**Note**: In some cases both OTHER.Auth_Code_DE38 and THIS.Auth_Code_DE38 are not present. |
| 1240 | H | Chargeback Notification (Non-Credit) | Financial Notification | As above (see MTID=1240, Txn_Type='C') |
| 1240 | K | Chargeback Reversal | Chargeback | As above (see MTID=1240, Txn_Type='C'), except that OTHER (the original to match) will have Txn_Type of 'C' or 'H') |
| 1240 | N | Financial Notification (Second Presentment) | Financial Notification and/or Chargeback Notification (Txn_Type H or N) | As above (see MTID=1240, Txn_Type='C') |

| MTID | Txn_Type | Description | Match to? | Match Criteria |
|---|---|---|---|---|
| 1240 | P | Financial Notification<br>(First Presentment) | Authorisation<br>(0100 or 0120) | Rule 1: (reliable match if found, Thredd and acquirer matching data)<br>OTHER.token=THIS.token<br>AND (if THIS.traceid_lifecycle exists)<br>OTHER.traceid_lifecycle = THIS.traceid_lifecycle<br>AND (if THIS.Auth_Code_DE38 exists)<br>OTHER.Auth_Code_DE38 = THIS.Auth_Code_DE38<br>AND<br>OTHER.trans_link = THIS.trans_link<br>AND<br>OTHER.TXn_ID = THIS.Matching_Txn_ID<br>AND OTHER.Txn_CCy = THIS.Txn_CCy<br>(see notes below )<br><br>Rule 2: (run if no match on rule 1, AND THIS.traceid_lifecycle exists. Uses Acquirer matching data only)<br>OTHER.token=THIS.token<br>AND<br>OTHER.traceid_lifecycle = THIS.traceid_lifecycle<br>AND (if THIS.Auth_Code_DE38 exists)<br>OTHER. Auth_Code_DE38 = THIS.Auth_Code_DE38<br>AND OTHER.Txn_CCy = THIS.Txn_CCy<br>(see notes below too)<br><br>Rule 3: (run if no match on rule 1. Uses Thredd matching data only)<br>OTHER.token=THIS.token<br>AND (if THIS.Auth_Code_DE38 exists)<br>OTHER.Auth_Code_DE38 = THIS.Auth_Code_DE38<br>AND<br>OTHER.trans_link = THIS.trans_link<br>AND<br>OTHER.TXn_ID = THIS.Matching_Txn_ID<br>AND OTHER.Txn_CCy = THIS.Txn_CCy<br>(see notes below)<br><br>**NOTES**<br>1. The above rules are best advice, but there may be some instances where the authorisation and presentment do not match (due to acquirer inconsistencies).<br><br>2. OTHER.trans_link may not exist if matching to a MTID=0120. So rule 2 is useful here.<br><br>3. Other fields that should normally match include: |

| MTID | Txn_Type | Description | Match to? | Match Criteria |
|---|---|---|---|---|
| | | | | • Txn_Amt (except for tips, partial approval, many-auths to 1 Presentment)<br>• Proc_Code (but not a 1-to-1 match)<br>• Merch_ID_DE42<br>• POS_Termnl_DE41<br>3. If rule 2 matches and rule 3 does not, (or vice-versa), this indicates an unreliable match. It is up to you if you use the found match or not.<br>4. Normally traceid_lifecycle will always be present if an authorisation exists. However, if this is a refund, then there will not be an authorisation with a matching traceid_lifecycle. |
| 05pp<br><br>(p = space) | N | Financial Notification of a Purchase (from Visa)<br>(Second Presentment) | Prior Financial Notification or Chargeback | As above (see MTID=1240, Txn_Type='N') |
| 06pp<br><br>(p = space) | N | Financial Notification of a Refund or Credit-to-cardholder (from Visa)<br>(Second Presentment)<br>**Note:** Some credit/refund transactions may be reported as MTID '05pp', Txn_type 'P' (with processing code 20xxxx). | Prior Financial Notification or Chargeback | As above (see MTID=1240, Txn_Type='N') |
| 07pp<br><br>(p = space) | N | Financial Notification of a Cash Withdrawal or disbursement (from Visa)<br>(Second Presentment) | Prior Financial Notification or Chargeback | As above (see MTID=1240, Txn_Type='N') |
| 05pp<br><br>(p = space) | P | Financial Notification of a Purchase (from Visa) | Authorisation | As above (see MTID=1240, Txn_Type='P') |
| 06pp<br><br>(p = space) | P | Financial Notification of a Refund or Credit-to-cardholder (from Visa)<br>(First Presentment) | Authorisation | As above (see MTID=1240, Txn_Type='P') |
| 07pp<br><br>(p = space) | P | Financial Notification of a Cash Withdrawal or disbursement (from Visa)<br>(First Presentment) | Authorisation | As above (see MTID=1240, Txn_Type='P') |
| 25pp | E | Financial Reversal of a Purchase (from Visa) | Prior Financial notification | As 1240 Financial Reversal above (see MTID=1240 Txn_Type='E') |

| MTID | Txn_Type | Description | Match to? | Match Criteria |
|---|---|---|---|---|
| (p = space) | | (First Presentment) | (MTID=05) | Note: If you cannot match on Acquirer_Reference_Data_031 then try matching on traceid_lifecycle and trans_link. If you cannot match on these, then try Auth_Code_DE38 and Merch_ID_DE42. |
| 26pp<br><br>(p = space) | E | Financial Reversal of a Refund/Credit-to-cardholder (from Visa) | Prior Financial notification (MTID=06) | As 1240 Financial Reversal above (see MTID=1240 Txn_Type='E')<br>Note: If you cannot match on Acquirer_Reference_Data_031 then try matching on traceid_lifecycle and trans_link. If you cannot match on these, then try Auth_Code_DE38 and Merch_ID_DE42. |
| 27pp<br><br>(p = space) | E | Financial Reversal of a Cash Withdrawal/disbursement (from Visa) | Prior Financial notification (MTID=07) | As 1240 Financial Reversal above (see MTID=1240 Txn_Type='E')<br>Note: If you cannot match on Acquirer_Reference_Data_031 then try matching on traceid_lifecycle and trans_link. If you cannot match on these, then try Auth_Code_DE38 and Merch_ID_DE42. |
| - | L | Load | - | - |
| - | U | Unload | - | - |
| - | G | Payment | - | - |
| - | B | Balance Adjustment | - | - |
| - | Y | Card Expiry | - | - |
| - | F | Fee | - | - |

## Resolving Transaction Matching Issues

For more information on resolving matching issues, see Troubleshooting FAQs: Transactions and Matching.

# 2.2.2 Blocking and Unblocking of Card Funds

When processing and matching transaction messages, you should appropriately apply or remove any card blocks. Below are some guidelines:

- If the authorisation request is for a debit, you should apply a card block to the full billing amount, plus any fees that you or Thredd has applied to the transaction.
- If the authorisation request is a reversal, you should remove the card block for the amount that has been reversed.
- If the authorisation request is for a credit, you can choose to not change any card blocks.

It is important to understand who sent the message before you update the block. Did these originate from the Acquirer, the Network or Thredd?

# 2.2.3 Transaction Processing Summary

The following table summarises how you should process the different types of transactions sent via EHI to the external host. For additional information, see Transaction Type Decoding.

| MTID | Txn_Type | Description | Action |
|---|---|---|---|
| 0100 | A | Authorisation request. | Process normally.<br>**Note**: if the traceid_lifecycle value matches the traceid_lifecycle value in a previous 0100 authorisation request, then this is an incremental authorisation. (Normally a single financial, with the same traceid_lifecycle, will arrive in this case.) |
| | D | Automatic authorisation reversal.<br>Thredd automatically reverses a transaction if it does not receive a presentment transaction from the network within the hanging filter period.<br>In the EHI message, all the transaction data fields normally sent by the acquirer (e.g., STAN, RRN, AID and FID) will be identical to the original authorisation request (MTID=0100, Txn_Type='A'). | Match to the original authorisation request (MTID=0100, Txn_Type='A') and process accordingly. |
| 0101 | A | Authorisation repeat (Visa only) | Match to see if an 0100 original message existed (see above matching criteria table.)<br>• If you find the 0100 original, this is the *same* authorisation. In this case, respond with the original 0100 response (and do not treat this as a new authorisation.)<br>• If you cannot find the 0100 original, this indicates that you did not receive the original 0100 message. In this case, treat this as a new authorisation, and process as with a 0100 message with Txn_Type='A'. |
| 0120 | J | Authorisation advice<br>Also provided in the following cases:<br>• Stand-in processing (STIP) by the network.<br>• Automated Fuel Dispenser (AFD) transactions if the final amount is higher than the amount originally authorised in the MTID=0100 Txn_Type="A" authorisation request. | Match to the original authorisation request (MTID=0100, Txn_Type='A') and process the advice normally. Before blocking any funds you should check the Resp_Code_DE39 field to determine whether the transaction was STIP approved or declined:<br>• If approved, then replace the existing block for this transaction with a new block for the amount in this advice.<br>• If declined, then remove the block for this transaction.<br>• If the processing code indicates a credit, you can optionally choose to not change any blocks.<br>For more information, see Transaction Matching Guidelines.<br>**Note**: If a matching authorisation request exists (that needed to be cancelled), then you will separately receive a reversal (e.g. if the original response to the original authorisation request was not sent to the terminal).<br>The following fields give more information on the advice:<br>• Response_Source - indicates the system that sent the response to the authorisation message<br>• Response_Source_Why - indicates the reason for the message response<br>• Message_Source - indicates the system that sent the authorisation message<br>• Message_Why - indicates the reason for the message response |
| 0120 | D | Authorisation reversal due to an | Match to the original authorisation request (MTID=0100, |

| MTID | Txn_Type | Description | Action |
|---|---|---|---|
| | | Automated Fuel Dispenser (AFD) 0120 Advice message.<br>(An AFD sends a 0120 advice to confirm how much fuel was actually dispensed. Thredd sends this to you as a reversal, to reverse the unspent part of the original authorisation from the AFD.) | Txn_Type='A') and process this reversal accordingly. |
| 0400 | D | Authorisation reversal request<br>This is a reversal received from the network, to reverse a prior authorisation request (MTID=0100, Txn_Type='A'). | Check you have not already received and processed this reversal. If so, ignore it.<br>Match to the original authorisation request (MTID=0100, Txn_Type='A') and process accordingly (unblock the reversal amount)<br>**Note**: if the Txn_Amt in the reversal matches the Txn_Amt in the original authorisation request, then this indicates a full reversal. Unblock whatever was originally blocked. (The Bill_Amt in the reversal may slightly differ to the Bill_Amt in the original due to exchange rate fluctuations.)<br>**Note**: it is important to apply any blocks due to an 0120 Auth Advice before applying the 0400 reversal. Never unblock more than was currently blocked due to all the messages for the same transaction set.<br>For more information, see Transaction Matching Guidelines. |
| 0420 | D | Authorisation reversal advice<br>This is a reversal received from the network, to reverse a prior authorisation request (MTID=0100, Txn_Type='A').<br>This is effectively identical to to above (MTID=0400, Txn_Type='D'), only the MTID is different.<br>The only reason for the difference is that we are sending the MTID as received from the network, and some network specifications for reversals use 0400, and others use 0420. But there is no effective difference - both should be treated as a reversal advice (as in you cannot decline.)<br>(Note: Visa use 0400 and 0420. Mastercard use 0400 when originated by the acquirer, and 0420 when originated by the network.) | Check you have not already received and processed this reversal. If so, ignore it.<br>Match to the original authorisation request (MTID=0100, Txn_Type='A') and process accordingly (unblock the reversal amount)<br>**Note**: if the Txn_Amt in the reversal matches the Txn_Amt in the original authorisation request, then this indicates a full reversal. Unblock whatever was originally blocked. (The Bill_Amt in the reversal may slightly differ to the Bill_Amt in the original due to exchange rate fluctuations.) |
| 1240<br>05pp<br>06pp<br>07pp<br><br>(p = space) | A | Authorisation advice notification<br>(Dummy authorisation created if a financial notification has no matching authorisation.)<br>1240 if from Mastercard<br>05pp, 06pp, or 07pp if from Visa. (p = space) | Discard - this is not needed.<br>(The purpose of this message is to provide a dummy authorisation to match to a financial notification.) |
| 1240 | E | Financial reversal | Match to a financial notification (MTID=1240, Txn_Type='P' or Txn_Type='N') and process accordingly |
| 1240 | C | Chargeback notification | Process normally.<br>(Optionally match to a financial notification (MTID=1240, Txn_Type='P') or (MTID=1240, Txn_Type='N')) |

| MTID | Txn_Type | Description | Action |
|---|---|---|---|
| 1240 | H | Chargeback notification (Non-Credit) | Process normally.<br>(Optionally match to a financial notification (MTID=1240, Txn_Type='P') or (MTID=1240, Txn_Type='N')) |
| 1240 | K | Chargeback reversal | Process normally.<br>This reverses the effect of a chargeback (e.g., if the chargeback changed the account balance, this reverses the effect on the account balance.)<br>Optionally match to the chargeback (MTID=1240, (Txn_Type='C' or Txn_Type='H')) |
| 1240 | N | Financial notification (Second Presentment) | Process normally.<br>(Optionally match to a financial notification (MTID=1240, Txn_Type='P') or Chargeback (MTID=1240, Txn_Type='H' / 'C') |
| 1240 | P | Financial notification<br>(First Presentment) | Match to the original authorisation request (MTID=0100, Txn_Type='A') and process accordingly. Note that not all financial notifications will have a matching authorisation. |
| 05pp<br>(p = space) | N | Financial notification (Second Presentment) | Process normally.<br>(Optionally match to a financial notification (MTID=05pp, Txn_Type='P') or Chargeback (MTID=1240, Txn_Type='H' / 'C') |
| 06pp<br>(p = space) | N | Financial notification (Second Presentment) | Process normally.<br>(Optionally match to a financial notification (MTID=06pp, Txn_Type='P') or Chargeback (MTID=1240, Txn_Type='H' / 'C') |
| 07pp<br>(p = space) | N | Financial notification (Second Presentment) | Process normally.<br>(Optionally match to a financial notification (MTID=07pp, Txn_Type='P') or Chargeback (MTID=1240, Txn_Type='H' / 'C') |
| 05pp<br>(p = space) | P | Financial notification of a purchase (from Visa) | Match to the original authorisation request (MTID=0100, Txn_Type='A') and process accordingly. Note that not all financial notifications will have a matching authorisation. |
| 06pp<br>(p = space) | P | Financial notification of a Refund/Credit-to-cardholder (from Visa) | Match to Auth request (MTID=0100, Txn_Type='A') and process accordingly.<br>Note that not all Financial Notifications will have a matching Authorisation. |
| 07pp<br>(p = space) | P | Financial notification of a cash withdrawal/disbursement (from Visa) | Match to Auth request (MTID=0100, Txn_Type='A') and process accordingly.<br>Note that not all Financial Notifications will have a matching Authorisation. |
| 25pp<br>(p = space) | E | Financial reversal of a purchase (from Visa) | Match to financial notification (MTID='05', Txn_Type='P' or Txn_Type='N') and process accordingly |
| 26pp<br>(p = space) | E | Financial reversal of a refund/credit-to-cardholder (from Visa) | Match to financial notification (MTID='06', Txn_Type='P' or Txn_Type='N') and process accordingly |
| 27pp | E | Financial reversal of a cash | Match to financial notification (MTID='07', Txn_Type='P' or |

| MTID | Txn_Type | Description | Action |
|---|---|---|---|
| (p = space) | | withdrawal/disbursement (from Visa) | Txn_Type='N') and process accordingly |
| - | L | Load | Process normally. |
| - | U | Unload | Process normally. |
| - | G | Payment | Process normally. |
| - | B | Balance Adjustment | Process normally. |
| - | Y | Card Expiry | Process normally. |
| - | P | Fee | Process normally<br>Amounts are in the Fee fields (Bill_Amt will be zero) |

## 2.2.4 Incremental Authorisations

Visa and Mastercard allow certain merchants – such as hotels, car rental companies and cruise liners – to obtain an estimated initial authorisation when the final amount of the purchase is unknown and to request incremental funds if needed.

You can match incremental authorisations using the traceid_lifecycle value; each incremental authorisation will have a different txn_ID.

Under normal circumstances Thredd expects, in the same life cycle:

*Final presentment transaction amount = SUM(all approved transaction amounts) - SUM(all reversed transaction amounts)*

### Example 1

The following scenario illustrates how incremental authorisations work:

- Assume starting blocked amount is zero
  a. First Authorisation: £20 - blocked amount now £20
  b. Incremental Authorisation: £30 - blocked amount now £50
  c. Partial Reversal: £40 - blocked amount now £10
  d. Presentment would be for £10

Note that there is no guarantee the above sums will always add up:

- In all cases, on receipt of the presentment you should unblock the amount that was blocked
- the final presentment amount may be less than expected
- the final presentment amount may be more than expected

Incremental authorisations will have:

- Same Thredd token
- Same currency
- Different txn_ID
- Same traceid_lifecycle

You can decline any of the incremental authorisations (or all).

## 2.2.5 Exception Transactions

Some transactions may have slightly different rules than expected. This is normally due to waivers granted by the card scheme to permit this.

Below are some examples that Thredd are aware of. For more information on any of the below, or to see if there are any other situations, contact your Issuer.

## Transport for London (United Kingdom of GB and NI) Merchant Transactions

Transport for London (TFL) (London's Public Transport network) have various waivers on authorisation requirements, in order to permit more offline transactions and for amounts larger than usually permitted, after a single approved authorisation request.

### Example 2

The following example is from Mastercard:

(All of the below have the same traceid_lifecycle)

- MTID=0100 authorisation for GBP 6.60, which was approved
- MTID=1240 presentment for GBP 6.60
- MTID=1240 presentment for GBP 5.80
- MTID=1240 presentment for GBP 5.30

**Note:** Rules differ for UK and non-UK BIN ranges. Check with your Issuer for the latest network rules.

## Other merchants

There may be other examples of merchants with waivers to the normal process.

Contact your Issuer or the network for more information.

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[1] Visa/Mastercard do not verify whether acquirer information matches, so data from the acquirer may be inaccurate.

# 2.3 Data Types

This section describes the data types used in both GetTransaction Messages and Cut_Off WSDL messages.

For information on fields in the EHI JSON message and their data type, see JSON Data Types and EHI Fields.

| Data Type | Minimum Length | Maximum Length | Description | Examples |
|---|---|---|---|---|
| N(min,max) | min | max | Numeric digits only (‘0’ to ‘9’.)<br>Variable length of at least minimum digits up to a maximum of digits. | N(1,11) could contain any of:<br>1<br>0001<br>12345678901<br>N(3,3) could contain:<br>123<br>467<br>009<br>010 |
| A(min,max) | min | max | Alpha characters: ‘a’-‘z’, ‘A’-Z’ only.<br>Variable length of at least minimum characters up to a maximum of characters. | A(1,11) could contain any of:<br>a<br>azBC<br>FFeRRtsD<br>A(3,3) could contain:<br>Abc<br>GBX<br>NzA<br>zzA |
| HEX(min,max) | min | max | Hexadecimal digits only, where letters are in upper case only.<br>i.e ‘0’ to ‘9’ and ‘A’-‘F’.<br>Note that ‘A’-‘F’ will only be in upper case.<br>Lower case ‘a’-‘f’ are not permitted.<br><br>Variable length of at least minimum hexdigits up to a maximum of hexdigits | HEX(1,11) could contain any of:<br>1<br>ABF34AD2<br>0001<br>ABC45678901<br><br>HEX(3,3) could contain:<br>000<br>FFF<br>01A |
| AN(min,max) | min | max | Alphanumeric characters only (‘0’ to ‘9’, ‘a’-‘z’ and ‘A’-‘Z’)<br>Variable length of at least minimum characters up to a maximum of characters | AN(1,11) could contain any of:<br>1<br>Abf34ZaD2<br>0001<br>ABC45678901<br><br>Decimal(3,3) could contain:<br>123<br>467<br>009<br>010 |
| ANP(min,max) | min | max | Alpha-numeric and Pad (space) characters only.<br>i.e.’ ‘ (Space), ‘a’-‘z’, ‘A’-‘Z’, ‘0’-‘9’. | ANS(1,11) could contain any of:<br>A<br>0001<br>A B 00 5D |

| Data Type | Minimum Length | Maximum Length | Description | Examples |
|---|---|---|---|---|
| | | | Variable length of at least minimum characters up to a maximum of characters | |
| ANS(min,max) | min | max | Alphanumeric and Special Characters.<br>Variable length of at least minimum characters up to a maximum of characters | ANS(1,11) could contain any of:<br>A<br>0001<br>A B $ % & * |
| AmountUnsigned(a,f) | 3 | a+1+f | Numeric unsigned amount field, as a real number with '.' as decimal separator. It cannot be negative.<br>(e.g., 123.4567)<br>Where:<br>a = maximum number of digits before decimal point<br>f = maximum number of digits after decimal point<br>**Note**: realtime authorisation message fields of type *AmountUnsigned* can contain numbers with up to four decimal places. Clearing message fields contain numbers with up to two decimal places; Thredd recommend supporting up to four decimal places to allow for future updates to the number of supported digits. | AmountUnsigned(19,4) field could contain:<br>12345.6780<br>99999.9999<br>1.001<br>1.0<br>6.72 |
| AmountSigned(a,f) | 3 | 1+a+1+f | Numeric signed amount field, as a real number with optional leading '-' (negative sign), with '.' as decimal separator.<br>(e.g., -123.4567 or 0.09000)<br>Where:<br>'-' = optional leading negative sign (ASCII code 45)<br>a = maximum number of digits before decimal point<br>'.' = decimal point (ASCII code 46)<br>f = maximum number of digits after decimal point<br>**Note**: realtime authorisation message fields of type *AmountSigned* can contain numbers with up to four decimal places. Clearing message fields contain | AmountSigned(19,4) field could contain:<br>12345.6780<br>-99999.999<br>-1.001<br>1.0<br>-6.72 |

| Data Type | Minimum Length | Maximum Length | Description | Examples |
|---|---|---|---|---|
| | | | numbers with up to two decimal places; Thredd recommend supporting up to four decimal places to allow for future updates to the number of supported digits. | |
| Datetime (Y_to_nnn) | 23 | 23 | Date time field, Year (y) to millisecond (nnn).<br>Format “YYYY-MM-DD hh:mm:ss.nnn”<br>Where:<br>YYYY = 4 digit year 0001-9999<br>‘-‘ = literal ‘-‘ character (ASCII 0x2D)<br>MM = Month of year, 01 - 12<br>‘-‘ = literal ‘-‘ character (ASCII 0x2D)<br>DD = Day of month, 01-31<br>‘ ‘ = literal space character (ASCII 0x20)<br>hh = hour, 00 - 23<br>‘:’ = literal colon character (ASCII 0x3A)<br>mm = minute of hour, 00 - 59<br>‘:’ = literal colon character (ASCII 0x3A)<br>ss = second, 00-59<br>‘.’ = literal decimal point (ASCII 0x2E)<br>nnn = milliseconds, 000- 999 | Examples:<br>2099-12-31 23:59:59.999<br><br>1872-01-01 00:00:00.000 |
| Datetime(Y_to_ss) | 19 | 19 | Date time field, Year (Y) to second (ss).<br>Format “YYYY-MM-DD hh:mm:ss”<br>Where:<br>YYYY = 4 digit year 0001-9999<br>‘-‘ = literal ‘-‘ character (ASCII 0x2D)<br>MM = Month of year, 01 - 12<br>‘-‘ = literal ‘-‘ character (ASCII 0x2D)<br>DD = Day of month, 01-31<br>‘ ‘ = literal space character (ASCII 0x20)<br>hh = hour, 00 - 23<br>‘:’ = literal colon character (ASCII 0x3A)<br>mm = minute of hour, 00 - 59<br>‘:’ = literal colon character (ASCII 0x3A)<br>ss = second, 00-59 | 2099-12-31 23:59:59<br><br>1872-01-01 00:00:00 |

| Data Type | Minimum Length | Maximum Length | Description | Examples |
|---|---|---|---|---|
| Datetime(Y_to_D) | 10 | 10 | Date time field, Year (y) to day (d).<br>Format “YYYY-MM-DD”<br>Where:<br>YYYY = 4 digit year 0001-9999<br>‘-‘ = literal ‘-‘ character (ASCII 0x2D)<br>MM = Month of year, 01 - 12<br>‘-‘ = literal ‘-‘ character (ASCII 0x2D)<br>DD = Day of month, 01-31 | 1999-12-31 |
| DatetimeRaw (Y_to_D) | 10 | 10 | As Datetime (Y_to_D) but any of YYYY, MM or DD might contain invalid characters, such as space, letters or other.<br>If YYYY is generated by Thredd, it will be set to ‘0000’ if the month/day information it is based on does not represent a valid date. | 1999-12-31<br>0000-00-00<br>0000-x#-99<br>0000-pp-pp (where p indicates a space character) |
| Traceid | 15 | 40 | Thredd ‘traceid’ format:<br>“nnnn-YYYYMMDD-i”<br>Where:<br>nnnn = 4 character network id, identifying the originating network: (‘BNET’ = Mastercard Banknet, ‘VIS1’ = Visa Base 1)<br>‘-‘ = literal minus sign<br>YYYYMMDD = network trace date (YYYY=year), (MM=month of year, 01 to 12), (DD=day of month, 01 to 31)<br>‘-‘ = literal minus sign<br>i = network reference (alphanumeric, 1 to 26) | BNET-19991231-MCC1234XY<br>VIS1-19991231-489365567890123 |
| TraceidRaw | 15 | 40 | As Traceid, except that the raw information received from the network will be passed as-is, without validation.<br>As a result of passing the raw information:<br>• the date YYYYMMDD inside it might contain invalid characters such as spaces, or might be an invalid date such as ‘00000000’.<br>• the network reference ‘i’ inside it might be invalid in whole or in part, including containing spaces.<br>If YYYY is generated by | BNET-20191231-MCC999999<br>BNET-0000pppp-000000000 (where p is the space character)<br>VIS1-00000000-000000000000000 |

<table>
<tr><th>Data Type</th><th>Minimum Length</th><th>Maximum Length</th><th>Description</th><th>Examples</th></tr>
<tr><td></td><td></td><td></td><td>Thredd based on MMDD from the network, YYYY will be set to ‘0000’ if MMDD is not a valid date.)<br>If YYYYMMDD is generated by Thredd based on YDDD (last digit of year and day-of-year) from the network, YYYYMMDD will be set to ‘00000000’ if YDDD was not a valid date.</td><td></td></tr>
<tr><td>Rate</td><td>5</td><td>50</td><td>A conversion rate consisting of two parts separated by ‘:’ (colon.)<br>The RateDigits are provided separately so it is clear how many significant figures are in the rate value.<br>Format:<br>RateDigits:DecimalPointOffset<br>Format of each part:<br>RateDigits = N(1,10) format DecimalPointOffset = N(1,2) format (values from 0 to 12 only).<br><br>Meaning of each part:<br>The rate value = RateDigits / 10DecimalPointOffet<br>Examples:<br><table><tr><th>Rate</th><th>Decimal value</th></tr><tr><td>1234567:03</td><td>1234.567</td></tr><tr><td>123456:0</td><td>123456</td></tr><tr><td>1234567:12</td><td>0.000001234567</td></tr></table></td><td>000001:12<br>1234567:0<br>1234567:1<br>1234567:2<br>1234567:03<br>1234567:6<br>1234567:7<br>1234567:8<br>123456:09<br>1234567:12<br>0:0<br>1:0<br>1000000:6</td></tr>
<tr><td>TLV10</td><td>14</td><td>999</td><td>A concatenation of many sets of the following:<br><table><tr><th>Type</th><th>Format</th></tr><tr><td>Tag</td><td>AN(10,10)</td></tr><tr><td>Length</td><td>N(4,4)</td></tr><tr><td>Value</td><td>ANS (length,length)</td></tr></table></td><td>M1234567890001XM2222222220002YYTTTTTTTTTTT0003abc<br>(the above means there are three items as follows:<br>Tag: “M123456789”<br>Value “X”<br>Tag: “M222222222”<br>Value: “YY”<br>Tag: “TTTTTTTTTT”<br>Value: “abc”)</td></tr>
</table>

| Data Type | Minimum Length | Maximum Length | Description | Examples |
|---|---|---|---|---|
| | | | Where:<br>Tag = 10 character identifier. For tag meanings, see Misc_TLV_Data Field.<br>Length = Length of the Value field (number of UTF-8 characters) as 4 decimal digits with leading zeros.<br>Value = Value ('Length' characters long.) Usage of non ASCII-7-bit characters will be kept to a minimum.<br>Notes:<br>Tags are not in any particular order. Tags may repeat if stated in the field description.<br>Tags might not all be defined in the specification – ignore any you do not recognise.<br>Value will only contain printable characters (no binary data.) | |
| DECIMAL (p,s) | 1 | p + s + 1 | Numeric data type with fixed precision and scale.<br>• Precision (p) is the maximum total number of decimal digits that can be stored, both to the left and to the right of the decimal point.<br>• Scale (s) is the maximum number of decimal digits that can be stored to the right of the decimal point. Scale must be a value from 0 through p. Scale can be specified only if precision is specified. The default scale is 0; therefore, 0 <= s <= p. Maximum storage sizes vary, based on the precision.<br>Example:<br>If p=5 and s=2, then "12345.00" is the maximum. if p=5 and s=5, then "0.12345" is the maximum. | 1234567890123456789<br>1234567890.123456789 |

**Note:** An empty field is permitted when usage is 'Optional' even though the Data Type does not permit an empty value (min length = 0.)

# 2.4 JSON Data Types and EHI Fields

This section describes the data types of the fields in the JSON message. You should use these details together with the information on Data Types for EHI GetTransaction messages.

**Note:** The Request field values are case sensitive.

**Note:** The EHI feed does not send JSON fields to externally-hosted systems where the values for the field data are blank. This is different from EHI feeds with XML fields where the feed can send blank values.

## Request Fields

| Field | JSON Data Type | Null Allowed | Compatible with IEEE 754 binary-64 (double precision) ? |
|---|---|---|---|
| Acquirer_id_DE32 | String | | N/A |
| ActBal | Number | Y | Y |
| Additional_Amt_DE54 | String | | N/A |
| Amt_Tran_Fee_DE28 | String | | N/A |
| Auth_Code_DE38 | String | | N/A |
| Avl_Bal | Number | Y | Y |
| Bill_Amt | Number | Y | Y |
| Bill_Ccy | String | | N/A |
| BlkAmt | Number | Y | Y |
| Cust_Ref | String | | N/A |
| FX_Pad | Number | Y | Y |
| Fee_Fixed | Number | Y | Y |
| Fee_Rate | Number | Y | Y |
| LoadSRC | String | | N/A |
| LoadType | String | | N/A |
| MCC_Code | String | | N/A |
| MCC_Desc | String | | N/A |
| MCC_Pad | Number | Y | Y |
| Merch_ID_DE42 | String | | N/A |
| Merch_Name_DE43 | String | | N/A |

| Field | JSON Data Type | Null Allowed | Compatible with  IEEE 754 binary-64 (double precision) ? |
|---|---|---|---|
| Note | String | | N/A |
| POS_Data_DE22 | String | | N/A |
| POS_Data_DE61 | String | | N/A |
| POS_Termnl_DE41 | String | | N/A |
| POS_Time_DE12 | String | | N/A |
| Proc_Code | String | | N/A |
| Resp_Code_DE39 | String | | N/A |
| Ret_Ref_No_DE37 | String | | N/A |
| Settle_Amt | Number | Y | Y |
| Settle_Ccy | String | | N/A |
| Status_Code | String | | N/A |
| Token | Number | Y | Y |
| Trans_link | String | | N/A |
| Txn_Amt | Number | Y | Y |
| Txn_CCy | String | | N/A |
| Txn_Ctry | String | | N/A |
| Txn_Desc | String | | N/A |
| Txn_GPS_Date | String | | N/A |
| TXn_ID | Number | Y | Y |
| Txn_Stat_Code | String | | N/A |
| TXN_Time_DE07 | String | | N/A |
| Txn_Type | String | | N/A |
| Additional_Data_DE48 | String | | N/A |
| Authorised_by_GPS | String | | N/A |
| AVS_Result | String | | N/A |
| CU_Group | String | | N/A |
| InstCode | String | | N/A |

| Field | JSON Data Type | Null Allowed | Compatible with IEEE 754 binary-64 (double precision) ? |
|---|---|---|---|
| MTID | String | | N/A |
| ProductID | Number | Y | Y |
| Record_Data_DE120 | String | | N/A |
| SubBIN | Number | Y | Y |
| TLogIDOrg | Number | Y | Y |
| VL_Group | String | | N/A |
| Dom_Fee_Fixed | Number | Y | Y |
| Non_Dom_Fee_Fixed | Number | Y | Y |
| Fx_Fee_Fixed | Number | Y | Y |
| Other_Fee_Amt | Number | Y | Y |
| Fx_Fee_Rate | Number | Y | Y |
| Dom_Fee_Rate | Number | Y | Y |
| Non_Dom_Fee_Rate | Number | Y | Y |
| Additional_Data_DE124 | String | | N/A |
| CVV2 | String | | N/A |
| Expiry_Date | Number | Y | Y |
| PAN_Sequence_Number | Number | Y | Y |
| PIN | String | | N/A |
| PIN_Enc_Algorithm | String | | N/A |
| PIN_Format | String | | N/A |
| PIN_Key_Index | String | | N/A |
| SendingAttemptCount | Number | Y | Y |
| source_bank_ctry | String | | N/A |
| source_bank_account_format | String | | N/A |
| source_bank_account | String | | N/A |
| dest_bank_ctry | String | | N/A |
| dest_bank_account_format | String | | N/A |

| Field | JSON Data Type | Null Allowed | Compatible with IEEE 754 binary-64 (double precision) ? |
|---|---|---|---|
| dest_bank_account | String | | N/A |
| GPS_POS_Capability | String | | N/A |
| GPS_POS_Data | String | | N/A |
| Acquirer_Reference_Data_031 | String | | N/A |
| Response_Source | String | | N/A |
| Response_Source_Why | Number | Y | Y |
| Message_Source | String | | N/A |
| Message_Why | Number | Y | Y |
| traceid_lifecycle | String | | N/A |
| Balance_Sequence | Number | Y | N |
| Balance_Sequence_Exthost | Number | Y | N |
| PaymentToken_id | Number | Y | Y |
| PaymentToken_creator | String | | N/A |
| PaymentToken_expdate | String | | N/A |
| PaymentToken_type | String | | N/A |
| PaymentToken_status | String | | N/A |
| PaymentToken_creatorStatus | String | | N/A |
| PaymentToken_wallet | String | | N/A |
| PaymentToken_deviceType | String | | N/A |
| PaymentToken_lang | String | | N/A |
| PaymentToken_deviceTelNum | String | | N/A |
| PaymentToken_deviceIp | String | | N/A |
| PaymentToken_deviceId | String | | N/A |
| PaymentToken_deviceName | String | | N/A |
| PaymentToken_activationCode | String | | N/A |
| PaymentToken_activationExpiry | String | | N/A |
| PaymentToken_ activationMethodData | String | | N/A |

| Field | JSON Data Type | Null Allowed | Compatible with IEEE 754 binary-64 (double precision) ? |
|---|---|---|---|
| PaymentToken_activationMethod | Number | Y | Y |
| ICC_System_Related_Data_DE55<br>This field applies to both Visa and Mastercard. | String | | N/A |
| Merch_Name | String | | N/A |
| Merch_Street | String | | N/A |
| Merch_City | String | | N/A |
| Merch_Region | String | | N/A |
| Merch_Postcode | String | | N/A |
| Merch_Country | String | | N/A |
| Merch_Tel | String | | N/A |
| Merch_URL | String | | N/A |
| Merch_Name_Other | String | | N/A |
| Merch_Net_id | String | | N/A |
| Merch_Tax_id | String | | N/A |
| Merch_Contact | String | | N/A |
| auth_type | String | | N/A |
| auth_expdate_utc | String | | N/A |
| Matching_Txn_ID | Number | Y | Y |
| Reason_ID | Number | Y | Y |
| Dispute_Condition | String | | N/A |
| Network_Chargeback_Reference_Id | String | | N/A |
| Acquirer_Forwarder_ID | String | | N/A |
| Currency_Code_Fee | String | | N/A |
| Currency_Code_Fee_Settlement | String | | N/A |
| Interchange_Amount_Fee | Number | Y | Y |
| Interchange_Amount_Fee_ Settlement | Number | Y | Y |

| Field | JSON Data Type | Null Allowed | Compatible with  IEEE 754 binary-64 (double precision) ? |
|---|---|---|---|
| Clearing_Process_Date | String | | N/A |
| Settlement_Date | String | | N/A |
| DCC_Indicator | Number | Y | Y |
| multi_part_txn | Number | Y | Y |
| multi_part_txn_final | Number | Y | Y |
| multi_part_number | Number | Y | Y |
| multi_part_count | Number | Y | Y |
| SettlementIndicator | String | | N/A |
| Network_TxnAmt_To_BillAmt_Rate | String | | N/A |
| Network_TxnAmt_To_BaseAmt_Rate | String | | N/A |
| Network_BaseAmt_To_BillAmt_Rate | String | | N/A |
| POS_Date_DE13 | String | | N/A |
| Traceid_Message | String | | N/A |
| Traceid_Original | String | | N/A |
| Network_Currency_Conversion_Date | String | | N/A |
| Mastercard_AdviceReasonCode_ DE60 | String | | N/A |
| Network_Original_Data_Elements_ DE90 | String | | N/A |
| Visa_ResponseInfo_DE44 | String | | N/A |
| Visa_STIP_Reason_Code | String | | N/A |
| Network_Issuer_Settle_ID | String | | N/A |
| Network_Replacement_Amounts_ DE95 | String | | N/A |
| Visa_POS_Data_DE60 | String | | N/A |
| Network_Transaction_ID | String | | N/A |
| Misc_TLV_Data | String | | N/A |
| Acquirer_Country | String | | N/A |
| PaymentToken_PanSource | String | | N/A |

| Field | JSON Data Type | Null Allowed | Compatible with IEEE 754 binary-64 (double precision) ? |
|---|---|---|---|
| ClearingFileID | String | | N/A |
| Network_Fraud_Data | String | | N/A |
| SenderData | String | | N/A |
| ReceiverData | String | | N/A |
| AuthenticationAmountUpper | Number | Y | Y |
| AuthenticationCurrency | String | | N/A |
| AuthenticationMerchantHash | String | | N/A |
| FxProviderCardholderRate | Number | | Y |
| FxProviderBookedRate | Number | | Y |

**Note:** For more information on JSON data types, see the RFC 8259 JSON specification.

## Response Fields

| Field | JSON Data Type | Null Allowed | Compatible with IEEE 754 binary-64 (double precision) ? |
|---|---|---|---|
| MerchantAdvice | String | Y | N/A |
| Responsestatus | String | Y | N/A |
| CurBalance | Number | Y | N/A |
| AvlBalance | Number | Y | N/A |
| Acknowledgement | String | Y | N/A |
| LoadAmount | Number | Y | N/A |
| Bill_Amt_Approved | Number | Y | N/A |
| Update_Balance | Number | Y | N/A |
| New_Balance_Sequence_Exthost | Number | Y | N/A |
| CVV2_Result | String | Y | N/A |
| CurBalance_GPS_STIP | Number | Y | N/A |
| AvlBalance_GPS_STIP | Number | Y | N/A |

## Number range and precision

For each field of JSON data type *Number*, refer to the field description in GetTransaction Message Fields. which describes the field length range and maximum value you need to support. This is important to ensure no loss of information, especially for the fields with potentially large values.

**Tip:** Some of the above fields of JSON data type *Number* have a bigger range than the RFC 8259 data type of IEEE 754 binary-64 (double precision) which is described for numbers. If using the JavaScript language to process JSON, then for whole numbers (of Thredd data type *N(min.max)*) the JavaScript data type *bigint* would be a suitable alternative to the IEEE 754 binary-64 number data type.

### Example

The Matching_Txn_ID field is a number of type N(1,16), with a minimum length of 1 digits and maximum length of 16 digits. Your systems must be able to handle a value containing up to 16 digits.

# 2.5 GetTransaction Message Fields

This section describes the fields included in the GetTransaction message.

To view message examples for different types of transactions, see GetTransaction Example Messages.

## 2.5.1 Request Field Formats

| Field | Description | Data Type[1] | Sample Data |
|---|---|---|---|
| Acquirer_id_DE32 | Acquiring Bank ID as assigned by the network. Note that the format differs depending on whether this is an Authorisation or a Financial type message.<br>For Authorisation messages:<br>• 2 digits length of Acquirer ID (01 to 09)<br>• Acquirer ID (possibly with leading zeros)<br>For Financial messages:<br>• 6 digit Acquirer ID (possibly with leading zeros)<br>Examples:<br>Authorisation examples:<br>• “06123456” means: “06” = length of Acquirer ID. “123456” Acquirer ID.<br>• “0501234” means: “05”=length of acquirer ID. “01234” = acquirer ID.<br>Financial examples:<br>• “123456” (acquirer id = 123456)<br>• “00123” (acquirer id = 123) | N(3,15) | Mastercard Authorisation type:<br>06123456<br><br>Mastercard Financial type:<br>123456<br><br>VISA Authorisation type:<br>06454500<br><br>VISA Financial type:<br>10000398 |
| ActBal | Actual balance on the card after the transaction, in the card account currency:<br>• Positive indicates a credit balance.<br>• Negative indicates a debit balance. | AmountSigned (19,4) | -250.0000 |
| Additional_Amt_DE54 | DE 54 (Additional Amounts) provides information on up to two amount types and related account data. See Additional Amount Field. | AN(20, 240) | 0040985D000000020000 |
| Amt_Tran_Fee_DE28 | DE 28 (Amount, Transaction Fee) is the fee charged (for example, by the acquirer) for transaction activity in the transaction currency code. The format differs between Authorisation and Financial messages, as follows:<br>• Authorisation message | Authorisation:<br>AN(9,9)<br><br>Financial:<br>AmountUnsigned(9,2) | For Authorisation:<br>D00000500<br><br>For Financial:<br>0.00 |

| Field | Description | Data Type[1] | Sample Data |
|---|---|---|---|
| | format: D= debit issuer or C = credit issuer; 8 digit fee amount in the minor units of currency held in the field Txn_CCy.<br>• Financial message format: Number in the major units of currency held in the field Txn_CCy, with decimal places.<br>For more information, see How are Acquirer fees applied and reported? | | |
| Auth_Code_DE38 | Authorisation code generated by Thredd for approved and declined authorisation requests. | ANP(1,6) | 675093 |
| Avl_Bal | Available balance on the card after the transaction, in the currency of Bill_Ccy field (card account currency). Negative indicates the account is in debit. | AmountSigned (19,4) | -60.7600 |
| Bill_Amt | Settlement billing amount of the transaction in Bill_Ccy currency.<br>Positive indicates the cardholder account is to be credited (e.g. used for Refunds). Negative means that cardholder account is to be debited (e.g. used for Purchase transactions). For usage in transactions, see Examples of Amount Signs.<br>**Note**: This excludes the Thredd calculated fees (Fee_Fixed and Fee_Rate) and Padding (Fx_Pad and MCC_Pad). Financial Transactions do not have padding. | AmountSigned (19,4) | -189.2400 |
| Bill_Ccy | ISO 3-digit numeric currency of the billing amount. See Currency Codes. | N(3,3) | 978 |
| BlkAmt | Total amount blocked on the card after this transaction, in the card's account currency (Bill_Ccy field). Normally zero (if no blocked amount on the card) or negative. For example:<br>• If BlkAmt = 0.0000 the total amount blocked on this card for all outstanding transactions is 0.0000.<br>• If BlkAmt = -24.0100 the total amount blocked on this card for all outstanding transactions is 24.0100 in the Bill_Ccy currency. | AmountSigned (19,4) | -134.6500 |

| Field | Description | Data Type[1] | Sample Data |
|---|---|---|---|
| Cust_Ref | Customer account reference. | ANS(1,25) | 4566DXF<br>Imperial Majesty |
| FX_Pad | Foreign currency (FX) padding applied to the transaction in the card's account currency (Bill_Ccy field). | AmountUnsigned(19,4) | 0.0000 |
| Fee_Fixed | The total fixed fee amount which is the sum of all fixed fees calculated by Thredd (based on your Thredd Fee Group configuration). This is applied to the transaction in the card's account currency (Bill_Ccy field). Normally zero or positive. | AmountSigned(19,4) | 0.0000 |
| Fee_Rate | Fee amount due, including all percentage rate fees calculated by Thredd applied to the transaction. Normally zero or positive. Corresponds to your fee setup on the system. | AmountSigned(19,4) | 0.0000 |
| LoadSRC | The source of the load request. See Load Source.<br>Present only for Txn_Type values of:<br>L= Load; U = Unload; G = Payment | N(1,4) | 14 |
| LoadType | Payment method of funds for the load. See Load Types.<br>Present only for Txn_Type values of:<br>L= Load; U = Unload; G = Payment | N(1,1) | 0 |
| MCC_Code | The classification (card acceptor business code or merchant category code) of the merchant's type of business or service. See Merchant Category Codes. | N(1,4) | 5411 |
| MCC_Desc | The classification (card acceptor business code or merchant category code) of the merchant's type of business or service. | ANS(0,250) | Grocery Stores, Supermarkets |
| MCC_Pad | Merchant category code (MCC) padding applied for the transaction in the card's account currency (Bill_Ccy field). | AmountUnsigned(19,4) | 0.0000 |
| Merch_ID_DE42 | Identifies the merchant or entity that accepted the card. This is always provided for a POS transaction and is optional for an ATM transaction.<br>For a POS tansaction, the merchant name is defined by the acquirer (Acquirer_id_DE32). For | ANS(1,15) | Mastercard Authorisation: 51569373<br>Mastercard presentment: 82040424200019<br><br>VISA Authorisation: 372181910889<br>VISA Presentment: 005438482900826 |

| Field | Description | Data Type[1] | Sample Data |
|---|---|---|---|
| | an ATM transaction, it typically identifies the entity that owns the ATM. | | |
| Merch_Name_DE43 | Identifies the merchant or entity that accepted the card and their location (excluding ATM and card-activated public phones).<br><br>**Note**: For EHI Version 3.0 and beyond, Thredd recommend using the following fields: Merch_Name, Merch_Street, Merch_City, Merch_Region, Merch_Postcode, Merch_Country.<br><br>The format differs depending on whether this is an Authorisation or a Financial message. For Visa and Mastercard authorisation message formats, see Merch_Name_DE43 Field in Authorisations. For Visa and Mastercard financial message formats, see Merch_Name_DE43 Field in Financials. | ANS(1,101) | Mastercard Authorisation:<br>Golff Harmelen HARMELEN NLD<br><br>FOR VISA:<br>TONY ROMA'S CARACAS VE |
| POS_Data_DE22 | Point of Sale (POS) data field, indicating the PAN entry method and the capability of the terminal to accept a PIN.<br><br>**Note**: For EHI Version 3.0 and beyond, Thredd recommend using the following fields: GPS_POS_Capability, GPS_POS_Data.<br><br>Format and content differs per message type as follows:<br><br>For Visa and Mastercard Authorisation messages:<br>• This holds the PAN entry method and PIN capture capability. See POS_Data_DE22 in Authorisation Messages<br>• For the extra POS methods and capabilities, see field POS_Data_DE61 instead<br>For Mastercard Financial messages: this holds all the POS methods and capabilities. See POS_Data_DE22 in Mastercard Financial Messages.<br><br>For Visa Financial messages: this is empty. | Authorisation messages:<br>N(3,4)<br><br>Financial messages:<br>AN(12,12) | Mastercard Authorisation messages: 071<br><br>Visa Authorisation messages: 0710<br><br>Mastercard Financial messages: C11101299001<br><br>Visa Financial messages: (empty) |

| Field | Description | Data Type[1] | Sample Data |
|---|---|---|---|
| POS_Data_DE61 | **Note**: For EHI Version 3.0 and beyond, Thredd recommend using the following fields for accurate POS data: GPS_POS_Capability and GPS_POS_Data. The is because POS_Data_DE61 is only relevant to Mastercard authorisations and only the first 9 positions are guaranteed in Mastercard.<br>For Mastercard authorisation-related messages: This holds additional POS condition codes. See POS_Data_DE61 Values<br>For Visa Authorisation-related messages: this is empty.<br>For Financial and all other messages: this is empty. | ANP(9,39) | For Mastercard Authorisation messages: 1025100006600442L2338<br>For VISA Authorisation messages: (empty)<br>For All Financial messages: (empty) |
| POS_Termnl_DE41 | Uniquely identifies the terminal which accepted the card. Always present if the card data was read by a terminal (i.e. field POS_Data_DE22 first two digits are any of: 02,03,04,05,06,07,08,80,90,91,92,95.)<br>Otherwise may be omitted. | ANS(1,8) | 1NDR01 |
| POS_Time_DE12 | This is the local time or date/time of the transaction in the time zone of the merchant or entity that accepted the card. The format varies depending on the message type as follows:<br>For Authorisation messages (Transaction Type - Authorisation), the format is:<br>“hhmmss” (hh=hour 00-23, mm=minute 00-59, ss=second 00-59.)<br>**Note**: For Visa Authorisations, the time is optional, so this field may be blank.<br>For Financial messages (Transaction Type - Financial, including dummy offline authorisations), the format is:<br>“YYMMDDhhmmss” (YY=last 2 digits of year, MM=month 01-12, DD=day of month 01-31, hh=hour 00-23, mm=minute 00-59, ss=second 00-59.)<br>**Note**: For Visa Financial format, the time is often “000000”, so often only the | If Auth:<br>N(6,6) or blank<br>If Financial (inc. dummy auth):<br>N(12,12) | If Auth:<br>141642<br>Empty-field<br>If Financial:<br>991231141642<br>191129000000 |

| Field | Description | Data Type[1] | Sample Data |
|---|---|---|---|
| | YYMMDD will have a meaningful value. | | |
| Proc_Code | Processing code for the transaction. See Processing Codes. | N(6,6) | 090000 |
| Resp_Code_DE39 | This field is provided in 0120 (auth advice), 0400 (reversal request) and 0420 (reversal advice) messages to indicate the reason for the advice or reversal. You should check this field to determine whether the transaction was STIP approved or declined. For more information, see Resp_Code_DE39 Values.<br>**Note**: For some Visa authorisation advices, this field is optional, so may be blank. | AN(2,2) | 00 |
| Ret_Ref_No_DE37 | Document reference number supplied by the system. Retains the original source document of the transaction and assists in locating that source document. | ANP(1,12) | 673001106898 |
| Settle_Amt | Settlement amount in settlement currency, as received from the Network. Value varies per transaction types as follows:<br><br>MTID/Txn_Type combinations listed in the section Transaction Type - Authorisation (auths, auth reversals):<br>• the amount is always positive<br>• The amount is the network converting the transaction amount into the settlement currency, and is not the net settlement amount<br><br>MTID and Txn_Type combinations listed in the section Transaction Type - Financial (real financials and their reversals, dummy Auths):<br>• The amount will have the same sign as the Bill_Amt field: positive (e.g., 20.00) if the card is credited and negative (e.g., -20.00) if debited.<br>• This amount will not include interchange or issuer fees - it is simply the transaction amount | AmountSigned (19,4) | Authorisation:<br>67.0100<br><br>Financials:<br>-189.2400<br>89.2400 |

| Field | Description | Data Type[1] | Sample Data |
|---|---|---|---|
| | converted into the settlement currency by the network, then the sign adjusted to positive or negative. It is not the net settlement amount.<br>For usage in transactions, see Examples of Amount Signs. | | |
| Settle_Ccy | Settlement currency. ISO 3-digit numeric. See Currency Codes. | N(3,3) | 978 |
| Status_Code | Current status code of the card on the Thredd system. See Card Status Codes. | AN(2,2) | 00 |
| Token | Thredd public token of the card. The range includes values from 100000000 to 999999999 inclusive. | N(1,9) | 231152625 |
| Trans_link | An identifier used to link related transactions together. For details, see the Trans_Link Field Appendix. | N(1,19) | 151231225367089085 |
| Txn_Amt | Transaction amount, in the transaction currency (see Txn_CCy field). Always zero or positive. To identify whether this is a credit or debit, check the Proc_Code field. For usage in transactions, see Examples of Amount Signs. | AmountUnsigned(19,4) | 189.2400 |
| Txn_CCy | Currency in which transaction occurred. ISO 3-digit currency code. See Currency Codes. | N(3,3) | 978 |
| Txn_Ctry | Country code for the transaction. ISO 3-alpha country code. Upper case characters only.See Country Codes. | A(3,3) | NLD |
| Txn_Desc | Description of the transaction. | ANS(1,800) | Golff Harmelen HARMELEN NLD |
| Txn_GPS_Date | Date in which transaction occurred. It is 'GMT' in winter and 'GMT +1' in summer (BST stands for British Summer Time). Format:<br>*YYYY-MM-DD hh:mm:ss.nnn*<br>Where there is a space between the date and time fields, and nnn is the milliseconds.<br>For TransactionType = A and MTID = 0100, this date is the time at the point just before Thredd sends the transaction to EHI. | Datetime (Y_to_nnn) | 2015-11-05 13:11:30.910 |
| TXn_ID | Unique ID for the transaction, generated by Thredd. This | N(1,16) | 51075303 |

| Field | Description | Data Type[1] | Sample Data |
|---|---|---|---|
| | should be used for duplicate checking. Maximum number will be $2^{53}$-1.<br>**Note**: Suitable for IEEE 754 binary-64 data type. See JSON Data Types and EHI Fields. | | |
| Txn_Stat_Code | Transaction status code for the transaction. See Transaction Status Codes. | AN(1,1) | A |
| TXN_Time_DE07 | Transmission Date and Time, in GMT (UTC) timezone.<br>Date and time message was sent by the acquirer to MasterCard/Visa Network.<br>Format:<br>*MMDDhhmmss*<br>Where:<br>MM = Month of year 01-12<br>DD = Day of month 01-31<br>hh = hour of day 00-23<br>mm = minute of hour 00-59<br>ss = second 00-59 | N(10,10) | 0302131642 |
| Txn_Type | Transaction type description for the transaction. See Transaction Types. | AN(1,1) | A |
| Additional_Data_DE48 | Network Additional data DE48 field. Contact Thredd if there is any specific piece of information you need from here.<br>Ignore unless mutually agreed with Thredd to extract certain data.<br>**Note:** For certain sub-elements, Thredd may use a default value of "3" to replace the original content to keep the integrity of the data field. If your organisation is using a specific sub-element contained within a data field with a default value, please contact your Thredd account manager.<br>**Note:** This field is passed through for scheme transaction risk scores, provided they are enabled by the Issuer as this is a chargeable service. | ANS(1,5000) | For Mastercard Authorisation messages:<br>034T8202529203385420701032106105000000<br><br>For Mastercard Financial messages:<br>0002003MRG0003003MRG0023003NA<br>0146036002901840000000000023384<br>0000000000233014800878428402<br>0158029MCC47840013412100304 NNNNN<br><br>For VISA Authorisation message:<br>0B5CF0F0F1F9F7F2F1F4F2F0 |
| Authorised_by_GPS | To identify whether authorised by Thredd or not for Stand-In enabled products: | A(1,1) | Y |

| Field | Description | Data Type (1) | Sample Data |
|---|---|---|---|
| | Y = Thredd can stand-in to authorise transaction in agreed circumstances.<br>N = no stand-in authorisation | | |
| AVS_Result | The result of AVS checking. See AVS Results. | AN(1,1) | N |
| CU_Group | Group code assigned for usage checking. | ANS(1,10) | AER-CU-001 |
| InstCode | Thredd Issuer (Program Manager) Code. Assigned by Thredd. | ANS(1,4) | TMS |
| MTID | The Message Type Identifier (MTID) describes the type of message being interpreted.<br>0100 = Authorisation Request<br>0400 = Reversal Request<br>0420 = Reversal Advice<br>1240 = Financial Notification (also used for Chargeback Notification for Mastercard and Visa; check TransactionType to tell the difference)<br>'05 ' (05 with 2 spaces) = Financial Notification (Purchase from Visa)<br>'06 ' (06 with 2 spaces) = Financial Notification (Credit from Visa)<br>'07 ' (07 with 2 spaces) = Financial Notification (Cash from Visa)<br>'25 ' (25 with 2 spaces) = Financial Reversal (of a Purchase from Visa)<br>'26 ' (26 with 2 spaces) = Financial Reversal (of a Credit from Visa)<br>'27 ' (27 with 2 spaces) = Financial Reversal (of Cash from Visa)<br>For a full list, see Transaction Matching Criteria. | ANP(1,4) | For Mastercard Authorisation: 0100<br>For Mastercard presentment: 1240<br>For VISA Authorisation:<br>0100<br>For VISA presentment: ’05 ‘<br>’06 ‘<br>’07 ‘ |
| ProductID | This value is the Product ID of the card. The Product ID is generated during product setup. For details, check with your Implementation Manager. | N(1,5) | 1504 |
| Record_Data_DE120 | This field is Mastercard-specific. DE 120 (Record Data) is a variable-length data element used for transmitting file record data or textual character string data in various message types. | ANS(1,1000) | For Mastercard: 018041414<br>For VISA: (empty) |

| Field | Description | Data Type[1] | Sample Data |
|---|---|---|---|
| SubBIN | The sub-BIN value assigned to the product.<br>**Note:** Can only be used for 6-digit BINs. Displays the 6-digit BIN plus 2 additional sub-BIN digits.<br>**Note:** For 8-digit BINs, displays the 8-digit BIN. | N(1,11) | 6-digit BIN: 67592**12** (sub-BIN is last 2 digits)<br>8-digit BIN: 67592678 (no sub-BIN displayed) |
| TLogIDOrg | ID of original transaction for reversals.<br>Maximum value will be $2^{53}$-1.<br>**Note**: Suitable for IEEE 754 binary-64 data type. See JSON Data Types and EHI Fields. | N(1,16) | 0 |
| VL_Group | Group code assigned for velocity checking. | ANS(1,10) | AVU-VL-005 |
| Dom_Fee_Fixed | Domestic fixed fee amount applied to transaction by Thredd, in the card account currency. It is part of the Fixed_Fee.<br>Domestic is defined as: Txn_CCy = Bill_Ccy<br>Corresponds to your fee setup on the system. | AmountSigned (19,4) | 0.0000 |
| Non_Dom_Fee_Fixed | Non-domestic fixed fee amount applied t othe transaction by Thredd, in the card account currency. It is part of Fixed_Fee.<br>Non-Domestic is defined as: Txn_CCy ≠ Bill_Ccy<br>Corresponds to your fee setup on the system. | AmountSigned (19,4) | 0.0000 |
| Fx_Fee_Fixed | Fixed foreign exchange fee amount applied by Thredd to the transaction, in the card account currency. It is part of Fixed_Fee. Corresponds to your fee setup on the system.<br>For example, if:<br>• the "Fx Fixed" was "1.2000" (i.e., 1.20 in billing currency) in the fee configuration relevant for this transaction<br>• Bill_Amt=10.0000<br>• Txn_CCy = 840<br>• Bill_Ccy = 826<br>• Foreign exchange occurred (as Txn_Ccy ≠ Bill_Ccy)<br>then Fx_Fee_Fixed Amount = | AmountSigned (19,4) | 0.0000 |

| Field | Description | Data Type[1] | Sample Data |
|---|---|---|---|
| | 1.2000 (in account currency) | | |
| Other_Fee_Amt | Other fees applied. It is part of Fixed_Fee. | AmountSigned (19,4) | 0.0000 |
| Fx_Fee_Rate | Fee Amount calculated by Thredd as part of the transaction, due to “Fx Rate” fee setting. It is part of Fixed_Fee.<br>Corresponds to your fee setup on the system.<br>For example, if:<br>• the “Fx Rate” was “1.2000” (i.e., 1.20%) in the fee configuration relevant for this transaction<br>• Bill_Amt=10.0000<br>• Txn_CCy = 985<br>• Bill_Ccy = 840<br>• Foreign exchange occurred (as Txn_CCy ≠ Bill_Ccy)<br>then Fx_Fee_Rate Amount = 10.0000 * 0.0120 = 0.1200 (in account currency) | AmountSigned (19,4) | 0.0000 |
| Dom_Fee_Rate | Fee Amount calculated by Thredd as part of the transaction, due to “Dom Fee Rate” fee setting, in the card account currency. It is part of Fixed_Fee.<br>Domestic is defined as: Txn_CCy = Bill_Ccy<br>Corresponds to your fee setup on the system.<br>For example, if:<br>• The “Dom Fee Rate” fee setting was “1.7500”<br>• Bill_Amt = 32.0000<br>• Txn_CCy = 978<br>• Bill_Ccy = 978<br>• Transaction is Domestic (as Txn_CCy = Bill_Ccy)<br>Then Fee Amount due to “Dom Fee Rate” = 32.0000 * 0.0175 = 0.5600 (in account currency.) | AmountSigned (19,4) | 0.0000 |
| Non_Dom_Fee_Rate | Fee Amount calculated by Thredd, due to Non domestic rate fee setting, in the card account currency. It is part of Fee_Rate.<br>Non-Domestic is defined as: Txn_CCy ≠ Bill_Ccy<br>Corresponds to your fee setup on the system.<br>For example, if: | AmountSigned (19,4) | 0.0000 |

| Field | Description | Data Type[1] | Sample Data |
|---|---|---|---|
| | • The “Non Dom Fee Rate” fee setting was “2.00” (i.e. 2%)<br>• Bill_Amt = 64.0000<br>• Txn_CCy = 840<br>• Bill_Ccy = 826<br>• Transaction is non-domestic (as Txn_CCy ≠ Bill_Ccy)<br>Then Fee Amount due to “Non Dom Fee Rate” = 64.0000 * 0.0200 = 1.2800 (in account currency.) | | |
| Additional_Data_DE124 | This field is Mastercard specific. DE 124 is used only for MasterCard Money Send and transactions.<br>In a Mastercard Networks Exchange SMS Network, acquirers can use DE 124 (Mastercard Networks Exchange Tags, Acquirer/Info, Text) to pass additional information to issuers on financial requests. | ANS(1,200) | For Mastercard: 1990006434532408021801MC MONEY SEND ST SOVETSKAYA 58<br><br>For VISA: (empty) |
| CVV2 | Cardholder Verification Value 2. This will only be present if configured for the customer. Format of this if present will be:<br>• If 3 characters long: 3 digit CVV2 value<br>• If 6 characters long:<br>Position 1 (CVV2 presence indicator)<br>Position 2 (CVV2 Response Type indicator)Position 3 (Space)<br>Positions 4-6 ( CVV2 Value)<br>(Thredd always sends the 3-digit CVV2 values for Mastercard. For Visa Threddsends the 6-character version) | N(3,6) | Mastercard:<br>123<br><br>Visa:<br>11 123 |
| Expiry_Date | Card or Token expiry date as received in transaction. Format: *YYMM*<br>This will only be present if configured for by the Program Manager. | N(4,4) | 2912 |
| PAN_Sequence_Number | PAN sequence number. Only present if sent by the acquirer. | N(1,2) | 8 |
| PIN | PIN block of format PIN_Format (see PIN Block Formats) encrypted under the EHI PIN Key of index = PIN_Key_Index using algorithm PIN_Enc_Algorithm. | HEX(32,32) | B7A85096C4C5EE23 |

| Field | Description | Data Type[1] | Sample Data |
|---|---|---|---|
| | Present only if Online PIN message and customer is configured to receive it. If this field is present, then these fields will also be present:<br>• PIN_Key_Index<br>• PIN_Format<br>• PIN_Enc_Algorithm | | |
| PIN_Enc_Algorithm | PIN block encryption algorithm.<br>Describes the encryption algorithm used to encrypt the PIN in the PIN field. Values:<br>• 3DES = Triple DES using ECB, using a triple length DES key.<br>**Note**: Other values may be added in future versions.<br>(This field is always present if PIN field is present) | AN(1,16) | 3DES |
| PIN_Format | The format of the PIN block used as clear text before encryption to create the PIN field. PIN Block formats:<br>0 = ISO9564-1 Format 0<br>1 = ISO9564-1 Format 1<br>2 = ISO9564-1 Format 2<br>3 = ISO9564-1 Format 3<br>Currently only value '1' (implying ISO9564-1 Format 1) is supported. This is because it is the only PIN block format that varies for the same PIN and does not require a PAN.<br>(This field is always present if the PIN field is present) | N(1,4) | 1 |
| PIN_Key_Index | Index of the PIN Key used to encrypt the PIN field. | N(1,4) | 2 |
| SendingAttemptCount | Indicates the number of times Thredd has repeated this message:<br>0 = not repeated (1st transmit)<br>1 = repeated once (2nd transmit)<br>2 = repeated twice (3rd transmit)<br>...<br>n = repeated n times ((n+1) transmit) | N(1,4) | 2 |
| source_bank_ctry | **Note**: This is Mastercard-specific.<br>Source Bank Country code as ISO 3-alpha uppercase. See Country Codes. | A(3,3) | For Mastercard: GBR<br><br>For VISA: (empty) |

| Field | Description | Data Type[1] | Sample Data |
|---|---|---|---|
| source_bank_account_format | Format of the bank account number in the source_bank_account field. See Bank Account Format. | AN(1,8) | For Mastercard: GBR<br><br>For VISA: (empty) |
| source_bank_account | Source bank account number. In format specified by source_bank_account_format | ANP(1,34) | For Mastercard: 601608 39857710<br><br>For VISA: (empty) |
| dest_bank_ctry | Destination Bank Country code as ISO 3-alpha uppercase. See Country Codes. | A(3,3) | For Mastercard: GBR<br><br>For VISA: (empty) |
| dest_bank_account_format | Format of the bank account number in the dest_bank_account field. See Bank Account Format. | AN(1,8) | For Mastercard: IBAN<br><br>For VISA: (empty) |
| dest_bank_account | Destination bank account number. In format specified by dest_bank_account_format. See Bank Account Format. | ANP(1,34) | For Mastercard: GB29NWBK60161331926819<br>For VISA: (empty) |
| GPS_POS_Capability | Thredd defined POS Capability codes. Defines what the POS terminal capabilities are for this transaction. See GPS_POS_Capability. | AN(2,255) | 1100100100010000000000010010010100000000019234CR |
| GPS_POS_Data | Thredd defined POS Data codes. Defines what happened at the POS terminal (e.g. card data input method). See GPS_POS_Data field. | AN(1,255) | 0171000300002Nx000 |
| Acquirer_Reference_Data_031 | Acquirer Reference Number (ARN).<br>This field is a 23 digit number for Mastercard and Visa transactions and an 8-digit alphanumerical value for Discover Global Network transactions.<br>The acquirer reference number exists for clearing messages only (Financial advices/notifications, and Chargeback advices/notifications (and reversals of)).<br>If MTID=1240 and Txn_Type='A' (dummy auth created if no matching auth to the financial) - in this case there may or may not be Acquirer_Reference_Data_031 present.<br>It is created by the acquirer in the first financial presentment, according to the scheme rules. It will be the same value for all clearing messages in the entire | N(23) | For Mastercard and VISA: 74456126366123456789014<br>For Discover:<br>000Or6P3 |

| Field | Description | Data Type[1] | Sample Data |
|---|---|---|---|
| | lifecycle.<br>**Note**: Values should be unique per card scheme within a 10-year time period. | | |
| Response_Source | Indicates which system sent the 0110 or 0210 response to the terminal. Normally present only for some Authorisation advices and Authorisation reversals.<br>See Response_Source and Message_Source values.<br>The field is ANS, but the special character is restricted to '_' (underscore) and '-' (minus sign), and special character will not begin the string. | ANS*(1,10)<br><br>Special characters only '-' or '_' | VISA-STIP |
| Response_Source_Why | Indicates the reason why the Response_Source sent a response to the terminal. Normally present only for some Authorisation advices and Authorisation reversals. See Response_Source_Why and Message_Why values. | N(1,4) | 1 |
| Message_Source | Indicates which system sent this message. Normally present only for some Authorisation advices and Authorisation reversals.<br>See Response_Source and Message_Source values.<br>The field is ANS, but the special character is restricted to '_' (underscore) and '-' (minus sign), and special character will not begin the string. | ANS*(1,10)<br><br>Special characters only '-' or '_' | MC-STIP |
| Message_Why | Indicates the reason why Response_Source sent a response to the terminal. Normally present only for some Authorisation advices and Authorisation reversals. See Response_Source_Why and Message_Why values. | N(1,4) | 18 |
| traceid_lifecycle | Lifecycle Trace ID. This consists of alphanumeric and '-' characters only. This is a value assigned to the lifecycle of the transaction, which is identical for all messages relating to the same transaction. For example, the following messages relating to the same transaction will all have the same Lifecycle Trace ID value: *Authorisation*, *Second incremental authorisation*, *authorisation reversal*, *Financial Presentment*, *Chargeback*, | ANS*(1,40)<br><br>* * the only special character is "-" (hyphen) | VIS1-20160608-086160508692217<br><br>BNET-20151231-MRG9001AB |

| Field | Description | Data Type (1) | Sample Data |
|---|---|---|---|
| | *Second Presentment* and *Second chargeback*.<br>If there is more than one authorisation for the same transaction, both authorisations will have the same value.<br>This is a reliable matching field and should be used for matching in the first instance if present.<br>**Construction of this field's value**<br>The traceid_lifecycle is a concatenation of: *network_id + "-" + date_yyyymmdd + "-" + a unique identifier*<br>For more information, see the FAQs: What is the traceid_lifecycle field and how is it constructed?<br>**Note**: We strongly advise you not to use hard-coded logic on your side based on the current format of this field, as Thredd may change the format of this field in the future.<br>**Note**: Will be present in most messages, but may not be included in some Authorisation Reversals (e.g. timeout reversals) and some Financial messages which were not authorised online (e.g. refunds, offline approved transactions). | | |
| Balance_Sequence | Thredd balance sequence number. Incremented by 1 each time the actual_balance or blocked_amount of the card account changes on the Thredd system.<br>Maximum value =$2^{63}$-1.<br>This gives the external host an idea of how out-of-sync the Thredd actual_balance and blocked_amount fields are compared to the external host.<br>This will always be present in any transaction where external host can respond with a Balance Update (Update_Balance=1 in response.) This happens only in online transactions sent to EHI as soon as Thredd receives them (not for after-the-event transactions sent later to EHI via a queue mechanism at Thredd, e.g., presentments.) | N(1,19)<br>Max value is $2^{63}$-1. | 568474 |

| Field | Description | Data Type[1] | Sample Data |
|---|---|---|---|
| Balance_Sequence_Exthost | The external host balance sequence number received from the EHI response. See field 'New_Balance_Sequence_Exthost' in the section Response Field Formats.<br><br>Maximum value = $2^{63}$-1.<br>Maintained by the External host.<br>This tells the external host how recent Thredd's external balance is. A higher number indicates a more recent balance.<br>This field will always be present in any transaction where external host can respond with a Balance Update (Update_Balance=1 in response.)<br>This happens only in online transactions sent to EHI as soon as Thredd receives them (not for after-the-event transactions sent later to EHI via a queue mechanism at Thredd, e.g., presentments.) | N(1,19)<br><br>Max value is $2^{63}$-1. | 450 |
| PaymentToken_id | Unique Thredd ID of the payment token. Only present if transaction relates to a payment token (for example, Apple Pay). | N(1,10) | 12345 |
| PaymentToken_creator | Identifies which system created the payment token.Only present if the transaction relates to a payment token (for example, Apple Pay).<br>See Response_Source and Message_Source. | AN(1,10) | For Mastercard:<br>MC-MDES<br>For VISA:<br>VISA-T |
| PaymentToken_expdate | Expiry date of the payment token. Only present if the transaction relates to a payment token (for example, Apple Pay). Format *YYYY-MM-DD*<br>**Note**: In the case of a Token Replacement message (MTID='0100', Txn_Type='A', Proc_Code='360000', Message_Why=52) then this contains the *new* payment token expiry date. (The previous payment-token expiry date is currently not included.) | Datetime(Y_to_D) | 2099-12-31 |
| PaymentToken_type | The type of system the payment token is encoded onto (defines how the payment token PAN is held). Only present if the transaction relates to a payment token (for example, Apple Pay). See PaymentToken_type. | AN(1,10) | SE |

| Field | Description | Data Type[1] | Sample Data |
|---|---|---|---|
| | **Note**: not to be confused with the device type (PaymentToken_deviceType). | | |
| PaymentToken_status | Current status of the payment token as set by Thredd. Only present if the transaction relates to a payment token (for example, Apple Pay). See Card Status Codes. | AN(1,2) | 00 |
| PaymentToken_creatorStatus | Current status of the payment token as set by the creator of the payment token. Only present if the transaction relates to a payment token (for example, Apple Pay). See PaymentToken_creatorStatus. | AN(1,1) | A |
| PaymentToken_wallet | Wallet that the payment token belongs to. Only present if the transaction relates to a payment token (for example, Apple Pay). See PaymentToken_wallet. | AN(1,10) | APPLE |
| PaymentToken_deviceType | Indicates the type of the device in which the payment token is held. Only present if the transaction relates to a payment token (for example, Apple Pay). See PaymentToken_deviceType. | AN(1,10) | X |
| PaymentToken_lang | The ISO 639-1 2 character alpha language code reported by the payment token device at digitisation time. Only present if the transaction relates to a payment token (for example, Apple Pay). For a list of ISO 639-1 language codes, see http://www.iso.org<br>**Note**: this may not be known, in which case the field will be empty. | A(0,2) | en |
| PaymentToken_deviceTelNum | The telephone number of the device on which the payment token is present, as reported by the creator at digitisation time. Only present if the transaction relates to a payment token (for example, Apple Pay).<br>**Note**: this may be empty, a full or partial number, and may be masked in various ways as the creator and/or wallet provider determines. | ANS(0,15) | 1 (656) 1234-3244 |
| PaymentToken_deviceIp | IPv4 address of the device on | ANS(1,15) | 255.255.255.255 |

| Field | Description | Data Type[1] | Sample Data |
|---|---|---|---|
| | which the payment token is present, as reported by the creator at digitisation time. Only present if the transaction relates to a payment token (for example, Apple Pay).<br>May arrive in either of 2 formats:<br>Hex format: PPQQRRSS<br>Where:<br>• PP = 1st IP byte, as 2 hex digits (00 to FF)<br>• QQ=2nd IP byte, as 2 hex digits (00 to FF)<br>• RR=3rd IP byte, as 2 hex digits (00 to FF)<br>• SS=4th IP byte, as 2 hex digits (00 to FF)<br>Or decimal format: p.q.r.s<br>Where:<br>• p = 1st IP byte, in decimal (0 to 255)<br>• q = 2nd IP byte, in decimal (0 to 255)<br>• r = 3rd IP byte, in decimal (0 to 255)<br>• s = 4th IP byte, in decimal (0 to 255)<br>**Note**: each decimal number may be prefixed with 0, 1 or 2 leading zeros, up to a maximum of 3 decimal digits (eg byte “4” could be encoded as “4”, “04” or “004”. | | FFFFFFFF<br>081.5.006.255<br>A17F001E |
| PaymentToken_deviceId | Payment token device ID as reported by the Wallet service provider. Only present if the transaction relates to a payment token (for example, Apple Pay). | ANS(0,48) | ABCD<br>043B28DB7E478 |
| PaymentToken_ deviceName | Payment token device name as given by the device owner (i.e., cardholder). Only present if the transaction relates to a payment token (for example, Apple Pay). | ANS(0,20) | Cookie Monster Phone |
| PaymentToken_ activationCode | Activation code that the cardholder must enter into the payment token holding device to complete Tokenisation. Only present if the first two characters of `Proc_Code`=“34” (payment token activation notification) | AN(1,8) | 987654 |
| PaymentToken_ activationExpiry | The Date and Time in UTC (GMT) that the activation code in the field `PaymentToken_ activationCode` expires. Only present if the first two characters | Datetime(Y_to_ nnn) | For Mastercard:<br>2019-12-31 23:59:00.000<br>For VISA: |

| Field | Description | Data Type[1] | Sample Data |
|---|---|---|---|
| | of Proc_Code="34" (payment token activation notification).<br>**Note**: milliseconds are present, but will always be zero. For Mastercard, seconds will always be zero. | | 2019-12-31 23:59:59.000 |
| PaymentToken_ activationMethodData | Data to indicate the value corresponding the selected PaymentToken_activationMethod. Only present if the first two characters of Proc_Code="34" (payment token activation notification). See PaymentToken_ activationMethod. | ANS(1,255) | Siobhan@bananarama.co.uk |
| PaymentToken_ activationMethod | The method by which the cardholder should obtain the Activation Code (in the field PaymentToken_activationCode) which they must enter into the device holding the payment token in order to activate it. Only present if first two characters of Proc_Code="34" (payment token activation notification). See PaymentToken_ activationMethod. | N(1,4) | 3 |
| ICC_System_Related_ Data_DE55 | EMV Chip data in TLV hex format:<br>• Hexadecimal digits (0-9 and A-F) where 2 hexadecimal digits represent 1 byte, where the encoded bytes mean:<br>◦ EMV TLV data as Tag, Length, Value bytes encoded as Basic Encoding Rules (BER) as described in EMV Book 3 Annex B, Rules for BER-TLV data objects.<br>• Note that all tags sent from the acquirer will be present (even if not defined by EMV)<br>Example ( if sending tags 9F35 and 82)<br>9F35012282021980<br>For format of Tag, Length and Value: See EMV Book 4.3 (www.emvco.com) Annex B – "Rules for BER-TLV Data Objects"<br><br>For definitions of Tags, see the following: | HEX(0,512) | 9F35012282021980 |

| Field | Description | Data Type[1] | Sample Data |
|---|---|---|---|
| | • *EMV Book 3 Annex A – Data Elements Dictionary*<br>• *EMV Book 3 Annex C – Coding of Data Elements Used in Transaction Processing*<br>• *EMV Book 3 Annex A – Coding of Terminal Data Elements*<br>For the definition of tag 9F10, and any tag in the range 9F50 – 9F7F inclusive, see the specification of the EMV chip card application that are used by the card.<br>**Note:** This field applies to both Visa and Mastercard. | | |
| Merch_Name | Merchant (or ATM owner) name. Many sources limit the Merchant/ATM-owner name to between 22 to 25 characters. | ANS(0,40) | Bananarama Fan Club |
| Merch_Street | Merchant/ATM street address. Not always provided. | ANS(0,80) | Flat 2, 3-19 St. Pancras Road |
| Merch_City | Merchant/ATM city. Many sources limit the city name at 13 characters | ANS(0,40) | Newcastle Upo |
| Merch_Region | Merchant/ATM region code. Defines a sub-region of a country. Usage varies per country. Not always provided.<br>If Merch_Country=USA, this will be a 2-alpha US state code (e.g. "AK" for Alaska). If Merch_Country=CAN (i.e. Canada) this will be a 2-alpha Canadian province code (e.g. "QC" for Quebec).<br>Other countries may put a region code in here. | ANS(0,3) | AK |
| Merch_Postcode | Merchant or ATM postal code. Postal code existence and format varies country to country. Not always provided. | ANS(0,20) | A6-12 34 |
| Merch_Country | Merchant or ATM country code. ISO 3-alpha country code. See Country Codes.<br>**Note:** Inclusion of this field is typically *optional*, but may be *mandatory*, depending on the program or service being processed. For more information, refer to the Card Scheme documentation. | A(3) | USA |

| Field | Description | Data Type (1) | Sample Data |
|---|---|---|---|
| Merch_Tel | Merchant (or ATM operator) telephone number.<br>Provided occasionally by some merchants | ANS(25) | +1 (636) - 0363 |
| Merch_URL | Merchant website URL. Provided by some merchants. | ANS(255) | http://petshopboys.co.uk/ |
| Merch_Name_Other | Alternative merchant name. This could be the Sole Trader or Legal name if provided. | ANS(40) | Governor and Company of the Bank of Engl |
| Merch_Net_id | Merchant ID assigned by Visa or Mastercard. The card networks assign unique merchant IDs to some merchants (generally larger ones). | ANS(30) | F9800D0001 |
| Merch_Tax_id | Merchant's Tax ID (reference), if provided. | ANS(30) | ABCDE12345FGHIJ67890 |
| Merch_Contact | Merchant alternative contact details. Provided occasionally.<br>(For example, may contain an email address, secondary phone numbers, customer service operation hours and contact name.) | ANS(30) | Mark-F_Knopfler@markknopfler.c |
| auth_type | Type of authorisation request, as indicated by the acquirer.<br>0 = normal/undefined<br>P = Preauth (amount will be an estimate)<br>F = Final auth (amount is correct and for the full amount. No incremental auths will be received after this.)<br>V = Account Verification<br>Blank/empty = not applicable (e.g. for non-authorisation message types).<br>**Note**: See auth_expdate_utc below for how long the authorisation block should survive.) | AN(1,1) | P |
| auth_expdate_utc | Expiry date and time of this authorisation in UTC/GMT, as set by the acquirer or estimated by Thredd. This field only applies to Authorisations and Authorisation Advices (MTID/Txn_Type combinations: '0100'/'A' or '0120'/'J'.) For both, this is when the authorisation expires, but note the following:<br>• If the auth_type field indicates a pre-auth (value 'P') then this will be the | Datetime(Y_to_nnn) | 2019-12-31 23:59:59.000 |

| Field | Description | Data Type[1] | Sample Data |
|---|---|---|---|
| | UTC/GMT time when the pre-auth expires. It is calculated from the time Thredd receives the pre-auth, then adding the number of days the acquirer indicates it should survive for.<br>• If the auth_type field is not pre-auth (not 'P') then this is Thredd's estimate of how long the authorisation should survive. It may not be 100% accurate (as Thredd may be unaware of all timeliness criteria, which can be changed at any time by Visa/Mastercard.) | | |
| Matching_Txn_ID | For Authorisation Reversals, Incremental Authorisations, Incremental Authorisation Reversals and first presentments this is set to the TXn_ID field of the original authorisation that this transaction Thredd matched it to.<br>For all other transactions, it will be blank.<br>Maximum value is $2^{53}$-1.<br>**Note:** For offline authorisations or where Thredd does not receive an original authorisation due to any reason, Thredd will not populate the Matching_Txn_ID field.<br>**Note**: Suitable for IEEE 754 binary-64 data type. See JSON Data Types and EHI Fields. | N(1,16) | 6634938 |
| Reason_ID | For various messages, this contains a value explaining the reason for the message.<br>• For chargebacks, it contains the chargeback reason.<br>• For Visa authorisation-related messages, it contains the Visa Message Reason Code (from Visa Base 1 field 63.3)<br>• For other messages, it may describe the reasons for these.<br>See Reason ID.<br>Maximum value: 9999 | N(1,4) | For Mastercard chargeback:<br>4808<br><br>For Visa chargeback:<br>11<br><br>For Visa Auths/Reversals:<br>3900 |
| Dispute_Condition | Additional information, in addition | ANS(1,3) | For Visa chargeback: 6.1 |

| Field | Description | Data Type (1) | Sample Data |
|---|---|---|---|
| | to Reason_ID field.<br>For Visa chargebacks, it contains the Visa Dispute Condition.<br>For other messages, it is currently not used. See Dispute Condition. | | |
| Network_Chargeback_Reference_Id | The reference numbers assigned by VISA or MasterCard during VROL or Mastercom initiated chargebacks. | N(1,19) | Visa: 0000001000<br>Mastercard: 0000000300002329285 |
| Acquirer_Forwarder_ID | Identifies the acquiring institution forwarding a Request or Advice message. | N(1,11) | 000405700 |
| Currency_Code_Fee | Currency code of the interchange fee. ISO 3-digit currency code. See Currency Codes. | N(3,3) | 876 |
| Currency_Code_Fee_Settlement | Currency code that the interchange fee will be settled in. ISO 3-digit currency code. See Currency Codes. | N(3,3) | 876 |
| Interchange_Amount_Fee | Interchange fee amount in the currency defined in Currency_Code_Fee. The interchange fee is an additional amount charged by the Card Scheme, Issuer or Acquirer. For example:<br>• POS transactions – positive interchange fee is paid to the issuer<br>• ATM transactions – negative interchange fee is paid to the operator of the ATM<br>• ATM card capture – fee is paid to the operator of the ATM<br>• Stolen card fee – interchange fee is paid to the issuer<br>These fees are only finalised at the presentment stage when settlement and transfer of funds occurs. You should factor your fee structure in line with potential network fees. | AmountSigned (15,6) | 01.020000 |
| Interchange_Amount_Fee_Settlement | Interchange fee amount in the currency defined in Currency_Code_Fee_Settlement. | AmountSigned (15,6) | 01.020000 |
| Clearing_Process_Date | Indicates the clearing system's processing date expressed in the local time zone of the clearing system's processing centre. This is referred to as the Reconcilliation | Datetime(Y_to_D) | 2099-12-31 |

| Field | Description | Data Type (1) | Sample Data |
|---|---|---|---|
| | Date in the Thredd Transaction XML (for details, see the *Transaction XML Guide*). | | |
| Settlement_Date | Identifies the date when the schemes settlement services initiate the movement of funds for settlement.<br>**Note**: This date may be different from Clearing_Process_Date if files are processed on days which settlement banks are closed. | Datetime(Y_to_D) | For Mastercard: 2099-12-31<br>For Visa: 2099-12-31 |
| DCC_Indicator | Indicates whether Dynamic Currency Conversion (DCC) has taken place.<br>0 = DCC has not been performed<br>1 = DCC has been performed | N(1,1) | 1 |
| multi_part_txn | Indicates whether the message is any part of a multi-auth/clearing sequence.<br>0 = Message is not part of a multi-auth/clearing sequence or no information was received from the acquirer<br>1= Message is any part of a multi-auth/clearing sequence<br>**Note**: This field is as received by Thredd; if the value received from the acquirer is blank, then the field is populated with *0*. | N(1,1) | 1 |
| multi_part_txn_final | Indicates whether the message is the final part of a multi-auth/clearing sequence.<br>0 = Message is not the final part of a multi-auth/clearing sequence or no information was received from the acquirer<br>1 = Message is the final part of a multi-auth/clearing sequence<br>**Note**: This field is as received by Thredd; if the value received from the acquirer is blank, then the field is populated with *0*. | N(1,1) | 1 |
| multi_part_number | Only available for Visa transactions. Indicates what part of a multi-auth/clearing sequence the message is. This value will not be higher than the total parts in multi_part_count field.<br>0 = N/A or unknown part number. | N(2,2) | For Mastercard: Blank<br>For Visa: 05 |

| Field | Description | Data Type[1] | Sample Data |
|---|---|---|---|
| multi_part_count | Only available for Visa transactions. Indicates how many parts there are in the multi-auth/clearing sequence.<br>0 = N/A or unknown. | N(2,2) | For Mastercard: Blank<br>For Visa: 09 |
| SettlementIndicator | Defines what settlement service the network will use to settle transactions:<br>0 = International Settlement Services<br>3 = Clearing Only<br>4 = Bilateral Settlement<br>8 = National Net Settlement | N(1,1) | 0 |
| Network_TxnAmt_To_BillAmt_Rate | The card network's currency conversion rate that they used to convert Txn_Amt into Bill_Amt. The rate used will be associated with the Network_Currency_Conversion_Date field. There will normally be seven significant figures in the rate, as that is what Visa and Mastercard currently send. | Rate | 0000001:6<br><br>0000000:0 |
| Network_TxnAmt_To_BaseAmt_Rate | The card network's currency conversion rate used to convert Txn_Amt into the network's base amount (often in US Dollars). This can be used in conjunction with Network_BaseAmt_To_BillAmt_Rate to understand how the Network converted Txn_Amt into Bill_Amt.<br>For Visa Base2, this is what arrives in Draft Data TCR5's *Source Amount to Base Amount conversion rate* field; there will always be six significant figures.<br>**Note**: The network Base Amount is not provided, as Thredd do not receive this. | Rate | Visa Financials:<br>987654:12 |
| Network_BaseAmt_To_BillAmt_Rate | The card network's currency conversion rate used to convert from the network's base amount (often in US Dollars) to the Bill_Amt.<br>This can be used in conjunction with Network_TxnAmt_To_BaseAmt_Rate to understand how the Network converted Txn_Amt into Bill_Amt.<br><br>For Visa Base2, this is what arrives in Draft Data TCR5's *Base Amount to Destination Amount conversion rate* field; there will always be six | Rate | Visa Financials:<br>987654:3 |

| Field | Description | Data Type[1] | Sample Data |
|---|---|---|---|
| | significant figures.<br>**Note**: The network Base Amount is not provided, as Thredd do not receive this. | | |
| POS_Date_DE13 | Terminal local date of transaction. The network normally provides the date as MMDD, and Thredd will add YYYY which most likely corresponds to it. MMDD will be transmitted exactly as received, even if invalid.<br>Thredd will set the YYYY to '0000' if MMDD received is not a valid date. | DatetimeRaw (Y_to_D) | 20240617 |
| Traceid_Message | The card network's reference. Data reflects exactly what was received.<br>• Mastercard: date is from DE15, reference is from DE63 (exactly as provided.)<br>• Visa: date is from Transaction ID DE62.2, reference is Transaction ID DE62.2 (exactly as provided)<br>This should always be valid, except for a Visa message if the acquirer provided an invalid value. | TraceidRaw | Mastercard:<br>BNET-19991231-MCC1234XY<br><br>Visa:<br>VIS1-19991231-489365789012345 |
| Traceid_Original | The card network's original reference. Data reflects exactly what was received, and may or may not be valid.<br>• Mastercard: date MMDD is from DE48.63 positions 10-13, with YYYY completed by Thredd (or '0000' if MMDD is not a valid date. Reference is from DE48.63 positions 1-9.<br>• Visa: date is from Original Transaction ID DE125, dataset 3 Tag 3, reference is Original Transaction ID DE125, dataset 3 Tag 3 (exactly as provided) | TraceidRaw | Mastercard Authorisations:<br>BNET-0000pppp-000000000<br>(where 'p' is a space)<br><br>BNET-20201231-SUR9876UX<br><br>Visa Authorisations:<br>VIS1-00000000-000000000000000<br><br>VIS1-20201231-660366000004444 |
| Network_Currency_ Conversion_Date | The card network's currency conversion date. Reflects the date of Visa/Mastercard currency conversion rate used in the transaction came from. MMDD is supplied by the network, Thredd add the corresponding year YYYY. If the MMDD received from the network is not a valid | DatetimeRaw (Y_to_D) | 2020-12-31 |

<table>
<tr><th>Field</th><th>Description</th><th>Data Type (1)</th><th>Sample Data</th></tr>
<tr><td></td><td>date, Thredd will set YYYY to ‘0000’.</td><td></td><td></td></tr>
<tr><td>Mastercard_<br>AdviceReasonCode_<br>DE60</td><td>Mastercard Authorisation Advice Reason Code (field 60).<br>Explains why Mastercard Stand-In processing (STIP) occurred or why an advice was created.<br>This field has a length of 999, but currently Mastercard send a maximum of 60. Format:<ul><li>First 3 digits = Advice Reason Code – this indicates the main reason for the advice</li><li>Next 4 digits: Advice Detail Code – generally ‘0000’ indicates ‘Accept’ (e.g. by STIP or X-Code), and all other values indicate a decline/error detail</li><li>Everything else: Advice Detail text – human readable text message</li></ul>See Mastercard_<br>AdviceReasonCode_DE60.</td><td>ANS(1,999)</td><td>400<br><br>4002000<br><br>1010000</td></tr>
<tr><td>Network_Original_Data_<br>Elements_DE90</td><td>The raw network data present in online reversals to explain which original (MTID=0100) the reversal is referring to. Format:<table><tr><th>Positions</th><th>Length</th><th>Content</th></tr><tr><td>1-4</td><td>4</td><td>Original MTID</td></tr><tr><td>5-10</td><td>6</td><td>Original STAN</td></tr><tr><td>11-20</td><td>10</td><td>Original transmission datetime MMDDhhmmss</td></tr><tr><td>21-31</td><td>11</td><td>Original Acquirer ID</td></tr><tr><td>32-42</td><td>11</td><td>Original Forwarder ID</td></tr></table>This is provided to aid diagnostics in exception cases.<br>Note: This field is as received by Thredd; data accuracy depends on the acquirer.</td><td>N(42,42)</td><td>010048101904220013160000047666600000000000<br><br>010000000000000000000000000000000000000000<br><br>010098883605060005240000045953500000456456<br><br>010023152805052350160000001344500000200353</td></tr>
</table>

| Field | Description | Data Type (1) | Sample Data |
|---|---|---|---|
| Visa_ResponseInfo_DE44 | Visa Base1 field 44 – Visa's Additional Response Data, exactly as provided from Visa to Thredd. This will only be present for transactions received by Thredd from Visa Base1, if DE44 was present.<br>It provides information on Visa's validation checks of data in the message. This will only be set for Visa online authorisation transactions. | ANS(25) | ppppppppppMppp2<br>pppp2ppp2<br>(where p is a space) |
| Visa_STIP_Reason_Code | Visa Base 1 field 63.4 STIP/Switch Reason Code. This maybe present for Visa online authorisation advices and reversals, to explain why Visa STIP responded instead of Thredd. This will only be set for Visa online authorisation-related transactions (MTID=0120 and MTID=0420). | N(4,4) | 9045 |
| Network_Issuer_Settle_ID | A multi-purpose field providing additional settlement data:<br>• For Mastercard: this field provides the member ID (ICA) of the Issuer responsible for the transaction (IPM DE93).<br>• For Visa: Not supported | N(6,11) | 019111 |
| Network_Replacement_Amounts_DE95 | DE95 replacement amounts from the card network. Used in reversals and completion advices to advise of the new amounts.<br>It is received only if the reversal is partial. Otherwise, it is blank.<br>**Note:** Currently applicable to Visa network transactions only. For Mastercard the reversal amount is stated in the Bill_Amt field.<br>Format for Mastercard:<br>• Positions 1-12: Actual transaction amount in minor units.<br>• Positions 13-24: Actual settlement amount in minor units<br>• Positions 25-36: Actual cardholder billing amount in minor units<br>• Positions 37-42 fixed '000000'.<br>Format for Visa:<br>• Positions 1-12: Actual | AN(42,42) | 000000000778000000000000000000000778000000<br>000000000147000000000000000000000147000000 |

| Field | Description | Data Type[1] | Sample Data |
|---|---|---|---|
| | transaction amount in minor units.<br>• Positions 13-42: Not used (zero filled) | | |
| Visa_POS_Data_DE60 | Visa Base 1 field 60 - Additional POS Data. Thredd already map the Visa POS data into the GPS_POS_Data and GPS_POS_Capability fields, which Thredd recommend to use in preference. This will only be set for Visa online authorisation transactions.<br>**Note**: the raw Visa POS Data is also provided for extra information. | N(2,12) | 00<br>0109<br><br>0100000007<br><br>750000400023 |
| Network_Transaction_ID | The raw transaction ID, exactly as received from the card network without any alteration. Present only if received. Thredd load this as follows:<br>• Visa Online: 16 hexdigits of the DE62.2 Visa Transaction ID. The leading hexdigit should be a '0' padding character. (Format HEX(16,16).)<br>• Visa Clearing: 15 characters, which should all be digits. (15 '0' characters indicates unknown.) (Format N (15,15).)<br>• Mastercard Online: DE63 concatenated with DE15 (Format ANS(1,13))<br>• Mastercard Clearing: DE63 (Format ANS(1,16))<br>**Note**: Thredd provide this to aid resolving exception messages. Thredd recommend you use traceid_lifecycle instead. | ANS(1,16) | Mastercard Authorisations:<br>SUR9876UX1231<br><br>Mastercard Financials:<br>pSUR9876UX1231<br>(where 'p' is a space)<br><br>Visa Authorisations:<br>0489365789012345<br><br>Visa Financials:<br>489365789012345 |
| Misc_TLV_Data | Miscellaneous data. See section Misc_TLV_Data field.<br>**Note**: Thredd expect you to normally ignore this field.<br>It is used to contain rarely used pieces of data that are not normally required for transaction processing. The field maximum is 8000, however in EHI 4.1, we never expect this to be more than 200. | TLV10(0,8000) | V1250300030016048936586399444 4 |
| Acquirer_Country | If present, contains the ISO 3-alpha uppercase country code of the acquirer. | A(3,3) | GBR |

| Field | Description | Data Type (1) | Sample Data |
|---|---|---|---|
| | **Note**: This field is available on EHI version 5.0 and beyond. | | |
| PaymentToken_ PanSource | Describes the originator of a Tokenisation Authorisation Request. For possible values, see PaymentToken_PanSource.<br><br>**Note**: This field is available on EHI version 5.0 and beyond. | AN (1,1) | 4 |
| ClearingFileID | Populated for Clearing records. Shows the File ID of the file that contains the presentment record.<br><br>**Note**: This field is available on EHI version 5.0 and beyond. | ANS (1, 50) | Visa: 444444020191220C0409OCE<br>Mastercard: T112.00201010100000999674011O1 |
| Network_Fraud_Data | Contains Fraud or Risk Indicators received from the card network.<br>See Network_Fraud_Data Format.<br><br>**Note**: This field is available on EHI version 5.0 and beyond. | AN (1, 32) | Visa: “011099 1122 013099 33 “<br>Mastercard: “00599903 0079990507 “ |
| SenderData | Contains the sender details in a money transfer message (Visa OCT or Mastercard Money Send)<br>This field is represented as a Tag-Length-Value (TLV) record with the following order and lengths:<br>• Tag - two characters<br>• Length - two decimal digits<br>• Data - the number of characters as given by the length<br>See SenderData and ReceiverData Fields.<br><br>**Note**: This field is available on EHI version 5.0 and beyond. | ANS (1, 512) | 0106Mickey0305Mouse0411Main Street0508Annaheim0703USA |
| ReceiverData | Contains the receiver details in a money transfer message (Visa OCT or Mastercard Money Send).<br>This field is represented as a Tag-Length-Value (TLV) record, with the following order and lengths:<br>• Tag - two characters<br>• Length - two decimal digits | ANS (1, 512) | 0106Mickey0305Mouse0411Main Street0508Annaheim0703USA |

| Field | Description | Data Type[1] | Sample Data |
|---|---|---|---|
| | • Data - the number of characters as given by the length<br>See SenderData and ReceiverData Fields.<br>**Note**: This field is available on EHI version 5.0. | | |
| AuthenticationAmountUpper | The maximum authentication amount in the currency specified in the AuthenticationCurrency, as provided during a 3D Secure authentication session. This field can be used to confirm whether the amount that was submitted for authentication is the same as the amount that was submitted for authorisation. For details, see Checking fields used for 3D Secure Authentication.<br>**Note**: For Visa, the authentication amount is the exact amount authenticated.<br>For Mastercard, if AuthenticationAmountUpper is a value of 14000 or below in the minor units of currency, then it is exact.<br>If AuthenticationAmountUpper is a value of more than 14000 in the minor units of currency, then it is the maximum possible Authentication Amount from the approximate value that Thredd received from Mastercard. | AmountUnsigned(14,4) | 562.342 |
| AuthenticationCurrency | The 3-digit authentication currency code, used for AuthenticationAmountUpper. | N(3,3) | 036 |
| AuthenticationMerchantHash | A hash of the merchant name as received at the authentication stage, in decimal digits or hex digits. For Visa, this is the *Information Data* provided by the Access Control Server (ACS), which may contain the merchant name hash, '00000000' or an IP address[1]. For Mastercard, this field contains the hash (using SHA 256) of the merchant name. | AN (8,8) | Mastercard: D36A8275<br>Visa: 01765342 |
| FxProviderCardholderRa | Provides the Currency Cloud | DECIMAL | 1234.000000000 |

[1]For Visa, this is the hashed value of Merchant Name as provided in the Authentication Request (data element 'merchantName' in AReq) or Payer Authentication Request (DTD element 'Merchant.name' in PAReq) message. SHA-256 to be used, first 8 numerical digits (digits 0 through 9) from the result of hashing to be used. If 8 numerical digits are not found, subtract 10 from all character digits (digits A through F) and use the first result(s) for as many digits missing of the 8 digit value.

| Field | Description | Data Type[1] | Sample Data |
|---|---|---|---|
| te | Foreign Exchange (FX Rate) sent in the authorisation message. | (19,9) | |
| SchemeTransactionIdentifier | Business Application ID (Visa) or Transaction Type Identifier (Mastercard) received in an authorisation message for an Original Credit Transaction (OCT) or Account Funding Transaction (AFT).<br>• For Visa – this is a concatenation of VIS1 + a 2 digit transaction identifier<br>• For Mastercard – this is a concatenation of BNET+ a 3 digit transaction identifier<br>For details, see Scheme Transaction Identifier Values.<br>**Note:** Available on GetTransaction version 5.1 onwards | AN (0,7) | Visa: VIS1BB<br>Mastercard: BNETC01 |
| TokenUniqueReference | The unique token reference as supplied by the token creator in a tokenisation message (MDES or VDEP transaction ).<br>**Note:** Available on GetTransaction version 5.1 onwards | AN (0,48) | VDEP: DNITHE582599999942043245<br>MDES: DM4MMC1PT0000000be3ec16ef999999ab7d4b47da4456277 |
| PaymentTokenPan | The DPAN (Device Primary Account Number), which is a tokenised version of the card number used in digital transactions.<br>This field is only populated if the transaction uses a payment token.<br>**Note**: This field is available from EHI version 5.1 onwards. | AN(0,16) | 5372XXXXX6767765 |
| FleetData | Data related to the Fleet 2.0 transaction (if applicable). The content of the FleetData tag is dynamic, and requires TLV parsing logic on your side. This is parsed as:<br>• Type of Purchase (Tag FL01) = “1”<br>• Fuel Type (FL03) = “02”<br>• Net Fuel Price (FL09) = “000001500000”, which stands for 150.0000 (four | AN(0,47) | FL01011FL030202FL0912000001500000FL2908A1234B22 |

| Field | Description | Data Type[1] | Sample Data |
|---|---|---|---|
| | decimals implied in the original incoming value)<br>• Fleet Employee Number (FL29) = “A1234B22”<br>For more information, see Fleet 2.0 Data Fields.<br>**Note**: Fleet Data must be enabled. Contact your account manager for more information. | | |
| ElapsedTimeToLive | Elapsed time in hours since the current limited-use key (LUK) is provisioned on the device. Defaults to 0 when no value is present.<br>**Note**: This field is pending. Further information will follow in due course. | N(1,9) | 111 |
| NumberOfTransactionsCount | Cumulative count of transactions for the current limited-use key (LUK). Defaults to 0 when no value is present.<br>**Note**: This field is pending. Further information will follow in due course. | N(1,9) | 222 |
| TotalOfTransactionAmounts | Cumulative total of transaction amounts in US Dollars for the current limited-use key (LUK). Defaults to 0.0 when no value is present.<br>**Note**: This field is pending. Further information will follow in due course. | AmountUnsigned(19,4) | 4444.4444 |
| FlexEligibilityIndicator | Indicates if transaction is eligible for Visa Flex. | N(1,1) | 1 |
| FlexEligibleUseCaseIds | The eligible use case IDs to use for Visa Flex. | AN(1.24) | 1000123487654321 |
| NetworkTransactionId2 | This corresponds to the Transaction Link Identifier (TLID) from Mastercard, which is a unique ID assigned by Mastercard for transactions in the same lifecycle (e.g. authorisation, clearing, and chargebacks).<br>**Note**: This field is Mastercard-specific. | ANS(1, 30) | |

| Field | Description | Data Type (1) | Sample Data |
|---|---|---|---|
| NetworkRelatedTransactionId | Transaction identifier from Mastercard that links a transaction with previous transactions that are related. These transactions are not in the same lifecycle (e.g. recurring transactions, refunds).<br>**Note**: This field is Mastercard-specific. | ANS(1, 30) | |
| NetworkLinkValidation | This field includes Mastercard's correction done on the NetworkTransactionId2. If Mastercard detects a problem in the TLID, MasterCard updates the TLID to the correct one, which is the original TLID that the acquirer provided.<br>**Note**: This field is Mastercard-specific. | ANS(1, 30) | |

(1) Data Types - lists the data type; depending on the datatype, numbers in parentheses represent either (*minimum,maximum*) or (*precision,scale*); for details, see Data Types.

## 2.5.2 Rounding off of currencies with exponents greater than 2

Thredd can store received currency amounts with a value of up to four decimal places. For currencies with exponents greater than 2, we round this to 2 decimal places and add zero padding for the remaining decimal places. For example:

- Value received: 12.3456.
- Rounded off to: 12.3500

This applies to the following fields of data type AmountSigned and AmountUnsigned, received in *authorisation messages only*:

ActBal, Avl_Bal,Bill_AmtBlkAmt, FX_Pad, Fee_Fixed, Fee_Rate, MCC_Pad, Settle_Amt, Dom_Fee_Fixed, Non_Dom_Fee_Fixed, Fx_Fee_Fixed, Other_Fee_Amt, Fx_Fee_Rate, Dom_Fee_Rate, Non_Dom_Fee_Rate.

## 2.5.3 Response Field Formats

Definition of response message field formats:

| Field | Description | Data type | Sample Data |
|---|---|---|---|
| Responsestatus | Response Code for the authorisation request. See Responsestatus Values.<br>**Note**:If sending value “10” (partial approval), then response field Bill_Amt_Approved must be provided too. | AN(2,2) | 00 |
| CurBalance | Actual balance on card after the transaction. Positive means the card is in credit. Negative means the card is in debit. | AmountSigned(9,2) | 189.24 |

<table>
<tr><th>Field</th><th>Description</th><th>Data type</th><th>Sample Data</th></tr>
<tr><td>AvlBalance</td><td>Available balance on card after the transaction. Positive means the card is in credit. Negative means the card is in debit.</td><td>AmountSigned(9,2)</td><td>89.24</td></tr>
<tr><td>Acknowledgement</td><td>Notification message for the transaction is acknowledged or not. Valid values are:<br>0 = Not Acknowledged (i.e. Thredd should re-transmit this); 1 = Acknowledged</td><td>N(1,1)</td><td>1</td></tr>
<tr><td>LoadAmount</td><td>This column must contain the amount that needs to be loaded to the card if approval is with an '0A' (Approve with Load) response code. Applicable only to Cooperative Processing (mode 2) with ‘Approve with Load’ feature set on.</td><td>AmountUnsigned (9,2)</td><td>100.45</td></tr>
<tr><td>Bill_Amt_Approved</td><td>Contains the amount approved in the billing currency code (Bill_Ccy.)<br>This is mandatory for all partial approval messages, to inform the acquirer how much of the transaction amount is approved.<br>Note that partial approval (Resp_Code_DE39="10") is only permitted if GPS_POS_Capability position 1 (partial approval support indicator) is 1 (partial approval supported by POS)<br>It should have the same sign as Bill_Amt in the request message. However, Thredd will take the absolute value of this (for example, sending -52.64 is the same as sending 52.64).
<table>
<tr><th>Transaction is approved (Resp_Code_DE39="00")</th><th>Transaction is partially approved (Resp_Code_DE39="10")</th><th>Transaction is declined</th></tr>
<tr><td>Bill_Amt_Approved is included and contains the same value as Bill_Amt in the request message<br>-Or -<br>Bill_Amt_Approved is not present</td><td>Bill_Amt_Approved must be present and contain a value between 0 and Bill_Amt (but non-zero, and not Bill_Amt)</td><td>Bill_Amt_Approved must be zero or not present</td></tr>
</table></td><td>AmountSigned(9,2)</td><td>-52.64</td></tr>
<tr><td>Update_Balance</td><td>Indicates whether Thredd should update stand-in balances.<br>0=do not update balance (default); 1=update balance (using CurBalance_GPS_STIP and AvlBalance_GPS_STIP as provided in this response)<br>Note: You should only respond with ‘1’ (update balance) if you have received both Balance_Sequence and Balance_Sequence_Exthost in the request message.<br>Note: the Thredd stand-in balances can also be updated via the WS_BalanceUpdate web service or the API Hub STIP Balance Update endpoint.</td><td>N(1,1)</td><td>0</td></tr>
</table>

| Field | Description | Data type | Sample Data |
|---|---|---|---|
| New_Balance_Sequence_Exthost | New external host balance sequence number for this card account.<br>New balance (and this New_Balance_Sequence_Exthost number) to be installed if both Update_Balance=1, AND this balance sequence number is strictly higher than the existing external host balance sequence number (CARDS.bal_seqno_exthost). Use of this will prevent Thredd from installing an out-of-date balance.<br>External host usage:<br>• Each time the external host returns a balance, it should include this number.<br>• The external host should increment this number each time it changes the card balance.<br>• Numbers do not need to be sequential.<br>• Thredd interprets a higher number as indicating a more recent balance<br>Example:<br>External host sends Thredd two response messages:<br>*Message A*: CurBalance=11.11; AvlBalance=22.22; Update_Balance=1<br>New_Balance_Sequence_Exthost = 18<br>*Message B*: CurBalance=77.77 ; AvlBalance=88.88; Update_Balance=1<br>New_Balance_Sequence_Exthost=20<br>Since the New_Balance_Sequence_Exthost in message B is higher than message A, Thredd will always apply the balances from Message B, irrespective of which message is received first. | N(1,19)<br>Max possible value is $2^{63}$-1 | 95736 |
| CVV2_Result | Used only if CVV2 is present in request. M=Match; N=No-match.<br>Any other values other than M and N will cause a format error rejection.<br>**Note**: If the *CVV2_Result* field is blank, then the merchant did not provide this information. In this case, Thredd will not complete the CVV2 pre-check and will authorise or decline the transaction based on the card usage group settings for your programme. | A(1,1) | M |
| AvlBalance_GPS_STIP | Similar to AvlBalance, this field is used in Gateway Processing with STIP (mode 4 only) to update the available Thredd stand-in balance. It will only be used to approve or decline EHI messages where a response from the External Host is not received and it will be decremented with every approval.<br>It is never sent back to the card network for any response message where the acquirer is expecting the card's available balance, such as Balance Inquiry transactions. Instead, the AvlBalance field, if sent by the External Host, is used for this purpose. | AmountSigned (9,2) | 120.32 |
| CurBalance_GPS_STIP | Similar to CurBalance, this field is used in Gateway Processing with STIP (mode 4) to update the current Thredd stand-in balance. | AmountSigned (9,2) | 129.32 |
| MerchantAdvice | If this field is included, then it contains a Merchant | N(2,2) | 01 |

<table>
<tr><th>Field</th><th>Description</th><th>Data type</th><th>Sample Data</th></tr>
<tr><td></td><td>
Advice Code, to tell the merchant whether to re-try the transaction on a decline. See below for possible values.
<table>
<tr><th>Value</th><th>Description</th><th>Examples</th></tr>
<tr><td>01</td><td>Merchant needs updated or additional information.</td><td>Expired card - merchant needs to retry after obtaining the new card expiry date. Incorrect CVV1/CVV2 or AVS - merchant needs corrected data to retry.</td></tr>
<tr><td>02</td><td>Merchant should re-try the transaction later.</td><td>Insufficient funds (more funds may be available later). Short-term temporary card block (card will be re-enabled soon).</td></tr>
<tr><td>03</td><td>Merchant should not retry again.</td><td>Only used for a stolen, destroyed card or closed account. Future transactions will never be approved.<br>Warning: If you return an "03" value in your response to a Mastercard network authorisation request (applicable to Program Managers using EHI Gateway or Cooperative processing) you must not approve any future transactions on this card or Mastercard may impose fines. For details, see the FAQs: What is the MerchantAdvice field and how is it used?</td></tr>
</table>
If not included, then for declines on Mastercard cards, Thredd will set the Merchant Advice automatically based on the Responsestatus provided.<br>
Note: This field is available from EHI version 5.0 onwards.
</td><td></td><td></td></tr>
<tr><td>FlexPaymentCredential</td><td>The secondary public token to use for Visa Flex.<br>Note: This field is available from EHI version 5.4 onwards.</td><td>AN(1,19)</td><td>1</td></tr>
<tr><td>FlexSelectedUseCaseId</td><td>The use case ID to apply for Visa Flex.<br>Note: This field is available from EHI version 5.4 onwards.</td><td>AN(1,8)</td><td>1</td></tr>
</table>

# 2.5.4 Transaction Type Decoding

When a GetTransaction message is received, the receiver should use the MTID and Txn_Type fields as follows to determine which of the below sections is appropriate to decode it.

| MTID | Txn_Type | Description | Transaction Type decoding |
|---|---|---|---|
| 0100 | A | Authorisation Request | Transaction Type - Authorisation |
| | D | Automatic Authorisation Reversal | Transaction Type - Authorisation |
| 0101 | A | Authorisation Repeat (Visa Only) | Transaction Type - Authorisation |
| 0120 | J | Authorisation Advice | Transaction Type - Authorisation |
| 0120 | D | Authorisation Reversal Advice (due to AFD 0120 auth advice) | Transaction Type - Authorisation |
| 0400 | D | Authorisation Reversal Request | Transaction Type - Authorisation |
| 0420 | D | Authorisation Reversal Advice | Transaction Type - Authorisation |
| 1240<br>05pp<br>06pp<br>07pp<br><br>(p = space) | A | Authorisation Advice Notification<br>(Dummy authorisation created if a Financial notification has no matching authorisation.) | Transaction Type - Financial |
| 1240<br>25pp<br>26pp<br>27pp<br><br>(p = space) | E | Financial Reversal | Transaction Type - Financial |
| 1240 | C | Chargeback Notification | Transaction Type - Financial |
| 1240 | H | Chargeback Notification (Non-Credit) | Transaction Type - Financial |
| 1240 | K | Chargeback Reversal | Transaction Type - Financial |
| 1240<br>05pp<br>06pp<br>07pp<br><br>(p = space) | N | Financial Notification (Second Presentment) | Transaction Type - Financial |

| MTID | Txn_Type | Description | Transaction Type decoding |
|---|---|---|---|
| 1240<br>05pp<br>06pp<br>07pp<br><br>(p = space) | P | Financial Notification<br>(First Presentment) | Transaction Type - Financial |
| | L | Load | Transaction Types - Non-Card-Network Transactions |
| | U | Unload | Transaction Types - Non-Card-Network Transactions |
| | G | Payment | Transaction Types - Non-Card-Network Transactions |
| | B | Balance Adjustment | Transaction Types - Non-Card-Network Transactions |
| | Y | Card Expiry | Transaction Types - Non-Card-Network Transactions |
| | F | Fee | Transaction Types - Non-Card-Network Transactions |

## 2.5.5 Transaction Type - Authorisation

Authorisation message types are used for the following Message Type Identifier MTID types:

| MTID | Txn_Type | Description |
|---|---|---|
| 0100 | A | Authorisation Request. If this arrives with:<br>`Txn_Stat_Code` = "I" (declined)<br>`Authorised_By_GPS` = "Y" (Thredd authorised the transaction)<br>Then this means that the authorisation is being re-sent as an advice, to inform you that Thredd authorised this transaction, and the response code used was `Resp_Code_DE39`. This should be accepted as an advice. |
| | D | Automatic Authorisation reversal.<br>This is created by Thredd system to unblock the authorised amount when all the following have happened:<br>• an 0100 approved authorisation request was received by Thredd<br>• No matching reversal or matching financial for this authorisation has been received<br>• A configurable amount of time has elapsed.<br>This will ensure that outstanding authorisations which never have a financial do not permanently block the account. |
| 0101 | A | Authorisation Repeat (Visa Only). |
| 0120 | J | Authorisation Advice |

| MTID | Txn_Type | Description |
|---|---|---|
| | | This is an advice received from the network, normally to advise of a MTID=0110 response generated by the network sent to the acquirer. (In case where for some reason or other, the Thredd 0110 response does not exist or could not be used.) |
| 0400 | D | Reversal Request<br>Note: although this is an 0400 message, it cannot be declined, as it is telling you a reversal has already happened.<br>There is no difference in practice between 0400 and 0420 - treat both as reversal advices. |
| 0420 | D | Reversal Advice |

## Request Message Fields (Authorisation Messages)

The following fields are included in an authorisation request message:

| Field | Usage | | Field | Usage | | Field | Usage |
|---|---|---|---|---|---|---|---|
| Acquirer_id_DE32 | Optional | | VL_Group | Optional | | Merch_Street | Optional |
| ActBal | Mandatory | | Dom_Fee_Fixed | Mandatory | | Merch_City | Mandatory |
| Additional_Amt_DE54 | Optional | | Non_Dom_Fee_Fixed | Mandatory | | Merch_Region | Optional |
| Amt_Tran_Fee_DE28 | Optional | | Fx_Fee_Fixed | Mandatory | | Merch_Postcode | Optional |
| Auth_Code_DE38 | Optional | | Other_Fee_Amt | Mandatory | | Merch_Country | Optional* |
| Avl_Bal | Mandatory | | Fx_Fee_Rate | Mandatory | | Merch_URL | Optional |
| Bill_Amt | Mandatory | | Dom_Fee_Rate | Mandatory | | Merch_Name_Other | Optional |
| Bill_Ccy | Mandatory | | Non_Dom_Fee_Rate | Mandatory | | Merch_Net_id | Optional |
| BlkAmt | Mandatory | | Additional_Data_DE124 | Optional | | Merch_Tax_id | Optional |
| Cust_Ref | Optional | | CVV2 | Optional | | Merch_Contact | Optional |
| FX_Pad | Mandatory | | Expiry_Date | Optional | | auth_type | Optional |
| Fee_Fixed | Mandatory | | PAN_Sequence_Number | Optional | | auth_expdate_utc | Optional |
| Fee_Rate | Mandatory | | PIN | Optional | | Matching_Txn_ID | Optional |
| LoadSRC | Optional | | PIN_Enc_Algorithm | Optional | | Reason_ID | Optional |

| Field | Usage | | Field | Usage | | Field | Usage |
|---|---|---|---|---|---|---|---|
| LoadType | Optional | | PIN_Format | Optional | | Dispute_Condition | Optional |
| MCC_Code | Optional | | PIN_Key_Index | Optional | | Network_Chargeback_Reference_Id | Optional |
| MCC_Desc | Optional | | SendingAttemptCount | Mandatory | | Acquirer_Forwarder_ID | Optional |
| MCC_Pad | Mandatory | | source_bank_ctry | Omitted | | DCC_Indicator | Optional |
| Merch_ID_DE42 | Optional | | source_bank_account_format | Omitted | | multi_part_txn | Optional |
| Merch_Name_DE43 | Mandatory | | source_bank_account | Omitted | | multi_part_txn_final | Optional |
| Note | Optional | | dest_bank_ctry | Omitted | | multi_part_number | Optional |
| POS_Data_DE22 | Optional | | dest_bank_account_format | Omitted | | multi_part_count | Optional |
| POS_Data_DE61 | Optional | | GPS_POS_Capability | Mandatory | | SettlementIndicator | Optional |
| POS_Termnl_DE41 | Optional | | GPS_POS_Data | Optional | | Clearing_Process_Date | Optional |
| POS_Time_DE12 | Optional | | Acquirer_Reference_Data_031 | Omitted | | Settlement_Date | Optional |
| Proc_Code | Mandatory | | Response_Source | Optional | | Currency_Code_Fee | Optional |
| Resp_Code_DE39 | Depends on EHI mode:<br>Mode 1: Optional<br>Mode 2: Optional<br>Mode 3: Mandatory<br>Mode 4 : Optional | | Response_Source_Why | Optional | | Currency_Code_Fee_Settlement | Optional |
| Ret_Ref_No_DE37 | Optional | | Message_Source | Optional | | Interchange_Amount_Fee | Optional |
| Settle_Amt | Optional | | Message_Why | Optional | | Interchange_Amount_Fee_Settlement | Optional |
| Settle_Ccy | Optional | | traceid_lifecycle | Optional | | Traceid_Message | Optional |
| Status_Code | Mandatory | | Balance_Sequence | Optional | | Traceid_Original | Optional |
| Token | Mandatory | | Balance_Sequence_Exthost | Optional | | Network_Transaction_ID | Optional |

| Field | Usage | | Field | Usage | | Field | Usage |
|---|---|---|---|---|---|---|---|
| Trans_link | Mandatory | | PaymentToken_id | Optional | | POS_Date_DE13 | Optional |
| Txn_Amt | Mandatory | | PaymentToken_creator | Optional | | Network_Currency_Conversion_Date | Optional |
| Txn_CCy | Mandatory | | PaymentToken_expdate | Optional | | Network_TxnAmt_To_BillAmt_Rate | Optional |
| Txn_Ctry | Optional | | PaymentToken_type | Optional | | Network_TxnAmt_To_BaseAmt_Rate | Omitted |
| Txn_Desc | Optional | | PaymentToken_status | Optional | | Network_BaseAmt_To_BillAmt_Rate | Omitted |
| Txn_GPS_Date | Mandatory | | PaymentToken_creatorStatus | Optional | | Network_Original_Data_Elements_DE90 | Optional |
| TXn_ID | Mandatory | | PaymentToken_wallet | Optional | | Network_Replacement_Amounts_DE95 | Optional |
| Txn_Stat_Code | Mandatory | | PaymentToken_deviceType | Optional | | Network_Issuer_Settle_ID | Omitted |
| TXN_Time_DE07 | Mandatory | | PaymentToken_lang | Optional | | Visa_ResponseInfo_DE44 Optional | (Visa only) |
| Txn_Type | Mandatory | | PaymentToken_deviceTelNum | Optional | | Visa_POS_Data_DE60 Optional | (Visa only) |
| Additional_Data_DE48 | Optional | | PaymentToken_deviceIp | Optional | | Visa_STIP_Reason_Code Optional | (Visa only) |
| Authorised_by_GPS | Optional | | PaymentToken_deviceId | Optional | | Mastercard_AdviceReasonCode_DE60 Optional | (Mastercard only) |
| AVS_Result | Optional | | PaymentToken_deviceName | Optional | | Misc_TLV_Data | Optional |
| CU_Group | Optional | | PaymentToken_activationCode | Optional | | Network_Fraud_Data | Mandatory |
| InstCode | Mandatory | | PaymentToken_activationExpiry | Optional | | SenderData | Optional |
| MTID | Mandatory | | PaymentToken_activationMethod | Optional | | ReceiverData | Optional |
| ProductID | Mandatory | | PaymentToken_PanSource | Optional | | AuthenticationCurrency | Optional |
| Record_Data_DE120 | Optional | | PaymentToken_activationMethodData | Optional | | AuthenticationAmountUpper | Optional |
| Acquirer_Country | Optional | | ICC_System_Related_Data_DE55 | Optional | | AuthenticationMerchantHash | Optional |

| Field | Usage | | Field | Usage | | Field | Usage |
|---|---|---|---|---|---|---|---|
| SubBIN | Mandatory | | VL_Group | Optional | | FxProviderCardholderRate | Optional |
| TLogIDOrg | Optional | | Merch_Name | Mandatory | | SchemeTransactionIdentifier | Optional (v5.1 onwards) |
| | | | PaymentTokenPan | Optional (v5.1 onwards) | | TokenUniqueReference | Optional (v5.1 onwards) |
| NetworkTransactionId2 | Optional | | NetworkRelatedTransactionId | Optional | | NetworkLinkValidation | Optional |
| FleetData | Optional | | | | | | |
| ElapsedTimeToLive | Optional | | | | | | |
| NumberOfTransactionsCount | Optional | | | | | | |
| TotalOfTransactionAmounts | Optional | | | | | | |
| FlexEligibilityIndicator | Optional | | | | | | |
| FlexEligibleUseCaseIds | Optional | | | | | | |

* The MerchCountry field is typically optional, but note that in certain cases the Card Schemes may consider this field as mandatory. For details, please check the Card Scheme documentation.

## Usage Notes

- **Omitted** - can be omitted (fields not included) or included with an empty value (e.g."Bill_Ccy": "")
- **Optional** - can be omitted (fields not included) or included with an empty value. Can be present (e.g., "Bill_Ccy": "0")
- **Mandatory** - field must be present. For example: "Bill_Ccy": "978"

## Response Message Fields

The following fields must be present in an authorisation response message:

**IMPORTANT:** Response field values are case sensitive.

**IMPORTANT:** Do not return the value "null" in any response fields which require numeric values, as this will result in EHI declining the transaction. Exclude fields that are optional, if you do not want to return any values.

| Field | Usage |
|---|---|
| Responsestatus | Mandatory |
| CurBalance | Conditional:<br>If Proc_Code begins “30” (Balance enquiry) AND transaction is being approved THEN:<br>Gateway Processing (modes 1 and 4): Must be provided<br>Cooperative Processing (mode 2): Should be provided if Thredd balance does not reflect actual |

| Field | Usage |
| --- | --- |
| | account balance<br>Full Service Processing (mode 3): not required<br>Otherwise: optional |
| AvlBalance | Conditional:<br>IF Proc_Code begins “30” (Balance enquiry) AND transaction is being approved THEN:<br>Gateway Processing (modes 1 and 4): Must be provided<br>Cooperative Processing (mode 2): Should be provided if Thredd balance does not reflect actual account balance<br>Full Service Processing (mode 3): not required<br>Otherwise: optional |
| Acknowledgement | Mandatory |
| LoadAmount | Optional |
| Bill_Amt_Approved | Optional |
| Update_Balance | Optional |
| New_Balance_Sequence_ Exthost | Optional |
| CVV2_Result | Optional |
| AvlBalance_GPS_STIP | Conditional:<br>Required if Update_Balance=1<br>Otherwise optional. |
| CurBalance_GPS_STIP | Conditional:<br>Required if Update_Balance=1<br>Otherwise optional. |
| MerchantAdvice | Optional |
| FlexPaymentCredential | The secondary public token to use for Visa Flex.<br>**Note**: This field is available from EHI version 5.4 onwards. |
| FlexSelectedUseCaseId | The use case ID to apply for Visa Flex.<br>**Note**: This field is available from EHI version 5.4 onwards. |

## 2.5.6 Transaction Type – Financial

Financial message types are used for the following message types:

| MTID | Txn_Type | Description |
| --- | --- | --- |
| 1240<br>05pp<br>06pp<br>07pp<br>(p = space) | A | Authorisation Advice notification<br>(Dummy authorisation created if a Financial notification has no matching authorisation.) |

| MTID | Txn_Type | Description |
|---|---|---|
| 1240 | C | Chargeback notification |
| 1240 | H | Chargeback (non-credit) notification |
| 1240 | K | Chargeback reversal |
| 1240<br>05pp<br>06pp<br>07pp<br>(p = space) | P | Financial notification (first presentment) |
| 1240<br>25pp<br>26pp<br>27pp<br>(p = space) | E | Financial Reversal notification |
| 1240<br>05pp<br>06pp<br>07pp<br>(p = space) | N | Financial notification (second presentment) |

## Request Message Fields (Financial Messages)

The following fields must be present in a Financial request message:

| Field | Usage | | Field | Usage |
|---|---|---|---|---|
| Acquirer_id_DE32 | Optional | | dest_bank_account_format | Omitted |
| ActBal | Mandatory | | dest_bank_account | Omitted |
| Additional_Amt_DE54 | Optional | | GPS_POS_Capability | Mandatory |
| Amt_Tran_Fee_DE28 | Optional | | GPS_POS_Data | Optional |
| Auth_Code_DE38 | Optional | | Acquirer_Reference_Data_031 | Mandatory |
| Avl_Bal | Mandatory | | Response_Source | Omitted |
| Bill_Amt | Mandatory | | Response_Source_Why | Omitted |
| Bill_Ccy | Mandatory | | Message_Source | Omitted |
| BlkAmt | Mandatory | | Message_Why | Omitted |
| Cust_Ref | Optional | | traceid_lifecycle | Optional |
| FX_Pad | Mandatory | | Balance_Sequence | Optional |
| Fee_Fixed | Mandatory | | Balance_Sequence_Exthost | Optional |

| Field | Usage | | Field | Usage |
|---|---|---|---|---|
| Fee_Rate | Mandatory | | PaymentToken_id | Optional |
| LoadSRC | Optional | | PaymentToken_creator | Optional |
| LoadType | Optional | | PaymentToken_expdate | Optional |
| MCC_Code | Optional | | PaymentToken_type | Optional |
| MCC_Desc | Optional | | PaymentToken_status | Optional |
| MCC_Pad | Mandatory | | PaymentToken_creatorStatus | Optional |
| Merch_ID_DE42 | Optional | | PaymentToken_wallet | Optional |
| Merch_Name_DE43 | Mandatory | | PaymentToken_deviceType | Optional |
| Note | Optional | | PaymentToken_lang | Optional |
| POS_Data_DE22 | Optional | | PaymentToken_deviceTelNum | Optional |
| POS_Data_DE61 | Optional | | PaymentToken_deviceIp | Optional |
| POS_Termnl_DE41 | Optional | | PaymentToken_deviceId | Optional |
| POS_Time_DE12 | Optional | | PaymentToken_deviceName | Optional |
| Proc_Code | Mandatory | | PaymentToken_activationCode | Omitted |
| Resp_Code_DE39 | Optional | | PaymentToken_activationExpiry | Omitted |
| Ret_Ref_No_DE37 | Optional | | PaymentToken_activationMethod | Omitted |
| Settle_Amt | Optional | | PaymentToken_ activationMethodData | Omitted |
| Settle_Ccy | Optional | | ICC_System_Related_Data_DE55 | Optional |
| Status_Code | Mandatory | | Merch_Name | Mandatory |
| Token | Mandatory | | Merch_Street | Optional |
| Trans_link | Mandatory | | Merch_City | Mandatory |
| Txn_Amt | Mandatory | | Merch_Region | Optional |
| Txn_CCy | Mandatory | | Merch_Postcode | Optional |
| Txn_Ctry | Optional | | Merch_Country | Optional* |
| Txn_Desc | Optional | | Merch_Tel | Optional |
| Txn_GPS_date | Mandatory | | Merch_URL | Optional |
| TXn_ID | Mandatory | | Merch_Name_Other | Optional |

| Field | Usage | | Field | Usage |
|---|---|---|---|---|
| Txn_Stat_Code | Mandatory | | Merch_Net_id | Optional |
| TXN_Time_DE07 | Optional | | Merch_Tax_id | Optional |
| Txn_Type | Mandatory | | Merch_Contact | Optional |
| Additional_Data_DE48 | Optional | | Auth_Type | Optional |
| Authorised_by_GPS | Optional | | auth_expdate_utc | Optional |
| AVS_Result | Optional | | Matching_Txn_ID | Optional |
| CU_Group | Optional | | Reason_ID | Optional |
| InstCode | Mandatory | | Dispute_Condition | Optional |
| MTID | Mandatory | | Network_Chargeback_Reference_Id | Optional |
| ProductID | Mandatory | | Acquirer_Forwarder_ID | Optional |
| Record_Data_DE120 | Omitted | | DCC_Indicator | Optional |
| SubBIN | Mandatory | | multi_part_txn | Optional |
| TLogIDOrg | Optional | | multi_part_txn_final | Optional |
| VL_Group | Optional | | multi_part_number | Optional |
| Dom_Fee_Fixed | Mandatory | | multi_part_count | Optional |
| Non_Dom_Fee_Fixed | Mandatory | | SettlementIndicator | Optional |
| Fx_Fee_Fixed | Mandatory | | Clearing_Process_Date | Optional |
| Other_Fee_Amt | Mandatory | | Settlement_Date | Optional |
| Fx_Fee_Rate | Mandatory | | Currency_Code_Fee | Optional |
| Dom_Fee_Rate | Mandatory | | Currency_Code_Fee_Settlement | Optional |
| Non_Dom_Fee_Rate | Mandatory | | Interchange_Amount_Fee | Optional |
| Additional_Data_DE124 | Optional | | Interchange_Amount_Fee_Settlement | Optional |
| CVV2 | Omitted | | Traceid_Message | Optional |
| Expiry_Date | Optional | | Traceid_Original | Optional |
| PAN_Sequence_Number | Optional | | Network_Transaction_ID | Optional |
| PIN | Omitted | | POS_Date_DE13 | Optional |
| PIN_Enc_Algorithm | Omitted | | Network_Currency_Conversion_Date | Omitted |

| Field | Usage | | Field | Usage |
|---|---|---|---|---|
| PIN_Format | Omitted | | Network_TxnAmt_To_BillAmt_Rate | Optional |
| PIN_Key_Index | Omitted | | Network_TxnAmt_To_BaseAmt_Rate | Optional (Visa only) |
| SendingAttemptCount | Mandatory | | Network_BaseAmt_To_BillAmt_Rate | Optional (Visa only) |
| source_bank_ctry | Omitted | | Network_Original_Data_Elements_DE90 | Omitted |
| source_bank_account_format | Omitted | | Network_Replacement_Amounts_DE95 | Omitted |
| source_bank_account | Omitted | | ReceiverData | Optional |
| ClearingFileId | Optional | | FxProviderCardholderRate | Optional |
| dest_bank_ctry | Omitted | | NetworkTransactionId2 | Optional (Mastercard only) |
| NetworkRelatedTransactionId | Optional (Mastercard only) | | NetworkLinkValidation | Optional (Mastercard only) |
| FleetData | Optional | | | |
| ElapsedTimeToLive | Optional | | | |
| NumberOfTransactionsCount | Optional | | | |
| TotalOfTransactionAmounts | Optional | | | |
| FlexEligibilityIndicator | Optional | | | |
| FlexEligibleUseCaseIds | Optional | | | |

## Response Message Fields (Financial Messages)

The following fields must be present in the Financial response message:

| Field | Usage |
|---|---|
| Responsestatus | Optional |
| CurBalance | Optional |
| AvlBalance | Optional |
| Acknowledgement | Mandatory |
| LoadAmount | Optional |
| Bill_Amt_Approved | Optional |

| Field | Usage |
|---|---|
| Update_Balance | Optional |
| New_Balance_Sequence_Exthost | Optional |
| CVV2_Result | Optional |
| AvlBalance_GPS_STIP | Conditional:<br>Required if Update_Balance=1<br>Otherwise optional. |
| CurBalance_GPS_STIP | Conditional:<br>Required if Update_Balance=1<br>Otherwise optional. |
| FlexPaymentCredential | Optional. |
| FlexSelectedUseCaseId | Optional. |

## 2.5.7 Transaction Types – Non-Card-Network Transactions

This section is for non-card-network originated transactions (i.e., where the cardholder has not used their card to perform this transaction, the transaction is not received from Visa or Mastercard, but another source, such as Web Services/Cards API or BACS). As a result, the card network specific fields are not present (e.g., MTID and Acquirer ID (Acquirer_id_DE32) are not present.)

The following message types are non-card-network transactions:

| MTID | Txn_Type | Description |
|---|---|---|
| n/a (not present) | L | Load |
| n/a (not present) | U | Unload |
| n/a (not present) | G | Payment |
| n/a (not present) | B | Balance Adjustment |
| n/a (not present) | Y | Card Expiry |
| n/a (not present) | P | Fee |

### Request Message Fields (Non-Card Network Messages)

The following fields must be present in non-card-network transaction request message:

| Field | Usage | | Field | Usage |
|---|---|---|---|---|
| Acquirer_id_DE32 | Omitted | | dest_bank_account | Optional |
| ActBal | Mandatory | | GPS_POS_Capability | Omitted |
| Additional_Amt_DE54 | Omitted | | GPS_POS_Data | Omitted |
| Amt_Tran_Fee_DE28 | Omitted | | Acquirer_Reference_Data_031 | Omitted |

| Field | Usage | | Field | Usage |
|---|---|---|---|---|
| Auth_Code_DE38 | Omitted | | Response_Source | Omitted |
| Avl_Bal | Mandatory | | Response_Source_Why | Omitted |
| Bill_Amt | Mandatory | | Message_Source | Omitted |
| Bill_Ccy | Mandatory | | Message_Why | Omitted |
| BlkAmt | Mandatory | | traceid_lifecycle | Omitted |
| Cust_Ref | Optional | | Balance_Sequence | Omitted |
| FX_Pad | Mandatory | | Balance_Sequence_Exthost | Omitted |
| Fee_Fixed | Mandatory | | PaymentToken_id | Omitted |
| Fee_Rate | Mandatory | | PaymentToken_creator | Omitted |
| LoadSRC | Optional | | PaymentToken_expdate | Omitted |
| LoadType | Optional | | PaymentToken_type | Omitted |
| MCC_Code | Omitted | | PaymentToken_status | Omitted |
| MCC_Desc | Omitted | | PaymentToken_creatorStatus | Omitted |
| MCC_Pad | Omitted | | PaymentToken_wallet | Omitted |
| Merch_ID_DE42 | Omitted | | PaymentToken_deviceType | Omitted |
| Merch_Name_DE43 | Omitted | | PaymentToken_lang | Omitted |
| Note | Optional | | PaymentToken_deviceTelNum | Omitted |
| POS_Data_DE22 | Omitted | | PaymentToken_deviceIp | Omitted |
| POS_Data_DE61 | Omitted | | PaymentToken_deviceId | Omitted |
| POS_Termnl_DE41 | Omitted | | PaymentToken_deviceName | Omitted |
| POS_Time_DE12 | Omitted | | PaymentToken_activationCode | Omitted |
| Proc_Code | Mandatory | | PaymentToken_activationExpiry | Omitted |
| Resp_Code_DE39 | Omitted | | PaymentToken_activationMethod | Omitted |
| Ret_Ref_No_DE37 | Omitted | | PaymentToken_activationMethodData | Omitted |
| Settle_Amt | Optional | | ICC_System_Related_Data_DE55 | Optional |
| Settle_Ccy | Optional | | Merch_Name | Omitted |
| Status_Code | Mandatory | | Merch_Street | Omitted |
| Token | Mandatory | | Merch_City | Omitted |

| Field | Usage | | Field | Usage |
|---|---|---|---|---|
| Trans_link | Mandatory | | Merch_Region | Omitted |
| Txn_Amt | Mandatory | | Merch_Postcode | Omitted |
| Txn_CCy | Mandatory | | Merch_Country | Optional* |
| Txn_Ctry | Optional | | Merch_Tel | Omitted |
| Txn_Desc | Optional | | Merch_URL | Omitted |
| Txn_GPS_Date | Mandatory | | Merch_Name_Other | Omitted |
| TXn_ID | Mandatory | | Merch_Net_id | Omitted |
| Txn_Stat_Code | Mandatory | | Merch_Tax_id | Omitted |
| TXN_Time_DE07 | Omitted | | Merch_Contact | Omitted |
| Txn_Type | Mandatory | | auth_type | Omitted |
| Additional_Data_DE48 | Omitted | | auth_expdate_utc | Omitted |
| Authorised_by_GPS | Omitted | | Matching_Txn_ID | Omitted |
| AVS_Result | Omitted | | Reason_ID | Omitted |
| CU_Group | Optional | | Dispute_Condition | Omitted |
| InstCode | Mandatory | | Network_Chargeback_Reference_Id | Omitted |
| MTID | Omitted | | Acquirer_Forwarder_ID | Omitted |
| ProductID | Mandatory | | DCC_Indicator | Omitted |
| Record_Data_DE120 | Omitted | | multi_part_txn | Omitted |
| SubBIN | Mandatory | | multi_part_txn_final | Omitted |
| TLogIDOrg | Omitted | | multi_part_number | Omitted |
| VL_Group | Optional | | multi_part_count | Omitted |
| Dom_Fee_Fixed | Mandatory | | SettlementIndicator | Omitted |
| Non_Dom_Fee_Fixed | Mandatory | | Clearing_Process_Date | Omitted |
| Fx_Fee_Fixed | Mandatory | | Settlement_Date | Omitted |
| Other_Fee_Amt | Mandatory | | Currency_Code_Fee | Omitted |
| Fx_Fee_Rate | Mandatory | | Currency_Code_Fee_Settlement | Omitted |
| Dom_Fee_Rate | Mandatory | | Interchange_Amount_Fee | Omitted |
| Non_Dom_Fee_Rate | Mandatory | | Interchange_Amount_Fee_Settlement | Omitted |

| Field | Usage | | Field | Usage |
|---|---|---|---|---|
| Additional_Data_DE124 | Omitted | | Traceid_Message | Omitted |
| CVV2 | Omitted | | Traceid_Original | Omitted |
| Expiry_Date | Omitted | | Network_Transaction_ID | Omitted |
| PAN_Sequence_Number | Omitted | | POS_Date_DE13 | Omitted |
| PIN | Omitted | | Network_Currency_Conversion_Date | Omitted |
| PIN_Enc_Algorithm | Omitted | | Network_TxnAmt_To_BillAmt_Rate | Omitted |
| PIN_Format | Omitted | | Network_TxnAmt_To_BaseAmt_Rate | Omitted |
| PIN_Key_Index | Omitted | | Network_BaseAmt_To_BillAmt_Rate | Omitted |
| SendingAttemptCount | Mandatory | | Network_Original_Data_Elements_DE90 | Omitted |
| source_bank_ctry | Optional | | Network_Replacement_Amounts_DE95 | Omitted |
| source_bank_account_format | Optional | | Network_Issuer_Settle_ID | Omitted |
| source_bank_account | Optional | | Visa_ResponseInfo_DE44 | Omitted |
| dest_bank_ctry | Optional | | Visa_POS_Data_DE60 | Omitted |
| dest_bank_account_format | Optional | | Visa_STIP_Reason_Code | Omitted |
| NetworkTransactionId2 | Optional (Mastercard only) | | NetworkRelatedTransactionId | Optional (Mastercard only) |
| NetworkLinkValidation | Optional (Mastercard only) | | | |
| FleetData | Optional | | | |
| ElapsedTimeToLive | Optional | | | |
| NumberOfTransactionsCount | Optional | | | |
| TotalOfTransactionAmounts | Optional | | | |
| FlexEligibilityIndicator | Optional | | | |
| FlexEligibleUseCaseIds | Optional | | | |

## Response Message Fields

The following fields must be present in a non-card-network response message:

| Field | Usage |
| --- | --- |
| Responsestatus | Optional |
| CurBalance | Optional |
| AvlBalance | Optional |
| Acknowledgement | Mandatory |
| LoadAmount | Optional |
| Bill_Amt_Approved | Optional |
| Update_Balance | Omitted |
| New_Balance_Sequence_Exthost | Omitted |
| CVV2_Result | Optional |
| AvlBalance_GPS_STIP | Optional |
| CurBalance_GPS_STIP | Optional |
| FlexPaymentCredential | Optional |
| FlexSelectedUseCaseId | Optional |

# 2.6 Cut_Off Messages

You can optionally enable receiving batch cut-off messages which provide summary information of the data sent via EHI. The frequency of cut-off messages is configurable.

**Tip:** The recommended frequency is 2-3 times per day.

## 2.6.1 Message Fields

The following fields are included in the *Cut_Off* message:

| Field | Description | Data type (min, max) | Sample Data | Usage |
|---|---|---|---|---|
| CutoffID | A unique identifier of the cut_off message. | N(1,9) | 12 | Mandatory |
| ProductID | The Product ID of the card. | N(1,9) | 1504 | Mandatory |
| CutoffDate | Date and time of this cut_off message. | Datetime (Y_to_nnn) | 2021-03-02 13:16:42.999 | Mandatory |
| FirstTxn_ID | First Txn_ID in this cut_off period.<br>Maximum is 2^63-1. | N(1,19) | 1234564 | Mandatory |
| LastTxn_ID | Last Txn_ID in this cut_off period.<br>Maximum is 2^63-1. | N(1,19) | 4523587 | Mandatory |
| Auths_Acknowledged | Number of acknowledged Authorisations during this cut_off | N(1,9) | 5000 | Mandatory |
| Auths_NotAcknowledged | Number of un-acknowledged Authorisations during this cut_off | N(1,9) | 100 | Mandatory |
| Financials_Acknowledged | Number of acknowledged Financials during this cut_off | N(1,9) | 5000 | Mandatory |
| Financials_ NotAcknowledged | Number of un-acknowledged Financials during this cut_off | N(1,9) | 100 | Mandatory |
| LoadsUnloads_ Acknowledged | Number of acknowledged Loads/Unloads during this cut_off | N(1,9) | 5000 | Mandatory |
| LoadsUnloads_ NotAcknowledged | Number of un-acknowledged Loads/Unloads during this cut_off | N(1,9) | 100 | Mandatory |
| BalanceAdjustExpiry_ Acknowledged | Number of acknowledged Balance Adjustment and Expiry during this cut_off | N(1,9) | 5000 | Mandatory |
| BalanceAdjustExpiry_ NotAcknowledged | Number of un-acknowledged Balance Adjustment and Expiry during this cut_off | N(1,9) | 100 | Mandatory |

## 2.6.2 Response Message Fields

The following fields must be present in the Cut_off response message:

| Field | Description | Data type (min,max) | Sample Data | Usage |
|---|---|---|---|---|
| Cut_ OffResult | Valid values:<br>0 = Not Acknowledged (in a future release, Thredd may re-transmit the cut off message.)<br>1 = Acknowledged | N(1,1) | 1 | Mandatory |

# 2.7 HTTP Message Format

EHI messages are HTTP 1.1 formatted, according to RFC 2616 and any superseding RFCs such as RFCs 7230 and RFC 7231.

## 2.7.1 Request Message

The outgoing request message is a HTTP/1.1 POST request. The header fields are specified below. The body data is the JSON fields of the GetTransaction message or Cut-Off message. For details, see GetTransaction Message Fields and Cut_Off Messages.

## 2.7.2 Request Header Fields

| Header | Content example | Status | Comment |
|---|---|---|---|
| host | 192.168.51.16 | Mandatory | IP of the sending host, set by the sending host (Thredd). |
| traceparent | 00-c24a548a2883cf4aac38eb40410a5e5d-593f9603da624910-00 | Optional | Identifies the incoming request in a tracing system. For details see the W3.org description of Traceparent Header. |
| content-type | application/json | Mandatory | Indicates JSON formatted content. |
| content-length | 778 | Mandatory | Length of the body in bytes. |

### Request Body Fields

For details, see GetTransaction Message Fields and Cut_Off Messages.

## 2.7.3 Response Message

The incoming response message is a valid HTTP/1.1 response. The header fields are specified below, and the body data is the XML data of either the GetTransaction response or the Cut_Off response. For details, see GetTransaction Message Fields and Cut_Off Messages.

## 2.7.4 Response Header Fields

| Header | Content example | Status | Comment |
|---|---|---|---|
| host | 192.168.51.16 | Mandatory | IP of the sending host, set by the sending host (Program Manager systems). |
| traceparent | 00-c24a548a2883cf4aac38eb40410a5e5d-593f9603da624910-00 | Optional | Identifies the incoming request in a tracing system. For details see the W3.org description of Traceparent Header. |
| content-type | application/json | Mandatory | Indicates JSON formatted content. |
| content-length | 778 | Mandatory | Length of the body in bytes. |
| *other items* | Various | Optional | Other standard headers permitted in the |

| Header | Content example | Status | Comment |
| --- | --- | --- | --- |
| | | | HTTP/1.1 as valid for the response may be included. |

## Response Body Fields

For details, see For details, see GetTransaction Message Fields and Cut_Off Messages.

# SECTION 3: JSON EXAMPLES

This section provides examples of common transaction messages and responses.

# 3.1 GetTransaction Example Messages

This section provides examples of common transaction messages and responses. This section includes these topics:

- Example Authorisation
- Example Authorisation Reversal
- Example Financial Presentment (Mastercard)
- Example Second Financial Presentment (Mastercard)
- Example Financial Reversal (Visa)
- Example Financial Reversal (Mastercard)
- Example Visa Authorisation Advice
- Example Mastercard Authorisation Advice
- Example Non-Credit Chargeback Notification (Mastercard)
- Example Chargeback Notification (Mastercard)
- Example Chargeback Reversal (Mastercard)
- Example Balance Enquiry Message
- Example ATM Cash Withdrawal Messages (Mastercard)
- Example Tokenisation Messages
- Example Incremental Authorisation Messages
- Examples of Amount Sign

**Note:** EHI_JSON_Guide_5.5 The EHI feed does not send JSON fields to externally-hosted systems where the values for the field data are blank. This is different from EHI feeds with XML fields where the feed can send blank values.

## 3.1.1 Example Authorisations

### Authorisation Request

Below is an example of the HTTP POST body data for an authorisation request.


```
{
  "Acquirer_Country": "GBR",
  "FxProviderCardholderRate": 0.0,
  "POS_Date_DE13": "00000000",
  "Traceid_Message": "VIS1-20221219-002353117950020",
  "Visa_POS_Data_DE60": "020000000000",
  "Network_Transaction_ID": "0002353117950020",
  "DCC_Indicator": 0,
  "multi_part_txn": 0,
  "multi_part_txn_final": 0,
  "auth_type": "0",
  "auth_expdate_utc": "2022-12-27 07:28:36.045",
  "Merch_Name": "Travel Like A Pro",
  "Merch_Country": "HRV",
  "GPS_POS_Capability": "00001001000000000000000010001001000100000000001130C0",
  "GPS_POS_Data": "9968000800000Nx000NNNNNU0NUUXXU",
  "Response_Source_Why": 0,
  "Message_Why": 0,
  "traceid_lifecycle": "VIS1-20221219-002353117950020",
  "Balance_Sequence": 114,
  "Balance_Sequence_Exthost": 0,
  "Acquirer_id_DE32": "0844622180",
  "ActBal": 10001.0000,
  "Auth_Code_DE38": "143088",
  "Avl_Bal": 10001.0000,
  "Bill_Amt": 1.0000,
  "Bill_Ccy": "826",
  "BlkAmt": 0.0000,
```

```
  "FX_Pad": 0.0000,
  "Fee_Fixed": 0.0000,
  "Fee_Rate": 0.0000,
  "MCC_Code": "4111",
  "MCC_Desc": "Commuter Transport, Ferries",
  "MCC_Pad": 0.0000,
  "Merch_ID_DE42": "4111",
  "Merch_Name_DE43": "Travel Like A Pro HR",
  "POS_Data_DE22": "0110",
  "Proc_Code": "200000",
  "Resp_Code_DE39": "00",
  "Ret_Ref_No_DE37": "235303502517",
  "Settle_Amt": 1.0000,
  "Settle_Ccy": "826",
  "Status_Code": "00",
  "Token": 107419774,
  "Trans_link": "221219002517622180",
  "Txn_Amt": 1.0000,
  "Txn_CCy": "826",
  "Txn_Ctry": "HRV",
  "Txn_Desc": "Travel Like A Pro HR",
  "Txn_GPS_Date": "2022-12-19 07:28:37.526",
  "TXn_ID": 6155805913,
  "Txn_Stat_Code": "A",
  "TXN_Time_DE07": "1219072835",
  "Txn_Type": "A",
  "Authorised_by_GPS": "N",
  "CU_Group": "DEF_PV",
  "InstCode": "TEST",
  "MTID": "0100",
  "ProductID": 99883,
  "SubBIN": 44622180,
  "TLogIDOrg": 0,
  "VL_Group": "MLMS_PV_GB",
  "Dom_Fee_Fixed": 0.0000,
  "Non_Dom_Fee_Fixed": 0.0000,
  "Fx_Fee_Fixed": 0.0000,
  "Other_Fee_Amt": 0.0000,
  "Fx_Fee_Rate": 0.0000,
  "Dom_Fee_Rate": 0.0000,
  "Non_Dom_Fee_Rate": 0.0000,
  "PIN": "0",
  "SendingAttemptCount": 0
}
```


**Note:** The above example does not include all available fields as not all fields are required for a message. For example, in the above message, the Network_Replacement_Amounts_DE95 field is not required as part of the message.

## Authorisation Response

Below is an example of HTTP response to the above Authorisation request message.


```
{
    "MerchantAdvice":"",
    "Responsestatus":"00",
    "CurBalance":0,
    "AvlBalance":100,
    "Acknowledgement":"1",
    "LoadAmount":50,
    "Bill_Amt_Approved":0,
    "Update_Balance":1,
    "New_Balance_Sequence_Exthost":200,
    "CVV2_Result":"M",
    "CurBalance_GPS_STIP":0,
    "AvlBalance_GPS_STIP":100
}
```

# 3.1.2 Example Authorisation Reversal

## Authorisation Reversal Request

Below is an example of the HTTP POST body data for an Authorisation Reversal message.


```
{
  "AuthenticationAmountUpper": 0.0000,
  "FxProviderCardholderRate": 0.0,
  "DCC_Indicator": 0,
  "multi_part_txn": 0,
  "multi_part_txn_final": 0,
  "auth_type": "0",
  "auth_expdate_utc": "2022-12-26 07:27:14.180",
  "Matching_Txn_ID": 0,
  "Reason_ID": 0,
  "Merch_Name": "Travel Like A Pro",
  "Merch_Country": "HRV",
  "Merch_Tax_id": "0",
  "GPS_POS_Capability": "00110000100000000000000000000000100000000001016",
  "GPS_POS_Data": "0168000800000Nx000",
  "Response_Source_Why": 0,
  "Message_Why": 0,
  "traceid_lifecycle": "BNET-20221219-MC 004279",
  "PaymentToken_id": 0,
  "PaymentToken_creatorStatus": " ",
  "PaymentToken_lang": "  ",
  "PaymentToken_activationMethod": 0,
  "Acquirer_id_DE32": "0852729540",
  "ActBal": 3535.47,
  "Amt_Tran_Fee_DE28": "D00000010",
  "Auth_Code_DE38": "183715",
  "Avl_Bal": 3401.72,
  "Bill_Amt": 10.00,
  "Bill_Ccy": "826",
  "BlkAmt": -133.75,
  "FX_Pad": 0.00,
  "Fee_Fixed": 0.50,
  "Fee_Rate": 0.00,
  "MCC_Code": "4111",
  "MCC_Desc": "Commuter Transport, Ferries",
  "MCC_Pad": 0.00,
  "Merch_ID_DE42": "4111           ",
  "Merch_Name_DE43": "Travel Like A Pro HRV",
  "Note": "Testing  User - Dhanya.B Date - 19/12/2022 16:18:08 BillAmt - 10.00 Location - Travel Like A Pro    ",
  "POS_Data_DE22": "010",
  "POS_Data_DE61": "2000000006000191",
  "POS_Termnl_DE41": "        ",
  "POS_Time_DE12": "072714",
  "Proc_Code": "000000",
  "Resp_Code_DE39": "00",
  "Ret_Ref_No_DE37": "235303504279",
  "Settle_Amt": 10.00,
  "Settle_Ccy": "826",
  "Status_Code": "00",
  "Token": 107612119,
  "Trans_link": "221219004279729540",
  "Txn_Amt": 10.0000,
  "Txn_CCy": "826",
  "Txn_Ctry": "HRV",
  "Txn_Desc": "Travel Like A Pro HRV",
  "Txn_GPS_Date": "2022-12-19 10:48:03.580",
  "TXn_ID": 6155806244,
  "Txn_Stat_Code": "A",
  "TXN_Time_DE07": "1219072714",
  "Txn_Type": "D",
  "Authorised_by_GPS": "N",
```

```
  "CU_Group": "CRN-CU-001",
  "InstCode": "TEST",
  "ProductID": 99884,
  "SubBIN": 52729540,
  "TLogIDOrg": 0,
  "VL_Group": "CRN-VL-100",
  "Dom_Fee_Fixed": 0.50,
  "Non_Dom_Fee_Fixed": 0.00,
  "Fx_Fee_Fixed": 0.00,
  "Other_Fee_Amt": 0.00,
  "Fx_Fee_Rate": 0.00,
  "Dom_Fee_Rate": 0.00,
  "Non_Dom_Fee_Rate": 0.00,
  "SendingAttemptCount": 0
}
```


**Note:** The above example does not include all available fields as not all fields are required for a message. For example, in the above message, the Network_Original_Data_Elements_DE90 field is not required as part of the message.

### Authorisation Reversal Response

Below is an example of HTTP response to the above Authorisation Reversal message.


```
{
    "MerchantAdvice":"",
    "Responsestatus":"00",
    "CurBalance":0,
    "AvlBalance":100,
    "Acknowledgement":"1",
    "LoadAmount":50,
    "Bill_Amt_Approved":0,
    "Update_Balance":1,
    "New_Balance_Sequence_Exthost":200,
    "CVV2_Result":"M",
    "CurBalance_GPS_STIP":0,
    "AvlBalance_GPS_STIP":100
}
```


## 3.1.3 Example Financial Presentment (Mastercard)

The following is an example presentment from Mastercard (MTID = 1240 and Txn_Type = P).

### Financial Request

Below is an example of the HTTP POST body data for a financial request.


```
{
  "ClearingFileID": "T112.00122091200052069000000025     ",
  "FxProviderCardholderRate": 0.0,
  "Network_TxnAmt_To_BillAmt_Rate": "1000000:6",
  "POS_Date_DE13": "20220912",
  "Traceid_Message": "BNET-20220912-MC 694327",
  "Network_Issuer_Settle_ID": "52069000",
  "Network_Transaction_ID": " MC 6943270912  ",
  "Acquirer_Forwarder_ID": "500000",
  "Clearing_Process_Date": "2022-09-12",
  "Settlement_Date": "2022-09-12",
  "DCC_Indicator": 0,
  "multi_part_txn": 0,
  "multi_part_txn_final": 0,
  "multi_part_number": 0,
  "multi_part_count": 0,
  "SettlementIndicator": "0",
  "auth_type": "0",
```

```
  "Matching_Txn_ID": 6153911205,
  "Reason_ID": 0,
  "Merch_Name": "E-Comm Merchant",
  "Merch_City": "CITY",
  "Merch_Country": "GBR",
  "Merch_Tel": "5032277600      ",
  "Merch_Tax_id": "0",
  "GPS_POS_Capability": "00100000000000000000000000000000000100000000990016",
  "GPS_POS_Data": "51V8000800000Nx000",
  "Acquirer_Reference_Data_031": "15000005123000006943271",
  "Response_Source_Why": 0,
  "Message_Why": 0,
  "traceid_lifecycle": "BNET-20220912-MC 694327",
  "PaymentToken_id": 0,
  "PaymentToken_activationMethod": 0,
  "Acquirer_id_DE32": "500000",
  "ActBal": 0.00,
  "Auth_Code_DE38": "187239",
  "Avl_Bal": 0.00,
  "Bill_Amt": 50.00,
  "Bill_Ccy": "124",
  "BlkAmt": 0.00,
  "FX_Pad": 0.00,
  "Fee_Fixed": 0.00,
  "Fee_Rate": 0.00,
  "MCC_Code": "5734",
  "MCC_Desc": "Computer Software Stores",
  "MCC_Pad": 0.00,
  "Merch_ID_DE42": "ECOMM          ",
  "Merch_Name_DE43": "E-Comm Merchant  \\\\CITY \\ GBR",
  "Note": " Refund matching credit auth",
  "POS_Data_DE22": "090951S99001",
  "POS_Termnl_DE41": "11223344",
  "POS_Time_DE12": "220912184813",
  "Proc_Code": "200000",
  "Ret_Ref_No_DE37": "225504594327",
  "Settle_Amt": 50.00,
  "Settle_Ccy": "124",
  "Status_Code": "00",
  "Token": 107916050,
  "Trans_link": "220912694327500000",
  "Txn_Amt": 50.0000,
  "Txn_CCy": "124",
  "Txn_Ctry": "GBR",
  "Txn_Desc": "E-Comm Merchant \\\\CITY \\ GBR",
  "Txn_GPS_Date": "2022-09-12 19:49:25.513",
  "TXn_ID": 6153911206,
  "Txn_Stat_Code": "S",
  "Txn_Type": "P",
  "Additional_Data_DE48": "0002003MRG0003003MRG0023003CT60052003   01480041242015803OMCC10106017322091201  NNNNNN0159067
1521544702350  1US00000001N22091201220912010165001M01700165032277600",
  "Authorised_by_GPS": "N",
  "CU_Group": "PMT-CU-001",
  "InstCode": "PMT",
  "MTID": "1240",
  "ProductID": 1234,
  "SubBIN": 52111111,
  "TLogIDOrg": 0,
  "VL_Group": "PMT-VL-001",
  "Dom_Fee_Fixed": 0.00,
  "Non_Dom_Fee_Fixed": 0.00,
  "Fx_Fee_Fixed": 0.00,
  "Other_Fee_Amt": 0.00,
  "Fx_Fee_Rate": 0.00,
  "Dom_Fee_Rate": 0.00,
  "Non_Dom_Fee_Rate": 0.00,
  "SendingAttemptCount": 0
}
```

## Financial Response

Below is an example of HTTP response to the above Financial Request message.


```
{
    "Acknowledgement": "1",
    "Responsestatus": "00"
}
```


# 3.1.4 Example Second Financial Presentment (Mastercard)

The following is an example second presentment from Mastercard (MTID = 1240 and Txn_Type = N).


```
{
  "ClearingFileID": "T112.00126011400000033348066O1",
  "FxProviderCardholderRate": 0.0,
  "Network_TxnAmt_To_BillAmt_Rate": "7429006:7",
  "POS_Date_DE13": "20251209",
  "Traceid_Message": "BNET-20251209-MCSK2A173",
  "Network_Issuer_Settle_ID": "033348",
  "Network_Transaction_ID": " MCSK2A1731209  ",
  "Acquirer_Forwarder_ID": "003499",
  "Currency_Code_Fee": "840",
  "Currency_Code_Fee_Settlement": "826",
  "Interchange_Amount_Fee": 1.190000,
  "Interchange_Amount_Fee_Settlement": 0.880000,
  "Clearing_Process_Date": "2026-01-14",
  "Settlement_Date": "2026-01-15",
  "DCC_Indicator": 0,
  "multi_part_txn": 0,
  "multi_part_txn_final": 0,
  "multi_part_number": 0,
  "multi_part_count": 0,
  "SettlementIndicator": "0",
  "auth_type": "0",
  "Matching_Txn_ID": 0,
  "Reason_ID": 0,
  "Merch_Name": "MERPAGO*GRUPOMODELO",
  "Merch_Street": "AV INSURGENTES SUR 1602",
  "Merch_City": "CIUDAD DE MEX",
  "Merch_Region": "MEX",
  "Merch_Postcode": "03940",
  "Merch_Country": "MEX",
  "Merch_Tax_id": "0",
  "GPS_POS_Capability": "00000000100000000000000000000000100000000230006",
  "GPS_POS_Data": "50V80008000001x000",
  "Acquirer_Reference_Data_031": "75177135343171088477474",
  "Response_Source_Why": 0,
  "Message_Why": 0,
  "traceid_lifecycle": "BNET-20251209-MCSK2A173",
  "PaymentToken_id": 0,
  "PaymentToken_activationMethod": 0,
  "ActBal": -32.3200,
  "Auth_Code_DE38": "345544",
  "Avl_Bal": -32.3200,
  "Bill_Amt": -53.6300,
  "Bill_Ccy": "826",
  "BlkAmt": 0.0000,
  "FX_Pad": 0.0000,
  "Fee_Fixed": 0.0000,
  "Fee_Rate": 0.0000,
  "MCC_Code": "5411",
  "MCC_Desc": "Grocery Stores, Supermarkets",
  "MCC_Pad": 0.0000,
  "Merch_ID_DE42": "8847747        ",
  "Merch_Name_DE43": "MERPAGO*GRUPOMODELO\\AV INSURGENTES SUR 1602\\CIUDAD DE MEX\\03940     MEXMEX",
  "Note": "9343141128Chargeback not accepted transaction valid under card network rules and supporting evidence",
```

```
  "POS_Data_DE22": "690550S99000",
  "POS_Termnl_DE41": "01062906",
  "POS_Time_DE12": "251209190355",
  "Proc_Code": "003000",
  "Ret_Ref_No_DE37": "            ",
  "Settle_Amt": -53.6300,
  "Settle_Ccy": "826",
  "Status_Code": "83",
  "Token": 276557146,
  "Trans_link": "251210930797003499",
  "Txn_Amt": 72.1900,
  "Txn_CCy": "840",
  "Txn_Ctry": "MEX",
  "Txn_Desc": "MERPAGO*GRUPOMODELO\\AV INSURGENTES SUR 1602\\CIUDAD DE MEX\\03940     MEXMEX",
  "Txn_GPS_Date": "2026-01-14 22:03:44.070",
  "TXn_ID": 2000000082332377,
  "Txn_Stat_Code": "S",
  "Txn_Type": "N",
  "Additional_Data_DE48":
"0002003MCS0003003MCS001500726011300023003CT6005200321001460360029018400000000001198260000000000880148020840248428402840282620149
064840000158031MCC1030501YG26011406    NNNNNNN015906733348      39120006
1EU00000012M2601140626011501016500 1M0177002YY01910012026200110266126483726010 1  000000007219840934314112 8Cardholder reported fraud
                                                                                ",
  "Authorised_by_GPS": "N",
  "CU_Group": "BTS-CU-001",
  "InstCode": "BTS",
  "MTID": "1240",
  "ProductID": 15121,
  "SubBIN": 51540629,
  "TLogIDOrg": 0,
  "VL_Group": "BTS-VL-001",
  "Dom_Fee_Fixed": 0.0000,
  "Non_Dom_Fee_Fixed": 0.0000,
  "Fx_Fee_Fixed": 0.0000,
  "Other_Fee_Amt": 0.0000,
  "Fx_Fee_Rate": 0.0000,
  "Dom_Fee_Rate": 0.0000,
  "Non_Dom_Fee_Rate": 0.0000,
  "SendingAttemptCount": 0
}
```


## Response

Below is an example of HTTP response to the above Second Presentment message.


```
{"Acknowledgement":"1"}
```


# 3.1.5 Financial Reversal (Mastercard)

Below is an example of the HTTP POST body data for a financial reversal (`MTID` = 1240 and `Txn_Type` = E).

A financial reversal occurs when the acquirer cancels all or part of a prior transaction (which may be a purchase, refund, cashback, cash, PIN change, or any other transaction type).


```
{
  "ClearingFileID": "T112.00124020200000020326011 1     ",
  "FxProviderCardholderRate": 0.0,
  "Network_TxnAmt_To_BillAmt_Rate": "1000000:6",
  "POS_Date_DE13": "20240131",
  "Traceid_Message": "BNET-20240131-MDW2YHECL",
  "Network_Issuer_Settle_ID": "021075",
  "Network_Transaction_ID": " MDW2YHECL0131  ",
  "Acquirer_Forwarder_ID": "032208",
  "Currency_Code_Fee": "978",
  "Currency_Code_Fee_Settlement": "978",
  "Interchange_Amount_Fee": 0.009200,
```

```
  "Interchange_Amount_Fee_Settlement": 0.009200,
  "Clearing_Process_Date": "2024-02-02",
  "Settlement_Date": "2024-02-02",
  "DCC_Indicator": 0,
  "multi_part_txn": 0,
  "multi_part_txn_final": 0,
  "multi_part_number": 0,
  "multi_part_count": 0,
  "SettlementIndicator": "0",
  "auth_type": "0",
  "Matching_Txn_ID": 0,
  "Reason_ID": 0,
  "Merch_Name": "COFFEE ISLAND",
  "Merch_Street": "ALKINOOU 2",
  "Merch_City": "DAFNI",
  "Merch_Region": "GRC",
  "Merch_Postcode": "17235",
  "Merch_Country": "GRC",
  "Merch_Tel": "2109766611      ",
  "Merch_Tax_id": "0",
  "GPS_POS_Capability": "00000000000000000000000100010000000000000000911341R",
  "GPS_POS_Data": "0175000400000Nx000",
  "Acquirer_Reference_Data_031": "77673704031974724943402",
  "Response_Source_Why": 0,
  "Message_Why": 0,
  "traceid_lifecycle": "BNET-20240131-MDW2YHECL",
  "PaymentToken_id": 61531240,
  "PaymentToken_activationMethod": 0,
  "ActBal": 0.0000,
  "Auth_Code_DE38": "150683",
  "Avl_Bal": 0.0000,
  "Bill_Amt": 4.6000,
  "Bill_Ccy": "978",
  "BlkAmt": 0.0000,
  "FX_Pad": 0.0000,
  "Fee_Fixed": 0.0000,
  "Fee_Rate": 0.0000,
  "MCC_Code": "5812",
  "MCC_Desc": "Eating Places, Restaurants",
  "MCC_Pad": 0.0000,
  "Merch_ID_DE42": "5053986        ",
  "Merch_Name_DE43": "COFFEE ISLAND\\ALKINOOU 2\\DAFNI\\17235     GRCGRC",
  "POS_Data_DE22": "M19101M54341",
  "POS_Termnl_DE41": "67500288",
  "POS_Time_DE12": "240131103058",
  "Proc_Code": "000000",
  "Ret_Ref_No_DE37": "403102239336",
  "Settle_Amt": 4.6000,
  "Settle_Ccy": "978",
  "Status_Code": "00",
  "Token": 256713034,
  "Trans_link": "1240131943402767370",
  "Txn_Amt": 4.6000,
  "Txn_CCy": "978",
  "Txn_Ctry": "GRC",
  "Txn_Desc": "COFFEE ISLAND\\ALKINOOU 2\\DAFNI\\17235     GRCGRC",
  "Txn_GPS_Date": "2024-02-02 01:36:04.133",
  "TXn_ID": 13917006447,
  "Txn_Stat_Code": "S",
  "Txn_Type": "E",
  "Additional_Data_DE48": "0001018O 5372143399965026000200 3MDW0003003MDW00150072401301002300 3POI0025007R2402010044002
I00580020000590115018303832501460360029019780000000000009780000000000000147048002901978000000000000009200978000000000000009200014 8-
00497820149006978000015803 1DMC4300001L424020201    NNNNNNN015906721075      14097113
1EUD2000008N2402020124020201016503 0M                              01700162109766611      0177002N 019100120207003337",
  "Authorised_by_GPS": "N",
  "CU_Group": "PMT-CU-002",
  "InstCode": "PMT",
  "MTID": "1240",
  "ProductID": 6496,
  "SubBIN": 12345678,
  "TLogIDOrg": 0,
```

```
  "VL_Group": "PMT-VL-004",
  "Dom_Fee_Fixed": 0.00,
  "Non_Dom_Fee_Fixed": 0.00,
  "Fx_Fee_Fixed": 0.00,
  "Other_Fee_Amt": 0.00,
  "Fx_Fee_Rate": 0.00,
  "Dom_Fee_Rate": 0.00,
  "Non_Dom_Fee_Rate": 0.00,
  "SendingAttemptCount": 0
}
```


## Financial Reversal Response

Below is an example of HTTP response to the above Financial Notification message.


```
{"Acknowledgement":"1"}
```


# 3.1.6 Financial Reversal (Visa)

Below is an example of the HTTP POST body data for a financial reversal (from Visa, `MTID`= 27 and `Txn_Type` = E) used for a Cash Withdrawal/disbursement reversal.


```
{
  "Network_TxnAmt_To_BillAmt_Rate": "1000000:6",
  "POS_Date_DE13": "20220830",
  "Traceid_Message": "VIS1-20220830-002242207570295",
  "Network_Issuer_Settle_ID": "099999",
  "Network_Transaction_ID": "002242207570295",
  "Clearing_Process_Date": "2022-08-30",
  "Settlement_Date": "2022-08-30",
  "DCC_Indicator": 0,
  "multi_part_txn": 0,
  "multi_part_txn_final": 0,
  "multi_part_number": 1,
  "multi_part_count": 1,
  "SettlementIndicator": "0",
  "auth_type": "0",
  "Matching_Txn_ID": 0,
  "Reason_ID": 0,
  "Merch_Name": "BNP ATM",
  "Merch_Postcode": "00000",
  "Merch_Country": "CYP",
  "Merch_Tel": "               ",
  "Merch_Net_id": "          ",
  "Merch_Tax_id": "0",
  "GPS_POS_Capability": "00000001000000000000000100000000000000000000029301A",
  "GPS_POS_Data": "0151800380000 x000",
  "Acquirer_Reference_Data_031": "77882202242000000000011",
  "Response_Source_Why": 0,
  "Message_Why": 0,
  "traceid_lifecycle": "VIS1-20220830-002242207570295",
  "PaymentToken_id": 0,
  "PaymentToken_activationMethod": 0,
  "Acquirer_id_DE32": "00000001",
  "ActBal": 848.99,
  "Additional_Amt_DE54": "0040826D000000000000",
  "Auth_Code_DE38": "146367",
  "Avl_Bal": 792.79,
  "Bill_Amt": 1.00,
  "Bill_Ccy": "826",
  "BlkAmt": -56.20,
  "FX_Pad": 0.00,
  "Fee_Fixed": 1.00,
  "Fee_Rate": 0.00,
  "MCC_Code": "6011",
```

```
  "MCC_Desc": "Automated Cash Disburse",
  "MCC_Pad": 0.00,
  "Merch_ID_DE42": "6011           ",
  "Merch_Name_DE43": "BNP ATM\\\\\\00000        CYP",
  "POS_Data_DE22": "05           ",
  "POS_Termnl_DE41": "        ",
  "POS_Time_DE12": "220830000000",
  "Proc_Code": "010000",
  "Settle_Amt": 1.00,
  "Settle_Ccy": "826",
  "Status_Code": "00",
  "Token": 100029683,
  "Trans_link": "220830001921788220",
  "Txn_Amt": 1.0000,
  "Txn_CCy": "826",
  "Txn_Ctry": "CYP",
  "Txn_Desc": "BNP ATM\\\\\\00000        CYP",
  "Txn_GPS_Date": "2022-08-30 15:12:04.157",
  "TXn_ID": 6153544584,
  "Txn_Stat_Code": "S",
  "Txn_Type": "E",
  "Authorised_by_GPS": "N",
  "CU_Group": "PMTPAYROLL",
  "InstCode": "PMT",
  "MTID": "27  ",
  "ProductID": 1234,
  "SubBIN": 43111111,
  "TLogIDOrg": 0,
  "VL_Group": "PMT CO1",
  "Dom_Fee_Fixed": 1.00,
  "Non_Dom_Fee_Fixed": 0.00,
  "Fx_Fee_Fixed": 0.00,
  "Other_Fee_Amt": 0.00,
  "Fx_Fee_Rate": 0.00,
  "Dom_Fee_Rate": 0.00,
  "Non_Dom_Fee_Rate": 0.00,
  "SendingAttemptCount": 0
}
```


## Financial Reversal Response

Below is an example of HTTP response to the above Financial Reversal message.


```
{
  "FxProviderCardholderRate": 0.0,
  "POS_Date_DE13": "00000000",
  "Visa_ResponseInfo_DE44": "020000000000",
  "Visa_STIP_Reason_Code": "9020",
  "Network_Transaction_ID": "0002353127640022",
  "DCC_Indicator": 0,
  "multi_part_txn": 0,
  "multi_part_txn_final": 0,
  "auth_type": "0",
  "auth_expdate_utc": "2022-12-27 07:44:44.137",
  "Matching_Txn_ID": 0,
  "Reason_ID": 0,
  "Merch_Name": "Passenger Railway - SCAEx",
  "Merch_Country": "CYP",
  "Merch_Tax_id": "0",
  "GPS_POS_Capability": "00001001000000000000000010001001000100000000011300C0",
  "GPS_POS_Data": "9968000800000Nx000",
  "Response_Source": "VISA-STIP",
  "Response_Source_Why": 5,
  "Message_Source": "VISA-STIP",
  "Message_Why": 5,
  "traceid_lifecycle": "VIS1-20221219-002353127640022",
  "PaymentToken_id": 0,
  "PaymentToken_creatorStatus": " ",
  "PaymentToken_lang": "  ",
```

```
  "PaymentToken_activationMethod": 0,
  "Acquirer_id_DE32": "0844622180",
  "ActBal": 10001.00,
  "Avl_Bal": 10001.00,
  "Bill_Amt": 1.00,
  "Bill_Ccy": "826",
  "BlkAmt": 0.00,
  "FX_Pad": 0.00,
  "Fee_Fixed": 0.00,
  "Fee_Rate": 0.00,
  "MCC_Code": "4112",
  "MCC_Pad": 0.00,
  "Merch_ID_DE42": "4112           ",
  "Merch_Name_DE43": "Passenger Railway - SCAEx CY",
  "POS_Data_DE22": "0110",
  "Proc_Code": "000000",
  "Resp_Code_DE39": "00",
  "Ret_Ref_No_DE37": "235303502519",
  "Settle_Amt": 0.00,
  "Status_Code": "00",
  "Token": 107419774,
  "Trans_link": "221219002519622180",
  "Txn_Amt": 1.0000,
  "Txn_CCy": "826",
  "Txn_Ctry": "CYP",
  "Txn_Desc": "Passenger Railway - SCAEx CY",
  "Txn_GPS_Date": "2022-12-19 07:44:44.203",
  "TXn_ID": 6155805963,
  "Txn_Stat_Code": "A",
  "TXN_Time_DE07": "1219074444",
  "Txn_Type": "J",
  "Authorised_by_GPS": "N",
  "InstCode": "TEST",
  "MTID": "0120",
  "ProductID": 99883,
  "SubBIN": 44622180,
  "TLogIDOrg": 0,
  "Dom_Fee_Fixed": 0.0000,
  "Non_Dom_Fee_Fixed": 0.0000,
  "Fx_Fee_Fixed": 0.0000,
  "Other_Fee_Amt": 0.0000,
  "Fx_Fee_Rate": 0.0000,
  "Dom_Fee_Rate": 0.0000,
  "Non_Dom_Fee_Rate": 0.0000,
  "SendingAttemptCount": 0
}
```


## 3.1.7 Example Visa Authorisation Advice

Below is an example of the HTTP POST body data for a Visa authorisation advice.


```
{
  "FxProviderCardholderRate": 0.0,
  "POS_Date_DE13": "00000000",
  "Visa_ResponseInfo_DE44": "020000000000",
  "Visa_STIP_Reason_Code": "9020",
  "Network_Transaction_ID": "0002353127640022",
  "DCC_Indicator": 0,
  "multi_part_txn": 0,
  "multi_part_txn_final": 0,
  "auth_type": "0",
  "auth_expdate_utc": "2022-12-27 07:44:44.137",
  "Matching_Txn_ID": 0,
  "Reason_ID": 0,
  "Merch_Name": "Passenger Railway - SCAEx",
  "Merch_Country": "CYP",
```

```
  "Merch_Tax_id": "0",
  "GPS_POS_Capability": "00001001000000000000000010001001000100000000001130C0",
  "GPS_POS_Data": "9968000800000Nx000",
  "Response_Source": "VISA-STIP",
  "Response_Source_Why": 5,
  "Message_Source": "VISA-STIP",
  "Message_Why": 5,
  "traceid_lifecycle": "VIS1-20221219-002353127640022",
  "PaymentToken_id": 0,
  "PaymentToken_creatorStatus": " ",
  "PaymentToken_lang": "  ",
  "PaymentToken_activationMethod": 0,
  "Acquirer_id_DE32": "0844622180",
  "ActBal": 10001.00,
  "Avl_Bal": 10001.00,
  "Bill_Amt": 1.00,
  "Bill_Ccy": "826",
  "BlkAmt": 0.00,
  "FX_Pad": 0.00,
  "Fee_Fixed": 0.00,
  "Fee_Rate": 0.00,
  "MCC_Code": "4112",
  "MCC_Pad": 0.00,
  "Merch_ID_DE42": "4112           ",
  "Merch_Name_DE43": "Passenger Railway - SCAEx CY",
  "POS_Data_DE22": "0110",
  "Proc_Code": "000000",
  "Resp_Code_DE39": "00",
  "Ret_Ref_No_DE37": "235303502519",
  "Settle_Amt": 0.00,
  "Status_Code": "00",
  "Token": 107419774,
  "Trans_link": "221219002519622180",
  "Txn_Amt": 1.0000,
  "Txn_CCy": "826",
  "Txn_Ctry": "CYP",
  "Txn_Desc": "Passenger Railway - SCAEx CY",
  "Txn_GPS_Date": "2022-12-19 07:44:44.203",
  "TXn_ID": 6155805963,
  "Txn_Stat_Code": "A",
  "TXN_Time_DE07": "1219074444",
  "Txn_Type": "J",
  "Authorised_by_GPS": "N",
  "InstCode": "TEST",
  "MTID": "0120",
  "ProductID": 99883,
  "SubBIN": 44622180,
  "TLogIDOrg": 0,
  "Dom_Fee_Fixed": 0.0000,
  "Non_Dom_Fee_Fixed": 0.0000,
  "Fx_Fee_Fixed": 0.0000,
  "Other_Fee_Amt": 0.0000,
  "Fx_Fee_Rate": 0.0000,
  "Dom_Fee_Rate": 0.0000,
  "Non_Dom_Fee_Rate": 0.0000,
  "SendingAttemptCount": 0
}
```


## Response

Below is an example of HTTP response to the above Visa authorisation advice message.


```
{
    "MerchantAdvice":"",
    "Responsestatus":"00",
    "CurBalance":0,
    "AvlBalance":100,
    "Acknowledgement":"1",
    "LoadAmount":50,
```

```
    "Bill_Amt_Approved":0,
    "Update_Balance":1,
    "New_Balance_Sequence_Exthost":200,
    "CVV2_Result":"M",
    "CurBalance_GPS_STIP":0,
    "AvlBalance_GPS_STIP":100
}
```


## 3.1.8 Example Mastercard Authorisation Advice

Below is an example of the HTTP POST body data for a Mastercard authorisation advice.


```
{
  "FxProviderCardholderRate": 0.0,
  "Network_TxnAmt_To_BillAmt_Rate": "1000000:6",
  "POS_Date_DE13": "20221219",
  "Traceid_Message": "BNET-20221219-MC 004280",
  "Network_Currency_Conversion_Date": "2022-12-19",
  "Mastercard_AdviceReasonCode_DE60": "4020000",
  "DCC_Indicator": 0,
  "multi_part_txn": 0,
  "multi_part_txn_final": 0,
  "auth_type": "0",
  "auth_expdate_utc": "2022-12-26 07:39:24.520",
  "Matching_Txn_ID": 0,
  "Reason_ID": 0,
  "Merch_Name": "Travel Like A Pro",
  "Merch_Country": "HRV",
  "Merch_Tax_id": "0",
  "GPS_POS_Capability": "00110000100000000000000000000000100000000001016",
  "GPS_POS_Data": "0168000800000Nx000",
  "Response_Source_Why": 0,
  "Message_Why": 0,
  "traceid_lifecycle": "BNET-20221219-MC 004280",
  "PaymentToken_id": 0,
  "PaymentToken_creatorStatus": " ",
  "PaymentToken_lang": "  ",
  "PaymentToken_activationMethod": 0,
  "Acquirer_id_DE32": "0852729540",
  "ActBal": 3535.47,
  "Amt_Tran_Fee_DE28": "D00000010",
  "Auth_Code_DE38": "183716",
  "Avl_Bal": 3392.72,
  "Bill_Amt": 10.00,
  "Bill_Ccy": "826",
  "BlkAmt": -142.75,
  "FX_Pad": 0.00,
  "Fee_Fixed": 0.00,
  "Fee_Rate": 0.00,
  "MCC_Code": "4111",
  "MCC_Pad": 0.00,
  "Merch_ID_DE42": "4111",
  "Merch_Name_DE43": "Travel Like A Pro HRV",
  "POS_Data_DE22": "010",
  "POS_Data_DE61": "0162000000006000191",
  "POS_Time_DE12": "072725",
  "Proc_Code": "000000",
  "Resp_Code_DE39": "00",
  "Ret_Ref_No_DE37": "235303504280",
  "Settle_Amt": 0.00,
  "Status_Code": "00",
  "Token": 107612119,
  "Trans_link": "221219004280729540",
  "Txn_Amt": 10.0000,
  "Txn_CCy": "826",
  "Txn_Ctry": "HRV",
  "Txn_Desc": "Travel Like A Pro HRV",
  "Txn_GPS_Date": "2022-12-19 07:39:24.607",
  "TXn_ID": 6155805959,
```

```
  "Txn_Stat_Code": "A",
  "TXN_Time_DE07": "1219072725",
  "Txn_Type": "J",
  "Additional_Data_DE48": "001R",
  "Authorised_by_GPS": "N",
  "InstCode": "TEST",
  "MTID": "0120",
  "ProductID": 99884,
  "SubBIN": 52729540,
  "TLogIDOrg": 0,
  "Dom_Fee_Fixed": 0.0000,
  "Non_Dom_Fee_Fixed": 0.0000,
  "Fx_Fee_Fixed": 0.0000,
  "Other_Fee_Amt": 0.0000,
  "Fx_Fee_Rate": 0.0000,
  "Dom_Fee_Rate": 0.0000,
  "Non_Dom_Fee_Rate": 0.0000,
  "SendingAttemptCount": 0
}
```


### Response

Below is an example of HTTP response to the above Mastercard authorisation advice message.


```
{
    "MerchantAdvice":"",
    "Responsestatus":"00",
    "CurBalance":0,
    "AvlBalance":100,
    "Acknowledgement":"1",
    "LoadAmount":50,
    "Bill_Amt_Approved":0,
    "Update_Balance":1,
    "New_Balance_Sequence_Exthost":200,
    "CVV2_Result":"M",
    "CurBalance_GPS_STIP":0,
    "AvlBalance_GPS_STIP":100
}
```


## 3.1.9 Example Non-Credit Chargeback Notification (Mastercard)

The following is an example of a non-credit chargeback notification. If the chargeback is non-credit, the chargeback amount is taken from the customer's account. The HTTP POST body data for a non-credit chargeback notification includes: `MTID` = 1240 and `Txn_Type` = H).


```
{
"AuthenticationAmountUpper": 0.0000,
"FxProviderCardholderRate": 0.0,
"Network_Chargeback_Reference_Id": "3013854930852",
"Acquirer_Forwarder_ID": "020779",
"Currency_Code_Fee": "826",
"Currency_Code_Fee_Settlement": "826",
"Interchange_Amount_Fee": 0.734250,
"Interchange_Amount_Fee_Settlement": 0.734250,
"Settlement_Date": "2026-01-21",
"DCC_Indicator": 0,
"multi_part_txn": 0,
"multi_part_txn_final": 0,
"multi_part_number": 0,
"multi_part_count": 0,
"SettlementIndicator": "0",
"auth_type": "0",
"Matching_Txn_ID": 2000000083237157,
"Reason_ID": 4853,
"Merch_Name": "SP ZERINDI",
"Merch_Street": "Manegelaan 57",
"Merch_City": "HOOFDDORP",
"Merch_Region": "NH",
"Merch_Postcode": "2131 XA",
```

```
  "Merch_URL": "ZERINDI.COM",
  "Merch_Tax_id": "0",
  "GPS_POS_Capability": "00100000000000000000000000000000000100000001291106",
  "GPS_POS_Data": "50V00000000001x000",
  "Acquirer_Reference_Data_031": "82644316021500002346397",
  "Response_Source_Why": 0,
  "Message_Why": 0,
  "PaymentToken_id": 0,
  "PaymentToken_creatorStatus": " ",
  "PaymentToken_lang": "  ",
  "PaymentToken_activationMethod": 0,
  "ActBal": 0.1300,
  "Auth_Code_DE38": "393261",
  "Avl_Bal": 0.1300,
  "Bill_Amt": 0.0000,
  "Bill_Ccy": "826",
  "BlkAmt": 0.0000,
  "FX_Pad": 0.0000,
  "Fee_Fixed": 0.0000,
  "Fee_Rate": 0.0000,
  "MCC_Code": "5691",
  "MCC_Desc": "Men’s, Women’s Clothing Stores",
  "MCC_Pad": 0.0000,
  "Merch_ID_DE42": "SRAIHWIFULCFNFN",
  "Merch_Name_DE43": "SP ZERINDI\\Manegelaan 57\\HOOFDDORP\\2131 XA   NH NLD",
  "POS_Data_DE22": "0916",
  "POS_Termnl_DE41": "HLIQPVJB",
  "POS_Time_DE12": "260120171836",
  "Proc_Code": "000000",
  "Ret_Ref_No_DE37": " ",
  "Settle_Amt": 0.0000,
  "Settle_Ccy": "826",
  "Status_Code": "00",
  "Token": 277008040,
  "Trans_link": "260120656766020779",
  "Txn_Amt": 0.0000,
  "Txn_CCy": "826",
  "Txn_Desc": "SP ZERINDI\\Manegelaan 57\\HOOFDDORP\\2131 XA   NH NLD",
  "Txn_GPS_Date": "2026-02-14 02:35:55.333",
  "TXn_ID": 2000000087438932,
  "Txn_Stat_Code": "S",
  "Txn_Type": "H",
  "Additional_Data_DE48":
"0002003MCS0003003MCS00150072601201002300 3CT600520032100146036002901826000000000073826000000000073014704800290182600000000000 7342-
5082600000000000073425001480048262015803 1MCC3050041EV26012102    NNNNNNN015906733348      39120006
1EU00000012N260121022601210101650 01M0175011ZERINDI.COM0177002YN01910012",
  "Authorised_by_GPS": "N",
  "CU_Group": "BTS-CU-001",
  "InstCode": "BTS",
  "MTID": "1240",
  "ProductID": 15121,
  "SubBIN": 51540629,
  "TLogIDOrg": 0,
  "VL_Group": "BTS-VL-001",
  "Dom_Fee_Fixed": 0.00,
  "Non_Dom_Fee_Fixed": 0.00,
  "Fx_Fee_Fixed": 0.00,
  "Other_Fee_Amt": 0.00,
  "Fx_Fee_Rate": 0.00,
  "Dom_Fee_Rate": 0.00,
  "Non_Dom_Fee_Rate": 0.00,
  "SendingAttemptCount": 0
}
```


## Chargeback Response

Below is an example of HTTP response to the above Chargeback notification message.


```
{"Acknowledgement":"1"}
```

# 3.1.10 Example Chargeback Notification (Mastercard)

The following is an example of a chargeback notification, where the disputed amount is credited to the customer's account. The HTTP POST body data for a non-credit chargeback notification includes: MTID = 1240 and Txn_Type = C).


```
{
  "AuthenticationAmountUpper": 0.0000,
  "FxProviderCardholderRate": 0.0,
  "Network_Chargeback_Reference_Id": "308900918928",
  "Acquirer_Forwarder_ID": "003325",
  "Currency_Code_Fee": "826",
  "Currency_Code_Fee_Settlement": "826",
  "Interchange_Amount_Fee": -0.115000,
  "Interchange_Amount_Fee_Settlement": -0.115000,
  "DCC_Indicator": 0,
  "multi_part_txn": 0,
  "multi_part_txn_final": 0,
  "multi_part_number": 0,
  "multi_part_count": 0,
  "SettlementIndicator": "0",
  "auth_type": "0",
  "Matching_Txn_ID": 14288894490,
  "Reason_ID": 4834,
  "Merch_Name": "NATWEST BANK",
  "Merch_Street": "CHANCERY LN HBRN 5",
  "Merch_City": "LONDON",
  "Merch_Region": "ENG",
  "Merch_Postcode": "WC1V 7PX",
  "Merch_Country": "GBR",
  "Merch_Name_Other": "NATWEST BANK",
  "Merch_Tax_id": "0",
  "GPS_POS_Capability": "00000001000000000000000100000010000000000001121146A",
  "GPS_POS_Data": "0151000300000Nx000",
  "Acquirer_Reference_Data_031": "85433254125005252052527",
  "Response_Source_Why": 0,
  "Message_Why": 0,
  "PaymentToken_id": 0,
  "PaymentToken_creatorStatus": " ",
  "PaymentToken_lang": "  ",
  "PaymentToken_activationMethod": 0,
  "Acquirer_id_DE32": "543325",
  "ActBal": 0.00,
  "Auth_Code_DE38": "156039",
  "Avl_Bal": 0.00,
  "Bill_Amt": 50.00,
  "Bill_Ccy": "826",
  "BlkAmt": 0.00,
  "FX_Pad": 0.00,
  "Fee_Fixed": 0.00,
  "Fee_Rate": 0.00,
  "MCC_Code": "6011",
  "MCC_Desc": "Automated Cash Disburse",
  "MCC_Pad": 0.00,
  "Merch_ID_DE42": "N576331        ",
  "Merch_Name_DE43": "NATWEST BANK\\CHANCERY LN HBRN 5\\LONDON\\WC1V 7PX  ENGGBR",
  "Note": "ChargeBack - Credit to Card",
  "POS_Data_DE22": "5112",
  "POS_Termnl_DE41": "N576331 ",
  "POS_Time_DE12": "240504111533",
  "Proc_Code": "010000",
  "Ret_Ref_No_DE37": "050400005252",
  "Settle_Amt": 50.00,
  "Settle_Ccy": "826",
  "Status_Code": "43",
  "Token": 133235724,
  "Trans_link": "240504005252003325",
  "Txn_Amt": 50.0000,
  "Txn_CCy": "826",
  "Txn_Ctry": "GBR",
```

```
  "Txn_Desc": "NATWEST BANK\\CHANCERY LN HBRN 5\\LONDON\\WC1V 7PX  ENGGBR",
  "Txn_GPS_Date": "2024-06-24 10:02:48.457",
  "TXn_ID": 14501288226,
  "Txn_Stat_Code": "S",
  "Txn_Type": "C",
  "Additional_Data_DE48":
"0002003MDS0003003MDS001500724050310023003ATM0146036001901826000000000012826000000000012014704800190182600000000000011500082600000-
0000000115000014800482620158031DMC48260015124050701    NNNNNNN015906723167      39120006
1EU00000012N2405070124050701016500 1M0172012NATWEST BANK0173012NATWEST BANK0177002N 019100120213003826",
  "Authorised_by_GPS": "N",
  "CU_Group": "ZIG-CU-001",
  "InstCode": "ZIG",
  "MTID": "1240",
  "ProductID": 7574,
  "SubBIN": 53576700,
  "TLogIDOrg": 0,
  "VL_Group": "ZIG-VL-001",
  "Dom_Fee_Fixed": 0.00,
  "Non_Dom_Fee_Fixed": 0.00,
  "Fx_Fee_Fixed": 0.00,
  "Other_Fee_Amt": 0.00,
  "Fx_Fee_Rate": 0.00,
  "Dom_Fee_Rate": 0.00,
  "Non_Dom_Fee_Rate": 0.00,
  "SendingAttemptCount": 0
}
```


### Chargeback Response

Below is an example of HTTP response to the above Chargeback notification message.


```
{"Acknowledgement":"1"}
```


## 3.1.11 Example Chargeback Reversal (Mastercard)

The following is an example of a chargeback reversal, The HTTP POST body data for a chargeback reversal includes: MTID = 1240 and Txn_Type = K).


```
{
  "AuthenticationAmountUpper": 0.0000,
  "FxProviderCardholderRate": 0.0,
  "Network_Chargeback_Reference_Id": "3012289249155",
  "Acquirer_Forwarder_ID": "018512",
  "DCC_Indicator": 0,
  "multi_part_txn": 0,
  "multi_part_txn_final": 0,
  "Matching_Txn_ID": 0,
  "Reason_ID": 4853,
  "Merch_Tax_id": "0",
  "GPS_POS_Capability": "",
  "GPS_POS_Data": "000",
  "Acquirer_Reference_Data_031": "85130705142500004920001",
  "Response_Source_Why": 0,
  "Message_Why": 0,
  "PaymentToken_id": 0,
  "PaymentToken_creatorStatus": " ",
  "PaymentToken_lang": "  ",
  "PaymentToken_activationMethod": 0,
  "ActBal": 33.6100,
  "Auth_Code_DE38": "161388",
  "Avl_Bal": 33.6100,
  "Bill_Amt": 0.0000,
  "Bill_Ccy": "826",
  "BlkAmt": 0.0000,
  "FX_Pad": 0.0000,
  "Fee_Fixed": 0.0000,
  "Fee_Rate": 0.0000,
```

```
  "MCC_Code": "5399",
  "MCC_Desc": "Miscellaneous General Merchandise",
  "MCC_Pad": 0.0000,
  "Merch_ID_DE42": "Y0BXWG4SFPV5HCE",
  "Merch_Name_DE43": "SP LANSLIN\\THOMSON COMM BLDG 8 THOMSON RD\\WANCHAI\\999077    KL HKG",
  "Note": " CBC:Chargeback Credit confirmed on (MasterCom) 17-07-2025 05:55:01",
  "POS_Data_DE22": "0916",
  "POS_Termnl_DE41": "NLDVIQHD",
  "POS_Time_DE12": "250522064945",
  "Proc_Code": "000000",
  "Ret_Ref_No_DE37": " ",
  "Settle_Amt": 0.0000,
  "Settle_Ccy": "840",
  "Status_Code": "46",
  "Token": 275389481,
  "Trans_link": "250521351405018512",
  "Txn_Amt": 0.0000,
  "Txn_CCy": "840",
  "Txn_Desc": "SP LANSLIN\\THOMSON COMM BLDG 8 THOMSON RD\\WANCHAI\\999077    KL HKG",
  "Txn_GPS_Date": "2025-07-25 04:06:43.510",
  "TXn_ID": 2000000055175340,
  "Txn_Stat_Code": "S",
  "Txn_Type": "K",
  "Additional_Data_DE48":
"0002003MCS0003003MCS00150072505211002300 3CT600520032100146036002901826000000000054826000000000054014800482620158031MCC1040501YA25-
052203    NNNNNNN015906733348      39120006
1EU00000012N250522032505220101650 01M0175012LANSLIN.SHOP0177002YN01910012",
  "Authorised_by_GPS": "N",
  "CU_Group": "BTS-CU-001",
  "InstCode": "BTS",
  "MTID": "1240",
  "ProductID": 15121,
  "SubBIN": 51540629,
  "TLogIDOrg": 0,
  "VL_Group": "BTS-VL-001",
  "Dom_Fee_Fixed": 0.00,
  "Non_Dom_Fee_Fixed": 0.00,
  "Fx_Fee_Fixed": 0.00,
  "Other_Fee_Amt": 0.00,
  "Fx_Fee_Rate": 0.00,
  "Dom_Fee_Rate": 0.00,
  "Non_Dom_Fee_Rate": 0.00,
  "SendingAttemptCount": 0
}
```


## Chargeback Response

Below is an example of HTTP response to the above Chargeback reversal message.


```
{"Acknowledgement":"1"}
```


# 3.1.12 Example Balance Enquiry Message

Below is an example of the HTTP POST body data for a balance enquiry request. A balance enquiry provides details of changes to a card's account balance. Card balance adjustments are made using Thredd's API (web services or Cards API) and are relevant to program managers on EHI Operating modes where Thredd maintains a record of the card balance.


```
{
  "Acquirer_Country": "GBR",
  "FxProviderCardholderRate": 0.0,
  "Network_TxnAmt_To_BillAmt_Rate": "1000000:6",
  "POS_Date_DE13": "20240925",
  "Traceid_Message": "BNET-20240924-MPB4IFV1M",
  "Network_Currency_Conversion_Date": "2024-09-24",
  "Network_Transaction_ID": "MPB4IFV1M0924",
  "Acquirer_Forwarder_ID": "200148",
  "DCC_Indicator": 0,
```

```
  "multi_part_txn": 0,
  "multi_part_txn_final": 0,
  "auth_type": "0",
  "auth_expdate_utc": "2024-10-01 23:27:09.712",
  "Merch_Name": "HFX  ECCLES CHURCH ST",
  "Merch_City": "MANCHESTER",
  "Merch_Postcode": "M30 0DA",
  "Merch_Country": "GBR",
  "GPS_POS_Capability": "00001001000000000000001000000100000000000012230CA",
  "GPS_POS_Data": "0151000300000Nx0002110NU0NCUXXU",
  "Response_Source_Why": 0,
  "Message_Why": 0,
  "traceid_lifecycle": "BNET-20240924-MPB4IFV1M",
  "Balance_Sequence": 0,
  "Balance_Sequence_Exthost": 0,
  "ICC_System_Related_Data_DE55":
"9F2608FF63FD5AD4CEDDF89F2701809F10120110A00003220000000000000000000000FF9F3704E4F0B2D09F3602009B95058000048000 9A032409259C01309F0-
2060000000000005F2A020826820218009F1A0208269F34034203009F33036040208407A0000000041010",
  "Acquirer_id_DE32": "06002309",
  "ActBal": 0.0000,
  "Auth_Code_DE38": "161883",
  "Avl_Bal": 0.0000,
  "Bill_Amt": 0.0000,
  "Bill_Ccy": "826",
  "BlkAmt": 0.0000,
  "Cust_Ref": "A2",
  "FX_Pad": 0.0000,
  "Fee_Fixed": 0.0000,
  "Fee_Rate": 0.0000,
  "MCC_Code": "6011",
  "MCC_Desc": "Automated Cash Disburse",
  "MCC_Pad": 0.0000,
  "Merch_ID_DE42": "LTS1",
  "Merch_Name_DE43": "HFX  ECCLES CHURCH ST    MANCHESTER  GBR",
  "Note": "PSD2 Counter Reset",
  "POS_Data_DE22": "051",
  "POS_Data_DE61": "1010010000500826M30 0DA",
  "POS_Termnl_DE41": "HA88EC11",
  "POS_Time_DE12": "002709",
  "Proc_Code": "300000",
  "Resp_Code_DE39": "00",
  "Ret_Ref_No_DE37": "20882       ",
  "Settle_Amt": 0.0000,
  "Settle_Ccy": "826",
  "Status_Code": "00",
  "Token": 358713475,
  "Trans_link": "240925925631002309",
  "Txn_Amt": 0.0000,
  "Txn_CCy": "826",
  "Txn_Ctry": "GBR",
  "Txn_Desc": "HFX  ECCLES CHURCH ST    MANCHESTER  GBR",
  "Txn_GPS_Date": "2024-09-25 00:27:09.911",
  "TXn_ID": 14890418727,
  "Txn_Stat_Code": "A",
  "TXN_Time_DE07": "0924232709",
  "Txn_Type": "A",
  "Additional_Data_DE48": "007Z8002TV",
  "Authorised_by_GPS": "N",
  "CU_Group": "PMT-CU-004",
  "InstCode": "PMT",
  "MTID": "0100",
  "ProductID": 15455,
  "SubBIN": 53908886,
  "TLogIDOrg": 0,
  "VL_Group": "PMT-VL-008",
  "Dom_Fee_Fixed": 0.0000,
  "Non_Dom_Fee_Fixed": 0.0000,
  "Fx_Fee_Fixed": 0.0000,
  "Other_Fee_Amt": 0.0000,
  "Fx_Fee_Rate": 0.0000,
  "Dom_Fee_Rate": 0.0000,
```

```
  "Non_Dom_Fee_Rate": 0.0000,
  "SendingAttemptCount": 0
}
```


### Message Response

Below is an example of HTTP response to the above balance enquiry message.


```
{
"Acknowledgement":"1",
"Responsestatus":"00",
"CurBalance":2425.6300,
"AvlBalance":2125.6300
}
```


## 3.1.13 Example ATM Cash Withdrawal Messages (Mastercard)

### Example Authorisation Message

The example below shows a typical authorisation message of an ATM cash withdrawal for Mastercard.

**Note:** Note that there is a value for Amt_Tran_Fee_DE28. This indicates that there is a transaction fee for the cash withdrawal as there is a value (D00000590),


```
{
  "Acquirer_Country": "DEU",
  "FxProviderCardholderRate": 0.0,
  "Network_TxnAmt_To_BillAmt_Rate": "1121282:5",
  "POS_Date_DE13": "2025-08-21",
  "Traceid_Message": "BNET-20250821-*********",
  "Network_Currency_Conversion_Date": "2025-08-20",
  "Network_Transaction_ID": "MDW2*****0821",
  "Acquirer_Forwarder_ID": "200123",
  "DCC_Indicator": 0,
  "multi_part_txn": 0,
  "multi_part_txn_final": 0,
  "auth_type": "F",
  "auth_expdate_utc": "2025-08-22 05:34:17.926",
  "Merch_Name": "M-Hbf. III",
  "Merch_City": "Hauptbahnhof",
  "Merch_Postcode": "60489",
  "Merch_Country": "DEU",
  "GPS_POS_Capability": "000010010000000000000001000000100000000000012130C1",
  "GPS_POS_Data": "*******************************",
  "Response_Source_Why": 0,
  "Message_Why": 0,
  "traceid_lifecycle": "BNET-20250821-*********",
  "Balance_Sequence": 0,
  "Balance_Sequence_Exthost": 0,
  "ICC_System_Related_Data_DE55":
"*****************************************************************************************************************************_
*****************************************************************************************************************************_
***************",
  "Acquirer_id_DE32": "06010480",
  "ActBal": 0.0000,
  "Amt_Tran_Fee_DE28": "D00000590",
  "Auth_Code_DE38": "60**05",
  "Avl_Bal": 0.0000,
  "Bill_Amt": -2308.7200,
  "Bill_Ccy": "752",
  "BlkAmt": 0.0000,
  "FX_Pad": 0.0000,
  "Fee_Fixed": 0.0000,
  "Fee_Rate": 0.0000,
  "MCC_Code": "6011",
  "MCC_Desc": "Automated Cash Disburse",
```

```
  "MCC_Pad": 0.0000,
  "Merch_ID_DE42": "52410300",
  "Merch_Name_DE43": "M-Hbf. III             Hauptbahnhof  DEU",
  "Note": "PSD2 Counter Reset",
  "POS_Data_DE22": "051",
  "POS_Data_DE61": "100001000150128060489",
  "POS_Termnl_DE41": "00002468",
  "POS_Time_DE12": "073337",
  "Proc_Code": "010000",
  "Resp_Code_DE39": "00",
  "Ret_Ref_No_DE37": "08******8158",
  "Settle_Amt": 2308.7200,
  "Settle_Ccy": "752",
  "Status_Code": "00",
  "Token": 14******4,
  "Trans_link": "25082******010480",
  "Txn_Amt": 205.9000,
  "Txn_CCy": "978",
  "Txn_Ctry": "DEU",
  "Txn_Desc": "M-Hbf. III             Hauptbahnhof  DEU",
  "Txn_GPS_Date": "2025-08-21 06:34:18.011",
  "TXn_ID": *****475865,
  "Txn_Stat_Code": "A",
  "TXN_Time_DE07": "0821053417",
  "Txn_Type": "A",
  "Additional_Data_DE48": "********************",
  "Authorised_by_GPS": "N",
  "CU_Group": "***-**-***",
  "InstCode": "***",
  "MTID": "0100",
  "ProductID": 1234,
  "SubBIN": ********,
  "TLogIDOrg": 0,
  "VL_Group": "***-VL-***",
  "Dom_Fee_Fixed": 0.0000,
  "Non_Dom_Fee_Fixed": 0.0000,
  "Fx_Fee_Fixed": 0.0000,
  "Other_Fee_Amt": 0.0000,
  "Fx_Fee_Rate": 0.0000,
  "Dom_Fee_Rate": 0.0000,
  "Non_Dom_Fee_Rate": 0.0000,
  "SendingAttemptCount": 0
}
```


## Response

Example response from the external host system:


```
{
"Responsestatus":"00",
"Acknowledgement":"1"
}
```


## Example Presentment Message

The example below shows a presentment message for an ATM cash withdrawal for Mastercard.


```
{
  "ClearingFileID": "T112.00125082200000020326022O1     ",
  "FxProviderCardholderRate": 0.0,
  "Network_TxnAmt_To_BillAmt_Rate": "1121282:5",
  "POS_Date_DE13": "20250821",
  "Traceid_Message": "BNET-20250821-MDW2IPTG0",
  "Network_Issuer_Settle_ID": "021075",
  "Network_Transaction_ID": " MDW2IPTG00821  ",
  "Acquirer_Forwarder_ID": "010480",
```

```
  "Currency_Code_Fee": "978",
  "Currency_Code_Fee_Settlement": "978",
  "Interchange_Amount_Fee": 0.000000,
  "Interchange_Amount_Fee_Settlement": 0.000000,
  "Clearing_Process_Date": "2025-08-22",
  "Settlement_Date": "2025-08-22",
  "DCC_Indicator": 0,
  "multi_part_txn": 0,
  "multi_part_txn_final": 0,
  "multi_part_number": 0,
  "multi_part_count": 0,
  "SettlementIndicator": "0",
  "auth_type": "0",
  "Matching_Txn_ID": 16386475865,
  "Reason_ID": 0,
  "Merch_Name": "REISEBANK FRANKFURT AT",
  "Merch_City": "MUENCHEN",
  "Merch_Region": "DEU",
  "Merch_Postcode": "60528",
  "Merch_Country": "DEU",
  "Merch_Tax_id": "0",
  "GPS_POS_Capability": "00000001000000000000000100000100000000000000121346A",
  "GPS_POS_Data": "0151000100000Nx000",
  "Acquirer_Reference_Data_031": "75506185234281662061591",
  "Response_Source_Why": 0,
  "Message_Why": 0,
  "traceid_lifecycle": "BNET-20250821-MDW2IPTG0",
  "PaymentToken_id": 0,
  "PaymentToken_activationMethod": 0,
  "ActBal": 0.0000,
  "Additional_Amt_DE54": "0042978D000000000590",
  "Auth_Code_DE38": "606805",
  "Avl_Bal": 0.0000,
  "Bill_Amt": -2308.7200,
  "Bill_Ccy": "752",
  "BlkAmt": 0.0000,
  "FX_Pad": 0.0000,
  "Fee_Fixed": 0.0000,
  "Fee_Rate": 0.0000,
  "MCC_Code": "6011",
  "MCC_Desc": "Automated Cash Disburse",
  "MCC_Pad": 0.0000,
  "Merch_ID_DE42": "4052245/4052245",
  "Merch_Name_DE43": "REISEBANK FRANKFURT AT\\\\MUENCHEN     \\60528     DEUDEU",
  "POS_Data_DE22": "511201C11346",
  "POS_Termnl_DE41": "00002468",
  "POS_Time_DE12": "250821073337",
  "Proc_Code": "010000",
  "Ret_Ref_No_DE37": "082107058158",
  "Settle_Amt": -205.9000,
  "Settle_Ccy": "978",
  "Status_Code": "00",
  "Token": 143654784,
  "Trans_link": "250821882458010480",
  "Txn_Amt": 205.9000,
  "Txn_CCy": "978",
  "Txn_Ctry": "DEU",
  "Txn_Desc": "REISEBANK FRANKFURT AT\\\\MUENCHEN     \\60528     DEUDEU",
  "Txn_GPS_Date": "2025-08-22 04:15:05.103",
  "TXn_ID": 16390740846,
  "Txn_Stat_Code": "S",
  "Txn_Type": "P",
  "Additional_Data_DE48":
"0002003MDW0003003MDW00150072508201002300 3ATM0146036001901978000000000009780000000000001470480019019780000000000000000009780000-
0000000000000014800897827522015803 1DMC30500125625082202    N2NNNNN015906721075      14097113
1EUD2000008N2508220225082201016500 1M0177002N 01910012",
  "Authorised_by_GPS": "N",
  "CU_Group": "CRV-CU-002",
  "InstCode": "CRV",
  "MTID": "1240",
  "ProductID": 6540,
```

```
  "SubBIN": 55744496,
  "TLogIDOrg": 0,
  "VL_Group": "CRV-VL-182",
  "Dom_Fee_Fixed": 0.00,
  "Non_Dom_Fee_Fixed": 0.00,
  "Fx_Fee_Fixed": 0.00,
  "Other_Fee_Amt": 0.00,
  "Fx_Fee_Rate": 0.00,
  "Dom_Fee_Rate": 0.00,
  "Non_Dom_Fee_Rate": 0.00,
  "SendingAttemptCount": 0
}
```


## Response

Example response from the external host system:


```
{"Acknowledgement":"1"}
```


# 3.1.14 Example Tokenisation Messages

## Example EHI TAR (330000) Message

The example below shows a typical EHI 0100 authorisation message for a Token Authorisation Request (TAR) in a JSON format.


```
{
  "SchemeTransactionIdentifier": "BNETF64",
  "TokenUniqueReference": "DM4MMC1PT0000000be3ec16ef999999ab7d4b47da4456277",
  "PaymentTokenPan": "5372403458767765",
  "PaymentToken_PanSource": "F",
  "Network_Fraud_Data": "00199991",
  "FxProviderCardholderRate": 0.000000000,
  "Network_TxnAmt_To_BillAmt_Rate": "7849290:7",
  "POS_Date_DE13": "00000000",
  "Traceid_Message": "BNET-20240604-MDWWKZ1AT",
  "Network_Currency_Conversion_Date": "2024-06-04",
  "Network_Transaction_ID": "MDWWKZ1AT0604",
  "DCC_Indicator": 0,
  "multi_part_txn": 0,
  "multi_part_txn_final": 0,
  "auth_type": "0",
  "auth_expdate_utc": "2024-06-12 01:00:01.307",
  "Matching_Txn_ID": 0,
  "Reason_ID": 0,
  "Merch_Name": "Klarna-EU",
  "Merch_City": "St. Louis",
  "Merch_Postcode": "63368",
  "Merch_Country": "USA",
  "Merch_Tax_id": "0",
  "GPS_POS_Capability": "00110000100000000000000000000000010000000230010",
  "GPS_POS_Data": "5018000800000Nx000",
  "Response_Source_Why": 0,
  "Message_Why": 0,
  "traceid_lifecycle": "BNET-20240604-MDWWKZ1AT",
  "PaymentToken_id": 0,
  "PaymentToken_creatorStatus": "N",
  "PaymentToken_wallet": "MRCHTOKEN",
  "PaymentToken_lang": "  ",
  "PaymentToken_activationMethod": 0,
  "Acquirer_id_DE32": "06015611",
  "ActBal": 0.00,
  "Auth_Code_DE38": "117574",
  "Avl_Bal": 0.00,
  "Bill_Amt": 0.00,
  "Bill_Ccy": "826",
  "BlkAmt": 0.00,
  "Cust_Ref": "49538776",
```

```
  "FX_Pad": 0.00,
  "Fee_Fixed": 0.00,
  "Fee_Rate": 0.00,
  "MCC_Code": "5969",
  "MCC_Desc": "Direct Marketing - Other",
  "MCC_Pad": 0.00,
  "Merch_ID_DE42": "CARD ACCPT IDC",
  "Merch_Name_DE43": "Klarna-EU St. Louis USA",
  "Note": "DR: Declined due to Card Status: Card Destroyed (Original status 83, changed to 05) ",
  "POS_Data_DE22": "010",
  "POS_Data_DE61": "102510900000084063368",
  "Proc_Code": "330000",
  "Resp_Code_DE39": "57",
  "Settle_Amt": 0.00,
  "Settle_Ccy": "826",
  "Status_Code": "83",
  "Token": 138602839,
  "Trans_link": "240605048358015611",
  "Txn_Amt": 0.0000,
  "Txn_CCy": "840",
  "Txn_Ctry": "USA",
  "Txn_Desc": "Klarna-EU              St. Louis     USA",
  "Txn_GPS_Date": "2024-06-05 02:00:01.410",
  "TXn_ID": 14419002829,
  "Txn_Stat_Code": "I",
  "TXN_Time_DE07": "0605010001",
  "Txn_Type": "A",
  "Additional_Data_DE48": "063T260332733260101H0611501929199980802037513010300102029171041 8C ",
  "Authorised_by_GPS": "Y",
  "CU_Group": "PMT-CU-002",
  "InstCode": "PMT",
  "MTID": "0100",
  "ProductID": 3004,
  "SubBIN": 53759000,
  "TLogIDOrg": 0,
  "VL_Group": "PMT-VL-020",
  "Dom_Fee_Fixed": 0.0000,
  "Non_Dom_Fee_Fixed": 0.0000,
  "Fx_Fee_Fixed": 0.0000,
  "Other_Fee_Amt": 0.0000,
  "Fx_Fee_Rate": 0.0000,
  "Dom_Fee_Rate": 0.0000,
  "Non_Dom_Fee_Rate": 0.0000,
  "Additional_Data_DE124": "195TAD00162036556451
                                                                  1                       C",
  "SendingAttemptCount": 0
}
```


## Response

Example response from the external host system:


```
{"Acknowledgement":"1"}
```


## ACN (340000) Message


```
{
  "SchemeTransactionIdentifier": "BNETF64",
  "TokenUniqueReference": "DM4MMC1DE0000000cac6e366341d49819f38090c57f15677",
  "PaymentTokenPan": "5372403458767765",
  "Network_Fraud_Data": "00199991                          ",
  "FxProviderCardholderRate": 0.0,
  "Network_TxnAmt_To_BillAmt_Rate": "7878970:7",
  "POS_Date_DE13": "00000000",
  "Traceid_Message": "BNET-20240603-BPD83TR98",
  "Network_Currency_Conversion_Date": "2024-06-03",
  "Network_Transaction_ID": "BPD83TR980603",
  "DCC_Indicator": 0,
  "multi_part_txn": 0,
  "multi_part_txn_final": 0,
```

```
  "auth_type": "0",
  "auth_expdate_utc": "2024-06-11 02:37:56.380",
  "Merch_Name": "APPLE PAY",
  "Merch_City": "St. Louis",
  "Merch_Postcode": "63368",
  "Merch_Country": "USA",
  "GPS_POS_Capability": "00110000100000000000000000000000010000000230010",
  "GPS_POS_Data": "5018000800000Nx000NNNNNM0NUUXXU",
  "Response_Source_Why": 0,
  "Message_Why": 0,
  "traceid_lifecycle": "BNET-20240603-BPD83TR98",
  "Balance_Sequence": 0,
  "Balance_Sequence_Exthost": 0,
  "PaymentToken_id": 72322899,
  "PaymentToken_creator": "MC-MDES",
  "PaymentToken_type": "SE",
  "PaymentToken_status": "00",
  "PaymentToken_creatorStatus": "N",
  "PaymentToken_wallet": "APPLE",
  "PaymentToken_deviceType": "M",
  "PaymentToken_lang": "  ",
  "PaymentToken_deviceIp": "4E916C0C",
  "PaymentToken_deviceId": "0123456789179002219903615031638 0EEB395872B0AC6ED",
  "PaymentToken_activationCode": "169961",
  "PaymentToken_activationExpiry": "2024-06-04 05:37:00.000",
  "PaymentToken_activationMethodData": "+447880646031",
  "PaymentToken_activationMethod": 1,
  "Acquirer_id_DE32": "06015611",
  "ActBal": 0.0000,
  "Auth_Code_DE38": "152085",
  "Avl_Bal": 0.0000,
  "Bill_Amt": 0.0000,
  "Bill_Ccy": "826",
  "BlkAmt": 0.0000,
  "FX_Pad": 0.0000,
  "Fee_Fixed": 0.0000,
  "Fee_Rate": 0.0000,
  "MCC_Code": "5969",
  "MCC_Desc": "Direct Marketing - Other",
  "MCC_Pad": 0.0000,
  "Merch_ID_DE42": "CARD ACCPT IDC",
  "Merch_Name_DE43": "APPLE PAY St. Louis     USA",
  "POS_Data_DE22": "010",
  "POS_Data_DE61": "102510900000084063368",
  "Proc_Code": "340000",
  "Resp_Code_DE39": "00",
  "Settle_Amt": 0.0000,
  "Settle_Ccy": "826",
  "Status_Code": "00",
  "Token": 335635281,
  "Trans_link": "240604612291015611",
  "Txn_Amt": 0.0000,
  "Txn_CCy": "840",
  "Txn_Ctry": "USA",
  "Txn_Desc": "APPLE PAY St. Louis     USA",
  "Txn_GPS_Date": "2024-06-04 03:37:56.518",
  "TXn_ID": 14414319424,
  "Txn_Stat_Code": "A",
  "TXN_Time_DE07": "0604023756",
  "Txn_Type": "J",
  "Additional_Data_DE48": "063T230221260310333200101C0611501100302737513010300102029171041 8C ",
  "Authorised_by_GPS": "N",
  "CU_Group": "PMT-CU-001",
  "InstCode": "PMT",
  "MTID": "0120",
  "ProductID": 4252,
  "SubBIN": 51694000,
  "TLogIDOrg": 0,
  "VL_Group": "PMT-VL-001",
  "Dom_Fee_Fixed": 0.0000,
  "Non_Dom_Fee_Fixed": 0.0000,
```

```
  "Fx_Fee_Fixed": 0.0000,
  "Other_Fee_Amt": 0.0000,
  "Fx_Fee_Rate": 0.0000,
  "Dom_Fee_Rate": 0.0000,
  "Non_Dom_Fee_Rate": 0.0000,
  "Additional_Data_DE124": "048ACD00151510492061699610  24060405371#########6031",
  "SendingAttemptCount": 0
}
```


## Response

Example response from the external host system:


```
{
  "Responsestatus":"00",
  "CurBalance":0.0,
  "AvlBalance":0.0,
  "Acknowledgement":1,
  "LoadAmount":0.0,
  "Bill_Amt_Approved":0.0,
  "Update_Balance":0,
  "New_Balance_Sequence_Exthost":0,
  "CVV2_Result":"",
  "AvlBalance_GPS_STIP":0.0,
  "CurBalance_GPS_STIP":0.0
}
```


## TCN (350000) Message


```
{
  "SchemeTransactionIdentifier": "BNETF64",
  "TokenUniqueReference": "DM4MMC1DE0000000cac6e366341d49819f38090c57f15677",
  "PaymentTokenPan": "5372403458767765",
  "Network_Fraud_Data": "00199991                          ",
  "FxProviderCardholderRate": 0.0,
  "Network_TxnAmt_To_BillAmt_Rate": "7878970:7",
  "POS_Date_DE13": "00000000",
  "Traceid_Message": "BNET-20240603-BPDR46YHK",
  "Network_Currency_Conversion_Date": "2024-06-03",
  "Network_Transaction_ID": "BPDR46YHK0603",
  "DCC_Indicator": 0,
  "multi_part_txn": 0,
  "multi_part_txn_final": 0,
  "auth_type": "0",
  "auth_expdate_utc": "2024-06-11 01:01:20.030",
  "Merch_Name": "APPLE PAY",
  "Merch_City": "St. Louis",
  "Merch_Postcode": "63368",
  "Merch_Country": "USA",
  "GPS_POS_Capability": "00110000100000000000000000000000100000000230010",
  "GPS_POS_Data": "5018000800000Nx000NNNNNM0NUUXXU",
  "Response_Source_Why": 0,
  "Message_Why": 0,
  "traceid_lifecycle": "BNET-20240603-BPDR46YHK",
  "Balance_Sequence": 0,
  "Balance_Sequence_Exthost": 0,
  "PaymentToken_id": 72322246,
  "PaymentToken_creator": "MC-MDES",
  "PaymentToken_expdate": "2027-07-31",
  "PaymentToken_type": "SE",
  "PaymentToken_status": "00",
  "PaymentToken_creatorStatus": "A",
  "PaymentToken_wallet": "APPLE",
  "PaymentToken_deviceType": "M",
  "PaymentToken_lang": "  ",
  "PaymentToken_deviceTelNum": "7181",
  "PaymentToken_deviceIp": "97E3830C",
  "PaymentToken_deviceId": "0123456789E5C8002010308064530510 2E616B5CB01EB3DD6",
  "PaymentToken_deviceName": "Stephanie's phone (3",
```

```
  "Acquirer_id_DE32": "06015611",
  "ActBal": 0.0000,
  "Auth_Code_DE38": "166647",
  "Avl_Bal": 0.0000,
  "Bill_Amt": 0.0000,
  "Bill_Ccy": "826",
  "BlkAmt": 0.0000,
  "FX_Pad": 0.0000,
  "Fee_Fixed": 0.0000,
  "Fee_Rate": 0.0000,
  "MCC_Code": "5969",
  "MCC_Desc": "Direct Marketing - Other",
  "MCC_Pad": 0.0000,
  "Merch_ID_DE42": "CARD ACCPT IDC",
  "Merch_Name_DE43": "APPLE PAY St. Louis USA",
  "POS_Data_DE22": "010",
  "POS_Data_DE61": "102510900000084063368",
  "Proc_Code": "350000",
  "Resp_Code_DE39": "00",
  "Settle_Amt": 0.0000,
  "Settle_Ccy": "826",
  "Status_Code": "00",
  "Token": 374414990,
  "Trans_link": "240604229542015611",
  "Txn_Amt": 0.0000,
  "Txn_CCy": "840",
  "Txn_Ctry": "USA",
  "Txn_Desc": "APPLE PAY St. Louis USA",
  "Txn_GPS_Date": "2024-06-04 02:01:20.142",
  "TXn_ID": 14414251623,
  "Txn_Stat_Code": "A",
  "TXN_Time_DE07": "0604010119",
  "Txn_Type": "J",
  "Additional_Data_DE48": "097T230221260310333540101C021653724083642754730304270706115011003027308020575130103001020291710418C ",
  "Authorised_by_GPS": "N",
  "CU_Group": "PMT-CU-001",
  "InstCode": "PMT",
  "MTID": "0620",
  "ProductID": 4252,
  "SubBIN": 51694000,
  "TLogIDOrg": 0,
  "VL_Group": "PMT-VL-001",
  "Dom_Fee_Fixed": 0.0000,
  "Non_Dom_Fee_Fixed": 0.0000,
  "Fx_Fee_Fixed": 0.0000,
  "Other_Fee_Amt": 0.0000,
  "Fx_Fee_Rate": 0.0000,
  "Dom_Fee_Rate": 0.0000,
  "Non_Dom_Fee_Rate": 0.0000,
  "Additional_Data_DE124": "192TCD001514838250601ZILCHCONS enStephanie's phone (31269d868a6a0394114a347cfe-
f4ee0901e24060401010DAPLMC000026259835f4ba50cdd94aea8725b3beedde4545FAPLMC00002625988947bff5eb134ffcae9822bf49031d09S",
  "SendingAttemptCount": 0
}
```


## Response

Example response from the external host system:


```
{
  "Responsestatus":"00",
  "CurBalance":0.0,
  "AvlBalance":0.0,
  "Acknowledgement":1,
  "LoadAmount":0.0,
  "Bill_Amt_Approved":0.0,
  "Update_Balance":0,
  "New_Balance_Sequence_Exthost":0,
  "CVV2_Result":"",
  "AvlBalance_GPS_STIP":0.0,
  "CurBalance_GPS_STIP":0.0
}
```

## TEN (360000) Message


```
{
  "SchemeTransactionIdentifier": "BNETF64",
  "TokenUniqueReference": "DM4MMC1PT0000000be3ec16ef999999ab7d4b47da4456277",
  "PaymentTokenPan": "5372403458767765",
  "Network_Fraud_Data": "00199991                          ",
  "FxProviderCardholderRate": 0.0,
  "Network_TxnAmt_To_BillAmt_Rate": "7878970:7",
  "POS_Date_DE13": "00000000",
  "Traceid_Message": "BNET-20240603-BPDH0UE75",
  "Network_Currency_Conversion_Date": "2024-06-03",
  "Network_Transaction_ID": "BPDH0UE750603",
  "DCC_Indicator": 0,
  "multi_part_txn": 0,
  "multi_part_txn_final": 0,
  "auth_type": "0",
  "auth_expdate_utc": "2024-06-11 01:00:16.001",
  "Merch_Name": "Visa Provisioning Service",
  "Merch_City": "St. Louis",
  "Merch_Postcode": "63368",
  "Merch_Country": "USA",
  "GPS_POS_Capability": "00110000100000000000000000000000000100000000230010",
  "GPS_POS_Data": "5018000800000Nx000NNNNNM0NUUXXU",
  "Response_Source_Why": 0,
  "Message_Source": "CRDHLR",
  "Message_Why": 51,
  "traceid_lifecycle": "VIS1-20240604-304156486459325",
  "Balance_Sequence": 0,
  "Balance_Sequence_Exthost": 0,
  "PaymentToken_id": 58098832,
  "PaymentToken_creator": "Visa-T",
  "PaymentToken_expdate": "2026-03-31",
  "PaymentToken_type": "SE",
  "PaymentToken_status": "00",
  "PaymentToken_creatorStatus": "D",
  "PaymentToken_wallet": "APPLE",
  "PaymentToken_deviceType": "M",
  "PaymentToken_lang": "  ",
  "PaymentToken_deviceTelNum": "1504",
  "PaymentToken_deviceIp": "94FC8598",
  "PaymentToken_deviceId": "01234567896A800211990999163114401 0A4926E8D6D1C36",
  "PaymentToken_deviceName": "iPhone",
  "Acquirer_id_DE32": "06015611",
  "ActBal": 0.0000,
  "Auth_Code_DE38": "161404",
  "Avl_Bal": 0.0000,
  "Bill_Amt": 0.0000,
  "Bill_Ccy": "826",
  "BlkAmt": 0.0000,
  "FX_Pad": 0.0000,
  "Fee_Fixed": 0.0000,
  "Fee_Rate": 0.0000,
  "MCC_Code": "5969",
  "MCC_Desc": "Direct Marketing - Other",
  "MCC_Pad": 0.0000,
  "Merch_ID_DE42": "CARD ACCPT IDC",
  "Merch_Name_DE43": "Visa Provisioning Service FR",
  "POS_Data_DE22": "010",
  "POS_Data_DE61": "102510900000084063368",
  "Proc_Code": "360000",
  "Resp_Code_DE39": "00",
  "Settle_Amt": 0.0000,
  "Settle_Ccy": "826",
  "Status_Code": "00",
  "Token": 155027420,
  "Trans_link": "240604919020015611",
  "Txn_Amt": 0.0000,
  "Txn_CCy": "840",
```

```
  "Txn_Ctry": "USA",
  "Txn_Desc": "Visa Provisioning Service FR",
  "Txn_GPS_Date": "2024-06-04 02:00:16.121",
  "TXn_ID": 14414250789,
  "Txn_Stat_Code": "A",
  "TXN_Time_DE07": "0604010015",
  "Txn_Type": "J",
  "Additional_Data_DE48": "091T230221260310333480101C021653724083932605950304260306115011003027375130103001020291710418C ",
  "Authorised_by_GPS": "N",
  "CU_Group": "PMT-CU-001",
  "InstCode": "PMT",
  "MTID": "0620",
  "ProductID": 4252,
  "SubBIN": 51694000,
  "TLogIDOrg": 0,
  "VL_Group": "PMT-VL-001",
  "Dom_Fee_Fixed": 0.0000,
  "Non_Dom_Fee_Fixed": 0.0000,
  "Fx_Fee_Fixed": 0.0000,
  "Other_Fee_Amt": 0.0000,
  "Fx_Fee_Rate": 0.0000,
  "Dom_Fee_Rate": 0.0000,
  "Non_Dom_Fee_Rate": 0.0000,
  "Additional_Data_DE124": "068TVD00067408479624  2DAPLMC000026259862dc013463464968ac77488b5bd11e9d",
  "SendingAttemptCount": 0
}
```


## Response

Example response from the external host system:


```
{
  "Responsestatus":"00",
  "CurBalance":0.0,
  "AvlBalance":0.0,
  "Acknowledgement":1,
  "LoadAmount":0.0,
  "Bill_Amt_Approved":0.0,
  "Update_Balance":0,
  "New_Balance_Sequence_Exthost":0,
  "CVV2_Result":"",
  "AvlBalance_GPS_STIP":0.0,
  "CurBalance_GPS_STIP":0.0
}
```


# 3.1.15 Example Incremental Authorisation Messages

## Incremental Authorisation Request

Below is an example of the HTTP POST body data for an incremental authorisation request.


```
{
  "FxProviderCardholderRate":0.000000000,
  "Network_TxnAmt_To_BillAmt_Rate":"1000000:6",
  "POS_Date_DE13":"20241127",
  "Traceid_Message":"BNET-20241127-MCC680561",
  "Traceid_Original":"BNET-20241127-MCC686194",
  "Network_Currency_Conversion_Date":"2024-11-27",
  "Network_Transaction_ID":"MCC6805611127",
  "DCC_Indicator":0,
  "multi_part_txn":0,
  "multi_part_txn_final":0,
  "auth_type":"P",
  "auth_expdate_utc":"2024-12-27 13:26:26.363",
  "Matching_Txn_ID":0,
  "Reason_ID":0,
  "Merch_Name":"ASDA GROCERIES",
  "Merch_City":"LONDON",
```

```
"Merch_Postcode":"SW1 3AN",
"Merch_Country":"GBR",
"Merch_Tax_id":"0",
"GPS_POS_Capability":"00010000000001000000000000000000001000000000100M",
"GPS_POS_Data":"10V8000800000Nx006",
"Response_Source_Why":0,
"Message_Why":0,
"traceid_lifecycle":"BNET-20241127-MCC686194",
"PaymentToken_id":0,
"PaymentToken_creatorStatus":" ",
"PaymentToken_lang":"  ",
"PaymentToken_activationMethod":0,
"Acquirer_id_DE32":"06555555",
"ActBal":100723.40,
"Auth_Code_DE38":"166297",
"Avl_Bal":100009.40,
"Bill_Amt":-20.00,
"Bill_Ccy":"826",
"BlkAmt":-714.00,
"FX_Pad":0.00,
"Fee_Fixed":2.00,
"Fee_Rate":0.00,
"MCC_Code":"5734",
"MCC_Desc":"Computer Software Stores",
"MCC_Pad":0.00,
"Merch_ID_DE42":"MERCHANT 000001",
"Merch_Name_DE43":"ASDA GROCERIES         LONDON        GBR",
"Note":"  Gen: Pre-Authorization Request",
"POS_Data_DE22":"812",
"POS_Data_DE61":"2031104000100826SW1 3AN",
"POS_Termnl_DE41":"ECOMM001",
"POS_Time_DE12":"012626",
"Proc_Code":"000000",
"Resp_Code_DE39":"00",
"Ret_Ref_No_DE37":"433210456861",
"Settle_Amt":20.00,
"Settle_Ccy":"826",
"Status_Code":"00",
"Token":108336227,
"Trans_link":"241127683518555555",
"Txn_Amt":20.0000,
"Txn_CCy":"826",
"Txn_Ctry":"GBR",
"Txn_Desc":"ASDA GROCERIES         LONDON        GBR",
"Txn_GPS_Date":"2024-11-27 13:26:26.783",
"TXn_ID":6162588064,
"Txn_Stat_Code":"A",
"TXN_Time_DE07":"1127132626",
"Txn_Type":"A",
"Additional_Data_DE48":"038T420701038106315MCC6861941127  9203***",
"Authorised_by_GPS":"N",
"CU_Group":"PMT-CU-001",
"InstCode":"TEST",
"MTID":"0100",
"ProductID":99884,
"SubBIN":52729540,
"TLogIDOrg":0,
"VL_Group":"QE-LIMIT",
"Dom_Fee_Fixed":2.0000,
"Non_Dom_Fee_Fixed":0.0000,
"Fx_Fee_Fixed":0.0000,
"Other_Fee_Amt":0.0000,
"Fx_Fee_Rate":0.0000,
"Dom_Fee_Rate":0.0000,
"Non_Dom_Fee_Rate":0.0000,
"SendingAttemptCount":0
}
```

## Incremental Authorisation Response

Below is an example response.


```
{
  "MerchantAdvice":null,
  "Responsestatus":"00",
  "CurBalance":0,
  "AvlBalance":100,
  "Acknowledgement":"1",
  "LoadAmount":50,
  "Bill_Amt_Approved":0,
  "Update_Balance":1,
  "New_Balance_Sequence_Exthost":200,
  "CVV2_Result":"M",
  "CurBalance_GPS_STIP":0,
  "AvlBalance_GPS_STIP":100
}
```


# 3.1.16 Examples of Amount Signs

The table below provides an overview of the signs on important amount fields used in many transactions and illustrates using examples.

**Note:** The TXn_ID field is provided for internal Thredd usage and can be ignored.

| MTID | Txn_ Type | cr/db | Proc_ Code | Source | settle_ ccy | settle_ amt | txn_ ccy | txn_amt | bill_ ccy | bill_amt | TXn_ID |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0100 | A | Debit | 000000 | Banknet | 978 | 7.1900 | 826 | 6.3000 | 978 | -7.1900 | 3178117382 |
| 0100 | A | Debit | 000000 | Visa B1 | 978 | 22.2500 | 826 | 19.4800 | 978 | -22.2500 | 3178117377 |
| 0100 | A | Credit | 280000 | Banknet | 826 | 47.7500 | 826 | 47.7500 | 826 | 47.7500 | 3178096311 |
| 0100 | A | Credit | 260000 | Visa B1 | 978 | 77.7100 | 826 | 70.0000 | 978 | 77.7100 | 3076890895 |
|  | D | Credit | 000000 | Banknet | 978 | 1.0000 | 978 | 1.0000 | 978 | 1.0000 | 3177930769 |
|  | D | Credit | 003000 | Visa B1 | 978 | 29.9400 | 554 | 50.0000 | 978 | 29.9400 | 3177930766 |
|  | D | Debit | 280000 | Banknet | 826 | 10.0000 | 826 | 10.0000 | 826 | -10.0000 | 3179976368 |
|  | D | Debit | 200000 | Visa B1 | 840 | 10.0000 | 826 | 8.0200 | 124 | -14.0400 | (not real) |
| 0120 | J | Credit | 000000 | Banknet |  | 0.0000 | 784 | 21.0300 | 826 | 4.4400 | 3178071058 |
| 0120 | J | Credit | 003000 | Visa B1 |  | 0.0000 | 458 | 2.4800 | 978 | 0.5400 | 3178059229 |
| 0120 | J | Credit | 20000 | Banknet |  | 0.0000 | 826 | 25.0000 | 978 | 30.0000 | (not real) |

| MTID | Txn_ Type | cr/db | Proc_ Code | Source | settl e_ccy | settle_ amt | txn_ ccy | txn_amt | bill_ ccy | bill_amt | TXn_ID |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 0 | | | | | | | | |
| 0120 | J | Credit | 260000 | Visa B1 | | 0.0000 | 826 | 70.0000 | 978 | 77.7100 | 3076890919 |
| 1240 | P | Debit | 000000 | GCMS | 978 | -129.0000 | 978 | 129.0000 | 978 | -129.0000 | 3185427850 |
| 1240 | P | Credit | 200000 | GCMS | 978 | 39.2300 | 978 | 39.2300 | 978 | 39.2300 | 3185427844 |
| 05pp | P | Debit | 000000 | Visa B2 | 826 | -30.5800 | 710 | 550.0000 | 826 | -30.5800 | 3184113150 |
| 06pp | P | Credit | 200000 | Visa B2 | 978 | 7.1300 | 036 | 11.3600 | 978 | 7.1300 | 3183968531 |
| 07pp | P | Debit | 010000 | Visa B2 | 978 | -901.7500 | 978 | 901.7500 | 978 | -901.7500 | 3183970358 |
| 1240 | A | Debit (dummy auth) | 010000 | GCMS | 840 | -64.9300 | 704 | 1500000.0000 | 978 | -57.6000 | 3189756992 |
| 1240 | A | Credit (dummy auth) | 200000 | GCMS | 978 | 39.2300 | 978 | 39.2300 | 978 | 39.2300 | (not real) |
| 05pp | A | Debit (dummy auth) | 000000 | Visa B2 | 840 | -18.9300 | 756 | 19.0000 | 840 | -18.9300 | 3189248664 |
| 06pp | A | Credit (dummy auth) | 200000 | Visa B2 | 978 | 7.1300 | 036 | 11.3600 | 978 | 7.1300 | (not real) |
| 07pp | A | Debit (dummy auth) | 010000 | Visa B2 | 826 | -207.7100 | 484 | 5100.0000 | 826 | -207.7100 | 3189246992 |
| 1240 | C | Chargeback | 180000 | Other | 978 | 200.0000 | 978 | 200.0000 | 978 | 200.0000 | 3186093786 |
| 1240 | C | Chargeback | 000000 | Other | 826 | 98.0000 | 826 | 98.0000 | 826 | 98.0000 | 3189694682 |
| 1240 | C | Chargeback | 010000 | Other | 978 | 80.0000 | 978 | 80.0000 | 978 | 80.0000 | 3189323524 |
| | L | Load | 220000 | Other | 978 | 90.0000 | 978 | 90.0000 | 978 | 90.0000 | 3189759169 |
| | U | Unload | 230000 | Other | 826 | 8.8400 | 826 | 8.8400 | 826 | -8.8400 | 2993509894 |
| | B | Bal Adj | 190000 | Other | 978 | 0.1900 | 978 | 0.1900 | 978 | -0.1900 | 3188058606 |

| MTID | Txn_ Type | cr/db | Proc_ Code | Source | settl e_ccy | settle_ amt | txn_ ccy | txn_amt | bill_ ccy | bill_amt | TXn_ID |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | B | Bal Adj | 021000 | Other | 826 | 4.9900 | 826 | 4.9900 | 826 | 4.9900 | 3188057935 |
| | P | Fee | 083999 | Thredd (Fee fields have amounts) | 826 | 0.0000 | 826 | 0.0000 | 826 | 0.0000 | 5071773234 |

## Notes

In the above table, a ‘p’ indicates the space character, and the ‘Source’ column indicates the origin of the message as follows:

- “Visa B1” if from Visa Base 1 (i.e., Visa online authorisation system)
- “Visa B2” if from Visa Base 2 (i.e., Visa offline clearing system)
- “Banknet” if from Mastercard Banknet (i.e., Mastercard online authorisation system)
- “GCMS” if from Mastercard Global Clearing system (i.e., Mastercard offline clearing system)
- “Other” means not Visa or Mastercard. For example, internal (via Thredd Portal, Smart Client) or a web service call / Cards API call.

# 3.2 Cut-Off Message Example

This section provides an example of a cut off message and response.

**Note:** If you are set up to receive EHI in JSON format, you will also receive cut-off messages in JSON format.

**Note:** EHI_JSON_Guide_5.5 The EHI feed does not send JSON fields to externally-hosted systems where the values for the field data are blank. This is different from EHI feeds with XML fields where the feed can send blank values.

## 3.2.1 Example Cut-Off Request Message


```
{
 "CutOffId":38077,
 "ProductId":99883,
 "CutOffDate":"2022-11-29 13:00:01.837",
 "FirstTransactionId":6154805771,
 "LastTransactionId":6154805771,
 "AuthsAcknowledged":1,
 "AuthsNotAcknowledged":0,
 "FinancialsAcknowledged":0,
 "FinancialsNotAcknowledged":0,
 "LoadsUnloadsAcknowledged":0,
 "LoadsUnloadsNotAcknowledged":0,
 "BalanceAdjustExpiryAcknowledged":0,
 "BalanceAdjustExpiryNotAcknowledged":0
 }
```


## 3.2.2 Example Cut-Off Response Message

This is an example response to the above example request message, showing the HTTP Response body data:


```
{"Acknowledgement":"1"}
```

# SECTION 4: APPENDICES

This section provides appendices with additional reference information.

# 4.1 Appendices

Refer to the table below for a list of the available appendices, organised alphabetically.

| # | Appendix | Description |
|---|---|---|
| 4.1 | Appendices | Provides a list of the available appendices. |
| 4.2 | Additional Amounts Field | Additional amount field contains additional amount information for a transaction. |
| 4.3 | AVS Results | Provides details of AVS Result values. |
| 4.4 | Bank Account Format | Describes the valid values for the source_bank_account_format and dest_bank_account_format fields. |
| 4.5 | Calculating the Total | Explains how the total cost of the transaction can be calculated. |
| 4.6 | Card Status Codes | Describes the possible card status codes. |
| 4.7 | Country Codes | Lists alpha and numeric country codes. |
| 4.8 | Currency Codes | Provides a list of currency codes, based on the ISO 4217 specification. |
| 4.9 | CVV2 Indicators | Provides details of the CVV2 Presence Type and Response Type indicators. |
| 4.10 | Dispute Condition | Describes the Visa dispute reason codes returned in the Dispute_Condition field. |
| 4.11 | Dynamic CVV2 | Describes the dynamic Card Verification Value 2 (CVV2) functionality, and how to implement. |
| 4.12 | GPS_POS_Capability field | Describes the GPS_POS_Capability subfields. |
| 4.13 | GPS_POS_Data field | Thredd defined field that records POS Data codes, which are specific to this transaction. |
| 4.14 | Load Source | Lists values for the LoadSRC field, identifying the source of a Load. |
| 4.15 | Load Type | Lists the load types that describe how the card was loaded. |
| 4.16 | Mastercard_AdviceReason | Describes the Mastercard_AdviceReasonCode_DE60 field. |
| 4.17 | Merch_Name_DE43 Field in Authorisations | Describes the format of the Merchant Name/Location (DE43) authorisation field Merch_Name_DE43. |
| 4.18 | Merch_Name_DE43 in Financials | Describes the subfields in the Merch_Name_DE43 field for a financial message. |
| 4.19 | Merchant Category Codes | Provides details of the merchant category codes (MCC). |
| 4.20 | Misc_TLV_Data Field | Describes the Misc_TLV_Data field, which is used for sending rarely used fields that can normally be ignored. |
| 4.21 | Network_Fraud_Data Format | Provides details of the Fraud and Risk indicators received from the network, which are populated in the Network_Fraud_Data field. |
| 4.22 | Payment Token Fields | Describes the fields used for mobile device payment tokens:<br>PaymentToken_activationMethod |

| # | Appendix | Description |
|---|---|---|
| | | PaymentToken_creatorStatus<br>PaymentToken_deviceType<br>PaymentToken_type<br>PaymentToken_wallet<br>PaymentToken_PanSource |
| 4.23 | PIN Fields | Describes the format of PIN blocks. |
| 4.24 | POS_Data_DE61 field | Describes the format and layout of the POS_Data_DE61 field. |
| 4.25 | POS_Data_DE22 in Authorisation | Describes the format and layout of the POS_Data_DE22 field. |
| 4.26 | POS_Data_DE22 in Mastercard | Describes the subfields in the POS_Data_DE22 field. |
| 4.27 | Processing Codes | Describes the subfields in the processing code (Proc_Code ) field. |
| 4.28 | Reason_ID | Provides details of the Reason_ID field, which indicates the reason for a message. |
| 4.29 | Response_Code_DE39 Response Codes | Provides details of the reason for the advice or reversal for Mastercard 0120, 0400 and 0420 messages. |
| 4.30 | Responsestatus Values | Lists the response codes that you can returned to Thredd in response to a payment authorisation request. |
| 4.31 | Response_Source and Message_Source | Lists codes and possible values for the Response_Source and Message_Source fields. |
| 4.32 | Response_Source_Why and Message_Source_Why | Lists the possible values for the reason why the Response_Source and Message_Source sent the message. |
| 4.33 | Scheme Transaction Identifier Values | List the different identifier values for transactions from Mastercard and Visa. |
| 4.34 | SenderData and ReceiverData Fields | The SenderData and ReceiverData fields provide details of the sender and receiver in a money transfer message. This appendix lists the possible subfield values. |
| 4.35 | Special Characters | Describes Special Characters that may be used in fields of Data Type ANS. |
| 4.36 | Transaction Matching - Authentications and Authorisations | Provides guidelines and examples of common transaction matching and processing scenarios for different types of messages and fields. |
| 4.37 | Transaction Status Codes | Provides details of the available Transaction Status Code (Txn_Stat_Code) values. |
| 4.38 | Transaction Types | Provides details of available Transaction Type (Txn_Type) values. |
| 4.39 | Trans_Link Field | Provides details of available Trans_Link field values. |
| 4.40 | Visa_POS_Data_DE60 | Provides details of the layout and format of the Visa_POS_Data_DE60 field. |
| 4.41 | Visa_ResponseInfo_DE44 | Provides details of the layout and format of the Visa_ResponseInfo_DE44 field. |
| 4.42 | Visa_STIP_Reason_Code | Provides details of the Visa_STIP_Reason_Code field. |

# 4.2 Additional Amount Field

The additional amount field (Additional_Amt_DE54) contains additional amount information for the transaction, if relevant. For example, for purchase with cashback transactions, the additional amounts field is present with the cashback amount. In practice, in request messages, you probably only want to read this field for cashback transactions to extract the cashback amount should you need it. (See also Get Transaction Message fields: Additional_Amt_DE54)

**Note:** Mastercard and Visa may add new Account Type and Amount Type codes at any time. Ignore any amounts where you do not understand the amount type or account type. These are not errors.

## 4.2.1 Additional Amount Subfields

The Additional amounts field (Additional_Amt_DE54) can contain between 1 and 12 different amounts. This is 6 in the originator currency and 6 in the recipient (Issuer) currency. Each individual amount is a 20 character block. There can be between 1 and 6 blocks. Each block is formatted as follows:

| Subfield | Name | Format | Description / Valid Values |
|---|---|---|---|
| 1 | Account Type | 2 digits 00-99 | Describes which account this amount refers to.<br>See Account Type Codes for valid values. |
| 2 | Amount Type | 2 digits 00-99 | Describes what this amount means.<br>See Amount Type Codes for valid values. |
| 3 | Currency Code | 3 digits 000-999 | ISO 3-digit numeric currency code.<br>See Currency Code for valid values. |
| 4 | Amount sign | 'D' or 'C' | C = Positive (credit) amount<br>D = Debit (negative) amount |
| 5 | Amount value | 12 decimal digits | The amount in minor units of the currency in subfield 3 (currency code.) |

## 4.2.2 Amount Type Codes

Amount Type provides a description of this amount.

| Amount Type | Description |
|---|---|
| 01 | Debit accounts: Ledger Balance<br>Credit card accounts: credit amount remaining for customer (the open to buy amount) |
| 02 | Debit accounts: Available Balance<br>Credit Card accounts: customer's credit limit |
| 03 | Amount Owing |
| 04 | Amount Due |
| 10 | Healthcare eligibility amount. Allows the acquirer to indicate the portion of the amount spent on eligible healthcare products/services (USA only). |
| 11 | Prescription eligibility amount. Allows the acquirer to indicate the portion of the amount spent on eligible prescriptions (USA only). |

| Amount Type | Description |
| --- | --- |
| 12 | Vision Rx eligibility amount. Allows the acquirer to indicate the portion of the amount spent on eligible vision Rx or vision products/services (USA only). |
| 17 | Mastercard prepaid online bill pay transaction fee amount |
| 40 | Cashback amount |
| 42 | Surcharge amount |
| 44 | Gratuity amount |
| 56 | Member provided fee |
| 57 | Original amount |
| 58 | Point of Interaction amount (e.g. before Dynamic Currency Conversion at the terminal) |
| 59 | Limit/Balance available amount from Mastercard In-Control |
| 93 | Resiliency account balance |

# 4.3 AVS Results

The table below gives details of available AVS Results (AVS_Result) values. (See also Get Transaction Message fields: AVS_Result) .

| Value | Description |
|---|---|
| A | Address matches, postal code does not |
| N | Both Postal Code and address not matching |
| U | AVS not used |
| X | Postal code matches (address not supplied or not checked). This is used for both US and non-US addresses. |
| Y | Both Postal Code and address matching |
| Z | Postal or ZIP codes match, street addresses do not match or street address not included in request. |

# 4.4 Bank Account Formats

This section describes the valid values for the source_bank_account_format and dest_bank_account_format fields. (See also Get Transaction Message fields: source_bank_account_format and dest_bank_account_format)

| Value | Description | Examples |
|---|---|---|
| IBAN | International Bank Account Number.<br>**Note**: must not contain spaces. | GR1601101250000000012300695<br>GB29NWBK60161331926819 |
| GBR | 6 digit sort code<br>1 space character<br>8 digit account number | 601613 31926819 |

**Note:** Thredd plan to use the ISO 3-alpha country code in uppercase for the 'value' to identify bank account number formats which are specific to that country.

# 4.5 Calculating the Total Transaction Cost

When the External Host decides whether to approve or decline the transaction, it takes into account the total cost of the transaction, which is the sum of:

- Billing amount (`Bill_Amt` field)
- Fixed Fees (`Fee_Fixed` field)
- Rate variable Fees (`Fee_Rate` field)
- Foreign Exchange Padding (`Fx_Pad` field)
- MCC Padding (`MCC_Pad` field)

Example:

| Bill_Amt | Fee_Fixed | Fee_Rate | Fx_Pad | MCC_Pad | Total amount blocked |
|---|---|---|---|---|---|
| 109.45 | 1.41 | 0.92 | 2.04 | 5.08 | 118.90 |

For use of this calculation in payment authorisation, see EHI Operating Modes.

# 4.6 Card Status Codes

This section lists the possible card status codes. These are status codes that you can set for card via Thredd API, Thredd Portal or Smart Client. They are also used to indicate the status of a payment token. For details of transaction response codes, see Response Codes.

| Status Code | Description |
|---|---|
| 00 | All Good. Indicates that the card is good for use, but does not indicate whether it is active. |
| 01 | Refer to card issuer |
| 02 | Card not yet activated |
| 04 | Capture Card |
| 05 | Do not honour |
| 14 | Invalid card (if you receive this status, it indicates that this card does not exist on the Thredd system and was used for a fraudulent transaction) |
| 41 | Lost card |
| 43 | Stolen card |
| 46 | Closed Account |
| 54 | Expired card |
| 59 | Suspected Fraud |
| 62 | Restricted card |
| 63 | Security violation |
| 70 | Cardholder to contact issuer |
| 75 | Allowable number of PIN tries exceeded |
| 83 | Card destroyed |
| 98 | Refund given to customer |
| 99 | Card voided |
| G1 | A short-term block which temporarily blocks card usage for all card transactions (excluding Credits and Refunds) for a short period. |
| G2 | Short-term full block (all transactions are blocked). |
| G3 | Long-term block (excluding Credits and Refunds). |
| G4 | Long-term full block (all transactions are blocked). |
| G5 | Fraud Transaction Monitoring/Thredd Protect: A short-term block that temporarily blocks card usage for all card transactions (excluding Credits and Refunds) for a short period. |
| G6 | Fraud Transaction Monitoring/Thredd Protect: Short-term full block (all transactions are blocked). |

| Status Code | Description |
| --- | --- |
| G7 | Thredd Protect: Long-term block (excluding Credits and Refunds). |
| G8 | Thredd Protect: Long-term full block (all transactions are blocked). |
| G9 | IVR Lost/Stolen block. Non-reversable status, equivalent to status code 41. |

## 4.6.1 Notes on Card Blocks (G1 - G9)

- Short-term blocks result in merchants receiving a message to try again; Visa guidelines instruct merchants to attempt up to 15 retries over 30 days.
- Long-term blocks result in merchants receiving a message not to try again. These are considered as permanent blocks. Visa expect that the card should not return to the '00 Approve' state at all, or at least not within 30 days.

# 4.7 Country Codes

Country codes are based on the Visa and Mastercard country codes, which are generally based on ISO 3166 country codes, but with some exceptions (as described below). You should use the correct alpha-3, alpha-2 or numeric-3 code correctly as described below.

| Country Name | Country 3-alpha code | Country 2-alpha code | Country 3-numeric code |
|---|---|---|---|
| Afghanistan | AFG | AF | 004 |
| Åland Islands | ALA | AX | 248 |
| Albania | ALB | AL | 008 |
| Algeria | DZA | DZ | 012 |
| American Samoa | ASM | AS | 016 |
| Andorra | AND | AD | 020 |
| Angola | AGO | AO | 024 |
| Anguilla | AIA | AI | 660 |
| Antarctica | ATA | AQ | 010 |
| Antigua and Barbuda | ATG | AG | 028 |
| Argentina | ARG | AR | 032 |
| Armenia | ARM | AM | 051 |
| Aruba | ABW | AW | 533 |
| Australia | AUS | AU | 036 |
| Austria | AUT | AT | 040 |
| Azerbaijan | AZE | AZ | 031 |
| Bahamas | BHS | BS | 044 |
| Bahrain | BHR | BH | 048 |
| Bangladesh | BGD | BD | 050 |
| Barbados | BRB | BB | 052 |
| Belarus | BLR | BY | 112 |
| Belgium | BEL | BE | 056 |
| Belize | BLZ | BZ | 084 |
| Benin | BEN | BJ | 204 |
| Bermuda | BMU | BM | 060 |

| Country Name | Country 3-alpha code | Country 2-alpha code | Country 3-numeric code |
|---|---|---|---|
| Bhutan | BTN | BT | 064 |
| Bolivia, Plurinational State of | BOL | BO | 068 |
| Bonaire, Sint Eustatius and Saba | BES | BQ | 535 |
| Bosnia and Herzegovina | BIH | BA | 070 |
| Botswana | BWA | BW | 072 |
| Bouvet Island | BVT | BV | 074 |
| Brazil | BRA | BR | 076 |
| British Indian Ocean Territory | IOT | IO | 086 |
| Brunei Darussalam | BRN | BN | 096 |
| Bulgaria | BGR | BG | 100 |
| Burkina Faso | BFA | BF | 854 |
| Burundi | BDI | BI | 108 |
| Cambodia | KHM | KH | 116 |
| Cameroon | CMR | CM | 120 |
| Canada | CAN | CA | 124 |
| Cape Verde | CPV | CV | 132 |
| Cayman Islands | CYM | KY | 136 |
| Central African Republic | CAF | CF | 140 |
| Chad | TCD | TD | 148 |
| Chile | CHL | CL | 152 |
| China | CHN | CN | 156 |
| Christmas Island | CXR | CX | 162 |
| Cocos (Keeling) Islands | CCK | CC | 166 |
| Colombia | COL | CO | 170 |
| Comoros | COM | KM | 174 |
| Congo | COG | CG | 178 |
| Congo, the Democratic Republic of the | ZAR | CD | 180 |
| Cook Islands | COK | CK | 184 |

| Country Name | Country 3-alpha code | Country 2-alpha code | Country 3-numeric code |
|---|---|---|---|
| Costa Rica | CRI | CR | 188 |
| Côte d'Ivoire | CIV | CI | 384 |
| Croatia | HRV | HR | 191 |
| Cuba | CUB | CU | 192 |
| Curaçao | CUW | CW | 531 |
| Cyprus | CYP | CY | 196 |
| Czech Republic | CZE | CZ | 203 |
| Denmark | DNK | DK | 208 |
| Djibouti | DJI | DJ | 262 |
| Dominica | DMA | DM | 212 |
| Dominican Republic | DOM | DO | 214 |
| Ecuador | ECU | EC | 218 |
| Egypt | EGY | EG | 818 |
| El Salvador | SLV | SV | 222 |
| Equatorial Guinea | GNQ | GQ | 226 |
| Eritrea | ERI | ER | 232 |
| Estonia | EST | EE | 233 |
| Ethiopia | ETH | ET | 230 |
| Falkland Islands (Malvinas) | FLK | FK | 238 |
| Faroe Islands | FRO | FO | 234 |
| Federal Republic of Germany | DDR | DD | 280 |
| Fiji | FJI | FJ | 242 |
| Finland | FIN | FI | 246 |
| France | FRA | FR | 250 |
| French Guiana | GUF | GF | 254 |
| French Polynesia | PYF | PF | 258 |
| French Southern Territories | ATF | TF | 260 |
| Gabon | GAB | GA | 266 |

| Country Name | Country 3-alpha code | Country 2-alpha code | Country 3-numeric code |
|---|---|---|---|
| Gambia | GMB | GM | 270 |
| Georgia | GEO | GE | 268 |
| Germany | DEU | DE | 276 |
| Ghana | GHA | GH | 288 |
| Gibraltar | GIB | GI | 292 |
| Greece | GRC | GR | 300 |
| Greenland | GRL | GL | 304 |
| Grenada | GRD | GD | 308 |
| Guadeloupe | GLP | GP | 312 |
| Guam | GUM | GU | 316 |
| Guatemala | GTM | GT | 320 |
| Guernsey | GGY | GG | 831 |
| Guinea | GIN | GN | 324 |
| Guinea-Bissau | GNB | GW | 624 |
| Guyana | GUY | GY | 328 |
| Haiti | HTI | HT | 332 |
| Heard Island and McDonald Islands | HMD | HM | 334 |
| Holy See (Vatican City State) | VAT | VA | 336 |
| Honduras | HND | HN | 340 |
| Hong Kong | HKG | HK | 344 |
| Hungary | HUN | HU | 348 |
| Iceland | ISL | IS | 352 |
| India | IND | IN | 356 |
| Indonesia | IDN | ID | 360 |
| Iran, Islamic Republic of | IRN | IR | 364 |
| Iraq | IRQ | IQ | 368 |
| Ireland | IRL | IE | 372 |
| Isle of Man | IMN | IM | 833 |

| Country Name | Country 3-alpha code | Country 2-alpha code | Country 3-numeric code |
|---|---|---|---|
| Israel | ISR | IL | 376 |
| Italy | ITA | IT | 380 |
| Jamaica | JAM | JM | 388 |
| Japan | JPN | JP | 392 |
| Jersey | JEY | JE | 832 |
| Jordan | JOR | JO | 400 |
| Kazakhstan | KAZ | KZ | 398 |
| Kenya | KEN | KE | 404 |
| Kiribati | KIR | KI | 296 |
| Korea, Democratic People's Republic of | PRK | KP | 408 |
| Korea, Republic of | KOR | KR | 410 |
| Kosovo - see “UNMI Kosovo” below | See below | See below | See below |
| Kuwait | KWT | KW | 414 |
| Kyrgyzstan | KGZ | KG | 417 |
| Lao People's Democratic Republic | LAO | LA | 418 |
| Latvia | LVA | LV | 428 |
| Lebanon | LBN | LB | 422 |
| Lesotho | LSO | LS | 426 |
| Liberia | LBR | LR | 430 |
| Libyan Arab Jamahiriya | LBY | LY | 434 |
| Liechtenstein | LIE | LI | 438 |
| Lithuania | LTU | LT | 440 |
| Luxembourg | LUX | LU | 442 |
| Macao | MAC | MO | 446 |
| Macedonia, the former Yugoslav Republic of | MKD | MK | 807 |
| Madagascar | MDG | MG | 450 |
| Malawi | MWI | MW | 454 |
| Malaysia | MYS | MY | 458 |

| Country Name | Country 3-alpha code | Country 2-alpha code | Country 3-numeric code |
|---|---|---|---|
| Maldives | MDV | MV | 462 |
| Mali | MLI | ML | 466 |
| Malta | MLT | MT | 470 |
| Marshall Islands | MHL | MH | 584 |
| Martinique | MTQ | MQ | 474 |
| Mauritania | MRT | MR | 478 |
| Mauritius | MUS | MU | 480 |
| Mayotte | MYT | YT | 175 |
| Mexico | MEX | MX | 484 |
| Micronesia, Federated States of | FSM | FM | 583 |
| Moldova, Republic of | MDA | MD | 498 |
| Monaco | MCO | MC | 492 |
| Mongolia | MNG | MN | 496 |
| Montenegro | MNE | ME | 499 |
| Montserrat | MSR | MS | 500 |
| Morocco | MAR | MA | 504 |
| Mozambique | MOZ | MZ | 508 |
| Myanmar | MMR | MM | 104 |
| Namibia | NAM | NA | 516 |
| Nauru | NRU | NR | 520 |
| Nepal | NPL | NP | 524 |
| Netherlands | NLD | NL | 528 |
| Netherlands Antilles | ANT | AN | 530 |
| New Caledonia | NCL | NC | 540 |
| New Zealand | NZL | NZ | 554 |
| Nicaragua | NIC | NI | 558 |
| Niger | NER | NE | 562 |
| Nigeria | NGA | NG | 566 |

| Country Name | Country 3-alpha code | Country 2-alpha code | Country 3-numeric code |
|---|---|---|---|
| Niue | NIU | NU | 570 |
| Norfolk Island | NFK | NF | 574 |
| Northern Mariana Islands | MNP | MP | 580 |
| Norway | NOR | NO | 578 |
| Oman | OMN | OM | 512 |
| Pakistan | PAK | PK | 586 |
| Palau | PLW | PW | 585 |
| Palestinian Territory, Occupied | PSE | PS | 275 |
| Panama | PAN | PA | 591 |
| Papua New Guinea | PNG | PG | 598 |
| Paraguay | PRY | PY | 600 |
| Peru | PER | PE | 604 |
| Philippines | PHL | PH | 608 |
| Pitcairn | PCN | PN | 612 |
| Poland | POL | PL | 616 |
| Portugal | PRT | PT | 620 |
| Puerto Rico | PRI | PR | 630 |
| Qatar | QAT | QA | 634 |
| Réunion | REU | RE | 638 |
| Romania | ROM[1] | RO | 642 |
| Russian Federation | RUS | RU | 643 |
| Rwanda | RWA | RW | 646 |
| Saint Barthélemy | BLM | BL | 652 |
| Saint Helena, Ascension and Tristan da Cunha | SHN | SH | 654 |
| Saint Kitts and Nevis | KNA | KN | 659 |
| Saint Lucia | LCA | LC | 662 |
| Saint Martin (French part) | MAF | MF | 663 |

[1] Note that this differrs from the ISO 3-digit country code for Romania of ROU.

| Country Name | Country 3-alpha code | Country 2-alpha code | Country 3-numeric code |
|---|---|---|---|
| Saint Pierre and Miquelon | SPM | PM | 666 |
| Saint Vincent and the Grenadines | VCT | VC | 670 |
| Samoa | WSM | WS | 882 |
| San Marino | SMR | SM | 674 |
| Sao Tome and Principe | STP | ST | 678 |
| Saudi Arabia | SAU | SA | 682 |
| Senegal | SEN | SN | 686 |
| Serbia | SRB | RS | 688 |
| Seychelles | SYC | SC | 690 |
| Sierra Leone | SLE | SL | 694 |
| Singapore | SGP | SG | 702 |
| Sint Maarten(D) | SXM | SX | 534 |
| Slovakia | SVK | SK | 703 |
| Slovenia | SVN | SI | 705 |
| Solomon Islands | SLB | SB | 090 |
| Somalia | SOM | SO | 706 |
| South Africa | ZAF | ZA | 710 |
| South Georgia and the South Sandwich Islands | SGS | GS | 239 |
| South Sudan | SSD | SS | 728 |
| Spain | ESP | ES | 724 |
| Sri Lanka | LKA | LK | 144 |
| Sudan | SDN | SD | 729 |
| Suriname | SUR | SR | 740 |
| Svalbard and Jan Mayen | SJM | SJ | 744 |
| Swaziland | SWZ | SZ | 748 |
| Sweden | SWE | SE | 752 |
| Switzerland | CHE | CH | 756 |
| Syrian Arab Republic | SYR | SY | 760 |

| Country Name | Country 3-alpha code | Country 2-alpha code | Country 3-numeric code |
|---|---|---|---|
| Taiwan, Province of China | TWN | TW | 158 |
| Tajikistan | TJK | TJ | 762 |
| Tanzania, United Republic of | TZA | TZ | 834 |
| Thailand | THA | TH | 764 |
| Timor-Leste | TMP | TL | 626 |
| Togo | TGO | TG | 768 |
| Tokelau | TKL | TK | 772 |
| Tonga | TON | TO | 776 |
| Trinidad and Tobago | TTO | TT | 780 |
| Tunisia | TUN | TN | 788 |
| Turkey | TUR | TR | 792 |
| Turkmenistan | TKM | TM | 795 |
| Turks and Caicos Islands | TCA | TC | 796 |
| Tuvalu | TUV | TV | 798 |
| Uganda | UGA | UG | 800 |
| Ukraine | UKR | UA | 804 |
| United Arab Emirates | ARE | AE | 784 |
| United Kingdom | GBR | GB | 826 |
| United States | USA | US | 840 |
| United States Minor Outlying Islands | UMI | UM | 581 |
| UNMI Kosovo | QZZ | QZ | 900 |
| Uruguay | URY | UY | 858 |
| Uzbekistan | UZB | UZ | 860 |
| Vanuatu | VUT | VU | 548 |
| Venezuela, Bolivarian Republic of | VEN | VE | 862 |
| Viet Nam | VNM | VN | 704 |
| Virgin Islands, British | VGB | VG | 092 |
| Virgin Islands, U.S. | VIR | VI | 850 |

| Country Name | Country 3-alpha code | Country 2-alpha code | Country 3-numeric code |
|---|---|---|---|
| Wallis and Futuna | WLF | WF | 876 |
| Western Sahara | ESH | EH | 732 |
| Yemen | YEM | YE | 887 |
| Zambia | ZMB | ZM | 894 |
| Zimbabwe | ZWE | ZW | 716 |

# 4.8 Currency Codes

Currency codes are based on the ISO 4217 specification.

| Code | Number | Exponent | Currency |
|---|---|---|---|
| AED | 784 | 2 | United Arab Emirates dirham |
| AFN | 971 | 2 | Afghan afghani |
| ALL | 008 | 2 | Albanian lek |
| AMD | 051 | 2 | Armenian dram |
| ANG | 532 | 2 | Netherlands Antillean guilder |
| AOA | 973 | 2 | Angolan kwanza |
| ARS | 032 | 2 | Argentine peso |
| AUD | 036 | 2 | Australian dollar |
| AWG | 533 | 2 | Aruban florin |
| AZN | 944 | 2 | Azerbaijani manat |
| BAM | 977 | 2 | Bosnia and Herzegovina convertible mark |
| BBD | 052 | 2 | Barbados dollar |
| BDT | 050 | 2 | Bangladeshi taka |
| BGN | 975 | 2 | Bulgarian lev |
| BHD | 048 | 3 | Bahraini dinar |
| BIF | 108 | 0 | Burundian franc |
| BMD | 060 | 2 | Bermudian dollar |
| BND | 096 | 2 | Brunei dollar |
| BOB | 068 | 2 | Boliviano |
| BOV | 984 | 2 | Bolivian Mvdol |
| BRL | 986 | 2 | Brazilian real |
| BSD | 044 | 2 | Bahamian dollar |
| BTN | 064 | 2 | Bhutanese ngultrum |
| BWP | 072 | 2 | Botswana pula |
| BYN | 933 | 2 | Belarusian ruble (new) |
| BYR | 974 | 2 | Belarusian Ruble (old) |

| Code | Number | Exponent | Currency |
|---|---|---|---|
| BZD | 084 | 2 | Belize dollar |
| CAD | 124 | 2 | Canadian dollar |
| CDF | 976 | 2 | Congolese franc |
| CHE | 947 | 2 | Swiss WIR Euro |
| CHF | 756 | 2 | Swiss franc |
| CHW | 948 | 2 | Swiss WIR Franc |
| CLF | 990 | 4 | Chile Unidad de Fomento |
| CLP | 152 | 0 | Chilean peso |
| CNH | 157 | 2 | Chinese Offshore Renminbi/Yuan |
| CNY | 156 | 2 | Chinese Renminbi/Yuan |
| COP | 170 | 2 | Colombian peso |
| COU | 970 | 2 | Unidad de Valor Real (UVR) |
| CRC | 188 | 2 | Costa Rican colon |
| CUC | 931 | 2 | Cuban convertible peso |
| CUP | 192 | 2 | Cuban peso |
| CVE | 132 | 0 | Cape Verde escudo |
| CZK | 203 | 2 | Czech koruna |
| DJF | 262 | 0 | Djiboutian franc |
| DKK | 208 | 2 | Danish krone |
| DOP | 214 | 2 | Dominican peso |
| DZD | 012 | 2 | Algerian dinar |
| EGP | 818 | 2 | Egyptian pound |
| ERN | 232 | 2 | Eritrean nakfa |
| ETB | 230 | 2 | Ethiopian birr |
| EUR | 978 | 2 | Euro |
| FJD | 242 | 2 | Fiji dollar |
| FKP | 238 | 2 | Falkland Islands pound |
| GBP | 826 | 2 | Great Britain (UK) Pound Sterling |

| Code | Number | Exponent | Currency |
|---|---|---|---|
| GEL | 981 | 2 | Georgian lari |
| GHS | 936 | 2 | Ghanaian cedi |
| GIP | 292 | 2 | Gibraltar pound |
| GMD | 270 | 2 | Gambian dalasi |
| GNF | 324 | 0 | Guinean franc |
| GTQ | 320 | 2 | Guatemalan quetzal |
| GYD | 328 | 2 | Guyanese dollar |
| HKD | 344 | 2 | Hong Kong dollar |
| HNL | 340 | 2 | Honduran lempira |
| HRK | 191 | 2 | Croatian kuna |
| HTG | 332 | 2 | Haitian gourde |
| HUF | 348 | 2 | Hungarian forint |
| IDR | 360 | 2 | Indonesian rupiah |
| ILS | 376 | 2 | Israeli new shekel |
| INR | 356 | 2 | Indian rupee |
| IQD | 368 | 3 | Iraqi dinar |
| IRR | 364 | 2 | Iranian rial |
| ISK | 352 | 0 | Icelandic króna |
| JMD | 388 | 2 | Jamaican dollar |
| JOD | 400 | 3 | Jordanian dinar |
| JPY | 392 | 0 | Japanese yen |
| KES | 404 | 2 | Kenyan shilling |
| KGS | 417 | 2 | Kyrgyzstani som |
| KHR | 116 | 2 | Cambodian riel |
| KMF | 174 | 0 | Comoro franc |
| KPW | 408 | 2 | North Korean won |
| KRW | 410 | 0 | South Korean won |
| KWD | 414 | 3 | Kuwaiti dinar |

| Code | Number | Exponent | Currency |
|---|---|---|---|
| KYD | 136 | 2 | Cayman Islands dollar |
| KZT | 398 | 2 | Kazakhstani tenge |
| LAK | 418 | 2 | Lao kip |
| LBP | 422 | 2 | Lebanese pound |
| LKR | 144 | 2 | Sri Lankan rupee |
| LRD | 430 | 2 | Liberian dollar |
| LSL | 426 | 2 | Lesotho loti |
| LYD | 434 | 3 | Libyan dinar |
| MAD | 504 | 2 | Moroccan dirham |
| MDL | 498 | 2 | Moldovan leu |
| MGA | 969 | 2 | Malagasy ariary |
| MKD | 807 | 2 | Macedonian denar |
| MMK | 104 | 2 | Myanmar kyat |
| MNT | 496 | 2 | Mongolian tögrög |
| MOP | 446 | 2 | Macanese pataca |
| MRO | 478 | 2 | Mauritanian ouguiya (old) |
| MRU | 929 | 2 | Mauritanian ouguiya (new) |
| MUR | 480 | 2 | Mauritian rupee |
| MVR | 462 | 2 | Maldivian rufiyaa |
| MWK | 454 | 2 | Malawian kwacha |
| MXN | 484 | 2 | Mexican peso |
| MXV | 979 | 2 | Mexican Unidad de Inversion (UDI) |
| MYR | 458 | 2 | Malaysian ringgit |
| MZN | 943 | 2 | Mozambican metical |
| NAD | 516 | 2 | Namibian dollar |
| NGN | 566 | 2 | Nigerian naira |
| NIO | 558 | 2 | Nicaraguan córdoba |
| NOK | 578 | 2 | Norwegian krone |

| Code | Number | Exponent | Currency |
|---|---|---|---|
| NPR | 524 | 2 | Nepalese rupee |
| NZD | 554 | 2 | New Zealand dollar |
| OMR | 512 | 3 | Omani rial |
| PAB | 590 | 2 | Panamanian balboa |
| PEN | 604 | 2 | Peruvian sol |
| PGK | 598 | 2 | Papua New Guinean kina |
| PHP | 608 | 2 | Philippine peso |
| PKR | 586 | 2 | Pakistani rupee |
| PLN | 985 | 2 | Polish zloty (new) |
| PYG | 600 | 0 | Paraguayan guaraní |
| QAR | 634 | 2 | Qatari riyal |
| RON | 946 | 2 | Romanian leu |
| RSD | 941 | 2 | Serbian dinar |
| RUB | 643 | 2 | Russian ruble (old) |
| RUR | 810 | 2 | Russian ruble |
| RWF | 646 | 0 | Rwandan franc |
| SAR | 682 | 2 | Saudi riyal |
| SBD | 090 | 2 | Solomon Islands dollar |
| SCR | 690 | 2 | Seychelles rupee |
| SDG | 938 | 2 | Sudanese pound |
| SEK | 752 | 2 | Swedish krona/kronor |
| SGD | 702 | 2 | Singapore dollar |
| SHP | 654 | 2 | Saint Helena pound |
| SLE | 925 | 2 | Sierra Leonean leone (new) |
| SLL | 694 | 2 | Sierra Leonean leone (old) |
| SOS | 706 | 2 | Somali shilling |
| SRD | 968 | 2 | Surinamese dollar |
| SSP | 728 | 2 | South Sudanese pound |

| Code | Number | Exponent | Currency |
|---|---|---|---|
| STD | 678 | 2 | São Tomé and Príncipe dobra (old) |
| STN | 930 | 2 | São Tomé and Príncipe dobra (new) |
| SVC | 222 | 2 | Salvadoran colón |
| SYP | 760 | 2 | Syrian pound |
| SZL | 748 | 2 | Swazi lilangeni |
| THB | 764 | 2 | Thai baht |
| TJS | 972 | 2 | Tajikistani somoni |
| TMM | 795 | 0 | Turkmenistan manat (old) |
| TMT | 934 | 2 | Turkmenistan manat (new) |
| TND | 788 | 3 | Tunisian dinar |
| TOP | 776 | 2 | Tongan pa-anga |
| TRL | 792 | 2 | Turkish lira |
| TRY | 949 | 2 | Turkish lira |
| TTD | 780 | 2 | Trinidad and Tobago dollar |
| TWD | 901 | 2 | New Taiwan dollar |
| TZS | 834 | 2 | Tanzanian shilling |
| UAH | 980 | 2 | Ukrainian hryvnia |
| UGX | 800 | 0 | Ugandan shilling |
| USD | 840 | 2 | United States dollar |
| USN | 997 | 2 | US Dollar (next day) |
| USS | 998 | 2 | US Dollar (same day) |
| UYI | 940 | 0 | Uruguay Peso en Unidades Indexadas |
| UYU | 858 | 2 | Uruguayan peso |
| UYW | 927 | 4 | Unidad previsional |
| UZS | 860 | 2 | Uzbekistan som |
| VEF | 937 | 2 | Venezuelan Bolivar Fuerte (old) |
| VES | 928 | 2 | Venezuelan bolívar soberano (new) |
| VND | 704 | 0 | Vietnamese dong |

| Code | Number | Exponent | Currency |
|---|---|---|---|
| VUV | 548 | 0 | Vanuatu vatu |
| WST | 882 | 2 | Samoan tala |
| XAF | 950 | 0 | CFA franc BEAC |
| XAG | 961 | 2 | Silver (one troy ounce) |
| XAU | 959 | 2 | Gold (one troy ounce) |
| XBA | 955 | 2 | European Composite Unit (EURCO) (bond market unit) |
| XBB | 956 | 2 | European Monetary Unit (E.M.U.-6) (bond market unit) |
| XBC | 957 | 2 | European Unit of Account 9 (E.U.A.-9) (bond market unit) |
| XBD | 958 | 2 | European Unit of Account 17 (E.U.A.-17) (bond market unit) |
| XCD | 951 | 2 | East Caribbean dollar |
| XDR | 960 | 2 | Special drawing rights |
| XOF | 952 | 0 | CFA franc BCEAO |
| XPD | 964 | 2 | Palladium (one troy ounce) |
| XPF | 953 | 0 | CFP franc (franc Pacifique) |
| XPT | 962 | 2 | Platinum (one troy ounce) |
| XSU | 994 | 2 | SUCRE |
| XTS | 963 | 2 | Code reserved for testing purposes |
| XUA | 965 | 2 | ADB Unit of Account |
| XXX | 999 | 2 | No currency |
| YER | 886 | 2 | Yemeni rial |
| ZAR | 710 | 2 | South African rand |
| ZMK | 894 | 2 | Zambian kwacha (old) |
| ZMW | 967 | 2 | Zambian kwacha (new) |
| ZWD | 716 | 2 | Zimbabwean dollar |
| ZWL | 932 | 2 | Zimbabwean dollar A/10 |

# 4.9 CVV2 Indicators

## 4.9.1 CVV2 Presence Type Indicator

If the CVV2 field has 6 characters, then the first character is the CVV2 Presence Type indicator.

This has the following values:

| CVV2 Presence Type indicator | Description | Comment |
|---|---|---|
| 0 | CVV2 value not provided | Nothing to validate. |
| 1 | CVV2 present | CVV2 will be present in positions 4 to 6 inclusive in the 'CVV2' field.<br>If you have chosen to validate CVV2 yourself, then check the CVV2. |
| 2 | CVV2 value on card but not legible | Nothing to validate.<br>You may want to consider declining the transaction if you expect CVV2 to be present on the card. |
| 3 | Dynamic CVV2 present | You should never receive this (only for issuers that subscribe to CVV2 fallback service from Visa) |
| 9 | No CVV2 value on card | Nothing to validate.<br>You may want to consider declining the transaction if you expect CVV2 to be present on the card. |

## 4.9.2 CVV2 Response Type Indicator

If the CVV2 field has 6 characters, then the second character is the CVV2 Response Type indicator.

This has the following values:

| CVV2 Response Type indicator | Description | Comment |
|---|---|---|
| 0 | Visa do not expect field 44.9 result of CVV2 validation | Ignore - Thredd will handle this |
| 1 | Visa expect field 44.9 result of CVV2 validation | Ignore - Thredd will handle this |

# 4.10 Dispute Condition

The Dispute_Condition field contains a code to indicate additional information to the Reason_ID field.

**Note:** Describes the Dispute Condition for a Visa chargeback; may be used as additional information to describe chargebacks and/or representments.

The usage varies per type of message, as follows:

| MTID | Txn_Type | Description | Details |
|---|---|---|---|
| 1240 | C | Chargeback Notification | For Visa cards: Dispute Reason for the chargeback (in addition to Reason_ID field.) See below.<br>For Other cards: not defined. Will be blank. |
| 1240 | H | Chargeback Notification (Non-Credit) | For Visa cards: Dispute Reason for the chargeback (in addition to Reason_ID field.) See below.<br>For Other cards: not defined. Will be blank. |
| (all other combinations) | | (all other transactions) | Not defined. Will be blank. |

## 4.10.1 Visa Dispute_Condition for Chargeback (Txn_Type C and H)

In Visa network chargeback message types, the Dispute_Condition field provides additional information on the reason for the chargeback (in addition to details in the Reason_ID field). For more information, refer to the *Visa chargeback documentation*.

Visa codes are defined in the BASE2 file TC33 "*Base2 Dispute Financial Status Advice*" TCR1 record position 9-11 "*Dispute Condition*". This is specific to Visa chargebacks initiated on the VROL system. The meaning varies depending on the value of the Reason_ID field.

**Note:** Visa do not explicitly define the codes in the BASE2 document; the table below provides the Thredd interpretaion for guidance only.

### Table of Thredd Interpretation of the VISA Codes

| Visa Reason_ID | Visa Dispute_ Condition | Thredd's interpretation as to the Visa meaning |
|---|---|---|
| 10 (Fraud) | 1 | EMV liability shift Counterfeit fraud |
| 10 (Fraud) | 2 | EMV liability shift non-counterfeit fraud |
| 10 (Fraud) | 3 | Other Fraud (Card Present Environment) |
| 10 (Fraud) | 4 | Other Fraud (Card Absent Environment) |
| 10 (Fraud) | 5 | Visa Fraud Monitoring Program |
| 10 (Fraud) | (other) | Refer to Visa |
| 11 (Authorisation) | 1 | Card Recovery Bulletin |
| 11 (Authorisation) | 2 | Declined Authorisation |
| 11 (Authorisation) | 3 | No Authorisation |
| 11 (Authorisation) | (other) | Refer to Visa |

| Visa Reason_ID | Visa Dispute_ Condition | Thredd's interpretation as to the Visa meaning |
|---|---|---|
| 12 (Processing Error) | 1 | Late Presentment |
| 12 (Processing Error) | 2 | Incorrect Transaction Code |
| 12 (Processing Error) | 3 | Incorrect Currency |
| 12 (Processing Error) | 4 | Incorrect Account Number |
| 12 (Processing Error) | 5 | Incorrect Amount |
| 12 (Processing Error) | 6 | Duplicate Processing / Paid by Other Means |
| 12 (Processing Error) | 6.1 | Not sure. Probably one of 'Duplicate Processing', or 'Paid by Other Means' |
| 12 (Processing Error) | 6.2 | Not sure. Probably one of 'Duplicate Processing', or 'Paid by Other Means' |
| 12 (Processing Error) | 7 | Invalid Data |
| 12 (Processing Error) | (other) | Refer to Visa |
| 13 (Consumer Dispute) | 1 | Merchandise/Services not as received |
| 13 (Consumer Dispute) | 2 | Cancelled Recurring |
| 13 (Consumer Dispute) | 3 | Not as Described or Defective Merchandise/services |
| 13 (Consumer Dispute) | 4 | Counterfeit Merchandise |
| 13 (Consumer Dispute) | 5 | Misrepresentation |
| 13 (Consumer Dispute) | 6 | Credit not processed |
| 13 (Consumer Dispute) | 7 | Cancelled Merchandise/services |
| 13 (Consumer Dispute) | 8 | Original Credit Transaction Not Accepted |
| 13 (Consumer Dispute) | 9 | Non-receipt of Cash or Load Transaction Value |
| 13 (Consumer | (other) | Refer to Visa |

| Visa Reason_ID | Visa Dispute_ Condition | Thredd's interpretation as to the Visa meaning |
| --- | --- | --- |
| Dispute) | | |

# 4.11 Dynamic CVV2

The Card Verification Value 2 (referred to by Visa as CVV2 and Mastercard as CVC 2) is a 3 digit code displayed on the back or front of the card. The cardholder must enter or provide the CVV2 during a card-not-present transaction, as a way of verifying that they have the card in their possession. Since the CVV2 is a static number, this makes it more susceptible to fraud.

With dynamic CVV2[1], the default CVV2 value linked to the card record is ignored; the CVV2 value is verified during transaction authorisation against another value which your systems dynamically supply to the cardholder (e.g., via their card app or SMS). This can improve the security of card-not-present transactions.

## 4.11.1 How it works

Thredd assigns a static CVV2 to the card record when it is generated. If Dynamic CVV2 is enabled, then we by-pass our CVV2 value checks during the authorisation stage and send the transaction to your systems through EHI to authorise or decline. You should then ignore the card's default CVV2 value, and check the CVV2 value in the EHI transaction record against the dynamic value you provided to your cardholder.

**Note:** Dynamic CVV2 is only available on Gateway Processing (mode 1) or Gateway Processing with STP (mode 4), where you approve the transaction.

## 4.11.2 How to Configure

In the **Card Usage Rules** tab on your Product Setup Form (PSF), in the **Verification Checks (V)** box, set the **Bypass CVV2/CVC2 Check** field to **Yes**.

Thredd will not verify the CVV2 and instead this will be sent over EHI for you to verify and approve.

| Allow? Y/N | Verification Checks (V) |
|---|---|
| No | Bypass Online PIN Check |
| No | Bypass Expiry Date Check |
| Yes | Bypass CVV2/CVC2 Check |
| No | Blank CVV2 in Card not Present E-commerce |
| No | Blank CVV2 in Card not Present Phone/Mail Order |
| No | Blank CVV2 in Card not Present Recurring |
| No | Blank CVV2 in Card not Present Manual Key Entry |
| No | Allow Blank DE014 |
| No | Expiry date optional for Recurring Payments |
| No | Bypass Card Status Check for Refund Authorisations |

*Figure 19: Card Usage Groups: Verification Checks*

If you want Thredd to ignore the default value for Dynamic CVV2 with printed cards and print the card without a CVV2 field, you must discuss this with your Card Manufacturer. For more information on configuration options and card designs for physical cards, see the Physical Cards Guide.

If using Dynamic CVV2 with virtual cards, then you can configure your Virtual Image to not display the CVV2 field. For details, see the Virtual Cards Guide > Virtual Card Image Design.

Dynamic CVV2 can be set at card level by assigning the Card Usage group to the card, and therefore can be applied to cards already issued (the cards must be on a product where you are on Gateway Processing - modes 1 and 4).

To be able to check that the VV2 value is included in the EHI Authorisation message, confirm with your Implementation Manager that you require the **send CVV2** option to be enabled on your EHI Configuration. See EHI Configuration Options.

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[1] Visa refer to this service as dynamic CVV2 (dCVV2) and Mastercard refer to it as dynamic Card Validation Code 2 (dynamic CVC 2). **Important**: You should not confuse this with dynamic CVV1 /CVC 1 or dynamic CVV3 /CVC 3, which are different services.

**Note:** Large merchants such as Paypal and Amazon may not send CVV2. If you specify that a CVV2 response is mandatory, then this may cause declines. We therefore recommend that in your **Card Usage Rules** you set the **Allow Blank CVV2 in Card not Present E-commerce** to **Yes**. See The Physical Cards Guide > Cards Usage Options.
During the transaction authorisation stage, we recommend that your systems do not decline a blank CVV2 value where the transaction originated from a large merchant such as Payal or Amazon[2].

## 4.11.3 Checking the CVV2 at the Authorisation Stage

During transaction authorisation (using Dynamic CVV2):

1. The cardholder enters the CVV2 value provided to them by your systems (e.g., via phone app, SMS, web portal or smart card).
2. The Merchant includes the CVV2 value in the authorisation request.
3. When Thredd receives the request from the card scheme, we bypass the CVV2 value checks (as **Bypass CVV2** is enabled in the card Usage Group). Thredd then takes the clear CVV2 value and encrypts it.
4. The Authorisation request is sent to your systems to validate the CVV2 value, along with any other checks; your systems must return an approve or decline decision.
5. Thredd returns your response to the card scheme.

**Note:** The CVV2 validation result is provided in the 0110 authorisation response message, in the **F44.10** field for Visa and in the **DE048.87** field for Mastercard.

## 4.11.4 CVV2 Processing at the Card Scheme

Check with your Implementation Manager for relevant CVV2 processing options that should be configured at scheme level.

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2 You can use Merch_ID_DE42 or Merch_Name_DE43 to identify the merchant.

# 4.11 Fleet 2.0 Data Fields

The following table lists the Fleet Data available for the FleetData field.

| Field | EHI Tag | Atttribute | Description |
|---|---|---|---|
| Type of Purchase | FL01 | AN(1,1) | The type of purchase:<br>• 1 = Fuel purchase (single fuel code)<br>• 2 = Non-fuel purchase<br>• 3 = Fuel and non-fuel purchase<br>• 4 = Fuel purchase (multiple fuel codes) |
| Service Type | FL02 | AN(1,1) | The service type.<br>• F = Full service<br>• S = Self-service<br>• H = High-speed dispense |
| Fuel Type | FL03 | AN(2,2) | The fuel type of the purchase.<br>• 01 = Regular<br>• 02 = Mid\Plus<br>• 03 = Premium\Super<br>Refer to VISA Fleet 2.0 Implementation Guide Appendix H for the list of types. |
| Expanded Fuel Type | FL04 | AN(4,4) | The same values are used as in Fuel Type, but with spaces padded to the right |
| Unit of Measure | FL05 | AN(1,1) | The measurement unit.<br>• C = CM (charging minutes)<br>• G = U.S. gallon<br>• I = Imperial gallon<br>• K = Kilo<br>• L = Liter<br>• P = Pound<br>• W = kWh (kilowatt per hour) |
| Quantity | FL06 | N(12,12) | Quantity of the fuel. Four decimal places applied. For example, 000000123987 in the quantity field means 12.3897 unit. |
| Unit Cost | FL07 | N(12,12) | Unit cost in transaction currency. Four decimal places implied. |
| Gross Fuel Price | FL08 | N(12,12) | Gross fuel price in transaction currency. Four decimal places implied. |
| Net Fuel Price | FL09 | N(12,12) | Net fuel price in transaction currency. Four decimal places implied. |
| Gross non-Fuel Price | FL10 | N(12,12) | Gross non-fuel price in transaction currency. Four decimal places implied. |
| Net non-Fuel Price | FL11 | N(12,12) | Net non-fuel price in transaction currency. Four decimal places implied. |

| Field | EHI Tag | Atttribute | Description |
|---|---|---|---|
| Local Tax Included | FL12 | AN(1,1) | Whether local tax is included.<br>• 0 = Tax not included<br>• 1 = State or provincial tax included<br>• 2 = Transaction is not subject to tax |
| Local Tax | FL13 | N(12,12) | Local Tax Amount. Two decimal places implied. |
| National Tax Included | FL14 | AN(1,1) | Whether national tax is included.<br>• 0 = Not subject to tax<br>• 1 = Subject to tax |
| National Tax | FL15 | N(12,12) | National Tax. Two decimal places implied. |
| Other Tax | FL16 | N(12,12) | Any other tax amount. Two decimal places implied. |
| VAT Tax Rate | FL17 | N(4,4) | Value-added tax or local tax rate (in percentage) for fuel purchased. Two decimal places are implied. |
| Odometer Reading | FL18 | AN(7,7) | Vehicle’s odometer reading at time of transaction. |
| Non-Fuel Product Code 1 | FL19 | AN(2,2) | Applicable non-fuel product that is part of the purchase. |
| Non-Fuel Product Code 2 | FL20 | AN(2,2) | Applicable non-fuel product that is part of the purchase. |
| Non-Fuel Product Code 3 | FL21 | AN(2,2) | Applicable non-fuel product that is part of the purchase. |
| Non-Fuel Product Code 4 | FL22 | AN(2,2) | Applicable non-fuel product that is part of the purchase. |
| Non-Fuel Product Code 5 | FL23 | AN(2,2) | Applicable non-fuel product that is part of the purchase. |
| Non-Fuel Product Code 6 | FL24 | AN(2,2) | Applicable non-fuel product that is part of the purchase. |
| Non-Fuel Product Code 7 | FL25 | AN(2,2) | Applicable non-fuel product that is part of the purchase. |
| Non-Fuel Product Code 8 | FL26 | AN(2,2) | Applicable non-fuel product that is part of the purchase. |
| Visa Fleet Service ID | FL27 | ANS(1,20) | Vehicle ID, Driver ID or Generic ID used in the transaction. |
| Fleet Work Order Number | FL28 | AN(1,30) | Prompted Fleet Work Order Number or Prompted Invoice Number. |

| Field | EHI Tag | Atttribute | Description |
|---|---|---|---|
| Fleet Employee Number | FL29 | AN(1,12) | VISA Fleet Cardholder Employee Number. |
| Fleet Trailer Number | FL30 | AN(1,16) | Contains the trailer number for the Visa Fleet cardholder or vehicle-assigned card. |
| Fleet Additional Prompt Data 1 | FL31 | AN(1,20) | Contains information that the cardholder is prompted to provide at the POS for issuer and fleet employer purposes. |
| Fleet Additional Prompt Data 2 | FL32 | AN(1,20) | Contains information that the cardholder is prompted to provide at the POS for issuer and fleet employer purposes. |
| Purchase Restrictions Flag | FL33 | AN(1,1) | This tag allows merchants to indicate via a flag in the incoming authorisation request the controls they can support at the POS. |
| Host Based Purchase Restrictions | FL34 | AN(1,16) | This tag allows an issuer to dynamically control the purchase and only allow the restriction they are passing back in the authorisation response message<br>**Note:** This field is normally a part of the response message. It is added into the spec for future usage. |
| Charging Power Output Capacity | FL35 | N(1,6) | Contains the charging station power output capacity in kW. |
| Charging Reason Code | FL36 | N(1,6) | Contains a specific charging reason code for the transaction. Refer to the Visa Fleet Card 2.0 Implementation Guide for a list of valid codes. |
| Maximum Power Dispensed | FL37 | N(1,6) | Contains maximum power dispensed during specific charge session from the charging station. This can be different from the power output capacity of the station based on power management by the site operator. |
| Connector Type | FL38 | AN(3,3) | Contains a Visa defined code for a specific connector type to identify the connection for the charge session. Refer to the Visa Fleet Card 2.0 Implementation Guide for a list of valid codes. |
| Total Time Plugged In | FL39 | N(1,6) | Contains the total time the vehicle was plugged in. Format is hhmmss, where:<br>• hh = Hours (00-23)<br>• mm = Minutes(00-59)<br>• ss = Seconds (00-59) |
| Total Charging Time | FL40 | N(1,6) | Contains the actual time taken to charge the vehicle. Format is hhmmss, where:<br>• hh = Hours (00-23)<br>• mm = Minutes(00-59)<br>• ss = Seconds (00-59) |
| Start Time of Charge | FL41 | N(1,6) | Contains the start time of the charge (expressed in local time of the card acceptor location). Format is hhmmss, where:<br>• hh = Hours (00-23)<br>• mm = Minutes(00-59)<br>• ss = Seconds (00-59) |

| Field | EHI Tag | Atttribute | Description |
| --- | --- | --- | --- |
| Finish Time of Charge | FL42 | N(1,6) | Contains the finishing time of the charge (expressed in local time of the card acceptor location). Format is hhmmss, where:<br>• hh = Hours (00-23)<br>• mm = Minutes(00-59)<br>• ss = Seconds (00-59) |
| Estimated KM\Miles Added | FL43 | N(1,6) | Contains an estimate of the total distance added, in km/miles, based on the kWh added, and the type of vehicle engine charged. |
| Carbon Footprint | FL44 | N(1,12) | Contains carbon footprint avoidance (how much was saved from this charge) measurement for the purchase on the transaction - measured in grams of carbon dioxide equivalent (CO2e). |
| Estimated KM\Miles Available | FL45 | N(1,6) | Contains estimated mileage that the car has, after completion of charge, when the electric vehicle leaves the charging station. |

# 4.12 GPS_POS_Capability field

This is a Thredd defined field that records POS terminal capabilities for this transaction. It is made up of various subfields.

## 4.12.1 GPS_POS_Capability Fields

Refer to the table below for details

**Note:** All subfields are concatenated together in order. Subfields begin at position 1. You may only receive the leading subfields (i.e. 1 or more). Additional subfields may be added.

| Position | Name | Format | Description / Valid Values |
|---|---|---|---|
| 1 | Partial Approval Support | N(1,1) | Indicates if POS terminal supports partial approval or not:<br>0 = not supported (default assumption)<br>1 = supported |
| 2 | Purchase Amount only approval support | N(1,1) | Indicates if POS terminal supports approval of the purchase amount only, in a purchase with cashback transaction.<br>0 = not supported (default assumption)<br>1 = supported |
| 3 to 22 | Card Data Input Capability | AN(20,20) | Card Data Input methods supported by the terminal.<br>1 position for each possible method.<br>Each position is set to: 1=Supported, 0=Not supported<br>See Card Data Input Capability subfield |
| 23 to 42 | Cardholder authentication capability | AN(20,20) | Cardholder authentication methods supported by the terminal.<br>1 position for each possible method.<br>Each position is set to: 1=Supported, 0=Not supported<br>See Cardholder Authentication Capability subfield |
| 43 | Card capture capability | AN(1,1) | 0 = Card capture not supported<br>1 = Card capture supported<br>9 = Unknown |
| 44 | Terminal Attended indicator | AN(1,1) | Indicates if the terminal is attended by the merchant<br>0 = No terminal used<br>1 = Attended<br>2 = Unattended<br>9 = Unknown<br>**Note**: On Visa card transactions, the information in GPS_POS_Capability position 44 should not be relied on, as merchants/Acquirers do not always submit the correct information. |
| 45 | Terminal Environment | AN(1,1) | Indicates the Terminal Environment or Location-type<br>0 = No terminal used<br>1 = On premises of card acceptor<br>2 = Off premises of card acceptor<br>3 = On premises of cardholder<br>9 = Unknown |
| 46 | Terminal Card Data Output | AN(1,1) | Indicates the ability of the terminal to write to the card |

| Position | Name | Format | Description / Valid Values |
|---|---|---|---|
| | Capability | | 0 = Unknown<br>1 = None (eg if no terminal used)<br>2 = Magnetic Stripe Write<br>3 = ICC<br>S = Other |
| 47 | Terminal output capability | AN(1,1) | Indicates the output capabilities of the terminal<br>0 = Unknown<br>1 = None<br>2 = Print only<br>3 = Display only<br>4 = Print and Display |
| 48 | Terminal PIN capture capability | AN(1,1) | Terminal PIN Capture Capability.<br>Says if the terminal can capture PINs, and if so, the maximum length of PIN supported:<br>0 = None<br>1 = Unknown<br>4 = Yes, max length 4 digits<br>5 = Yes, max length 5 digits<br>6 = Yes, max length 6 digits<br>7 = Yes, max length 7 digits<br>8 = Yes, max length 8 digits<br>9 = Yes, max length 9 digits<br>A = Yes, max length 10 digits<br>B = Yes, max length 11 digits<br>C = Yes, max length 12 digits |
| 49 | Terminal Type | AN(1,1) | Defines what sort of terminal this is.<br>(here 'CAT' means Cardholder Activated Terminal.)<br>0 = Unknown/Unspecified<br>1 = CAT level 1 - Automated Dispensing Machine<br>2 = CAT level 2 - self-service terminal<br>3 = CAT level 3 - Limited Amount Terminal<br>4 = CAT level 4 - In-flight commerce terminal<br>5 = CAT level 5<br>6 = CAT level 6 - e-commerce terminal<br>7 = CAT level 7 - Transponder<br>8 = Remote Terminal (eg Mastercard Tap to More transaction)<br>9 = Mobile POS acceptance device<br>M = Manual (no terminal used)<br>A = ATM<br>R = Electronic Cash Register or normal attended POS device |

## 4.12.2 Card Data Input Capability subfield

This describes the "Card Data Input Capability"subfield of GPS_POS_Capability. See above.

Card Data Input Capability is a 20 character field. Each position represents a different capability, with a value set to either: 1=Supported or 0=Not supported.

See the table below.

| GPS_POS_Capability position | Card Data Input Capability position | Name |
|---|---|---|
| 3 | 1 | Unknown |
| 4 | 2 | Manual (eg zip-zap); no terminal or server |
| 5 | 3 | Magnetic Stripe |
| 6 | 4 | Barcode |
| 7 | 5 | OCR |
| 8 | 6 | EMV contact |
| 9 | 7 | PAN Key Entry |
| 10 | 8 | Contactless Magnetic Stripe |
| 11 | 9 | EMV contactless or qVSDC contactless |
| 12 | 10 | Account Data on File |
| 13 | 11 | QR code |
| 14 | 12 | E-Commerce |
| 15 | 13 | E-Commerce with EMV cryptogram |
| 16 | 14 | MICR reader |
| 17 | 15 | Reserved |
| 18 | 16 | Reserved |
| 19 | 17 | Reserved |
| 20 | 18 | Reserved |
| 21 | 19 | Reserved |
| 22 | 20 | Reserved |

### Example 1

If GPS_POS_Capability *= "11001001000100000000000100100101000000000019234CR"* then this indicates that the following card data input capabilities are supported: Magnetic Stripe, EMV contact, Account Data on File.

## 4.12.3 Cardholder Authentication Capability subfield

Positions 23 to 42 inside the GPS_POS_Capability field represent the Cardholder Authentication Capabilities.

The table defines which Cardholder Authentication Capability is defined by each position. Each position's value is set to either: 1=Supported, or 0=Not supported / unknown.

| GPS_POS_Capability position | Cardholder authentication Capability position | Name |
|---|---|---|
| 23 | 1 | None |

| GPS_POS_Capability position | Cardholder authentication Capability position | Name |
|---|---|---|
| 24 | 2 | PIN (online or offline) |
| 25 | 3 | Electronic signature analysis |
| 26 | 4 | biometrics |
| 27 | 5 | biographic |
| 28 | 6 | Manual signature verification |
| 29 | 7 | Manual other (eg drivers licence / ID card) |
| 30 | 8 | Offline PIN |
| 31 | 9 | Online PIN |
| 32 | 10 | 3D-Secure |
| 33 | 11 | Account based digital signature |
| 34 | 12 | Public key based digital signature |
| 35 | 13 | Unknown |
| 36 | 14 | Reserved |
| 37 | 15 | Reserved |
| 38 | 16 | Reserved |
| 39 | 17 | Reserved |
| 40 | 18 | Reserved |
| 41 | 19 | Reserved |
| 42 | 20 | Reserved |

### Example 2

If GPS_POS_Capability = “1100100100010000000000010010010100000000019234CR” this indicates that the following Cardholder authentication methods are supported: PIN, biographic, Offline PIN, 3D-secure.

## 4.12.4 Full GPS_POS_Capability example

If GPS_POS_Capability = “11001001000100000000000100100101000000000019234CR”

Then this indicates:

| Position | Value | Meaning |
|---|---|---|
| 1 | 1 | Partial approval supported |
| 2 | 1 | Purchase amount only approval supported |

| Position | Value | Meaning |
|---|---|---|
| 3 | 0 | Card data input capability not unknown |
| 4 | 0 | Card data input by manual not supported |
| 5 | 1 | Card data input by magnetic stripe supported |
| 6 | 0 | Card data input by barcode not supported |
| 7 | 0 | Card data input by OCR not supported |
| 8 | 1 | Card data input by EMV contact supported |
| 9 | 0 | Card data input by PAN key entry not supported |
| 10 | 0 | Card data input by Contactless Magnetic stripe not supported |
| 11 | 0 | Card data input by EMV contactless not supported |
| 12 | 1 | Card data input by Account Data on file supported |
| 13 | 0 | Card data input by QR code not supported |
| 14 | 0 | Card data input by E-commerce not supported |
| 15 | 0 | Card data input by E-commerce with EMV not supported |
| 16 | 0 | Card data input by MICR reader not supported |
| 17 | 0 | Reserved for future use. |
| 18 | 0 | Reserved for future use. |
| 19 | 0 | Reserved for future use. |
| 20 | 0 | Reserved for future use. |
| 21 | 0 | Reserved for future use. |
| 22 | 0 | Reserved for future use. |
| 23 | 0 | No Cardholder authentication at all is not supported |
| 24 | 1 | Cardholder authentication by PIN supported |
| 25 | 0 | Cardholder authentication by Electronic signature analysis not supported |
| 26 | 0 | Cardholder authentication by biometrics not supported |
| 27 | 1 | Cardholder authentication by biographic supported |
| 28 | 0 | Cardholder authentication by manual signature not supported |
| 29 | 0 | Cardholder authentication by manual (other) not supported |
| 30 | 1 | Cardholder authentication by offline PIN supported |

| Position | Value | Meaning |
|---|---|---|
| 31 | 0 | Cardholder authentication by online PIN not supported |
| 32 | 1 | Cardholder authentication by 3D-secure supported |
| 33 | 0 | Cardholder authentication by Account based digital signature not supported |
| 34 | 0 | Cardholder authentication by Public key based digital signature not supported |
| 35 | 0 | Cardholder authentication by unknown means not indicated |
| 36 | 0 | Reserved for future use. |
| 37 | 0 | Reserved for future use. |
| 38 | 0 | Reserved for future use. |
| 39 | 0 | Reserved for future use. |
| 40 | 0 | Reserved for future use. |
| 41 | 0 | Reserved for future use. |
| 42 | 0 | Reserved for future use. |
| 43 | 1 | Card capture supported |
| 44 | 9 | Unknown if terminal is attended |
| 45 | 2 | Terminal is off premises of card acceptor |
| 46 | 3 | Terminal supports card output by ICC writing |
| 47 | 4 | Terminal has Print and Display capability |
| 48 | C | Terminal can capture up to 12 digit PINs |
| 49 | R | Terminal is a normal POS or cash register |

# 4.13 GPS_POS_Data field

This is a Thredd field that records POS Data codes, which are specific to this transaction. Each position records a different piece of information. Positions 33 onwards are reserved for future use.

**Note:** All subfields are concatenated together in order. Subfields begin at 1. You may only receive the leading subfields (i.e. 1 or more.)

## 4.13.1 GPS_POS_Data Positions

| Position | Name | Format | Values defined in section |
|---|---|---|---|
| 1 | Cardholder Present | AN(1,1) | Cardholder Present Indicator |
| 2 | Card Present | AN(1,1) | Card Present Indicator |
| 3 | Card Data Input Method | AN(1,1) | Card Data Input Method |
| 4 | Cardholder authentication method 1 | AN(1,1) | Cardholder authentication Method |
| 5 | Cardholder authentication method 2 | AN(1,1) | Cardholder authentication Method |
| 6 | Cardholder authentication method 3 | AN(1,1) | Cardholder authentication Method |
| 7 | Cardholder authentication method 4 | AN(1,1) | Cardholder authentication Method |
| 8 | Cardholder authentication entity 1 | AN(1,1) | Cardholder authentication Entity |
| 9 | Cardholder authentication entity 2 | AN(1,1) | Cardholder authentication Entity |
| 10 | Cardholder authentication entity 3 | AN(1,1) | Cardholder authentication Entity |
| 11 | Cardholder authentication entity 4 | AN(1,1) | Cardholder authentication Entity |
| 12 | Chip fallback indicator | AN(1,1) | Chip Fallback Indicator |
| 13 | Fraud indicator | AN(1,1) | POS Fraud Indicator |
| 14 | Security protocol in the cardholder->merchant interaction | AN(1,1) | Security Protocol (between cardholder device and merchant) |
| 15 | 3D secure authentication method | AN(1,1) | 3D-secure Authentication Method |
| 16 | InstantFunding_Network | N(1,1) | InstantFunding_Network |
| 17 | InstantFunding_GPS | N(1,1) | InstantFunding_GPS |
| 18 | ExemptFromSCA | AN(1,1) | ExemptFromSCA |
| 19 | SCA assessment result | AN(1,1) | SCA assessment result |
| 20 | SCA test: Knowledge | AN(1,1) | SCA test: Knowledge |
| 21 | SCA test: Possession | AN(1,1) | SCA test: Possession |
| 22 | SCA test: Biometric (inherence) | AN(1,1) | SCA test: Biometric (inherence) |

| Position | Name | Format | Values defined in section |
|---|---|---|---|
| 23 | Thredd Exempt from SCA Indicator | AN(1,1) | Thredd Exempt from SCA Indcator |
| 24 | Card/device type (form factor) | AN(1,1) | Card/Device Type (Form Factor) |
| 25 | Acquirer Exempt from SCA Indicator (specifies if the acquirer sent an exemption indicator in the incoming message) | AN(1,1) | Acquirer Exempt from SCA Indicator |
| 26 | Result of the Authentication Amount and Currency comparison (applicable for 3D Secure transactions only). | AN(1,1) | Authentication Amount and Currency Comparison |
| 27 | Merchant or cardholder initiated indicator | AN(1,1) | Merchant or Cardholder Initiated Indicator |
| 28 | Merchant Initiated transaction type (or setup of) indicator | AN(1,1) | Merchant Initiated Transaction Type Indicator |
| 29 | Original transaction SCA exempt indicator | AN(1,1) | Original Transaction SCA Exempt Indicator |
| 30 | Original transaction SCA assessment result | AN(1,1) | Original Transaction SCA Assessment Result |
| 31 | Original transaction status value | AN(1,1) | Original Transaction Status Value |
| 32 | Extended Authorization indicator | AN(1,1) | Extended Authorization Indicator |
| 33 | Reserved for future use | AN | Ignore this, if arrives. |

**Note:** Any positions not received should be treated as 'Unknown'.

## 4.13.2 Cardholder Present Indicator

This field describes if the cardholder was present at the point of sale, or if not, why not. Values are as follows:

| Cardholder Present value | Meaning |
|---|---|
| 0 | Cardholder present |
| 1 | Cardholder not present, unspecified |
| 2 | Cardholder not present, mail order |
| 3 | Cardholder not present, telephone order |
| 4 | Cardholder not present, standing auth/recurring transaction (could recur forever) |
| 5 | Cardholder not present, e-commerce |
| 6 | Cardholder not present, installment transaction (like recurring but fixed number of installments) |
| 9 | Unknown |

## 4.13.3 Card Present Indicator

This field describes if the card was present at the point of sale, or if not, why not. Values are as follows:

| Cardholder Present value | Meaning |
|---|---|
| 0 | Card not present |
| 1 | Card present |
| 9 | Unknown |

## 4.13.4 Card Data Input Method

This field describes how the card data (eg PAN) was provided to the terminal. Values are as follows:

| Card Data Input Method value | Meaning |
|---|---|
| 0 | Information not provided |
| 1 | Manual, no terminal |
| 2 | Magnetic stripe read |
| 3 | Bar code |
| 4 | Optical Character Recognition |
| 5 | Chip dip (i.e. EMV contact) |
| 6 | Key entered / added manually |
| 7 | EMV contactless or VSDC contactless |
| V | E-Commerce |
| C | E-Commerce with EMV cryptogram |
| E | Contactless magnetic stripe |
| F | Account Data on File |
| G | Key entered by Acquirer (merchant phoned acquirer with card data) |
| M | MICR reader |
| Q | QR code |

## 4.13.5 Cardholder Authentication Method

There are four cardholder authentication methods recorded in `GPS_POS_Data`. The table below describes the possible cardholder authentication method values.

| Value | Meaning |
|---|---|
| 0 | Not authenticated. |
| 1 | PIN. |
| 2 | Electronic signature analysis. |
| 3 | Biometrics (eg fingerprint, vein scan). |
| 4 | Biographic (eg date-of-birth, other data). |
| 5 | Manual signature verification. |
| 6 | Other manual verification (e.g. drivers licence). |
| 7 | Other. |
| 8 | Unknown. |
| 9 | Passcode/Password (e.g. to unlock a smartphone). |
| A | Pattern (e.g. to unlock a smartphone). |
| B | Possession of Hardware device (e.g. number generating key fob). |
| C | Possession of Hardware device with user verification (as 'B', but additionally the cardholder was verified too). |
| D | Possession of software application (e.g. passcode generating program). |
| E | Possession of software application with user verification (as 'D', but additionally the cardholder was verified too). |
| S | 3D-Secure. |
| T | Tokenization Authentication Framework. |

**Note:** It is possible for a merchant to specify two cardholder authentication methods. For example, a merchant could apply both PIN verification and Signature verification to an authorisation. Where a method is more secure (such as PIN vs signature), Thredd will put the more secure method in GPS_POS_Data position 4 and the less secure in GPS_POS_Data position 5. Note that GPS_POS_Data positions 6 and 7 are reserved for future use.

**Note:** Values 7,9,A,B,C,D,E as of 06/01/2021 Thredd expect to see from Visa only, and initially only for transactions on a payment-token (e.g. a smartphone).

## 4.13.6 Cardholder Authentication Entity

There are four cardholder authentication methods recorded in GPS_POS_Data.

For each authentication method, the entity performing that authentication method is recorded in the four cardholder authentication entity values.

For example: “Cardholder authentication entity 2” describes which entity performed the “Cardholder authentication method 2” test.

The table below describes the possible values for cardholder authentication entities.

| Value | Meaning |
|---|---|
| 0 | Not authenticated |

| Value | Meaning |
|---|---|
| 1 | Chip Card |
| 2 | Card Acceptance Device / Terminal |
| 3 | Authorising Agent |
| 4 | Merchant |
| 5 | Other |
| 6 | Cardholder device (e.g. mobile phone) |
| 7 | Wallet Provider and/or Token Requestor. (E.g. Apple Pay) |
| 8 | Unknown |

## 4.13.7 Chip Fallback Indicator

This is used by Visa to indicate the likely cause of the fallback (e.g., a terminal or card problem).

This is done by noting if the previous chip transaction at the same terminal (which would 99% be on a completely different card) was also a fallback.

The table below describes the possible values for the Chips Fallback Indicator:

| Value | Meaning |
|---|---|
| 0 | n/a (This transaction is not a chip fallback transaction, or unknown). |
| 1 | Previous transaction at same terminal was not fallback from chip. |
| 2 | Previous transaction at same terminal was fallback from chip. |

## 4.13.8 POS Fraud Indicator

This is used by the merchant to indicate if the merchant thought the transaction was suspicious. Not all networks, acquirers or terminals may support this.

Values are as follows:

| Fraud Indicator | Meaning |
|---|---|
| 0 | No problem |
| 1 | Merchant suspicious (in UK, this is a code 10 call) |
| 2 | Merchant verified the cardholder ID |

## 4.13.9 Security Protocol (between cardholder device and merchant)

This describes, for an e-commerce or equivalent card data input method, what security was in place between the cardholder device and merchant system.

Values are as follows:

| Security Protocol value | Meaning |
|---|---|
| 0 | None |
| 1 | Channel encryption (https) |
| N | Not applicable |

## 4.13.10 3D Secure Authentication Method

If 3D Secure was used to authenticate the cardholder, then this indicates what type of authentication was used.

This is the authentication method as reported by the network.

**Note:** This field is only populated with an accurate value if Thredd receive this information from the network. The table below summarises this situation.

| Network | 3D-secure version | Content of this 3D Secure field on 3D Secure transactions |
|---|---|---|
| Visa | 1 (all variants) | Limited, only values ‘x’ or ‘0’ |
| Visa | 2.0 and up | Provided, any value may be set. (From Base1 field 126.20) |
| Mastercard | SPA v1 | Provided: only values 0,1,2,3 are possible |
| Mastercard | SPA v2 | Provided: only values D, E, F, L, v, x, y, z are possible |

Values are as follows:

| 3D-secure auth method | Visa Meaning | Mastercard Meaning |
|---|---|---|
| x | Unknown / not applicable | Unknown / not applicable |
| 0 | 3DS 1.0.2 or prior (all authentication methods), or 3DS 1.0.2 frictionless flow. | No cardholder authentication performed (for SPA v1 only) |
| 1 | Challenge flow using static Passcode | Password (for SPA v1 only) |
| 2 | Challenge flow using OTP (One-Time Password) via SMS method | Secret Key (For example, a chip card) (for SPA v1 only) |
| 3 | Challenge flow using OTP via key fob or card reader method | PKI (for SPA v1 only) |
| 4 | 3DS 2.0 Challenge flow using OTP via app method | 3DS 2.0 Challenge flow using OTP via app method |
| 5 | 3DS 2.0 Challenge flow using OTP via any other method | 3DS 2.0 Challenge flow using OTP via any other method |
| 6 | 3DS 2.0 Challenge flow using KBA (Knowledge-Based Authentication) method | 3DS 2.0 Challenge flow using KBA (Knowledge-Based Authentication) method |
| 7 | 3DS 2.0 Challenge flow using OOB (Out of Band) with biometric method | 3DS 2.0 Challenge flow using OOB (Out of Band) with biometric method |
| 8 | 3DS 2.0 Challenge flow using OOB with app | 3DS 2.0 Challenge flow using OOB with app login method |

| 3D-secure auth method | Visa Meaning | Mastercard Meaning |
|---|---|---|
| | login method | |
| 9 | 3DS 2.0 Challenge flow using OOB with any other method | 3DS 2.0 Challenge flow using OOB with any other method |
| A | 3DS 2.0 Challenge flow using any other authentication method | 3DS 2.0 Challenge flow using any other authentication method |
| B | 3DS unrecognized authentication method | 3DS unrecognised authentication method |
| C | 3DS 2.0 Push Confirmation | 3DS 2.0 Push Confirmation |
| D | 3DS 2.0 Frictionless flow, RBA (Risk-based authentication) review | 3DS 2.0 Frictionless flow, RBA (Risk-based authentication) review |
| E | 3DS 2.0 Attempts server responding | 3DS 2.0 Attempts server responding |
| F | 3DS 2.0 Frictionless flow | 3DS 2.0 Frictionless flow |
| L | Delegated authentication | Delegated authentication |
| S | Frictionless flow, Smart attempts | Not applicable - only available on Visa networks |
| y | 3DS 2.0 Challenge with Unknown authentication method | 3DS 2.0 Challenge with Unknown authentication method |
| v | Authenticated by Mastercard IDCX ('Identity Check Express') service (or a Visa similar equivalent) | Authenticated by Mastercard IDCX ('Identity Check Express') service |
| z | AAV refresh transaction successfully authenticated by the ACS (Access Control Server) | AAV refresh transaction successfully authenticated by the ACS (Access Control Server) |

## 4.13.11 InstantFunding_Network

Network flag to indicate the transaction uses instant funding (MoneySend or Visa Direct). Values are as follows:

| InstantFunding_ Network value | Meaning |
|---|---|
| 0 | Normal transaction |
| 1 | Instant Funding Transaction |

## 4.13.12 InstantFunding_GPS

Thredd flag to indicate the transaction uses instant funding (MoneySend or Visa Direct). Values are as follows:

| InstantFunding_GPS value | Meaning |
|---|---|
| 0 | Normal transaction |

| InstantFunding_GPS value | Meaning |
|---|---|
| 1 | Instant Funding Transaction |

## 4.13.13 ExemptFromSCA

Indicates if the transaction is exempt from Strong Customer Authentication (SCA) as per the Payments Service Directive Two (PSD2). Values are as follows:

| ExemptfromSCA value | Description |
|---|---|
| 0 | Transaction not exempt from SCA or unknown. |
| 1 | Transaction is exempt from SCA due to being on an exempt Merchant Category Code (MCC).<br>(Acquirer did not provide an SCA exemption indicator.)<br>(As of 11/02/2020, exempt MCCs are: 4111, 4112, 4131, 4784, 7523) |
| 2 | Contactless transaction under low-value limits (identified by Thredd). |
| 3 | E-commerce transaction under low-value limits (identified by Thredd). |
| 4 | Recurring/installment transaction (identified by Thredd). |
| 5 | Credit (identified by Thredd). Visa expects credit transactions to be out-of-scope. |
| 6 | Mail Order, Telephone Order or other cardholder-not-present transaction (except recurring which is above) which is excluded from SCA requirements (identified by Thredd). This means GPS_POS_Data position 1 (cardholder present indicator) will have any value except for 0 (present), 4 (recurring) or 5 (e-commerce). |
| 7 | Acquirer is exempt (located in a country outside of the EEA or UK, so do not fall under the PSD2 jurisdiction). |
| 8 | Not a transaction under PSD2 rules |
| 9 | Reserved for a possible future Thredd detected exemption |
| A | Acquirer transaction risk analysis. |
| C | Secure corporate payment. |
| D | SCA delegation. |
| M | Merchant initiated transaction. |
| O | Authentication outage exemption. |
| R | Recurring payment. |
| T | Trusted merchant. |
| V | Low value payment. |

## 4.13.14 SCA Assessment Result

Indicates if Thredd tested whether the transaction met the criteria for Strong Customer Authentication (SCA), and if so, what was the basis for the assessment decision.

**Note:** Thredd only does SCA assessments for authorisation requests; for all other transaction types (authorisation advices, clearing, reversals) this will always be 'N'. For a clearing transaction, always check the matching authorisation request(s) to determine if SCA was done.

SCA assessment result values are as follows:

| Value | Description |
|---|---|
| 0 | Thredd tested for SCA and the transaction did not meet the criteria for SCA. |
| 1 | Thredd tested for SCA and the transaction met the criteria for SCA.The card/payment token performed SCA. |
| 2 | Thredd tested for SCA and the transaction met the criteria for SCA. At least two of the three SCA tests were performed (Knowledge, Possession and Biometric tests passed). |
| 3 | Thredd tested for SCA and the transaction met the criteria for SCA. Passed the SCA tests in both '1' (payment token performed SCA) and '2' (two of the three biometric, knowledge, possession tests). |
| D | Thredd did not test for SCA. When Thredd assessed the transaction, it was detected that PSD2 checks were delegated to the card/payment token. No further PSD2 assessment was required of Thredd. |
| N | Thredd did not test for SCA. SCA not performed or not applicable (and value 'D' not appropriate). For example, the transaction was declined or PSD2 checks were not turned on for the product. |

## 4.13.15 SCA Test: Knowledge

Indicates whether Thredd detected that the SCA Knowledge test was performed, and if so, what was the result.

The Knowledge test checks if the cardholder knew some information known only to them (e.g. provided a PIN or Passcode.)

**Note:** Thredd only does SCA assessment for authorisation requests; for all other transactions (authorisation advices, clearing, reversals) this will always be 'N'.

Values are as follows:

| Value | Description |
|---|---|
| N | Not performed or not applicable |
| 0 | Failed test |
| 1 | Passed test |

## 4.13.16 SCA Test: Possession

Indicates whether Thredd detected that the SCA Possession test was performed, and if so, what was the result.

The Possession test checks that the cardholder has something that only they should possess (e.g. a physical chip card.)

**Note:** Thredd only does SCA assessment for authorisation requests; for all other transactions (authorisation advices, clearing, reversals) this will always be 'N'.

Values are as follows:

| Value | Description |
|---|---|
| N | Not performed or not applicable |
| 0 | Failed test |
| 1 | Passed test |

## 4.13.17 SCA Test: Biometric (inherence)

Indicates whether Thredd detected that the SCA Biometric (inherence) test was performed, and if so, what was the result.

Biometric testing includes authentication via methods such as fingerprint, iris and facical scans.

**Note:** Thredd only does SCA assessment for authorisation requests; for all other transactions (authorisation advices, clearing, reversals) this will always be 'N'.

Values are as follows:

| Value | Description |
|---|---|
| N | Not performed or not applicable |
| 0 | Failed test |
| 1 | Passed test |

## 4.13.18 Thredd Exempt from SCA Indicator

Indicates whether Thredd detected an SCA exemption. (**Note**: Thredd exemption is only loaded in position 18 if no Acquirer exemption exists)

This position has the same values as position 18, but, no Acquirer values will be present. See ExemptFromSCA.

## 4.13.19 Card/Device Type (Form Factor)

Indicates the type (form factor) of the card or payment token used to perform the transaction. Only available if present on the chip and sent by the acquirer. See PaymentToken_deviceType.

You can use this field to identify the type of payment device and capabilities it supports (e.g., to determine if EMV contact is possible).

## 4.13.20 Acquirer Exempt from SCA Indicator

Indicates whether the transaction is exempt from the EU's'Payment Services Directive 2 (PSD2) Strong Cardholder Authentication (SCA) requirement. This position contains:

- The acquirer's exemption, if it exists
- '0' (not exempt)

**Note:** Only online authorisation transactions set these exemption flags. Values are as listed below.

| Value | Description |
|---|---|
| 0 | Transaction not exempt from SCA or unknown. |
| A | Acquirer Transaction Risk Analysis (identified by Acquirer). |

| Value | Description |
|---|---|
| C | Secure Corporate Payment (identified by Acquirer). |
| D | SCA Delegation (identified by Acquirer). |
| M | Merchant Initiated Transaction (identified by Acquirer). |
| O | (15th letter of the alphabet) ; Authentication Outage Exemption (identified by Acquirer). |
| R | Recurring Payment (identified by Acquirer). |
| T | Trusted Merchant (identified by Acquirer). |
| V | Low Value Payment (identified by Acquirer). |

## 4.13.21 Authentication Amount and Currency Comparison

This position indicates the results of the *amount* and *currency* comparison between a 3D Secure authentication transaction and the linked authorisation transaction. You can use this result to determine whether the amount authenticated during a 3D Secure session matches the final authorised amount. (Applicable for EMV 3D Secure transactions only).

Values are as listed below.

| Value | Description |
|---|---|
| N | Test not performed (e.g., not a 3D Secure transaction, or not performed since the transaction was already declined for another reason). |
| U | Unknown; 3D Secure transaction, but currencies not available. |
| C | Transaction currency different to Authentication currency. |
| 0 | Currencies match: amounts not compared. |
| 1 | Currencies match: Authorisation amount is less than or equal to the Authentication amount. |
| 2 | Currencies match: Authorisation amount is higher than the Authentication amount; difference is less than or equal to 20%. |
| 3 | Currencies match: Authorisation amount is higher than the Authentication amount; difference is greater than 20%. |

## 4.13.22 Merchant or Cardholder Initiated Indicator

Indicates who initiated the transaction.

| Value | Meaning |
|---|---|
| C | Cardholder initiated. |
| M | Merchant Initiated. |
| U | Unknown (other information in the transaction may imply one of the above two, but nothing directly indicated either). |

## 4.13.23 Merchant Initiated Transaction Type (or setup of) Indicator

From Banknet DE48.22.05 (introduced in Mastercard announcement AN 5524, live on 07-06-2022) the 4th character (1 to 8) or U=Unknown, so:

| Value | Meaning |
|---|---|
| 1 | Credential on file. |
| 2 | Standing Order (variable amount, fixed frequency). |
| 3 | Subscription (fixed amount, fixed frequency). |
| 4 | Instalment (known amount over a specified duration based on a single purchase). |
| 5 | Partial Shipment (for when e-commerce ordered goods are not all available at the time of shipment. Each shipment is a separate transaction). |
| 6 | Related / Delayed Charge (An additional charge after initial services have been paid for. (For example: mini-bar charge in hotel.) |
| 7 | No Show Charge (a penalty charge permitted by the merchant's cancellation policy). |
| 8 | Resubmission (previous authorisation was declined, but merchant can try again. (For example: transit debt recovery.) |
| U | Unknown or not applicable. |

## 4.13.24 Original Transaction SCA Exempt Indicator

Either the `GPS_POS_Data` position 18 value from the original transaction or:

| Value | Meaning |
|---|---|
| L | Lookup of original transaction attempted, but original not found. |
| X | Not applicable (original transaction not applicable or lookup was not attempted). |

## 4.13.25 Original Transaction SCA Assessment Result

Either the `GPS_POS_Data` position 19 value from the original transaction or:

| Value | Meaning |
|---|---|
| L | Lookup of original transaction attempted, but original not found. |
| X | Not applicable (original transaction not applicable or lookup was not attempted). |

## 4.13.26 Original Transaction Status Value

Either the Transaction Status `Txn_Stat_Code` from the original transaction (for values, see Transaction Status Codes) or:

| Value | Meaning |
|---|---|
| U | Original transaction status not known or not applicable |

# 4.13.27 Extended Authorisation Indicator

For cardholder-initiated card-not-present transactions, indicates whether the acquirer has requested a 30-day clearing extension. If requested, then the acquirer will have up to 30 days to submit the linked presentment transaction.

**Note:** Applicable to Visa network transactions only.

| Value | Description |
|---|---|
| 0 | No clearing extension requested. |
| 1 | Acquirer requested a 30-day clearing extension. If you receive this value, then note that this will extend the number of days the transaction funds remain blocked on the card, up to 30 days. If you manage the balance ledger, then you should keep the transaction amount block in place for the 30-day period or until you receive the linked presentment. |

# 4.13.28 GPS_POS_Data Example

Below is an example of GPS_POS_Data.

## Example 1 - Length of 18 characters

If GPS_POS_Data = “0151500340002Nx000”

Then this indicates:

| Position | Value | Meaning |
|---|---|---|
| 1 | 0 | Cardholder is present |
| 2 | 1 | Card is present |
| 3 | 5 | EMV contact |
| 4 | 1 | 1st cardholder authentication method was PIN |
| 5 | 5 | 2nd cardholder authentication method was signature |
| 6 | 0 | No 3rd cardholder authentication method was used |
| 7 | 0 | No 4th cardholder authentication method was used |
| 8 | 3 | PIN (1st cardholder authentication method) was checked by the authorising Agent (i.e. Network, Thredd or EHI) |
| 9 | 4 | Signature (2nd cardholder authentication method) was checked by the Merchant |
| 10 | 0 | n/a (as no 3rd cardholder authentication method) |
| 11 | 0 | n/a (as no 4th cardholder authentication method) |
| 12 | 0 | Not a chip fallback transaction |
| 13 | 2 | Merchant verified the cardholder ID |
| 14 | N | Security protocol (cardholder to merchant) not applicable |

| Position | Value | Meaning |
|---|---|---|
| 15 | x | 3D-secure not applicable |
| 16 | 0 | Instant Funding (Thredd indicator) not applicable |
| 17 | 0 | Instant Funding (Network indicator) not applicable |
| 18 | 9 | ExemptFromSCA not applicable or unknown |

**Note:** Positions 19 onwards are not present and can be treated as 'Unknown'.

## Example 2 - Length of 32 characters

If GPS_POS_Data = "0151500340002Nx00031109C01MU93U1"

Then this indicates:

| Position | Value | Meaning |
|---|---|---|
| 1 | 0 | Cardholder is present |
| 2 | 1 | Card is present |
| 3 | 5 | EMV contact |
| 4 | 1 | 1st cardholder authentication method was PIN |
| 5 | 5 | 2nd cardholder authentication method was signature |
| 6 | 0 | No 3rd cardholder authentication method was used |
| 7 | 0 | No 4th cardholder authentication method was used |
| 8 | 3 | PIN (1st cardholder authentication method) was checked by the authorising Agent (i.e. Network, Thredd or EHI) |
| 9 | 4 | Signature (2nd cardholder authentication method) was checked by the Merchant |
| 10 | 0 | n/a (as no 3rd cardholder authentication method) |
| 11 | 0 | n/a (as no 4th cardholder authentication method) |
| 12 | 0 | Not a chip fallback transaction |
| 13 | 2 | Merchant verified the cardholder ID |
| 14 | N | Security protocol (cardholder to merchant) not applicable |
| 15 | x | 3D-secure not applicable |
| 16 | 0 | Instant Funding (Thredd indicator) not applicable. |
| 17 | 0 | Instant Funding (Network indicator) not applicable. |
| 18 | 9 | ExemptFromSCA not applicable or unknown. |

| Position | Value | Meaning |
|---|---|---|
| 19 | 3 | Transaction is SCA, as passed 2+ of the knowledge, possession & biometric tests. |
| 20 | 1 | SCA Knowledge test passed. |
| 21 | 1 | SCA Possession test passed. |
| 22 | 0 | SCA Biometric (inherence) test failed. |
| 23 | 9 | Thredd Exempt from SCA Indicator not applicable or unknown. |
| 24 | C | Card or device type is card. |
| 25 | 0 | Acquirer Exempt from SCA Indicator: Transaction not exempt from SCA or unknown. |
| 26 | 1 | Currencies match, Authorisation amount is less than or equal to Authentication amount. |
| 27 | M | Merchant initiated. |
| 28 | U | Unknown or not applicable. |
| 29 | 9 | GPS_POS_Data Position 18 value from the original transaction. |
| 30 | 3 | GPS_POS_Data Position 19 value from the original transaction. |
| 31 | U | Original Transaction status not known or not applicable. |
| 32 | 1 | Acquirer requested a 30-day clearing extension. |

# 4.14 Load Source

The table below lists the valid values for the `LoadSRC` field, identifying the source of a Load. (See also Get Transaction Message fields: LoadSRC)

| ID | Source | Notes |
|---|---|---|
| 1 | POS standard | |
| 2 | Thredd Kiosk | |
| 3 | Thredd Website | |
| 4 | Card Processor | |
| 5 | Standard Web Service or Cards API | |
| 6 | Agent | |
| 7 | Head Office | |
| 8 | Call Centre | |
| 9 | Customer Web site | |
| 10 | Wirecard | |
| 11 | Customer kiosk | |
| 12 | Customer mobile app | |
| 13 | Thredd IVR | |
| 14 | Unknown | |
| 16 | Load From Card Request File | |
| 17 | Corporate | |
| 18 | epay | |
| 19 | HOCA Verifiable | |
| 20 | Post Office | |
| 21 | HOCA Non Verifiable | |
| 22 | Paypoint | |
| 23 | DXB POS Reload | |
| 24 | TCC Web Report | |
| 25 | TCC Online | |
| 26 | VIRGIN POS Reload | |

| ID | Source | Notes |
|---|---|---|
| 27 | TCC POS Reload | |
| 28 | TCC Promotion | |
| 29 | DXB Zero Load | |
| 30 | AlFardan Reload | |
| 31 | UAEx Reload | |
| 32 | AlAnsari Reload | |
| 33 | 14 day Cool Off | |
| 34 | Unload to Repatriate | |
| 35 | Loan Repayment | |
| 36 | DXB Online | |
| 37 | Payzone | |
| 38 | VIRGIN Zero Load | |
| 39 | VIRGIN POS standard | |
| 40 | JADE Web Report | |
| 41 | JADE POS standard | |
| 42 | JADE POS Reload | |
| 43 | JADE Zero Load | |
| 44 | Wirecard-Cadooz | |
| 45 | Crunch POS Standard | |
| 46 | CRUNCH POS Reload | |
| 47 | Unload Fee Test | |
| 48 | Balance Transfer Fee Test | |
| 49 | Sofort Banking | |
| 50 | Wirecard e-commerce | |
| 51 | UAExAirport POS Standard | |
| 52 | UAExAirport Reload | |
| 53 | Cadooz Load | |
| 54 | Cadooz Reload | |

| ID | Source | Notes |
| --- | --- | --- |
| 55 | Cadooz web unload | |
| 56 | Sofort Bank Transfer Load | |
| 57 | Billpay Payment | |
| 60 | Post Office and Paypoint | |
| 61 | Credit Limit | |
| 62 | Credit Card Payment | |
| 63 | Ukash Payment | |
| 64 | Bank Transfer | For Bank transfers, the following fields will be present in the request message:<br>source_bank_ctry<br>source_bank_account_format<br>source_bank_account<br>dest_bank_ctry<br>dest_bank_account_format<br>dest_bank_account |
| 65 | Giropay | |
| 66 | Sofortüberweisung | |
| 67 | Debit Card | |
| 68 | Primary Card | |
| 74 | Master Virtual Card | |
| 75 | Micropayment | |
| 76 | MVC Load | |
| 77 | iMVC Load | |

# 4.15 Load Type

The table below lists the valid values for the `LoadType` field, identifying the type of Load. (See also Get Transaction Message fields: LoadType)

| ID | Source |
|---|---|
| 0 | Unknown |
| 1 | Cash |
| 2 | Debit card |
| 3 | Credit card |
| 4 | e-Wallet |
| 5 | Bank account |
| 6 | Import |
| 7 | Savings Stamps |
| 8 | Cheque |
| 9 | Export |
| 10 | Transfer |
| 11 | From/To Offline Balance |

# 4.16 Mastercard_AdviceReasonCode_DE60

The Mastercard_AdviceReasonCode_DE60 field is present for MTID='0120' (Authorisation Advice) and MTID='0420' (Reversal Advice) transactions on Mastercard. In both cases it provides information on why the advice was generated.

**Note:** Mastercard may add, remove or change any of the values at any time.

The field is divided into three parts:

| Position | Length | Format | Description |
|---|---|---|---|
| 1 to 3 | 3 | N(3,3) | Advice Reason Code - reason why this advice was created<br>See Positions 1-3 Advice Reason Code |
| 4 to 7 | 4 | N(4,4) | Advice Detail Code - May be present (depending on the Advice Reason Code) providing additional information.<br>See Positions 4-7 Advice Detail Code |
| 8 to the end | 1 to 53 | ANS(1,53) | Advice Detail Text - May be present (depending on the Advice Reason Code) providing additional information as human readable format. |

## 4.16.1 Positions 1-3 Advice Reason Code

Provides three digits to describe why the MTID=0120 or MTID=0420 advice was created. See the table below.

**Note:** Not all the codes below are applicable, for example: some may only apply to Acquirers, and some only apply to services you may not be using.

- *Alternate Issuer Route* refers to the Mastercard STIP system.
- *MIP* is part of the Mastercard system. The Acquirer is connected to one MIP, Issuer (Thredd) is connected to another MIP.

| Advice Reason Code | Meaning |
|---|---|
| 100 | Alternate Issuer Route: Issuer selected option |
| 101 | Alternate Issuer Route: IPS signed out |
| 102 | Alternate Issuer Route: IPS timed out |
| 103 | Alternate Issuer Route: IPS unavailable |
| 105 | Transaction processed via X-Code (i.e., Mastercard processed this at their Acquiring MIP). |
| 107 | PIN processing error |
| 108 | Alternate Issuer Route: MIP Error |
| 109 | Alternate Issuer Route: Issuer Edit Response Error |
| 111 | Alternate Issuer Route: Issuer Host System Error |
| 112 | Alternate Route: Network Not Dispatched Error |
| 113 | Alternate Route: Issuer Undelivered |
| 114 | Alternate Route: Direct Down Option |
| 115 | Transaction Processed via On-behalf Service Decision |

| Advice Reason Code | Meaning |
|---|---|
| 116 | Invalid Merchant |
| 120 | Transaction Blocking ( blocked by a Mastercard Fraud System; this normally configured with your issuer; Thredd is not involved .) |
| 121 | Account Lookup Service |
| 126 | Pay with Rewards Processing Advice to Issuer |
| 140 | Unable to convert contactless or virtual account number |
| 141 | Mastercard Digital Enablement Service Advice to Issuer |
| 150 | Mastercard Transaction blocking for Mastercard Send or other transaction blocking service. |
| 151 | In Control Processing Advice to Issuer (Mastercard Merchant Presented QR) |
| 160 | Authentication Advice to Issuer |
| 180 | CAT Risk Level 3 |
| 190 | Acquirer Processing System (APS) Approved |
| 191 | Acquirer Processing System (APS) Completed Authorization Transaction |
| 192 | M/Chip Offline Advice to Issuer |
| 200 | In Control Processing Advice to Issuer |
| 400 | Unable to deliver response from Mastercard to Acquirer |
| 401 | No acknowledgement from Acquirer to Mastercard |
| 402 | Issuer Time-out |
| 403 | Issuer Signed out |
| 409 | Issuer Response Error |
| 410 | Reversal message provided by a system other than Mastercard’s online authorisation system (Banknet) |
| 413 | Issuer Undelivered |
| other | Mastercard may add other values when they please |

## 4.16.2 Positions 4-7 Advice Detail Code

This is a 4 digit number which may be present, providing additional information, as follows:

| Advice Detail Code | Meaning |
| --- | --- |
| 0000 | Accepted/Approved |
| Any other code | Reason why transaction was declined.<br><br>There are too many codes to practically put them in this specification, if you want to know a particular value, if you have access to the Mastercard Customer Interface Specification you can look in there, otherwise you can ask Thredd. |

# 4.17 Merch_Name_DE43 Field in Authorisations

This section describes the format of the Merchant Name/Location Field (DE43) procided in authorisation messages Merch_Name_DE43. (See also Get Transaction Message fields: Merch_Name_DE43)

## 4.17.1 Mastercard Authorisation

The merchant name/location field for Mastercard is made up of various subfields.

| Positions | Length | Field Name | Description / Valid Values |
|---|---|---|---|
| 1-22 | 22 | Card Acceptor Name | Name of Card Acceptor or ATM service provider.<br>(Space padded on the right to make up to 22 characters.) |
| 23-23 | 1 | Separator | Space character ‘ ‘ |
| 24-36 | 13 | Card Acceptor City | City of the merchant/ATM<br>(Space padded on the right to make up to 13 characters.) |
| 37-37 | 1 | Separator | Space character ‘ ‘ |
| 38-40 | 3 | State or Country Code | If Card Acceptor is in the USA or Canada, this contains a 2 character US state or Canadian Province code then a space.<br>Otherwise, this contains a ISO 3-alpha upper case country code. |

### Examples

Below are examples of the type of data that can arrive in Merch_Name_DE43 in authorisation messages:

| Authorisation Message Merch_Name_DE43 value | Things to note |
|---|---|
| PAYPAL *YIWUYUYICHE 35314369001 GBR | Normal country code |
| ROBLOX CORPORATION 888-858-2569 CA | Last 3 characters are a 2-letter US state code, followed by a space e.g. TX = Texas, NY = New York etc. |
| 3600 LAS VEGAS BLVD SO LAS VEGAS NV | Last 3 characters are a space, followed by a 2-letter US state code e.g. TX = Texas, NY = New York etc. |
| NOOR DUBAI MALL BRANCH BAI AE ARE | Emirate within UAE e.g. Dubai/DXB, Abu Dhabi/AUH, Ras Al Khaimah/RAK etc. |
| GOOGLE *FiLMiC Inc g.co/payhelp# GBR | URL in city field |
| MICROSOFT *XBOX BILL.XBOX.COM IRL | Website hostname in city field |

## 4.17.2 VISA Authorisation

The merchant name/location field for Visa is made up of various subfields.

| Positions | Length | Field Name | Description / Valid Values |
|---|---|---|---|
| 1-25 | 25 | Card Acceptor Name | Name of Card Acceptor or ATM service provider.<br>(Space padded on the right to make up to 25 characters.) |
| 26-38 | 23 | City Name | POS: City where the customer transaction occurs. |

| Positions | Length | Field Name | Description / Valid Values |
|---|---|---|---|
| | | | Card-Not-Present Transactions: Instead of the city name, these positions must<br>contain the merchant's customer service telephone number.<br>ATM: City where the ATM is located. The institution name is in field 42. |
| 39-40 | 2 | Country Code | The 2-character alpha code in uppercase format for the country where the cardholder transaction occurs or the ATM is located. |

# 4.18 Merch_Name_DE43 in Financial Messages

The Merch_Name_DE43 field is made up the subfields described below. (See also Get Transaction Message fields: Merch_Name_DE43)

## 4.18.1 Mastercard Merch_Name_DE43 (Financial) Format

Most fields are variable in length, separated by a backslash '\' character.

| Length | Field Name | Description / Valid Values |
|---|---|---|
| 0-100 | Card Acceptor Name | Name of Card Acceptor or ATM service provider. May contain special characters. |
| 1 | Separator | Backslash '\' character |
| 0-100 | Card Acceptor Street Address | Card Acceptor/ATM street address. May contain special characters. |
| 1 | Separator | Backslash '\' character |
| 0-100 | Card Acceptor City | Card Acceptor or ATM city. For cardholder not present transactions, this may contain a URL or phone number of customer support. May contain special characters. |
| 1 | Separator | Backslash '\' character |
| 10 | Postal Code | May contain nothing or special characters (e.g. Polish postcodes contain '-') |
| 3 | Region Code | If the country is USA, this is the US state code.<br>If the country is CAN, this is the Canadian province code.<br>If the country has regions or provinces, it may contain the region or province code.<br>If not applicable, may be blank or contain the 3-alpha country code of the merchant. |
| 3 | Country Code | ISO 3-alpha country code of the merchant or ATM. |

## 4.18.2 VISA Merch_Name_DE43 (Financial) Format

| Positions | Length | Field Name | Description / Valid Values |
|---|---|---|---|
| 1-25 | 25 | Card Acceptor Name | Name of Card Acceptor or ATM service provider.<br>(Space padded on the right to make up to 25 characters.) |
| 26-38 | 23 | City Name | POS: City where the customer transaction occurs.<br>Card-Not-Present Transactions: Instead of the city name, these positions must<br>contain the merchant's customer service telephone number.<br>ATM: City where the ATM is located. The institution name is in field Merch_ID_DE42. |
| 39-40 | 2 | Country Code | The 2-character alpha code in uppercase format for the country where the cardholder transaction occurs or the ATM is located. |

# 4.18.3 Merch_Name_DE43 (Financial) Examples

Examples of Merch_Name_DE43 in financial type messages:

| Financial Message Merch_Name_DE43 value | Notes |
|---|---|
| MARTIN MCCOLL\152 HUNTSPOND ROAD\FAREHAM\PO14 4PL GBRGBR | Normal.<br>Country in region field. |
| IMPERIAL CHINA \25A LISLE STREET \LONDON WC2H \WC2H 7BA GBR | Blank region field |
| MECK \Stora Varvsgatan 6A \Malmo \21119 SWESWE | Numbers-only postcode |
| VUE BSL LTD\3 CRANBOURN STREET\WEST END\WC2H 7AL GBRGBR | |
| THE CHIC PEA\4545 BLACKCOMB WAY\WHISTLER\V0N1B4 BC CAN | 'BC ' 6th to 4th last characters are the Canadian province code |
| USCUSTOMS ESTA APPL PM\6650 TELECOM DR STE 100\317-617-4458\46278 IN USA | 'IN ' 6th to 4th last characters are the US state code |
| CCSF MTA IPS PRKNG MET\1 S VAN NESS AVE FL 8 \SAN FRANCISCO\94103 CA USA | 'CA ' 6th to 4th last characters are the US state code |
| LINODE.COM\329 E. Jimmie Leeds Road\855-4546633\08205 NJ USA | Notice phone number in the City field |
| BADAVI SL 60508603\CL CARACAS 50 A\BARCELONA\08030 080ESP | Notice '080' in region field |
| LA BANQUE POSTAL\\VAL D ISERE\7315000000FR FRA | Notice no street address. 73150 is the postcode. |
| STARBUCKS CC 4461 \\DUBAI \ ARE | Notice no street address or postcode |
| Eymundsson Leifsstod \Grensásvegi 11 \REYKJAVÍK \108 ISLISL | Notice accented characters present in both street address and city |
| Uber BV\Hamminkweg 5\help.uber.com\7251B NLDNLD | Notice URL in city field |
| *BNP\14 RUE AUBER\PARIS 15\75000 FRAFRA | Notice asterik as first character in name field. |
| CHEFETTE RESTAURANT-BL\CHEFETTE RESTAURANT-BLACST MICHAEL BB\ST. MICHAEL\BB23027 BRB | |
| KEYCDN CREDITS \Room 424, 7 Gra\41445853152 \3011 CHECHE | Notice street address. |
| APOTEKET SERGEL \SERGELGÅNGEN 14 \STOCKHOLM \111 57 SWESWE | Special character in street address. |
| Vikurskali/Strondin\Sigtuni 5\Vik\870 ISLISL | Notice '/' in name field |
| mytaxi.com\C/ Diputacio 39, Local B1\taxi tour\8015 ESP | Notice '/' in street address field (Abbreviation of 'Calle' which means Street in Spanish |
| Amazon UK Marketplace\5 rue plaetis\800-279-6620\L2338 LUXLUX | Notice telephone number and '-' in city field |

| Financial Message Merch_Name_DE43 value | Notes |
| --- | --- |
| MICROSOFT *XBOX \-- \01157761000 \89119 NV USA | Notice '-' signs in street address and '*' in name field |
| BANQUE RHONES AL\\BARALP L' ALP\3875000000FR FRA | Notice apostrophe in city name |
| ROAD TRANSPORT AUTH\RTA-DUBAI METRO-TVM DUBAI AE\DUBAI\0000000784UAEARE | Notice all postcode characters used |
| WWW.REMIXSHOP.COM \ST.L.KOSTOV3\SOFIA \1407 BGRBGR | |
| CONVERSE # 39\8166 VINELAND AVE #1725\ORLANDO\32821 FL USA | |
| ANUDAN HOLDINGS (PVT)\ANUDAN HOLDINGS (PVT) LTD\HIKKADUWA\UNKNOWN LKA | |
| CT TNHH IHOME TEAM\31 E2 BIET THU TAN LAP NT KH\KHANH HOA\650000 VNM | |
| L'ESCORCHEVEL \LE PRAZ \SAINT BON TAR\73120 FRAFRA | |
| HUMBLEBUNDLE.COM HUMBL\201 POST ST FL 11 \8778877815 \94108 CA USA | |
| ADO TERMINAL TULUM\AV TULUM NO 9 ENTRE\SOLIDARIDAD Q\77780 QR MEX | Notice region code present for non-US and non-Canada country |
| "TAVRIA-V"\"TAVRIA-V"\NIKOLAEV\54056 UKR | Notice double quote characters in name and street |
| "BGEU" BR.519 ATM \PR.PARTIZANSKIY,26A\MINSK \220070 BLRBLR | Notice double quote characters in name |
| (BK-R1) BK- T1 #021-53\101 THOMSON RD\SINGAPORE\307591 SGPSGP | Notice '(', ')', '-', '#' characters in name. |
| #5 LUCILLE'S SMOKE\6257 E. 2ND ST\LONG BEACH\90803 CA USA | Notice apostrophe and '#' characters in name. |
| *BARCLAYS/GWERU*BARCLAYS/GWERU\GWERU\UNKNOWN ZWEZWE | Notice '*' '/' in both name and street |
| *DEUTSCHE BANK AG \\F-FLUGHAF. \60486 DEUDEU | |
| 00/HBCG-AERO-PODGORICA\00/HBCG-AERO-PODGORICA\PODGORICA\81000 499MNE | |
| +CHURCHGATE RAI\+CHURCHGATE RAILWAY ST\M M\400020 INDIND | |
| 000000003006002\LAOS DEVELOPMENT BANK\03006002\UNKNOWN LAOLAO | |
| 000000017200001\000000017200001 TSCN,\Bac Kan\UNKNOWN VNMVNM | |
| 000000074200002\000000074200002 Toa an\Chau Doc\UNKNOWN VNMVNM | |
| 000000099999999\91Tran H Dao Tx Hoi An\Da Nang\UNKNOWN VNMVNM | |
| 013109669990000\Line2,kejiguan\Shanghai\UNKNOWN CHNCHN | |
| 018 STARBUCKS PTY\219/3Y YAMAMOTO 13/1 SOI.BEACH\CHONBURI\20150 THATHA | |
| 02010002\(02010002),Yuri Meiko\inYangon\UNKNOWN MMRMMR | |

| Financial Message Merch_Name_DE43 value | Notes |
|---|---|
| 2BuySafe.com/ MCCOYS\Kirchstrasse 6\.\9494 LIELIE | Notice '.' Is the city |
| 589359000000000\AV0POTOSI0SN0000000000\00POTOSI0000\UNKNOWN BOLBOL | |
| 99BILL*JUNEYAOAIR.\SHANGHAI PU DONG PU DIAN LU 360 HAO 12 L\SHANGHAI\200122 SHACHN | |
| WOOLWORTHS V A WRON\\CAPE TOWN\8000 ZA ZAF | No street |
| TRAVELEX LHR T5 BA (1)\\London\AB21 0DU GBRGBR | Postcode is not valid and does not correspond to city |
| Piraeus Bank,S/M MASOU\\Thessaloniki\ GRCGRC | |
| HSBC CASH MACHINE\\TILEHURST\ GBRGBR | No street, description in name |
| HOUSE BOUTIQUE \\PHNOM PENH \ KHM | No street |
| Goldman Sachs\\London\EC4A 2BB GBRGBR | No street |
| BOI ATM\\TRINITY \00000 IRLIRL | Dummy postcode (probably) |
| Twoj Market\ul.Pelplinska 41\Bydgoszcz\85-794 POLPOL | '-' in postcode field. |
| ASDA GEORGE COM LEEDS\LEEDS\GB | |
| WWW.ALZA.CZ\PRAHA 7\CZ<br>SYMBAL.BY\PAVEL.BELAVUS\BY | |
| WWW.ALZA.SK\PRAHA 7\CZ | |
| mall.hu\Budapest\HU | |
| RYANAIR 22400000MUYY2\LONDON\GB | |
| WWW.ALZA.CZ\PRAHA 7\CZ | |

# 4.19 Merchant Category Codes

The table below lists the valid values for the MCC_Code field, identifying the merchant category code. (See also Get Transaction Message fields:MCC_Code)

| MCC Lower | MCC Upper | MCC Category Description |
|---|---|---|
| 742 | 742 | Veterinary Services |
| 763 | 763 | AGRICULTURAL COOPERATIVES |
| 780 | 780 | LANDSCAPE AND HORTICULTURAL SERVICES |
| 1520 | 1520 | General Contractors |
| 1711 | 1711 | Heating, Plumbing, A/C |
| 1731 | 1731 | Electrical Contractors |
| 1740 | 1740 | Masonry, Stonework, and Plaster |
| 1750 | 1750 | Carpentry Contractors |
| 1761 | 1761 | Roofing/Siding, Sheet Metal |
| 1771 | 1771 | Concrete Work Contractors |
| 1799 | 1799 | Special Trade Contractors |
| 2741 | 2741 | Miscellaneous Publishing and Printing |
| 2791 | 2791 | Typesetting, Plate Making, and Related Services |
| 2842 | 2842 | Specialty Cleaning |
| 3000 | 3299 | Airlines |
| 3001 | 3001 | AMERICAN AIRLINES |
| 3004 | 3004 | DRAGONAIR |
| 3005 | 3005 | BRITISH AIRWAYS |
| 3006 | 3006 | JAPAN AIRLINES |
| 3007 | 3007 | AIR FRANCE |
| 3008 | 3008 | LUFTHANSA |
| 3009 | 3009 | AIR CANADA |
| 3010 | 3010 | KLM (ROYAL DUTCH AIRLINES) |
| 3011 | 3011 | AEROFLOT |
| 3012 | 3012 | QANTAS |

| MCC Lower | MCC Upper | MCC Category Description |
|---|---|---|
| 3013 | 3013 | ALITALIA |
| 3014 | 3014 | SAUDI ARABIAN AIRLINES |
| 3015 | 3015 | SWISS INTERNATIONAL AIRLINES - SWISS AIR |
| 3016 | 3016 | SAS |
| 3017 | 3017 | SOUTH AFRICAN AIRWAYS |
| 3018 | 3018 | VARIG AIR (BRAZIL) |
| 3019 | 3019 | Eastern Airline |
| 3020 | 3020 | AIR INDIA |
| 3021 | 3021 | AIR ALGERIE |
| 3022 | 3022 | PAL AIR |
| 3024 | 3024 | PAKISTAN INTERNATIONAL |
| 3025 | 3025 | AIR NEW ZEALAND |
| 3026 | 3026 | EMIRATES AIRLINES |
| 3027 | 3027 | UTA/INTERAIR |
| 3028 | 3028 | AIR MALTA |
| 3029 | 3029 | SN BRUSSELS AIRLINES - SNBRU AIR |
| 3030 | 3030 | AEROLINEAS ARGENTINAS |
| 3031 | 3031 | OLYMPIC AIRWAYS |
| 3032 | 3032 | EL AL |
| 3033 | 3033 | ANSETT AIRLINES |
| 3034 | 3034 | TRANS AUSTRAILIAN AIRWAYS (TAA) |
| 3035 | 3035 | TAP (PORTUGAL) |
| 3037 | 3037 | EGYPTAIR |
| 3038 | 3038 | KUWAIT AIRWAYS |
| 3039 | 3039 | AVIANCA |
| 3040 | 3040 | GULF AIR (BAHRAIN) |
| 3042 | 3042 | FINNAIR |
| 3043 | 3043 | AER LINGUS |

| MCC Lower | MCC Upper | MCC Category Description |
|---|---|---|
| 3044 | 3044 | AIR LANKA |
| 3047 | 3047 | THY (TURKEY) |
| 3048 | 3048 | AIRMARO |
| 3049 | 3049 | TUNIS AIR |
| 3050 | 3050 | ICELANDAIR |
| 3051 | 3051 | AUSTRIAN AIRLINES |
| 3052 | 3052 | LAN AIRLINES-LANAIR |
| 3056 | 3056 | QUEBECAIRE |
| 3057 | 3057 | EAST/WEST AIRLINES (AUSTRALIA) |
| 3058 | 3058 | DELTA |
| 3063 | 3063 | U.S. AIR |
| 3064 | 3064 | ADRIA AIRWAYS |
| 3065 | 3065 | AIRINTER |
| 3066 | 3066 | SOUTHWEST |
| 3068 | 3068 | AIR ASTANA |
| 3069 | 3069 | Sun Country Airlines |
| 3070 | 3070 | Fly Dubai |
| 3072 | 3072 | CEBU PAC |
| 3075 | 3075 | SINGAPORE AIRLINES |
| 3076 | 3076 | AEROMEXICO |
| 3077 | 3077 | THAI AIRWAYS |
| 3078 | 3078 | CHINA AIRLINES |
| 3079 | 3079 | JETSTAR AIRLINES |
| 3080 | 3080 | Airline Swoop Inc |
| 3081 | 3081 | Xiamen Airlines |
| 3082 | 3082 | KOREAN AIRLINES |
| 3084 | 3084 | EVA AIRWAYS |
| 3088 | 3088 | CROATIA AIRLINES |

| MCC Lower | MCC Upper | MCC Category Description |
|---|---|---|
| 3089 | 3089 | TRANSAERO |
| 3096 | 3096 | AIR ZIMBABWE |
| 3098 | 3098 | ASIANNA AIRLINES - ASIANNA |
| 3099 | 3099 | CATHAY PACIFIC |
| 3100 | 3100 | MALAYSIAN AIRLINE SYSTEM |
| 3102 | 3102 | IBERIA |
| 3103 | 3103 | GARUDA (INDONESIA) |
| 3111 | 3111 | BRITISH MIDLAND |
| 3112 | 3112 | WINDWARD ISLAND |
| 3125 | 3125 | TAN |
| 3127 | 3127 | TACA INTERNATIONAL |
| 3129 | 3129 | SURINAM AIRWAYS |
| 3132 | 3132 | FRONTIER AIRLINES |
| 3136 | 3136 | QATAR AIRWAYS |
| 3144 | 3144 | VIRGIN ATLANTIC |
| 3146 | 3146 | LUXAIR |
| 3161 | 3161 | ALL NIPON AIRWAYS |
| 3168 | 3168 | Hainan Airlines |
| 3169 | 3169 | RIYADH AIR |
| 3174 | 3174 | JETBLUE AIRLINES |
| 3175 | 3175 | MIDDLE EAST AIR |
| 3177 | 3177 | AIRTRAN AIRWAYS |
| 3178 | 3178 | MESA AIR |
| 3180 | 3180 | WESTJETAIR |
| 3182 | 3182 | LOT (POLAND) |
| 3183 | 3183 | OMANAIR |
| 3184 | 3184 | LIAT |

| MCC Lower | MCC Upper | MCC Category Description |
|---|---|---|
| 3190 | 3190 | JUGOSLAV AIR |
| 3191 | 3191 | ISLAND AIRLINES |
| 3196 | 3196 | HAWAIIAN AIR |
| 3206 | 3206 | CHINA EASTERN AIRLINES |
| 3211 | 3211 | NORWEGIAN AIR SHUTTLE |
| 3217 | 3217 | CSA |
| 3219 | 3219 | COPA |
| 3223 | 3223 | COMAIR |
| 3228 | 3228 | CAYMAN AIRWAYS |
| 3234 | 3234 | CARIBBEAN AIRLINES |
| 3236 | 3236 | AIR ARABIA |
| 3240 | 3240 | BAHAMASAIR |
| 3245 | 3245 | EASYJET AIR |
| 3246 | 3246 | RYANAIR |
| 3247 | 3835 | 3247-3835 |
| 3248 | 3248 | TAM AIR |
| 3256 | 3256 | ALASKA AIRLINES |
| 3260 | 3260 | SPIRIT AIRLINES |
| 3261 | 3261 | AIR CHINA |
| 3267 | 3267 | AIR PANAMA |
| 3292 | 3292 | CYPRUS AIRWAYS |
| 3294 | 3294 | ETHIOPIAN AIRLINES |
| 3295 | 3295 | KENYA AIRWAYS |
| 3296 | 3296 | AIR BERLIN |
| 3297 | 3297 | TAROM |
| 3298 | 3298 | AIR MAURITIUS |
| 3299 | 3299 | WIDEROE'S FLYVESELSKAP |
| 3303 | 3303 | Tigerair |

| MCC Lower | MCC Upper | MCC Category Description |
|---|---|---|
| 3304 | 3304 | Air Baltic |
| 3305 | 3305 | Air Transat |
| 3306 | 3306 | Scoot Ltd |
| 3308 | 3308 | China Southern |
| 3351 | 3441 | Car Rental |
| 3351 | 3441 | Car Rental Agencies 2 |
| 3355 | 3355 | SIXT CAR RENTAL |
| 3357 | 3357 | HERTZ RENT-A-CAR |
| 3359 | 3359 | PAYLESS CAR RENTAL |
| 3364 | 3364 | AGENCY RENT-A-CAR |
| 3366 | 3366 | BUDGET RENT-A-CAR |
| 3368 | 3368 | HOLIDAY RENT-A-CAR |
| 3381 | 3381 | EUROP CAR |
| 3387 | 3387 | ALAMO RENT-A-CAR |
| 3389 | 3389 | AVIS RENT-A-CAR |
| 3390 | 3390 | DOLLAR RENT-A-CAR |
| 3393 | 3393 | NATIONAL CAR RENTAL |
| 3395 | 3395 | THRIFTY RENT-A-CAR |
| 3400 | 3400 | AUTO HOST CAR RENTALS |
| 3405 | 3405 | ENTERPRISE RENT-A-CAR |
| 3409 | 3409 | GENERAL RENT-A-CAR |
| 3412 | 3412 | A-1 RENT-A-CAR |
| 3420 | 3420 | ANSA INTL RENT-A-CAR |
| 3427 | 3427 | AVON RENT-A-CAR |
| 3437 | 3437 | CITE RENT-A-CAR |
| 3438 | 3438 | INTERENT RENT-A-CAR |
| 3441 | 3441 | ADVANTAGE RENT-A-CAR |

| MCC Lower | MCC Upper | MCC Category Description |
|---|---|---|
| 3501 | 3790 | Hotels/Motels/Inns/Resorts |
| 3501 | 3835 | 3501-3835 |
| 3502 | 3502 | BEST WESTERN HOTELS |
| 3503 | 3503 | SHERATON HOTELS |
| 3504 | 3504 | HILTON HOTELS |
| 3505 | 3505 | FORTE HOTELS |
| 3506 | 3506 | GOLDEN TULIP HOTELS |
| 3507 | 3507 | FRIENDSHIP INNS |
| 3508 | 3508 | QUALITY INNS & QUALITY SUITES |
| 3509 | 3509 | MARRIOTT HOTELS |
| 3510 | 3510 | DAYS INNS OR DAYSTOP |
| 3511 | 3511 | ARABELLA HOTELS |
| 3512 | 3512 | INTER-CONTINENTAL HOTELS |
| 3513 | 3513 | WESTIN HOTELS |
| 3514 | 3514 | AMERISUITES |
| 3515 | 3515 | RODEWAY INNS |
| 3516 | 3516 | LA QUINTA MOTOR INNS |
| 3519 | 3519 | PULLMAN INTERNATIONAL HOTELS |
| 3520 | 3520 | MERIDIEN HOTELS |
| 3521 | 3521 | ROYAL LAHAINA RESORTS |
| 3523 | 3523 | PENINSULA HOTEL |
| 3526 | 3526 | PRINCE HOTELS |
| 3528 | 3528 | RED LION HOTELS OR RED LION INNS |
| 3530 | 3530 | RENAISSANCE HOTELS |
| 3533 | 3533 | HOTEL IBIS |
| 3535 | 3535 | HILTON INTERNATIONAL |
| 3536 | 3536 | AMFAC HOTELS |
| 3537 | 3537 | ANA HOTEL |

| MCC Lower | MCC Upper | MCC Category Description |
|---|---|---|
| 3538 | 3538 | CONCORDE HOTELS |
| 3539 | 3539 | SUMMERFIELD SUITES HOTEL |
| 3540 | 3540 | IBEROTEL HOTELS |
| 3541 | 3541 | HOTEL OKURA |
| 3542 | 3542 | ROYAL HOTELS |
| 3543 | 3543 | FOUR SEASONS HOTELS |
| 3545 | 3545 | SHANGRI-LA INTERNATIONAL |
| 3548 | 3548 | HOTELS MELIA |
| 3549 | 3549 | AUBERGE DES GOVERNEURS |
| 3551 | 3551 | MIRAGE HOTEL AND CASINO |
| 3552 | 3552 | COAST HOTELS |
| 3553 | 3553 | PARK INNS INTERNATIONAL |
| 3555 | 3555 | TREASURE ISLAND HOTEL AND CASINO |
| 3558 | 3558 | JOLLY HOTELS |
| 3559 | 3559 | CANDLEWOOD SUITES - THISTLE HOTELS |
| 3560 | 3560 | DISALLOWED - Aladdin Resort and Casino |
| 3561 | 3561 | GOLDEN NUGGET |
| 3562 | 3562 | COMFORT INNS |
| 3567 | 3567 | SOHO GRAND HOTEL |
| 3570 | 3570 | FORUM HOTELS |
| 3572 | 3572 | MIYAKO HOTELS |
| 3573 | 3573 | SANDMAN HOTELS |
| 3575 | 3575 | VAGABOND HOTELS |
| 3577 | 3577 | MANDARIN ORIENTAL HOTEL |
| 3579 | 3579 | HOTEL MERCURE |
| 3581 | 3581 | DELTA HOTEL |
| 3583 | 3583 | SAS HOTELS |
| 3586 | 3586 | SOKOS HOTELS |

| MCC Lower | MCC Upper | MCC Category Description |
|---|---|---|
| 3590 | 3590 | FAIRMONT HOTELS |
| 3591 | 3591 | SONESTA HOTELS |
| 3592 | 3592 | OMNI HOTELS |
| 3595 | 3595 | HOSPITALITY INNS |
| 3596 | 3596 | WYNN LAS VEGAS |
| 3597 | 3597 | DISALLOWED - Riverside Resort and Casino |
| 3598 | 3598 | REGENT INTERNATIONAL HOTELS |
| 3602 | 3602 | HUDSON HOTEL |
| 3604 | 3604 | HILTON GARDEN RESORT/INN |
| 3607 | 3607 | FONTAINEBLEAU RESORTS |
| 3608 | 3608 | GAYLORD OPRYLAND |
| 3612 | 3612 | MOVENPICK HOTELS |
| 3613 | 3613 | MICROTEL INN AND SUITES |
| 3615 | 3615 | TRAVELODGE |
| 3617 | 3617 | AMERICAS BEST VALUE INN |
| 3618 | 3618 | GREAT WOLF |
| 3619 | 3619 | ALOFT |
| 3621 | 3621 | EXTENDED STAY |
| 3623 | 3623 | DORINT HOTELS |
| 3625 | 3625 | HOTEL UNIVERSALE |
| 3628 | 3628 | EXCALIBUR HOTEL AND CASINO |
| 3629 | 3629 | DAN HOTELS |
| 3630 | 3630 | Tokyu Hotels |
| 3631 | 3631 | SLEEP INNS |
| 3632 | 3632 | PHOENICIAN |
| 3634 | 3634 | SWISSOTEL |
| 3635 | 3635 | RESO HOTELS |
| 3636 | 3636 | SAROVA HOTELS |

| MCC Lower | MCC Upper | MCC Category Description |
|---|---|---|
| 3637 | 3637 | RAMADA INNS & RAMADA LIMITED |
| 3638 | 3638 | HOWARD JOHNSON |
| 3639 | 3639 | MOUNT CHARLOTTE THISTLE |
| 3640 | 3640 | HYATT HOTELS |
| 3641 | 3641 | SOFITEL HOTELS |
| 3642 | 3642 | NOVOTEL HOTELS |
| 3643 | 3643 | STEIGENBERGER HOTELS |
| 3644 | 3644 | ECONO LODGES |
| 3645 | 3645 | QUEENS MOAT HOUSES |
| 3647 | 3647 | HUSA HOTELS |
| 3648 | 3648 | DE VERE HOTELS |
| 3649 | 3649 | RADISSON HOTELS |
| 3650 | 3650 | RED ROOF INNS |
| 3651 | 3651 | IMPERIAL LONDON HOTEL |
| 3652 | 3652 | EMBASSY HOTELS |
| 3653 | 3653 | PENTA HOTELS |
| 3654 | 3654 | LOEWS HOTELS |
| 3655 | 3655 | SCANDIC HOTELS |
| 3657 | 3657 | OBEROI HOTELS |
| 3659 | 3659 | TAJ HOTELS INTERNATIONAL |
| 3660 | 3660 | KNIGHTS INNS |
| 3661 | 3661 | METROPOLE HOTELS |
| 3662 | 3662 | CIRCUS CIRCUS HOTEL AND CASINO |
| 3663 | 3663 | HOTELES EL PRESIDENTE |
| 3665 | 3665 | HAMPTON INNS |
| 3667 | 3667 | LUXHOR HOTEL AND CASINO |
| 3668 | 3668 | MARITIM HOTELS |
| 3670 | 3670 | ARCADE HOTELS |

| MCC Lower | MCC Upper | MCC Category Description |
|---|---|---|
| 3672 | 3672 | CAMPANILE HOTELS |
| 3674 | 3674 | RANTASIPI HOTELS |
| 3676 | 3676 | MONTE CARLO HOTEL AND CASINO |
| 3677 | 3677 | CLIMAT DE FRANCE HOTELS |
| 3678 | 3678 | CUMULUS HOTELS |
| 3680 | 3680 | HOTEIS OTHAN |
| 3681 | 3681 | ADAMS MARK HOTELS |
| 3684 | 3684 | BUDGET HOST INNS |
| 3687 | 3687 | CLARION HOTELS |
| 3689 | 3689 | CONSORT HOTELS |
| 3690 | 3690 | COURTYARD BY MARRIOTT |
| 3692 | 3692 | DOUBLTREE HOTELS |
| 3693 | 3693 | DRURY INNS |
| 3694 | 3694 | ECONOMY INNS OF AMERICA |
| 3695 | 3695 | EMBASSY SUITES |
| 3698 | 3698 | HARLEY HOTELS |
| 3699 | 3699 | MIDWAY MOTOR LODGE |
| 3700 | 3700 | MOTEL 6 |
| 3703 | 3703 | RESIDENCE INNS |
| 3706 | 3706 | SHILO INNS |
| 3709 | 3709 | SUPER 8 MOTELS |
| 3710 | 3710 | THE RITZ CARLTON HOTELS |
| 3715 | 3715 | FAIRFIELD INN |
| 3716 | 3716 | CARLTON HOTELS |
| 3717 | 3717 | CITY LODGE HOTELS |
| 3719 | 3719 | PROTEA HOTELS |
| 3721 | 3721 | HILTON CONRAD |
| 3722 | 3722 | WYNDHAM HOTEL & RESORTS |

| MCC Lower | MCC Upper | MCC Category Description |
|---|---|---|
| 3723 | 3723 | RICA HOTELS |
| 3728 | 3728 | BALLY'S HOTEL AND CASINO |
| 3730 | 3730 | MGM GRAND HOTEL |
| 3731 | 3731 | HARRAH'S HOTELS AND CASINOS |
| 3732 | 3732 | OPRYLAND HOTEL |
| 3733 | 3733 | Boca Raton Resort |
| 3736 | 3736 | Colorado Belle Edgewater Resort |
| 3737 | 3737 | Riviera Hotel and Casino |
| 3738 | 3738 | Tropicana Resort and Casino |
| 3739 | 3739 | Woodside Hotels and Resorts |
| 3740 | 3740 | MARRIOTT/TOWNPLACE SUITES |
| 3741 | 3741 | MILLENNIUM HOTELS |
| 3745 | 3745 | ST. REGIS HOTEL |
| 3750 | 3750 | CROWNE PLAZA HOTEL |
| 3751 | 3751 | HOMEWOOD SUITES |
| 3752 | 3752 | PEABODY HOTELS |
| 3754 | 3754 | AMELIA ISLAND PLANTATION |
| 3756 | 3756 | Tokyo Inn |
| 3765 | 3765 | BELLAGIO |
| 3769 | 3769 | DISALLOWED - Stratosphere Hotel and Casino |
| 3770 | 3770 | SPRINGHILL SUITES |
| 3771 | 3771 | DISALLOWED - Ceasers Hotel and Casino |
| 3772 | 3772 | NEMACOLIN WOODLANDS |
| 3773 | 3773 | DISALLOWED - Venetian Resort, Hotel and Casino |
| 3774 | 3774 | DISALLOWED - New York - New York Hotel and Casino |
| 3775 | 3775 | SANDS RESORT |
| 3777 | 3777 | MANDALAY BAY RESORT |
| 3778 | 3778 | FOUR POINTS HOTELS |

| MCC Lower | MCC Upper | MCC Category Description |
|---|---|---|
| 3779 | 3779 | W HOTELS |
| 3780 | 3780 | DISNEY RESORTS |
| 3782 | 3782 | ROSEN HOTELS & RESORTS |
| 3783 | 3783 | TOWN AND COUNTRY RESORT |
| 3784 | 3784 | FIRST HOSPITALITY HOTELS |
| 3785 | 3785 | OUTRIGGER HOTELS AND RESORTS |
| 3786 | 3786 | OHANA HOTELS OF HAWAII |
| 3790 | 3790 | RAFFLES HOTEL |
| 3791 | 3791 | Staybridge Suites |
| 3792 | 3792 | Claridge Casino Hotel |
| 3793 | 3793 | Flamingo Hotels |
| 3794 | 3794 | Grand Casino Hotels |
| 3795 | 3795 | Paris Las Vegas Hotel |
| 3796 | 3796 | Peppermill Hotel Casino |
| 3797 | 3797 | Atlantic City Hilton Resorts |
| 3798 | 3798 | Embassy Vacation Resort |
| 3799 | 3799 | Hale Koa Hotel |
| 3801 | 3801 | WILDERNESS HOTEL AND RESORT |
| 3802 | 3802 | THE PALACE HOTEL |
| 3808 | 3808 | LXR (LUXURY RESORTS) |
| 3811 | 3811 | PREMIER TRAVEL INN |
| 3812 | 3812 | HYATT PLACE |
| 3813 | 3813 | HOTEL INDIGO |
| 3814 | 3814 | THE ROOSEVELT HOTEL NY |
| 3819 | 3819 | OXFORD SUITES |
| 3822 | 3822 | CROSSLAND |
| 3839 | 3839 | Kyoritsu Hotels |
| 3840 | 3840 | Rio hotels |

| MCC Lower | MCC Upper | MCC Category Description |
|---|---|---|
| 3841 | 3841 | Tribute Portfolio |
| 3842 | 3842 | Marriott Executive Apartments |
| 3843 | 3843 | Moxy |
| 3844 | 3844 | AC Hotels |
| 3845 | 3845 | Bulgari |
| 3846 | 3846 | The Luxury Collection |
| 3847 | 3847 | JW Marriott |
| 3848 | 3848 | Edition |
| 3849 | 3849 | Minacia |
| 3850 | 3850 | Breezbay Group |
| 3851 | 3851 | Candeo Hotels |
| 3852 | 3852 | Core Global Management Hotels and Resorts |
| 3853 | 3853 | Granbell Hotels and Resorts |
| 3854 | 3854 | JHAT |
| 3855 | 3855 | C'est la vie Resort Izumigo |
| 3856 | 3856 | Banyan Tree Hotels and Resorts |
| 3857 | 3857 | Hotel Sunroute |
| 3858 | 3858 | Sotetsu Fresa-Inn |
| 3859 | 3859 | La Vista |
| 3860 | 3860 | JR-East Hotel Mets |
| 3861 | 3861 | AB Hotel |
| 3862 | 3862 | Chisun Hotels |
| 3863 | 3863 | Super Hotel |
| 3864 | 3864 | Itoen Hotel |
| 3865 | 3865 | Quintessa Hotel |
| 3866 | 3866 | Smile Hotel |

| MCC Lower | MCC Upper | MCC Category Description |
|---|---|---|
| 3867 | 3867 | Hotel Alpha-1 |
| 3868 | 3868 | Relo Vacations |
| 3869 | 3869 | Yutorelo |
| 3870 | 3870 | Keio Presso inn |
| 3871 | 3871 | Villa-Fontaine |
| 3872 | 3872 | Meitetsu Inn |
| 3873 | 3873 | Tokyo Harvestclub |
| 3874 | 3874 | Hotel Livemax |
| 3875 | 3875 | Fufu Japan |
| 3876 | 3876 | HMI Hotel Group |
| 3877 | 3877 | Orix Hotels and Resorts |
| 3878 | 3878 | Washington Hotel |
| 3979 | 3979 | Sanco Inn |
| 3880 | 3880 | Hotel Unizo |
| 3881 | 3881 | Hotel Metropolitan |
| 3882 | 3882 | Centurion Hotels |
| 3883 | 3883 | Nest Hotel |
| 3884 | 3884 | Chateraise Hotel Group |
| 3885 | 3885 | Ab-Accommo |
| 3886 | 3886 | Noguchikanko Group |
| 4011 | 4011 | Railroads |
| 4111 | 4111 | Commuter Transport, Ferries |
| 4112 | 4112 | Passenger Railways |
| 4119 | 4119 | Ambulance Services |
| 4121 | 4121 | Taxicabs/Limousines |
| 4131 | 4131 | Bus Lines |
| 4214 | 4214 | Motor Freight Carriers and Trucking - Local and Long Distance, Moving and Storage Companies, and Local Delivery Services |

| MCC Lower | MCC Upper | MCC Category Description |
|---|---|---|
| 4215 | 4215 | Courier Services |
| 4225 | 4225 | Public Warehousing and Storage - Farm Products, Refrigerated Goods, Household Goods, and Storage |
| 4411 | 4411 | Cruise Lines |
| 4457 | 4457 | Boat Rentals and Leases |
| 4468 | 4468 | Marinas, Service and Supplies |
| 4511 | 4511 | Airlines, Air Carriers |
| 4582 | 4582 | Airports, Flying Fields |
| 4722 | 4722 | Travel Agencies, Tour Operators |
| 4723 | 4723 | TUI Travel - Germany |
| 4761 | 4761 | TRANSPORTATION/TRAVEL-RELATED ARRANGEMENT |
| 4784 | 4784 | Tolls/Bridge Fees |
| 4789 | 4789 | Transportation Services (Not Elsewhere Classified) |
| 4812 | 4812 | Telecommunication Equipment and Telephone Sales |
| 4813 | 4813 | Special Telecom Merchants |
| 4814 | 4814 | Telecommunication Services |
| 4816 | 4816 | Computer Network Services |
| 4821 | 4821 | Telegraph Services |
| 4829 | 4829 | Money Transfer, Money Orders - Merchant |
| 4899 | 4899 | Cable, Satellite, and Other Pay Television and Radio |
| 4900 | 4900 | Utilities |
| 5013 | 5013 | Motor Vehicle Supplies and New Parts |
| 5021 | 5021 | Office and Commercial Furniture |
| 5039 | 5039 | Construction Materials (Not Elsewhere Classified) |
| 5044 | 5044 | Photographic, Photocopy, Microfilm Equipment, and Supplies |
| 5045 | 5045 | Computers, Peripherals, and Software |
| 5046 | 5046 | Commercial Equipment (Not Elsewhere Classified) |
| 5047 | 5047 | Medical, Dental, Ophthalmic, and Hospital Equipment and Supplies |

| MCC Lower | MCC Upper | MCC Category Description |
|---|---|---|
| 5051 | 5051 | Metal Service Centers |
| 5065 | 5065 | Electrical Parts and Equipment |
| 5072 | 5072 | Hardware, Equipment, and Supplies |
| 5074 | 5074 | Plumbing, Heating Equipment, and Supplies |
| 5085 | 5085 | Industrial Supplies (Not Elsewhere Classified) |
| 5094 | 5094 | Precious Stones and Metals, Watches and Jewelry |
| 5099 | 5099 | Durable Goods (Not Elsewhere Classified) |
| 5111 | 5111 | Stationary, Office Supplies, Printing and Writing Paper |
| 5122 | 5122 | Drugs, Drug Proprietaries, and Druggist Sundries |
| 5131 | 5131 | Piece Goods, Notions, and Other Dry Goods |
| 5137 | 5137 | Uniforms, Commercial Clothing |
| 5139 | 5139 | Commercial Footwear |
| 5169 | 5169 | Chemicals and Allied Products (Not Elsewhere Classified) |
| 5172 | 5172 | Petroleum and Petroleum Products |
| 5192 | 5192 | Books, Periodicals, and Newspapers |
| 5193 | 5193 | Florists Supplies, Nursery Stock, and Flowers |
| 5198 | 5198 | Paints, Varnishes, and Supplies |
| 5199 | 5199 | Nondurable Goods (Not Elsewhere Classified) |
| 5200 | 5200 | Home Supply Warehouse Stores |
| 5211 | 5211 | Lumber, Building Materials Stores |
| 5231 | 5231 | Glass, Paint, and Wallpaper Stores |
| 5251 | 5251 | Hardware Stores |
| 5261 | 5261 | Nurseries, Lawn and Garden Supply Stores |
| 5262 | 5262 | Marketplaces |
| 5271 | 5271 | Mobile Home Dealers |
| 5300 | 5300 | Wholesale Clubs |
| 5309 | 5309 | Duty Free Stores |
| 5310 | 5310 | Discount Stores |

| MCC Lower | MCC Upper | MCC Category Description |
|---|---|---|
| 5311 | 5311 | Department Stores |
| 5331 | 5331 | Variety Stores |
| 5382 | 5382 | Antique Shops - Sales, Repairs, and Restoration Services |
| 5399 | 5399 | Miscellaneous General Merchandise |
| 5411 | 5411 | Grocery Stores, Supermarkets |
| 5422 | 5422 | Freezer and Locker Meat Provisioners |
| 5441 | 5441 | Candy, Nut, and Confectionery Stores |
| 5451 | 5451 | Dairy Products Stores |
| 5462 | 5462 | Bakeries |
| 5499 | 5499 | Miscellaneous Food Stores - Convenience Stores and Specialty Markets |
| 5511 | 5511 | Car and Truck Dealers (New & Used) Sales, Service, Repairs Parts and Leasing |
| 5521 | 5521 | Car and Truck Dealers (Used Only) Sales, Service, Repairs Parts and Leasing |
| 5531 | 5531 | Auto and Home Supply Stores |
| 5532 | 5532 | Automotive Tire Stores |
| 5533 | 5533 | Automotive Parts and Accessories Stores |
| 5541 | 5541 | Service Stations |
| 5542 | 5542 | Automated Fuel Dispensers |
| 5551 | 5551 | Boat Dealers |
| 5561 | 5561 | Motorcycle Shops, Dealers |
| 5571 | 5571 | Motorcycle Shops and Dealers |
| 5592 | 5592 | Motor Homes Dealers |
| 5598 | 5598 | Snowmobile Dealers |
| 5599 | 5599 | Miscellaneous Auto Dealers |
| 5611 | 5611 | Men’s and Boy’s Clothing and Accessories Stores |
| 5621 | 5621 | Women’s Ready-To-Wear Stores |
| 5631 | 5631 | Women’s Accessory and Specialty Shops |
| 5641 | 5641 | Children’s and Infant’s Wear Stores |
| 5651 | 5651 | Family Clothing Stores |

| MCC Lower | MCC Upper | MCC Category Description |
|---|---|---|
| 5655 | 5655 | Sports and Riding Apparel Stores |
| 5661 | 5661 | Shoe Stores |
| 5681 | 5681 | Furriers and Fur Shops |
| 5691 | 5691 | Men’s, Women’s Clothing Stores |
| 5697 | 5697 | Tailors, Alterations |
| 5698 | 5698 | Wig and Toupee Stores |
| 5699 | 5699 | Miscellaneous Apparel and Accessory Shops |
| 5712 | 5712 | Furniture, Home Furnishings, and Equipment Stores, Except Appliances |
| 5713 | 5713 | Floor Covering Stores |
| 5714 | 5714 | Drapery, Window Covering, and Upholstery Stores |
| 5718 | 5718 | Fireplace, Fireplace Screens, and Accessories Stores |
| 5719 | 5719 | Miscellaneous Home Furnishing Specialty Stores |
| 5722 | 5722 | Household Appliance Stores |
| 5723 | 5723 | Gun and Ammunition Store |
| 5732 | 5732 | Electronics Stores |
| 5733 | 5733 | Music Stores-Musical Instruments, Pianos, and Sheet Music |
| 5734 | 5734 | Computer Software Stores |
| 5735 | 5735 | Record Stores |
| 5811 | 5811 | Caterers |
| 5812 | 5812 | Eating Places, Restaurants |
| 5813 | 5813 | Drinking Places |
| 5814 | 5814 | Fast Food Restaurants |
| 5815 | 5815 | Digital Goods - Audiovisual Medai |
| 5816 | 5816 | Digital Goods - Games |
| 5817 | 5817 | Digital Goods - Software |
| 5818 | 5818 | Digital Goods - Multi Categorry |
| 5912 | 5912 | Drug Stores and Pharmacies |
| 5921 | 5921 | Package Stores-Beer, Wine, and Liquor |

| MCC Lower | MCC Upper | MCC Category Description |
|---|---|---|
| 5931 | 5931 | Used Merchandise and Secondhand Stores |
| 5932 | 5932 | Antique Shops |
| 5933 | 5933 | Pawn Shops |
| 5935 | 5935 | Wrecking and Salvage Yards |
| 5937 | 5937 | Antique Reproductions |
| 5940 | 5940 | Bicycle Shops |
| 5941 | 5941 | Sporting Goods Stores |
| 5942 | 5942 | Book Stores |
| 5943 | 5943 | Stationery Stores, Office, and School Supply Stores |
| 5943 | 5968 | 5943-5968 |
| 5944 | 5944 | Jewelry Stores, Watches, Clocks, and Silverware Stores |
| 5945 | 5945 | Hobby, Toy, and Game Shops |
| 5946 | 5946 | Camera and Photographic Supply Stores |
| 5947 | 5947 | Gift, Card, Novelty, and Souvenir Shops |
| 5948 | 5948 | Luggage and Leather Goods Stores |
| 5949 | 5949 | Sewing, Needlework, Fabric, and Piece Goods Stores |
| 5950 | 5950 | Glassware, Crystal Stores |
| 5960 | 5960 | Direct Marketing - Insurance Services |
| 5961 | 5961 | MAIL ORDER HOUSES INCL CATALOG ORDER STORES BOOK/RECORD CLUB |
| 5962 | 5962 | Direct Marketing - Travel |
| 5963 | 5963 | Door-To-Door Sales |
| 5964 | 5964 | Direct Marketing - Catalog Merchant |
| 5965 | 5965 | Direct Marketing - Combination Catalog and Retail Merchant |
| 5966 | 5966 | Direct Marketing - Outbound Tele |
| 5967 | 5967 | Direct Marketing - Inbound Tele |
| 5968 | 5968 | Direct Marketing - Subscription |
| 5969 | 5969 | Direct Marketing - Other |
| 5970 | 5970 | Artist’s Supply and Craft Shops |

| MCC Lower | MCC Upper | MCC Category Description |
|---|---|---|
| 5971 | 5971 | Art Dealers and Galleries |
| 5972 | 5972 | Stamp and Coin Stores |
| 5973 | 5973 | Religious Goods Stores |
| 5975 | 5975 | Hearing Aids Sales and Supplies |
| 5976 | 5976 | Orthopedic Goods - Prosthetic Devices |
| 5977 | 5977 | Cosmetic Stores |
| 5978 | 5978 | Typewriter Stores |
| 5983 | 5983 | Fuel Dealers (Non Automotive) |
| 5992 | 5992 | Florists |
| 5993 | 5993 | Cigar Stores and Stands |
| 5994 | 5994 | News Dealers and Newsstands |
| 5995 | 5995 | Pet Shops, Pet Food, and Supplies |
| 5996 | 5996 | Swimming Pools Sales |
| 5997 | 5997 | Electric Razor Stores |
| 5998 | 5998 | Tent and Awning Shops |
| 5999 | 5999 | Miscellaneous Specialty Retail |
| 6010 | 6010 | Financial Institutions - Manual Cash Disbursements |
| 6011 | 6011 | Automated Cash Disburse |
| 6012 | 6012 | Financial Institutions - Merchandise and Services |
| 6050 | 6050 | Quasi Cash, Money Orders - Member Financial Institution |
| 6051 | 6051 | Quasi Cash, Money Orders - Non-Financial institution |
| 6211 | 6211 | Security Brokers/Dealers |
| 6300 | 6300 | Insurance Underwriting, Premiums |
| 6381 | 6381 | Insurance Premiums |
| 6399 | 6399 | Insurance - Default |
| 6513 | 6513 | Real Estate Agents and Managers - Rentals |
| 6529 | 6529 | Remote Stored Value Load--MemberFinancial Inst |
| 6530 | 6530 | Remote Stored Value Load--Merchant |

| MCC Lower | MCC Upper | MCC Category Description |
|---|---|---|
| 6531 | 6531 | Payment Service Provider - MoneyTransfer For A Purchase |
| 6532 | 6532 | Payment Service Provider - MemberFinancial Inst. - Pymt Trans. |
| 6533 | 6533 | Payment Service Provider - Merchant - Payment Transaction |
| 6534 | 6534 | Money Transfer - Member FinancialInstitution |
| 6535 | 6535 | Value Purchase-Member Financial Institution |
| 6538 | 6538 | MASTERCARD MONEYSEND FUNDING TRANSACTION |
| 6540 | 6540 | POI Funding Transactions (Excluding Mastercard MoneySend) |
| 6760 | 6760 | Savings Bonds |
| 7011 | 7011 | Hotels, Motels, and Resorts |
| 7012 | 7012 | Timeshares |
| 7032 | 7032 | Sporting/Recreation Camps |
| 7033 | 7033 | Trailer Parks, Campgrounds |
| 7210 | 7210 | Laundry, Cleaning Services |
| 7211 | 7211 | Laundries |
| 7216 | 7216 | Dry Cleaners |
| 7217 | 7217 | Carpet/Upholstery Cleaning |
| 7221 | 7221 | Photographic Studios |
| 7230 | 7230 | Barber and Beauty Shops |
| 7251 | 7251 | Shoe Repair/Hat Cleaning |
| 7261 | 7261 | Funeral Services, Crematories |
| 7273 | 7273 | Dating/Escort Services |
| 7276 | 7276 | Tax Preparation Services |
| 7277 | 7277 | Counseling Services |
| 7278 | 7278 | Buying/Shopping Services |
| 7296 | 7296 | Clothing Rental |
| 7297 | 7297 | Massage Parlors |
| 7298 | 7298 | Health and Beauty Spas |
| 7299 | 7299 | Miscellaneous General Services |

| MCC Lower | MCC Upper | MCC Category Description |
|---|---|---|
| 7311 | 7311 | Advertising Services |
| 7321 | 7321 | Credit Reporting Agencies |
| 7322 | 7322 | Debt Collection Agency |
| 7333 | 7333 | Commercial Photography, Art and Graphics |
| 7338 | 7338 | Quick Copy, Repro, and Blueprint |
| 7339 | 7339 | Secretarial Support Services |
| 7342 | 7342 | Exterminating Services |
| 7349 | 7349 | Cleaning and Maintenance |
| 7361 | 7361 | Employment/Temp Agencies |
| 7372 | 7372 | Computer Programming |
| 7375 | 7375 | Information Retrieval Services |
| 7379 | 7379 | Computer Repair |
| 7392 | 7392 | Consulting, Public Relations |
| 7393 | 7393 | Detective Agencies |
| 7394 | 7394 | Equipment Rental |
| 7395 | 7395 | Photo Developing |
| 7399 | 7399 | Miscellaneous Business Services |
| 7511 | 7511 | Truck Stop |
| 7512 | 7512 | CAR RENTAL AGENCIES -- NOT LISTED BELOW |
| 7513 | 7513 | Truck/Utility Trailer Rentals |
| 7519 | 7519 | Recreational Vehicle Rentals |
| 7521 | 7521 | Car Rental Agencies |
| 7523 | 7523 | Parking Lots, Garages |
| 7531 | 7531 | Auto Body Repair Shops |
| 7534 | 7534 | Tire Retreading and Repair |
| 7535 | 7535 | Auto Paint Shops |
| 7535 | 7535 | Paint Shop Automotives |
| 7538 | 7538 | Auto Service Shops |

| MCC Lower | MCC Upper | MCC Category Description |
|---|---|---|
| 7542 | 7542 | Car Washes |
| 7549 | 7549 | Towing Services |
| 7622 | 7622 | Electronics Repair Shops |
| 7623 | 7623 | A/C, Refrigeration Repair |
| 7629 | 7629 | Small Appliance Repair |
| 7631 | 7631 | Watch/Jewelry Repair |
| 7641 | 7641 | Furniture Repair, Refinishing |
| 7692 | 7692 | Welding Repair |
| 7699 | 7699 | Miscellaneous Repair Shops |
| 7800 | 7800 | Government Owned Lottery |
| 7801 | 7801 | Internet Gambling |
| 7802 | 7802 | Government Licensed Horse/Dog Racing |
| 7829 | 7829 | Picture/Video Production |
| 7832 | 7832 | Motion Picture Theaters |
| 7841 | 7841 | Video Tape Rental Stores |
| 7911 | 7911 | Dance Hall, Studios, Schools |
| 7922 | 7922 | Theatrical Ticket Agencies |
| 7929 | 7929 | Bands, Orchestras |
| 7932 | 7932 | Billiard/Pool Establishments |
| 7933 | 7933 | Bowling Alleys |
| 7941 | 7941 | Sports Clubs/Fields |
| 7991 | 7991 | Tourist Attractions and Exhibits |
| 7992 | 7992 | Golf Courses - Public |
| 7993 | 7993 | Video Amusement Game Supplies |
| 7994 | 7994 | Video Game Arcades |
| 7995 | 7995 | Betting/Casino Gambling |
| 7995 | 7995 | DISALLOWED - Gambling Transactions |
| 7996 | 7996 | Amusement Parks/Carnivals |

| MCC Lower | MCC Upper | MCC Category Description |
|---|---|---|
| 7997 | 7997 | Country Clubs |
| 7998 | 7998 | Aquariums |
| 7999 | 7999 | Miscellaneous Recreation Services |
| 8011 | 8011 | Doctors |
| 8021 | 8021 | Dentists, Orthodontists |
| 8031 | 8031 | Osteopaths |
| 8041 | 8041 | Chiropractors |
| 8042 | 8042 | Optometrists, Ophthalmologist |
| 8043 | 8043 | Opticians, Eyeglasses |
| 8049 | 8049 | Chiropodists, Podiatrists |
| 8050 | 8050 | Nursing/Personal Care |
| 8062 | 8062 | Hospitals |
| 8071 | 8071 | Medical and Dental Labs |
| 8082 | 8082 | Health Care |
| 8099 | 8099 | Medical Services |
| 8111 | 8111 | Legal Services, Attorneys |
| 8211 | 8211 | Elementary, Secondary Schools |
| 8220 | 8220 | Colleges, Universities |
| 8241 | 8241 | Correspondence Schools |
| 8244 | 8244 | Business/Secretarial Schools |
| 8249 | 8249 | Vocational/Trade Schools |
| 8299 | 8299 | Educational Services |
| 8351 | 8351 | Child Care Services |
| 8398 | 8398 | Charitable and Social Service Organizations - Fundraising |
| 8641 | 8641 | Civic, Social, Fraternal Associations |
| 8651 | 8651 | Political Organizations |
| 8661 | 8661 | Religious Organizations |
| 8675 | 8675 | Automobile Associations |

| MCC Lower | MCC Upper | MCC Category Description |
|---|---|---|
| 8699 | 8699 | Membership Organizations |
| 8734 | 8734 | Testing Laboratories |
| 8911 | 8911 | Architectural/Surveying Services |
| 8931 | 8931 | Accounting/Bookkeeping Services |
| 8999 | 8999 | Professional Services |
| 9211 | 9211 | Court Costs, Including Alimony and Child Support - Courts of Law |
| 9222 | 9222 | Fines - Government Administrative Entities |
| 9223 | 9223 | Bail and Bond Payments (payment to the surety for the bond, not the actual bond paid to the government agency) |
| 9311 | 9311 | Tax Payments - Government Agencies |
| 9399 | 9399 | Government Services (Not Elsewhere Classified) |
| 9402 | 9402 | Postal Services - Government Only |
| 9405 | 9405 | U.S. Federal Government Agencies or Departments |
| 9700 | 9700 | Automated Referral Service |
| 9701 | 9701 | Visa Credential Service |
| 9702 | 9702 | Emergency Services |
| 9751 | 9751 | U.K. Supermarkets - Electronic HotFile |
| 9752 | 9752 | U.K. Petrol Stations - ElectronicHot File |
| 9754 | 9754 | GAMBLING-HORSE, DOG RACING-ST LOTTERY |
| 9950 | 9950 | Intra-Company Purchases |
| 9999 | 9999 | CLIENT DEFINED MCC |

# 4.20 Misc_TLV_Data Field

The Misc_TLV_Data field is used for sending rarely used fields that can normally be ignored.

For the format of this field, see section Data Types: *TLV10*.

The table below lists the tag values and their meaning.

**Note:** Thredd may add tags at any time (without a specification update). To avoid errors, your systems should ignore any unknown tags.

| Tag | Value Format | Description |
|---|---|---|
| V125030003 | N(16,16) | Visa Original Trace ID, exactly as received from Visa.<br>For information only - Traceid_Original is the recommended field to use instead, this can be used if you suspect Traceid_Original is not as expected. |
| V1045D0082 | AN(10) | 35AN Plan Registration System Identifier. Contains the plan registration system identifier value to identify the transaction as a Visa Installment Solutions transaction. This identifier is a10-character alphanumeric unique value. (Note: ISO definition allows up to 35 characters, but Visa will send 10 characters). |
| CGBRDEBT01 | ANS(1,35) | UK Debt repayment - Recipient Last Name<br>(Specific to UK country) |
| CGBRDEBT02 | ANS(1,10) | UK Debt repayment - Recipient Postal Code<br>(Specific to UK country) |
| CGBRDEBT03 | N(8,8) | UK Debt repayment - Recipient Date of Birth YYYYMMDD<br>(Specific to UK country) |
| CGBRDEBT04 | ANS(1,20) | UK Debt repayment - Recipient Account Number<br>(Specific to UK country) |
| G00001S0*nn* | ANS(1,99) | Sender data obtained from Mastercard authorisation message field 108 and Visa fields 56 and 104. For details, see Sender and Receiver Tags. |
| G00001R0*nn* | ANS(1,99) | Receiver data obtained from Mastercard authorisation message field 108 and Visa fields 56 and 104. For details, see Sender and Receiver Tags. |
| V034xxxxxx | HEX(2,4000) | This field is used by acquirers to indicate if they have appplied any Strong Customer Authentication (SCA) acquirer exemption to the transaction; see the PSD2 SCA Guide > PSD2 Acquirer Exemptions.<br><br>**Note**: You should not normally need to extract the data in this field, as Thredd already provides this information in the GPS_POS_DATA field, position 25, Acquirer Exempt from SCA Indicator.<br><br>Visa Base1 field 34 e-commerce data (complete) is provided as hexadecimals. Each two hexadecimal digits represents one binary byte of data as Thredd received it from Visa. The first two hexadecimals will be the first dataset identifier. Example: *0100078605F14BA74BA7*<br>For more information on the Visa field 34, refer to the following Visa documents: *VisaNet Authorization-Only Online Messages - Technical Specification* and Visa PSD2 SCA for Remote Electronic Transactions Implementation Guide.<br><br>**Note**: If character data is present, the hexadecimal values will be represented as an IBM EBCDIC code page 1148 character (e.g., if Visa provided the letter “x” in 1 byte, then this is represented here as the hexadecimal value “A7”.). For more information on IBM character sets defined in the EBCDIC code page 1148, see ibm.com: docs > Character sets. |

| Tag | Value Format | Description |
|---|---|---|
| Any other value | Anything | Unknown |

Where *nn* represents additional digits.

The following formats are intended for future Mastercard and Visa raw data, if they are required:

| Data Source | Tag Construction plan |
|---|---|
| Banknet<br>(Mastercard online authorisations) | 'M' + 3 digit DE + 3 digit subelement + 3 digit subfield |
| Visa Base1<br>(visa online authorisations) | 'V' + 3 digit DE + 2 hexdigit dataset ID + 4 hexdigit Tag<br>(if sending all datasets, 'xx' will be used as the dataset ID)<br>(if sending all tags, 'xxxx' will be used as the Tag) |
| GCMS<br>(Mastercard clearing) | 'm' + 3 digit DE + 4 digit PDS + 2 digit subfield |
| Visa Base 2<br>(Visa clearing) | 'v' + 2 digit TC + 1 digit TCR + 3 digit start offset + 3 digit end offset |
| Specific to a particular country | 'C' + 3-alpha-country-code + 6 char identifier |
| Other | Initial character will not be any of 'M','V','m','v','C' |

## 4.20.1 Sender and Receiver Tags

The table below provides details of Sender and Receiver data obtained from the Mastercard authorisation message field 108 and Visa fields 56 and 104.

The length of the value precedes the actual value, for example: *G00001S0030007Johnson*, where *G00001S003* is the tag for last name, *0007* is the tag value length, and *Johnson* is the tag value.

| Misc_TLV_Data Tag Name | Description |
|---|---|
| G00001S001 | Sender first name |
| G00001S002 | Sender middle name |
| G00001S003 | Sender last name |
| G00001S004 | Sender street address |
| G00001S005 | Sender city |
| G00001S006 | Sender province |
| G00001S007 | Sender country (three character alpha ISO code) |
| G00001S008 | Sender postcode |
| G00001S009 | Sender phone number |

| Misc_TLV_Data Tag Name | Description |
|---|---|
| G00001S010 | Sender date of birth (MMDDYYYY). For example 25011996. |
| G00001S011 | Sender account number (rightmost 4 digits) |
| G00001S012 | Sender identity document (ID) type (00 = passport; 01 = National Identification Card; 02 = Driver's License; 03 = Government Issued; 04 = Other; 05-10 reserved for future use) |
| G00001S013 | Sender ID number |
| G00001S014 | Sender ID country; three character alpha ISO code (e.g., CYP = Cypress) |
| G00001S015 | Sender ID expiry Date (MMDDYYYY) |
| G00001S016 | Sender nationality (three character alpha ISO code) |
| G00001S017 | Sender birth country (three character alpha ISO code) |
| G00001S018 | Sender account number type. See Account Number Type. |
| G00001S0V1 | Sender funds source. See Source of Funds. |
| G00001S0V2 | Sender claim code |
| G00001R001 | Receiver first name |
| G00001R002 | Receiver middle name |
| G00001R003 | Receiverlast name |
| G00001R004 | Receiver street address |
| G00001R005 | Receiver city |
| G00001R006 | Receiver province |
| G00001R007 | Receiver country (3 letter country code, e.g., CYP = Cypress) |
| G00001R008 | Receiver postcode |
| G00001R009 | Receiver phone number |
| G00001R010 | Receiver date of birth (MMDDYYYY). For example 12311996. |
| G00001R011 | Receiver account number (rightmost 4 digits) |
| G00001R012 | Receiver identity type (00 = passport; 01 = National Identification Card; 02 = Driver's License; 03 = Government Issued; 04 = Other; 05-10 reserved for future use) |
| G00001R013 | Receiver ID number |
| G00001R014 | Receiver ID country code (three character alpha ISO code) |
| G00001R015 | Receiver ID expiry date (MMDDYYYY) |
| G00001R016 | Receiver nationality (three character alpha ISO code) |

| Misc_TLV_Data Tag Name | Description |
|---|---|
| G00001R017 | Receiver birth country (three character alpha ISO code) |
| G00001R018 | Receiver account number type. See Account Number Type. |

## Account Number Type

| Value | Description |
|---|---|
| 0 | Other |
| 1 | RTN + Bank account |
| 2 | IBAN |
| 3 | Card account |
| 4 | Email |
| 5 | Phone number |
| 6 | Bank account number (BAN) + Bank Identification Code (BIC) |
| 7 | Wallet ID |
| 8 | Social Network ID |

## Source of Funds

| Value | Description |
|---|---|
| 1 | Visa credit |
| 2 | Visa debit |
| 3 | Visa prepaid |
| 4 | Cash |
| 5 | Debit/deposit access accounts other than those linked to a Visacard (includes checking/savings accounts and proprietary debit/ATM cards) |
| 6 | Credit accounts other than those linked to a Visa card (includes credit cards and proprietary credit lines) |

## Example

Sender Data = *0104Adam0703ROM080511A56V10205*

Receiver Data = *0310John Smith*

MiscTLVData = *G00001S0010004AdamG00001S0070003ROMG00001S008000511A56G00001S0V1000205G00001R0030010John Smith*

# 4.21 Network_Fraud_Data Format

The Network_Fraud_Data field contains Fraud and Risk indicators from the network. This field is a fixed format field. There is no identifier of subfields; each position refers to a specific field from Visa or Mastercard. See the table below.

| Positions | Subfield Name (Not part of message) | Visa Usage | Mastercard Usage |
|---|---|---|---|
| 1-3 | Fraud Score 1 | VAA Score | Mastercard Fraud Score |
| 4-6 | Fraud Score 1 Maximum Value | Fixed “099” | Fixed “999“ |
| 7-8 | Fraud Score Reason 1.1 | Spaces | Fraud Score Reason Code 1 |
| 9-10 | Fraud Score Reason 1.2 | Spaces | Spaces |
| 11-12 | Fraud Score Condition 1.1 | VAA Condition Code 1 | Spaces |
| 13-14 | Fraud Score Condition 1.2 | VAA Condition Code 2 | Spaces |
| 15-16 | Fraud Score Condition 1.3 | Spaces (RFU) | Spaces |
| 17-19 | Fraud Score 2 | VISA Risk Assessment Score | MastercardFraud Rule Manager Score |
| 20-22 | Fraud Score 2 Maximum Value | Fixed “099“ | Fixed “999“ |
| 23-24 | Fraud Score Reason 2.1 | Spaces | Fraud Rule Manager Reason Code 1 |
| 25-26 | Fraud Score Reason 2.2 | Spaces | Fraud Rule Manager Reason Code 2 |
| 27-28 | Fraud Score Condition 2.1 | VISA Risk Assessment Condition Code 1 | Spaces |
| 29-30 | Fraud Score Condition 2.2 | Spaces (RFU) | Spaces |
| 31-32 | Fraud Score Condition 2.3 | Spaces (RFU) | Spaces |

# 4.22 Payment Token Fields

This section provides details of the fields which hold payment token information.

## 4.22.1 PaymentToken_activationMethod

Describes the method used to activate the payment token. The table below describes the valid options and the content for each method.

| PaymentToken_activationMethod | Description | Content included |
|---|---|---|
| 0 | None | Empty |
| 1 | SMS to mobile | Mobile phone number held on Thredd for the cardholder |
| 2 | Email | Email address held on Thredd for the cardholder |
| 3 | Cardholder to call automated call centre | Call centre number |
| 4 | Cardholder to call normal call centre | Call centre number |
| 5 | Website | Website URL |
| 6 | Mobile application | Mobile application reference |
| 7 | Cardholder will receive voice call | Mobile phone number held on Thredd for the cardholder |

## 4.22.2 PaymentToken_deviceType

Describes the type of device the payment token is installed on. Below is a list of possible values.

| PaymentToken_deviceType | Description |
|---|---|
| A | Clothing / apparel |
| B | Media/gaming device, eg XBox, TV, set-top box |
| C | Card |
| E | Mini-card. A physical card of reduced dimensions (height and width) which is smaller than the standard ID-1 card size (See ISO 7810 for the ID-1 standard.) |
| D | Domestic application (e.g., fridge, washing machine) |
| F | Fob or key fob |
| G | Mobile tag, case or sleeve |
| H | Fashion accessory (e.g., handbag, glasses) |
| J | Jewelry (e.g., necklace, rings, bracelets). For Visa Contactless devices, this implies any wrist-worn device (including watches and wristbands.) |
| M | Mobile phone |
| N | Non-Card. This originates from Visa Contactless devices, where it indicates anything except: Card (C), Mini-Card (E), Mobile Phone (M) or Wrist-worn device (J). |

| PaymentToken_deviceType | Description |
|---|---|
| P | Personal computer or laptop |
| R | Wristband |
| S | Sticker |
| T | Tablet |
| U | Unknown |
| V | Vehicle |
| W | Watch |
| X | Mobile phone or tablet |
| other | Ask Thredd for any additional values |

## 4.22.3 PaymentToken_type

Describes the type of payment token. Below is a list of possible values.

| PaymentToken_type | Description |
|---|---|
| BW | Browser accessible Wallet |
| C | Contactless device PAN |
| CF | Card on File PAN |
| CL | Cloud-base payments PAN |
| P | Real PAN |
| SE | Secure Element PAN |
| U | Unknown - other PAN mapping not otherwise defined |
| V | Virtual PAN |

## 4.22.4 PaymentToken_creatorStatus

Describes the status of the payment token on the token creator's system. Below is a list of possible values.

**Note:** Thredd receive this value from the token creator's system.

**Note:** This field can contain " " or be empty when no value has been provided.

.

| PaymentToken_creatorStatus | Description | Is this status reversible? |
|---|---|---|
| A | Active | Yes |

| PaymentToken_creatorStatus | Description | Is this status reversible? |
|---|---|---|
| D | Deleted on cardholder device | No |
| I | Inactive | Yes |
| N | Not tokenised | Yes |
| S | Suspended | Yes |
| X | Deactivated | No |

## 4.22.5 PaymentToken_wallet

Describes the type of eWallet the payment token belongs to. Below is a list of possible values.

| PaymentToken_wallet | Description |
|---|---|
| ADYEN | Adyen (Gateway TSP) |
| AMAZON | Amazon |
| ANDROID | Google Pay Wallet<br>(known before 20/2/2018 as “Android Pay Wallet”) |
| APPLE | Apple Pay Wallet |
| ASIA | Asia Pay |
| CHUNGHWA | Chungwa |
| FITBIT | Fitbit Pay Wallet |
| GARMIN | Garmin Pay |
| LGPAY | LG Electronics |
| MASTERPASS | MasterPass from Mastercard |
| MICROSOFT | Microsoft |
| MRCHTOKEN | Merchant Tokenisation Program |
| MTBLANC | Montblanc Pay |
| PAYNETPHYR | Phyre |
| RELIANCE | Reliance |
| SAMA | Saudi Arabia Monetary Authority |
| SAMSUNG | Samsung Pay Wallet |
| SECURECO | SecureCo |
| STOCARD | Stocard Pay Wallet |

| PaymentToken_wallet | Description |
| --- | --- |
| VISA_DCA | Visa Digital Commerce App |
| VISACKOUT | Visa Checkout |
| WORLDPAY | WorldPay |
| other | Ask Thredd for any additional wallets |

## 4.22.6 PaymentToken_PanSource

Describes the originator of a Tokenisation Authorisation Request.

| Value | Description |
| --- | --- |
| 0 | Information not provided |
| 5 | Chip dip (i.e. EMV contact) |
| 6 | Key entered / added manually |
| 7 | EMV contactless or VSDC contactless |
| F | Account Data on File |
| P | Card added via application / Mobile banking app |
| W | DPAN input from Wallet Provider (Token to Token) |

# 4.23 PIN Fields

The card's Primary Identification Number (PIN) is encapsulated in a PIN block and then encrypted using the Triple-DES algorithm.

The Data Encryption Standard (DES), including Triple-DES, is described by the United States National Institution of Standards and Technology (NIST) in document NIST 800-67 which is available here: https://nvlpubs.nist.gov/nistpubs/Legacy/SP/nistspecialpublication800-67r1.pdf

## 4.23.1 PIN Block Formats

The authorisation request message field PIN_Format describes the PIN block format as follows:

**Note:** This version of the specification only sends PIN blocks in format 1 (ISO9564-1 Format 1.) This ensures that PINs are properly protected and the receiver can decrypt them without needing to know the PAN. ISO9564-1 is available from https://www.iso.org/home.html

| PIN_Format | Format | Example |
|---|---|---|
| 0 | ISO 9564-1 Format 0 | PAN = 5299887766554439<br>PIN = 223344<br>Plaintext PIN field = '0'+ PIN length (4-C) + PIN + 'F's padding to 16 hex digits<br>= 06223344FFFFFFFF<br>Account number field = '0000' + rightmost 12 digits of the PAN excluding the check digit<br>= 0000988776655443<br>Now XOR the 2 results to get the PIN block:<br>06223344FFFFFFFF xor 0000988776655443<br>=> PIN BLOCK = 0622ABC3899AABBC |
| 1 | ISO 9564-1 Format 1 | PIN BLOCK = '1' + PIN length (4-C) + PIN + random padding to 16 hex digits<br>e.g. PIN = 223344<br>=> 8 random padding bytes needed, e.g. 358C44BF<br>=> PIN BLOCK = 16223344358C44BF |
| 2 | ISO 9564-1 Format 2<br>(also see EMV 4.3 book 3 VERIFY command) | PIN BLOCK = '2' + PIN length (4-C) + PIN + 'F' pad nibbles up to 16 hex<br>e.g. PIN = 223344<br>=> PIN BLOCK = '2' + '6' + '223344' + 'FFFFFFFF'<br>=> PIN BLOCK = 26223344FFFFFFFF |
| 3 | ISO 9564-1 Format 3 | PAN = 5299887766554439<br>PIN = 223344<br>Plaintext PIN field = '3'+ PIN length (4-C) + 'A-F' random padding to 16 hex digits<br>= 36223344CBADFEEA<br>Account number field = '0000' + rightmost 12 digits of the PAN excluding the check digit<br>= 0000988776655443<br>36223344CBADFEEA xor 0000988776655443<br>=> PIN BLOCK = 3622ABC3BDC8AAA9 |

## 4.23.2 PIN Encryption Example

In this example:

- PIN_Format =1 (ISO 9564-1 Format 1)
- PIN = 223344
- Random padding nibbles for PIN block = 358C44BF

- EHI PIN Key established between Thredd and 3rd party is Triple length 3DES key = 0123456789abcdeffedcba9876543210B5BC921385681AB9

=> PIN BLOCK = 16223344358C44BF

=> PIN field (PIN block 3DES encrypted with EHI PIN Key 0123456789abcdeffedcba9876543210B5BC921385681AB9)

=> PIN field = 479ECEE7AEA0EBAE

## 4.23.3 Establishment of EHI PIN Keys

Before you can transfer PIN data over EHI, the following needs to have occurred first:

- Establishment of a triple length DES key, which is used to transfer PIN encryption keys for the EHI Zone. (Zone Master Key.)
- Transmission of a PIN key encrypted under the EHI Zone key in ECB mode using 3DES.
- All PINs will be encrypted under the PIN key.

This process is expected to be done manually, as it will be done rarely.

For example:

1. New random 3DES triple length EHI Zone key of clear value '022576DFF8B3D30816232F8637AB0D7F68C24AAEA8AB4F02' is generated by Thredd.
2. This is split into 3 clear XOR components of:
    1. D7E307AEDA98D35498E986145A735D367FBA8D6BF0C3ED30
    2. 92464A17A5C6CC2CEC25CC381617A282A6F0E69ABE692E02
    3. 47803B6687EDCC7062EF65AA7BCFF2CBB188215FE6018C30
3. These 3 XOR components are delivered to the 3rd party, to separate people independently.
4. Each 3rd party who has received an XOR component enters them into their Hardware Security Module (HSM).
5. The 3rd party HSM now has the clear Zone Master key of 022576DFF8B3D30816232F8637AB0D7F68C24AAEA8AB4F02 installed.
6. Thredd then generate a random triple length EHI PIN Key of clear value '20438354E545C7CD2FB5B9F84CE385C10431A91CF9B98FA5'.
7. Thredd then transmit the EHI PIN key encrypted using Triple-DES in ECB mode under the EHI Zone Key. EHI PIN Key under Zone key is '898AEA86B81C1CA61E575F208E0535A25A1E84D4E88B9097'.
8. The 3rd party then sends this EHI PIN Key under Zone key value to their HSM.
9. 3rd party HSM now has the clear EHI PIN Key of '20438354E545C7CD2FB5B9F84CE385C10431A91CF9B98FA5'.
10. 3rd party can now use this to decrypt the PIN field.

## 4.23.4 Worked example of 3DES ECB encrypting the PIN key under the Master Key

Using the above example, this is how you encrypt:

- the PIN key (20438354E545C7CD2FB5B9F84CE385C10431A91CF9B98FA5)
- under the Master key (022576DFF8B3D30816232F8637AB0D7F68C24AAEA8AB4F02).

Encryption mode is ECB (Electronic Code Book.) This means each 8-byte input block is separately encrypted under the encryption key.

Starting point:

- Clear Zone Master key = 022576DFF8B3D30816232F8637AB0D7F68C24AAEA8AB4F02 (Triple length DES key)
- Clear Zone PIN key = 20438354E545C7CD2FB5B9F84CE385C10431A91CF9B98FA5 (Triple length DES key)

Steps:

1. First 8 bytes of PIN key = 20438354E545C7CD
   Triple DES encrypt 20438354E545C7CD under 022576DFF8B3D30816232F8637AB0D7F68C24AAEA8AB4F02
   = 898AEA86B81C1CA6
2. Second 8 bytes of PIN key = 2FB5B9F84CE385C1
   Triple DES encrypt 2FB5B9F84CE385C1 under 022576DFF8B3D30816232F8637AB0D7F68C24AAEA8AB4F02
   = 1E575F208E0535A2

3. Third 8 bytes of PIN key = 0431A91CF9B98FA5
   Triple DES encrypt 0431A91CF9B98FA5 under 022576DFF8B3D30816232F8637AB0D7F68C24AAEA8AB4F02
   = 5A1E84D4E88B9097
4. Now concatenate the 3 encrypted results = 898AEA86B81C1CA6 1E575F208E0535A2 5A1E84D4E88B9097
5. PIN key under Master Key = 898AEA86B81C1CA61E575F208E0535A25A1E84D4E88B9097

# 4.23.5 Example Triple DES operations with a triple length key

Various examples above involve a triple length DES key encrypting or decrypting an 8-byte block.

Basic Algorithm:

- A Triple length key is 3 DES (8-byte) keys concatenated: K1, K2, K3
- Encryption of Data D = $ENCRYPT_{K3}(DECRYPT_{K2}(ENCRYPT_{K1}(D)))$
- Decryption of Data D = $DECRYPT_{K1}(ENCRYPT_{K2}(DECRYPT_{K3}(D)))$

This is an example of how that works.

Suppose the Triple Length key = 022576DFF8B3D30816232F8637AB0D7F68C24AAEA8AB4F02 (e.g. same as clear Zone Master Key above)

Suppose 8-byte block = 20438354E545C7CD (e.g. same as first 8 bytes of the clear PIN key).

## Triple DES Encryption

To encrypt this block with the triple length key:

1. DES Encrypt 20438354E545C7CD  with $1^{st}$ part of Triple length key (022576DFF8B3D308)
   = 23085EE9F52CE247
2. DES Decrypt the result of above (23085EE9F52CE247) with $2^{nd}$ part of Triple length key (16232F8637AB0D7F)
   = 2A5D03C4B8A9F91D
3. DES Encrypt the result of above (2A5D03C4B8A9F91D) with $3^{rd}$ part of Triple length key (68C24AAEA8AB4F02)
   = 898AEA86B81C1CA6

So the 3DES encryption of 20438354E545C7CD, with key 022576DFF8B3D30816232F8637AB0D7F68C24AAEA8AB4F02,
is 898AEA86B81C1CA6

## Triple DES Decryption

As an example, we can decrypt the result of above (898AEA86B81C1CA6) with the same triple length key
(022576DFF8B3D30816232F8637AB0D7F68C24AAEA8AB4F02)

To decrypt this block with the triple length key:

1. DES Decrypt 898AEA86B81C1CA6 with $3^{rd}$ part of Triple length key (68C24AAEA8AB4F02)
   = 2A5D03C4B8A9F91D
2. DES Encrypt the result of above (2A5D03C4B8A9F91D) with $2^{nd}$ part of Triple length key (16232F8637AB0D7F)
   = 23085EE9F52CE247
3. DES Decrypt the result of above (23085EE9F52CE247) with $1^{st}$ part of Triple length key (022576DFF8B3D308)
   = 20438354E545C7CD

So the 3DES decryption of 898AEA86B81C1CA6, with key 022576DFF8B3D30816232F8637AB0D7F68C24AAEA8AB4F02,
is 20438354E545C7CD.

# 4.24 POS_Data_DE61 field

The table below describes the POS_Data_DE61 field, used for Mastercard Authorisation related message. (See also Get Transaction Message fields: POS_Data_DE61)

All subfields are concatenated together in order. Subfields begin at 1. Only the first 9 subfields (i.e. subfields 1 to 9, the first 9 characters) in the field are mandatory. For example, you might have just the first 9 subfields, or first 10, or first 11, or first 12, or first 13 or all 14.

**Note:** This field is deprecated in EHI version 3.0.

| subfield | Name | Format | Description / Valid Values |
|---|---|---|---|
| 1 | POS Terminal Attendance | N(1,1) | POS Terminal Attendance - indicates if the card acceptor is:<br>0 = Attended terminal<br>1 = Unattended terminal (cardholder-activated terminal [CAT], home PC, mobile phone, PDA)<br>2 = No terminal used (voice/audio response unit [ARU] authorisation) |
| 2 | RFU | N(1,1) | 0 = Reserved for future use. |
| 3 | POS Terminal Location | N(1,1) | POS Terminal Location - indicates the terminal location:<br>0 = On premises of card acceptor facility<br>1 = Off premises of card acceptor facility (merchant terminal–remote location)<br>2 = Off premises of card acceptor facility (cardholder terminal including home PC, mobile phone, PDA)<br>3 = No terminal used (voice/ARU authorisation)<br>4 = On premises of card acceptor facility (cardholder terminal including home PC, mobile phone, PDA) |
| 4 | POS Cardholder Presence | AN(1,1) | POS Cardholder Presence - indicates whether the cardholder is present at the point of service and explains the condition if the cardholder is not present.<br>0 = Cardholder present<br>1 = Cardholder not present, unspecified<br>2 = Mail/facsimile order<br>3 = Phone/ARU order<br>4 = Standing order/recurring transactions<br>5 = Electronic order (home PC, Internet, mobile phone, PDA) |
| 5 | POS Card Presence | N(1,1) | POS Card Presence - indicates if the card is present at the point of service.<br>0 = Card present<br>1 = Card not present |
| 6 | POS Card Capture Capabilities | N(1,1) | POS Card Capture Capabilities - indicates whether the terminal has card capture capabilities.<br>0 = Terminal/operator has no card capture capability<br>1 = Terminal/operator has card capture capability |
| 7 | POS Transaction Status | N(1,1) | POS Transaction Status - indicates the purpose or status of the request.<br>0 = Normal request (original presentment)<br>2 = SecureCode phone order<br>3 = ATM installment inquiry<br>4 = Preauthorised request<br>6 = ATC update |

| subfield | Name | Format | Description / Valid Values |
|---|---|---|---|
| | | | 8 = Account Status Inquiry (ASI) service<br>9 = Tokenization request/notification |
| 8 | POS Transaction Security | N(1,1) | POS Transaction Security indicates the card acceptor's security level.<br>0 = No security concern<br>1 = Suspected fraud (merchant suspicious–code 10)<br>2 = ID verified |
| 9 | RFU | N(1,1) | 0 = Reserved for future use. |
| 10 | Cardholder-Activated Terminal Level | N(1,1) | Indicates whether the cardholder activated the terminal with the use of the card and the CAT security level.<br>0 = Not a CAT transaction<br>1 = Authorized Level 1 CAT: Automated dispensing machine with PIN<br>2 = Authorized Level 2 CAT: Self-service terminal<br>3 = Authorized Level 3 CAT: Limited-amount terminal<br>4 = Authorized Level 4 CAT: In-flight commerce<br>5 = Reserved<br>6 = Authorized Level 6 CAT: Electronic commerce<br>7 = Authorized Level 7 CAT: Transponder transaction<br>8 = Remote Terminal (eg Mastercard Tap to More transaction)<br>9 = MPOS Acceptance Device |
| 11 | POS Card Data Input Capabilities | N(1,1) | Terminal capabilities for transferring the data on the card into the terminal.<br>0 = Unknown or unspecified<br>1 = No terminal used (voice/ARU authorization); server<br>2 = Magnetic stripe reader only<br>3 = Contactless M/Chip (Proximity Chip)<br>Terminal supports PayPass M/Chip and PayPass magstripe transactions. The terminal also may support other card input types, including contact transactions<br>4 = Contactless Magnetic Stripe (Proximity Chip) only<br>The terminal supports PayPass magstripe transactions. The terminal also may support other card input types, including contact transactions<br>5 = EMV specification (compatible chip reader) and magnetic stripe reader.<br>The terminal also may support contactless transactions; however contactless transactions should always be submitted with value 3 or 4.<br>6 = Key entry only<br>7 = Magnetic stripe reader and key entry<br>8 = EMV specification (compatible chip reader), magnetic stripe reader and key entry. The terminal also may support contactless transactions; however contactless transactions should always be submitted with value 3 or 4.<br>9 = EMV specification (compatible chip reader) only - The terminal also may support contactless transactions; however contactless transactions should always be submitted with value 3 or 4.<br>DE 61, subfield 11 values 3, 4, 5, 8, and 9 can only be used if the terminal is chip certified by Mastercard. |

| subfield | Name | Format | Description / Valid Values |
|---|---|---|---|
| 12 | POS Authorization Life Cycle | N(2,2) | Indicates the number of days pre-authorization will stay in effect. Used mainly for car rentals and hotel reservations. Zeros indicate it does not apply. Zero fill or number of days. |
| 13 | POS Country Code | N(3,3) | ISO 3-digit numeric country code of the terminal location.<br>See Country Codes. |
| 14 | POS Postal Code | ANS(0,10) | Merchant postal code. |

# 4.25 POS_Data_DE22 in Authorisation Messages

The POS Entry Mode and POS PIN Capture capability field (POS_Data_DE22) is made up of various subfields. (See also Get Transaction Message fields: POS_Data_DE22)

**Note:** Similar values are used by Visa and Mastercard, but there are some subtle differences. The differences for each are described in the tables below.

## 4.25.1 POS_Data_DE22 Layout Format

The field for Mastercard Authorisation Messages consists of 3 decimal digits as follows:

| Position | Length | Description |
|---|---|---|
| 1-2 | 2 | PAN Entry Method<br>See POS_Data_DE22 positions 1-2: PAN Entry Method |
| 3 | 1 | PIN Entry Capability<br>See POS_Data_DE22 positions 3: Terminal PIN Entry Capability |

The field for Visa Authorisation Messages consists of 4 decimal digits as follows:

| Position | Length | Description |
|---|---|---|
| 1-2 | 2 | PAN Entry Method<br>See POS_Data_DE22 positions 1-2: PAN Entry Method |
| 3 | 1 | PIN Entry Capability<br>See POS_Data_DE22 positions 3: Terminal PIN Entry Capability |
| 4 | 1 | Filler - value ‘0’ |

## 4.25.2 POS_Data_DE22 positions 1-2: PAN Entry Method

**Note:** A normalised value to identify the Card Data Input Method can be found in GPS_POS_Data field, in position 3. See "GPS_POS_Data field" on page 203 for more information.

This field is formatted as follows:

| Value | Mastercard Description | Visa Description |
|---|---|---|
| 00 | Unknown or no terminal | Unknown or terminal not used |
| 01 | Manual Key Entry | (manual key entry) for application-based e-commerce transactions, and card-not-present transactions initiated with a token |
| 02 | Partial Magnetic Stripe Read | Magnetic stripe read; CVV checking may not be possible Plus transactions: Exact Track 2 contents read, but transaction is not eligible for CVV checking |
| 03 | Barcode | Optical code |
| 04 | OCR | Not valid |
| 05 | Contact EMV ICC | Integrated circuit card read; CVV or iCVV checking is possible |

| Value | Mastercard Description | Visa Description |
|---|---|---|
| 07 | Contactless EMV ICC | (contactless chip using VSDC rules) for transactions at contactless-enabled devices with a mobile-issued token payment |
| 10 | Credential-on-file<br>Indicates a Merchant is initiating a transaction on behalf of the Cardholder using credentials stored on file. | Credential-on-file<br>Indicates a Merchant is initiating a transaction on behalf of the Cardholder using credentials stored on file. |
| 79 | PAN+expdate key entered by Acquirer (PAN+expdate read from Magnetic Stripe and communicated verbally to acquirer who keyed in the transaction. Neither Track1 or Track2 will be present.) | Not valid |
| 80 | Magnetic Stripe (fallback from EMV ICC) | Not valid |
| 81 | e-commerce | Not valid |
| 82 | PAN data on file | Not valid |
| 90 | Magnetic Stripe Read | (magnetic stripe read; CVV check is possible; exact content of Track 1 or Track 2 included) |
| 91 | Contactless Magnetic Stripe | (contactless chip using magnetic stripe data rules) for transactions at contactless-enabled devices with a mobile-issued token payment |
| 95 | Contact EMV ICC (something unreliable) | Integrated circuit card read; CVV or iCVV checking may not be possible |
| 96 | Stored Value from pre-registered checkout service | Not valid |

## 4.25.3 POS_Data_DE22 positions 3: Terminal PIN Entry Capability

**Note:** A normalised value to identify if the terminal supports PIN entry can be found in GPS_POS_Capability field, specifically in positions 24, 30, 31 and 48. See "GPS_POS_Capability field" on page 197 for more information.

This describes the capability of the Terminal to accept a PIN. The field is formatted as follows:

| Value | Mastercard Description | Visa Description |
|---|---|---|
| 0 | Unknown | Unknown |
| 1 | Terminal supports PIN. | Indicates that the point-of-transaction terminal can accept and forward an online PIN. |
| 2 | Terminal does not support PIN. | Indicates that the point-of-transaction terminal cannot accept and forward an online PIN. |
| 8 | Terminal supports PIN, but PIN pad is not working. | Terminal PIN pad is down |

# 4.26 POS_Data_DE22 in Mastercard Financial Messages

**Note:** The POS_Data_DE22 field applies to Mastercard Financial Clearing messages only (i.e., MTID=1240, MTID=1442). For Visa, use GPS_POS_Data. (See also Get Transaction Message fields: POS_Data_DE22 and GPS_POS_Data)

The POS Data codes (POS_Data_DE22) field is made up of various subfields. Its format is based on ISO8583:1993 DE 22 specification, and consists of both:

- Terminal capabilities (what the terminal can do)
- Terminal methods (what the terminal did do, or what actually happened)

| Positions | Length | Field Name | Description / Valid Values |
|---|---|---|---|
| 1 | 1 | Card Data Input Capability | 0 = Unknown<br>1 = Manual, no terminal; server<br>2 = Magnetic stripe reader (MSR)<br>3 = Barcode<br>4 = OCR<br>5 = ICC<br>6 = PAN Key entry (PKE) only<br>A = Contactless MSR (possibility also optionally including ICC, MSR or PKE)<br>B = MSR + PKE<br>C = MSR, ICC, PKE<br>D = MSR + ICC<br>E = ICC + PKE<br>M = Contactless ICC + Contactless MSR (possibly also optionally including ICC, MSR or PKE)<br>V = Other |
| 2 | 1 | Cardholder Authentication Capability | 0 = No electronic authentication capability<br>1 = PIN<br>2 = Electronic signature analysis capability<br>3 = Biometrics<br>4 = Biographic<br>5 = Electronic authentication capability is inoperative<br>9 = Unknown |
| 3 | 1 | Card Capture Capability | 0 = No capture capability<br>1 = Card Capture capability<br>9 = Unknown |
| 4 | 1 | Terminal Operating Environment | 0 = No Terminal used<br>1 = On card acceptor premises, attended<br>2 = On card acceptor premises, unattended<br>3 = Off card acceptor premises, attended<br>4 = Off card acceptor premises, unattended<br>5 = On cardholder premises, unattended<br>6 = Off cardholder premises, unattended<br>9 = Unknown |
| 5 | 1 | Cardholder present data | 0 = Cardholder present<br>1 = Cardholder not present (unspecified)<br>2 = Cardholder not present (mail order)<br>3 = Cardholder not present (telephone order)<br>4 = Cardholder not present (standing order or recurring transaction)<br>5 = Cardholder not present (e-commerce) |

| Positions | Length | Field Name | Description / Valid Values |
|---|---|---|---|
| 6 | 1 | Card Present Data | 0 = Card not present<br>1 = Card Present |
| 7 | 1 | Card Data Input Method | 0 = Unknown or no terminal<br>1 = Manual Input (no terminal used)<br>2 = Partial Magnetic Stripe Read<br>3 = Barcode<br>4 = OCR<br>5 = Contact EMV ICC<br>6 = PAN Key Entry<br>A = Contactless Magnetic Stripe<br>B = Magnetic Stripe Read<br>C = Contact EMV ICC, Online Transaction<br>F = Contact EMV ICC, Offline Transaction<br>M = Contactless EMV ICC<br>N = Contactless EMV ICC or Contactless Magnetic Stripe (PAN mapping service applied by Network)<br>O = e-commerce with EMV ICC. Mastercard Digital Enablement Service Applied.<br>R = e-commerce with EMV ICC<br>S = e-commerce<br>T = Pan auto-entry via server (issuer, acquirer or third party vendor system)<br>V = e-commerce or PAN auto-entry by server. Card on File service applied by Network. |
| 8 | 1 | Cardholder authentication Method | 0 = Not authenticated<br>1 = PIN<br>2 = Electronic Signature Analysis<br>3 = Biometrics<br>4 = Biographic<br>5 = Manual signature verification<br>6 = Other Manual verification (e.g. drivers licence)<br>9 = Unknown<br>S = Other systematic verification (including biometrics + biographic) |
| 9 | 1 | Cardholder authentication entity | Identifies who verified the cardholder (using the method described in the *Cardholder authentication method* field above).<br>0 = Not authenticated<br>1 = ICC<br>2 = Terminal<br>3 = Authorising Agent<br>4 = Merchant<br>5 = Other<br>9 = Unknown |
| 10 | 1 | Card Data Output Capability | This is rarely used.<br>10 = Unknown<br>1 = None<br>2 = Magnetic Stripe writer<br>3 = ICC<br>S = Other |
| 11 | 1 | Terminal Data Output Capability | This is rarely used.<br>0 = Unknown<br>1 = None |

| Positions | Length | Field Name | Description / Valid Values |
|---|---|---|---|
| | | | 2 = Printing only<br>3 = Display only<br>4 = Printing and Display |
| 12 | 1 | PIN Capture Capability | 0 = No PIN capture capability<br>1 = Unknown<br>4 = PIN capture up to 4 digits max<br>5 = PIN capture up to 5 digits max<br>6 = PIN capture up to 6 digits max<br>7 = PIN capture up to 7 digits max<br>8 = PIN capture up to 8 digits max<br>9 = PIN capture up to 9 digits max<br>A = PIN capture up to 10 digits max<br>B = PIN capture up to 11 digits max<br>C = PIN capture up to 12 digits max |

# 4.27 Processing Codes

The Processing code (`Proc_Code`) is a 6 digit field made up of:

- 2 characters transaction code. See Transaction Codes.
- 2 characters source account type code. See Account Type Codes.
- 2 characters destination account type code. See Account Type Codes.

For transactions initiated via web services or the Cards API, the processing code is formed of:

- 3 digits load source supplied in the request
- 3 digits “999”

## 4.27.1 Transaction Codes

The first two characters of the processing code is the transaction code, as follows:

| Value | Description | Impacts Balance |
|---|---|---|
| 00 | Debits (goods and services) | Yes |
| 01 | Debits for ATM cash withdrawals (on Visa and Mastercard networks)<br>May also be used for manual cash disbursements as follows:<br>• Mastercard *Authorisation* transactions on Maestro cards only<br>• Visa *Authorisation* and *Clearing* transactions on Visa cards | Yes |
| 02 | Adjustment Credits<br>Indicates a Credit adjustment. | Yes |
| 09 | Debits (goods with cash back) | Yes |
| 10 | Account Funding | Yes |
| 11 | Quasi-Cash<br>Visa-specific quasi-cash transaction. This is used for specific merchants where the purchased items could be converted to cash (e.g., gaming chips, money orders, wire-transfer). | Yes |
| 12 | Debits (for manual cash disbursements).<br>Type of transaction where cash is given to the cardholder, for example, from a bank branch by a member of staff using a Point of Sale (POS) terminal.<br>**Note**: Used for *Clearing* transactions on Mastercard Credit, Cirrus, Maestro and Mastercard Debit. | Yes |
| 17 | Debits (for manual cash disbursements).<br>Type of transaction where cash is given to the cardholder, for example, from a bank branch by a member of staff using a Point of Sale (POS) terminal.<br>**Note**: Used for *Authorisation* transactions on Mastercard Credit, Cirrus and Mastercard Debit. | Yes |
| 18 | Unique Transaction (requires unique MCC)<br>Mastercard-specific transaction category. Similar to Visa's quasi-cash, this is used for specific merchants where the purchased items could be converted to cash (e.g., gaming chips, money orders). | Yes |
| 19 | Debit Adjustments<br>May be received for non-card money transfers (out), manual or one-off balance adjustments or additional | Yes |

| Value | Description | Impacts Balance |
|---|---|---|
| | fees. | |
| 20 | Credits (for refund) / Credit voucher or merchandise return authorisation | Yes |
| 21 | Credits (for deposit) | Yes |
| 22 | Credits - Card Load | Yes |
| 23 | Debits - Card Unload | Yes |
| 26 | Original Credits<br>Visa-specific Money Send transaction. Also called an Original Credit Transaction (OCT). | Yes |
| 28 | Credits (for Payment Transaction)<br>Mastercard-specific Money Send transaction. | Yes |
| 30 | Balance inquiry service (supported by both Visa and Mastercard) | No |
| 32 | Visa Tokenisation - Tokenisation Eligibility. Only used by Visa. | No |
| 33 | MDES / Visa Tokenisation – Tokenisation Authorisation | No |
| 34 | MDES/ Visa Tokenisation – Activation Code Notification | No |
| 35 | MDES / Visa Tokenisation – Tokenisation Complete Notification | No |
| 36 | MDES / Visa Tokenisation – Token Event Notification.<br>See the 'Message_Source' field for which system originated the Token Event.<br>See the 'Message_Why' field for what sort of Token Event occurred. | No |
| 37 | Visa Tokenisation - Get Supported Cardholder Authentication Methods (for Approve with Authentication). Only used by Visa. | No |
| 38 | Visa Tokenisation - Device Binding. Only used by Visa. | No |
| 39 | Indicates an Account Verification transaction (eligibility inquiry) for a Debit Account Status Inquiry (ASI). A Debit ASI is a Visa service that checks if an amount can be debited from an account, Thredd uses this code for mapping from a debit transaction (authorisation code 00). | No |
| 70 | PIN change (Visa only) | No |
| 71 | Card Data File Action (e.g., new PAN or `expdate`) | No |
| 72 | PIN unblock (Visa only) | No |
| 89 | A Credit ASI that checks if an account is open and able to receive funds for a credit transaction. | No |
| 91 | PIN unblock (Mastercard only) | No |
| 92 | PIN change (Mastercard only) | No |

# 4.27.2 Account Type Codes

The 3rd & 4th digits in Processing code is the Source account type code.

The 5th and 6th digits in Processing code is the Destination account type code.

Both codes are from the following list of account type codes (based on ISO 8583:2003 Account Type Codes).

| Value | Description |
|---|---|
| 00 | Default Account (not specified or not applicable) |
| 10 | Savings Account |
| 20 | Cheque Account |
| 30 | Credit Card Account |
| 35 | Deferred debit account |
| 36 | Charge account |
| 38 | Credit Line Account |
| 39 | Corporate Account |
| 40 | Universal Account |
| 50 | Money Market Investment Account |
| 58 | IRA Investment Account |
| 60 | Prepaid or Stored Value Account |
| 90 | Revolving Loan Account |
| 91 | Instalment Loan Account |
| 92 | Real Estate Loan Account |

# 4.28 Reason_ID

The Reason_ID field contains a code to indicate the reason behind this message.

This field is used to describe the reason for a chargeback, but may be used to explain the reason behind other messages. See also the Message_Why field.

## 4.28.1 Reason_ID Usage

The usage varies per type of message, as follows:

| MTID | Txn_Type | Description | Reason_ID meaning |
|---|---|---|---|
| 0100<br>0120<br>0400<br>0420 | A, D, J<br>D, J<br>D<br>D | If message comes from Visa then:<br>Visa's Message Reason Code<br>(otherwise blank) | Visa's Reason for the message. See below. |
| 1240 | C | Chargeback Notification | Reason for the chargeback. See below. |
| 1240 | H | Chargeback Notification (Non-Credit) | Reason for the chargeback. See below. |
| 1740 | | | Reason for the Fee Collection |
| (all other combinations) | | (all other transactions) | Not defined. Will be blank. |

## 4.28.2 Reason_ID for a Fee Collection

Mastercard passes Reason ID values for fee collection.

| Reason_ID | Mastercard network meaning |
|---|---|
| 7640 to 7649 | Funds Transfer Service codes |

## 4.28.3 Reason_ID for a Chargeback (Txn_Type C and H)

In Chargeback message types, the Reason_ID field is the reason for the chargeback.

The code is specific to the payment network the chargeback relates to, as networks define the valid chargeback reasons, and may change them. The table below list the reason_ID codes. For more information on the code, refer to the following Visa/Mastercard chargeback documentation:

Mastercard codes are defined in the *Mastercard GCMS IPM clearing formats manual*, Field 25 (Message Reason Code), as applicable for chargeback messages.

Visa codes are defined in the BASE2 file TC33 "Base2 Dispute Financial Status Advice" TCR1 record position 74-75 "Dispute Financial Reason Code". Since Thredd expects all customers to initiate Visa Chargebacks on the VROL system, only VROL-related chargeback reasons are listed below. See also the Dispute_Condition code.

| Reason_ID | Mastercard network meaning<br>(Chargeback Message Reason Code) | Visa network meaning<br>(Dispute Financial Reason Code) |
|---|---|---|
| 10 | - | Fraud |
| 11 | - | Authorisation |

| Reason_ID | Mastercard network meaning<br>(Chargeback Message Reason Code) | Visa network meaning<br>(Dispute Financial Reason Code) |
|---|---|---|
| 12 | - | Processing Error |
| 13 | - | Consumer Dispute |
| 4515 | Cardholder Denies Transaction Finalised | |
| 4804 | Multiple Processing, Duplicate | |
| 4807 | Warning Bulletin | |
| 4808 | Requested/Required Authorisation not obtained | |
| 4809 | Transaction not reconcilied | |
| 4811 | Stale Transaction | |
| 4812 | Account Number not on file | |
| 4831 | Transaction Amount Differs | |
| 4834 | Duplicate Processing | |
| 4837 | Fraudulent Transaction, no cardholder authorisation | |
| 4840 | Fraudulent Processing of Transaction | |
| 4841 | Cancelled Recurring Transaction | |
| 4842 | Late Presentment | |
| 4846 | Correct Transaction Currency Not Provided | |
| 4849 | Questionable Card Acceptor Activity | |
| 4850 | Installment Transaction Dispute | |
| 4853 | Cardholder Dispute Defective/Not as described | |
| 4854 | Cardholder Dispute (not elsewhere classified) - USA only | |
| 4855 | Non-receipt of merchandise | |
| 4859 | Services not rendered | |
| 4860 | Credit not processed | |
| 4863 | Cardholder does not recognize - Potential Fraud | |
| 4870 | Chip Liability Shift | |
| 4871 | Chip/PIN Liability Shift | |
| 4880 | Maestro Late Presentment | |

| Reason_ID | Mastercard network meaning<br>(Chargeback Message Reason Code) | Visa network meaning<br>(Dispute Financial Reason Code) |
|---|---|---|
| 4890 | Syntax Error Return | |
| 4900 | Invalid Second Presentment (Generic) | |
| 4901 | Required documentation not received to support second presentment | |
| 4902 | Documentation received was illegible | |
| 4903 | Scanning error – unrelated documents or partial scan | |
| 4905 | Invalid Acquirer Reference Number in Second Presentment, no documentation required or provided | |
| 4908 | Invalid Acquirer Reference Number in Second Presentment, documentation received | |
| 4999 | Domestic Chargeback Dispute | |

## 4.28.4 Reason_ID for an Authorisation (Txn_Type A, D, J)

In authorisation-related messages (Txn_Types: A, D or J) if Thredd receives the transaction from Visa, then the Visa Message Reason code is included, if available.

**Note:** Thredd maps important Visa Message Reasons to the Thredd field Message_Why. This field is provided for additional information. Thredd does not recommend you process this, but you can store for information if desired.

| Reason Code | Used for | Description |
|---|---|---|
| 2104 | Acquirer generated 0120 (USA only) | Acquirer Advice. No 0100 was sent |
| 2501 | Reversal messages | Transaction voided by customer |
| 2502 | Reversal messages | Transaction not completed |
| 2503 | Reversal messages | No confirmation from Point of Sale (POS) terminal |
| 2504 | Reversal messages | Partial dispense by ATM or POS partial reversal |
| 3700 | Payment token related messages | Token create |
| 3701 | Payment token related messages | Token deactivate |
| 3702 | Payment token related messages | Token suspend |
| 3703 | Payment token related messages | Token resume |
| 3711 | Payment token related messages | Device provisioning result |
| 3712 | Payment token related messages | One Time Password (OTP) verification result |
| 3713 | Payment token related messages | Call Centre activation |

| Reason Code | Used for | Description |
|---|---|---|
| 3714 | Payment token related messages | Mobile Banking App activation |
| 3715 | Payment token related messages | Replenishment confirmation of limited-use keys |
| 3716 | Payment token related messages | Token expiry update |
| 3717 | Payment token related messages | 3DS browser activation |
| 3720 | Payment token related messages | PAN expiry update |
| 3721 | Payment token related messages | PAN update |
| 3730 | Payment token related messages | Device provisioning update results |
| 3740 | Payment token related messages | Device binding |
| 3741 | Payment token related messages | Device binding results |
| 3742 | Payment token related messages | One Time Password (OTP) verification results - device binding |
| 3743 | Payment token related messages | Call centre step up – device binding |
| 3744 | Payment token related messages | Mobile banking app step up – device binding |
| 3745 | Payment token related messages | Device binding removed |
| 3748 | Payment token related messages | 3DS browser setup - device binding |
| 3749 | Payment token related messages | Device binding with FIDO intent. |
| 3751 | Payment token related messages | Cardholder verification results |
| 3752 | Payment token related messages | OTP verification result - cardholder verification |
| 3753 | Payment token related messages | Call center step up - cardholder verification |
| 3754 | Payment token related messages | Mobile banking app step up - cardholder verification |
| 3755 | Payment token related messages | 3DS browser setup - cardholder verification |
| 3760 | Payment token related messages | Device binding Green Flow |
| 3900 | Merchant initiated transactions | Incremental authorization |
| 3901 | Merchant initiated transactions | Resubmission |
| 3902 | Merchant initiated transactions | Delayed charges |
| 3903 | Merchant initiated transactions | Reauthorization |
| 3904 | Merchant initiated transactions | No show |
| 5206 | Deferred authorisation | Deferred Authorisation |
| 5400 | Fee collection/funds disbursement transactions | Preauthorisation |

| Reason Code | Used for | Description |
| --- | --- | --- |
| 5401 | Fee collection/funds disbursement transactions | Purchase |
| 5402 | Fee collection/funds disbursement transactions | Original Credit Transaction (OCT) |
| 5403 | Fee collection/funds disbursement transactions | Account Funding Transaction (AFT) |
| 5404 | Fee collection/funds disbursement transactions | Bill Pay |
| 5405 | Fee collection/funds disbursement transactions | Preauthorisation Completion |
| 5406 | Fee collection/funds disbursement transactions | Reversal |
| 5407 | Fee collection/funds disbursement transactions | Chargeback |
| 5408 | Fee collection/funds disbursement transactions | Representment |
| 5409 | Fee collection/funds disbursement transactions | Adjustment |
| Any other value | Unknown | Unknown.<br>Visa may add extra codes at any time. |

# 4.29 Response Status Values

The table below lists the response status codes that you can return in a response to a payment authorisation request through EHI. See Get Transaction Message field: Responsestatus.

**Note:** For details of `<Resp_Code_DE39>` response codes that the Card Scheme (Network) sends to Thredd, see Response_Code_DE39 Values. For card status codes, see Card Status Codes.

| Response Code | Description | Action |
|---|---|---|
| 00 | All good. | Approve |
| 01 | Refer to card issuer.<br>**Note**: Not permitted for Visa transactions. | Refer |
| 03 | Invalid merchant. | Decline |
| 05 | Do not honour. | Decline |
| 0A | Approval with Load. | Approve |
| 5C | Transaction not supported or blocked by issuer.<br>**Note**: For Visa transactions only. | Decline |
| 9G | Blocked by cardholder, contact cardholder.<br>**Note**: For Visa transactions only. | Decline |
| 10 | Partial approval.<br>**Note:** This is permitted only if GPS_POS_Capability position 1 (partial approval supported) is '1' (POS supports partial approval) | Approve |
| 12 | Invalid transaction.<br>May also be used when Integrated Circuit Card (ICC) Card Verification Value (iCVV) or Card Authentication Method (CAM) authorization request cryptogram (ARQC) validation was not successful.<br>**Note**: For Visa transactions only. | Decline |
| 13 | Invalid amount | Decline |
| 14 | Invalid card number (no such number) | Decline |
| 15 | No such issuer.<br>**Note**: For Visa transactions only. | Decline |
| 33 | Expired card (Capture). | Decline and *Pickup* card |
| 41 | Lost card (Capture). | Decline and *Pickup* card |
| 43 | Stolen card (Capture). | Decline and *Pickup* card |
| 46 | Account closed and no further authorisation requests will be approved. | Decline |

| Response Code | Description | Action |
|---|---|---|
| 51 | Insufficient funds. | Decline |
| 54 | Expired card. | Decline |
| 55 | Incorrect PIN. | Decline |
| 57 | Transaction not permitted to cardholder.<br>**Note: M**ay be used if the decline condition applies to all primary account numbers (PANs) for the same product. It cannot be used for individual PANs to generically decline a transaction.<br>**Note**: For Visa transactions only. | Decline |
| 58 | Transaction not permitted to terminal. | Decline |
| 59 | Suspected fraud. | Decline |
| 61 | Exceeds withdrawal amount limit. | Decline |
| 62 | Restricted card (e.g. card invalid in region or country). | Decline |
| 63 | Security violation. | Decline |
| 65 | Exceeds withdrawal frequency limit. | Decline |
| 6P | Verification Data Failed. Applies to cardholder, card, and other verification data. Includes both:<br>• Provided verification data is invalid<br>• Required verification data is missing<br>**Note**: if a more specific code exists (e.g. '55' if PIN incorrect), then use that. | Decline |
| 70 | Cardholder to contact issuer.<br>**Note**: only for Mastercard transactions. | Decline |
| 72 | Account not yet activated. | Decline |
| 75 | Allowable number of PIN tries exceeded. | Decline |
| 78 | Card is not active (including created but not yet activated). | Decline |
| 91 | Issuer or switch is inoperative.<br>• Gateway and Cooperative Processing (modes 1 or 2) – Thredd will decline and invoke STIP, which may approve the transaction (depending on your STIP setup .)<br>• Gateway Processing with STIP (mode 4) – Thredd to stand-in<br>If your systems are unavailable, then use '05' decline if you do not want to invoke STIP. | Decline or Invoke STIP (at Thredd or Network) |
| 92 | Unable to Route Transaction (to Issuer or EHI).<br>• Gateway Processing (modes 1 or 2) – Thredd will decline and invoke STIP, which may approve the transaction (depending on your STIP setup .)<br>• Gateway Processing with STIP (mode 4) – Thredd to stand-in<br>If your systems have a fatal error, then use '05' decline if you to not want to invoke | Decline or Invoke STIP (at Thredd or Network) |

| Response Code | Description | Action |
|---|---|---|
| | STIP.<br>**Note:** If this received in advices, it can indicate that Thredd failed to connect to EHI. | |
| 93 | Violation of law. (Transaction is illegal or against regulations in this jurisdiction.)<br>**Note**: Visa use only. For Mastercard Thredd suggest using value 57 instead. | Decline |
| 96 | System malfunction.<br>• Gateway or Cooperative Processing (modes 1 or 2) – Thredd will decline<br>• Gateway Processing with STIP (mode 4) – Thredd to stand-in<br>If your systems have a fatal error, then use '05' decline if you to not want to invoke STIP.<br>**Note**: Gateway or Cooperative Processing (modes 1 or 2): using this code will invoke Card Scheme STIP at Mastercard or Visa, which may approve the transaction (depending on your STIP setup). | Decline or Invoke STIP (at Thredd or Network) |
| C0 | Strong Customer Authentication (SCA) required, card form factor. | Decline (reattempt with SCA) |
| C1 | SCA required, non-card form factor. | Decline (reattempt with SCA) |
| N7 | Decline for CVV2 failure. | Decline |
| R0 | Merchant level one-time stop payment to be used for VSPS-eligible (Visa Stop Payment Service) transactions (recurring, instalment, and credential-on-file). | Stop this payment. |
| R1 | Used when a cardholder requests to stop all VSPS-eligible (Visa Stop Payment Service) transactions (recurring, instalment, and credential-on-file) payments against a single merchant.<br>**Note:** This is a Category 1 response code, meaning the issuer will never approve the transaction and further attempts are not permitted. | Stop all future payments for a single merchant. |
| R3 | Used when a cardholder requests to stop all VSPS-eligible (Visa Stop Payment Service) payments (recurring, instalment, and credential-on-file) against all merchants.<br>**Note:** This is a Category 1 response code, meaning the issuer will never approve the transaction and further attempts are not permitted. | Stop all future payments for all merchants. |
| Z5 | Valid account but verification amount not verified correctly.<br>**Note:** This is an account verification response that relates to an expected amount. Visa only. | Decline |
| (any code not in the above list) | Invalid response. | If 0110 response, then Thredd will invoke STIP in EHI mode 4, otherwise will decline (05). |

Notes:

- Response code "01" is not permitted for Visa Transactions. If "01" is sent, then Visa will discard the authorisation response and instead invoke STIP.
- Response codes 12 and 15 are Visa-only codes effective from 12 April 2025.

- Response Code 57 (Transaction not permitted to cardholder) cannot be used for individual PANs to generically decline a transaction. It can still be used if the decline condition applies to all PANs for the same product. This change is effective from 18 October 2025.
- Response codes 04, 07, 14, 41, 43, and 46 are only used for listing permanently closed or invalid accounts.
- If an Issuer uses the 12, 15 or 57 response codes incorrectly, then Visa will convert the response and send it to the Acquirer as a generic response code decline.

# 4.30 Resp_Code_DE39 Values

This field is provided in Mastercard 0120 (authorisation advice), 0400 (reversal request) and 0420 (reversal advice) messages to indicate the reason for the advice or reversal, which is sent to Thredd by the Card Scheme (Network). For more details, see Get Transaction Message fields: Resp_Code_DE39.

**Note:** For details of authorisation response status codes that are sent to Thredd through EHI, see ResponseStatus Values. For card status codes, see Card Status Codes.

| Code | Reason for Advice or Reversal |
|---|---|
| 06 | Error. |
| 17 | Customer cancellation. This code is also used for reversals where other reasons in this section do not apply. For example, if doing an EMV contact transaction and the card returns an AAC (decline) after receiving an approve response from the Issuer, this code is used.<br>This code is also normally used if the terminal decides to reverse a transaction from the Issuer, where the Issuer approved it (but additionally stated that some authentication data such as Address or CVV2 was incorrect.) |
| 32 | Partial reversal. |
| 34 | Suspected fraud. |
| 68 | Response received too late. |
| 82 | Timeout from network to issuer. Visa/Mastercard was unable to send the original 0100 message to Thredd. |

## 4.30.1 Code values that explain the reason for the advice

Below is a list of other codes values in the `Resp_Code_DE39` field which can be used to explain the reason for the advice:

- For an 0120 advice, this indicates the response that was originally sent to the terminal.
- For an 0400 advice or 0420 reversal, this code is what was used in the original 0110 acquirer response, and does not provide information on why the reversal was created.

| Code | Description | Action |
|---|---|---|
| 00 | All good | Approve |
| 01 | Refer to card issuer | Refer |
| 03 | Invalid merchant | Decline |
| 04 | Capture card | Decline and *Pickup* card |
| 05 | Do not honour | Decline |
| 06 | Unspecified error | Decline |
| 08 | Honor with identification | Approve |
| 10 | Partial approval | Approve |

| Code | Description | Action |
|---|---|---|
| 12 | Invalid transaction | Decline |
| 13 | Invalid amount | Decline |
| 14 | Invalid card number (no such number) | Decline |
| 15 | Unable to route at IEM (Issuer's Europay Module). Card Scheme network cannot connect to Thredd. | Decline |
| 30 | Format error | Decline |
| 41 | Lost card (Capture) | Decline and *Pickup* card |
| 43 | Stolen card (Capture) | Decline and *Pickup* card |
| 46 | Account closed | Decline |
| 51 | Insufficient funds | Decline |
| 54 | Expired card | Decline |
| 55 | Incorrect PIN | Decline |
| 57 | Transaction not permitted to cardholder | Decline |
| 58 | Transaction not permitted to terminal | Decline |
| 59 | Suspected fraud | Decline |
| 61 | Exceeds withdrawal amount limit. | Decline |
| 62 | Restricted card (e.g. card invalid in region or country) | Decline |
| 63 | Security violation | Decline |
| 65 | Exceeds withdrawal frequency limit | Decline |
| 70 | Cardholder to contact issuer | Decline |
| 71 | PIN not changed | Decline |
| 72 | Account not yet activated | Decline |
| 75 | Allowable number of PIN tries exceeded | Decline |
| 76 | Wrong PIN, allowable number of PIN tries exceeded | Decline |
| 77 | Issuer does not participate in the service | Decline |
| 78 | Card is not active (including created but not yet activated) | Decline |
| 79 | Unacceptable PIN - Transaction declined. Retry. | Decline |

| Code | Description | Action |
|---|---|---|
| 81 | Domestic debit transaction not allowed | Decline |
| 85 | Approved (used for some non-financial transactions such as a PIN Unblock request) | Approve |
| 86 | PIN validation not possible | Decline |
| 87 | Purchase amount only. No Cashback allowed. | Approve |
| 88 | Cryptographic failure | Decline |
| 89 | Authentication failure | Decline |
| 91 | Issuer or switch is inoperative | Decline |
| 92 | Unable to Route Transaction (to Issuer or EHI) | Decline |
| 94 | Duplicate transmission | Decline |
| 96 | System malfunction | Decline |
| 1A | SCA required<br>**Note:** Thredd internal response code, cannot be used by clients. | Decline |

## 4.30.2 Using the Resp_Code_DE39 value in your response to Thredd

When declining a transaction, you must respond with a valid decline reason; we recommend that you use the same response code as received in the `Resp_Code_DE39` field. You should avoid declining with the generic response code *05 - Do not honour*.

The decline reason should be provided in the `ResponseStatus` field of your EHI message response. See GetTransaction Message Fields.

# 4.31 Response_Source and Message_Source

This field is used to identify the source (originator) of the message. It indicates:

- Who sent the 0110 response message to the terminal (Response_Source)
- Who sent this (usually advice/reversal) message in the first place (Message_Source)
- Who created the payment token (PaymentToken_creator)

Response_Source and Message_Source may be present in the Authorisation Advice and/or Authorisation Reversal messages.

## 4.31.1 Possible Values

| Source | Description |
|---|---|
| UNKNOWN | Unknown or not applicable |
| ISSUER | Thredd Issuer Auth System (primary site) |
| ISSUER-ALT | Alternate Issuer System (Secondary site) |
| ACQUIRER | Acquirer |
| TERMINAL | Terminal |
| CARD | Chip Card |
| EHI | Issuer PM Host via EHI connection |
| ACQ-MC-X | Acquirer X-Code (Mastercard) |
| MC-X | Mastercard X-Code at acquirer MIP |
| MC-STIP | Mastercard Stand-In processing |
| VISA-STIP | Visa Stand-In processing |
| VISA-IARS | Visa International Automated Referral Service |
| MC-ICPS | Mastercard in-control processing service |
| MC-PREVAL | Mastercard pre-validation services |
| MC-BLOCK | Mastercard transaction blocking service |
| MC-RPCS | Mastercard Recurring Payment cancellation service |
| MC-MDES | Mastercard tokenisation system (MDES) |
| CARD-APP | Application running on cardholder’s card device (e.g. phone application) |
| VISA-T | Visa Tokenisation system (Visa Europe/International Token Service) |
| CARD-WAL | Wallet application running on cardholder’s card device (e.g. phone) |
| WALLET | Wallet Service Provider (generic) systems - not on cardholder device (e.g. WAL-AP or WAL-AN or WAL-SA) |

| Source | Description |
| --- | --- |
| WAL-AP | Apple Wallet Systems (Apple servers - not on cardholder device) |
| WAL-AN | Android Wallet Systems (Google servers - not on cardholder device) |
| WAL-SA | Samsung Wallet Systems (Samsung servers - not on cardholder device) |
| CRDHLR | Cardholder |
| MC | Mastercard |
| VISA | Visa |

# 4.32 Response_Source_Why and Message_Why

This field describes the reason why the response and message source sent the message. It indicates:

- Why the Response_Source sent the 0110 response message to the terminal.
- Why the Message_Source created this (usually advice/reversal) message in the first place.

It may be present in Authorisation Advice and/or Authorisation Reversal messages.

## 4.32.1 Possible Values

| Why | Description |
|---|---|
| 0 | Unknown / not-applicable / not-a-fault |
| 1 | Issuer signed off |
| 2 | Issuer signed off by switch |
| 3 | Issuer communications line down or unavailable |
| 4 | Issuer sent DE39 instruction to force network Stand In Processing (STIP) |
| 5 | Issuer timed out |
| 6 | PCAS/Limit-1 diverted (transactions under the limit sent to network STIP) |
| 7 | Issuer is in *Suppress Inquiry* mode |
| 8 | Issuer selected option |
| 9 | MIP/VAP error |
| 10 | Issuer Edit Response Error (if Mastercard, DE60.3 may contain DE in error) |
| 11 | Issuer system error |
| 12 | Network not dispatched error |
| 13 | Issuer undelivered |
| 14 | Direct down option |
| 15 | Network unable to map virtual PAN |
| 16 | Automated Fuel Dispenser (AFD) transaction acquired in USA met Visa Transaction Advisor Service criteria |
| 17 | Visa Payment Controls (VPC) rule |
| 18 | Selective acceptance service |
| 19 | Automated Referral Service |
| 20 | Original processed in STIP |
| 21 | Network Account Management system |

| Why | Description |
|---|---|
| 22 | PIN verification error |
| 23 | Unable to translate PIN |
| 24 | CVV error |
| 25 | Source or destination does not support service |
| 26 | ARQC verification error |
| 27 | Network error |
| 28 | Network unable to deliver response to acquirer |
| 29 | Duplicate detected by network |
| 30 | Invalid merchant |
| 31 | Network transaction blocking service |
| 32 | Acquirer acknowledgement of 0110 not received |
| 33 | Foreign system sent message |
| 34 | AFD confirmation advice |
| 35 | Exception file maintenance |
| 36 | Reversal matched original authorisation request |
| 37 | No matching original authorisation request found |
| 38 | Issuer notification of token vault provisioned or status change |
| 39 | Issuer notification of card-on-file token issuance |
| 40 | Pay with rewards processing advice to issuer |
| 41 | Network MDES advice to issuer |
| 42 | Authentication advice to issuer |
| 43 | CAT Risk Level 3 |
| 44 | EMV Offline advice to issuer |
| 45 | In-Control processing advice to issuer |
| 46 | Adminstrative text message |
| 47 | Transaction voided by customer |
| 48 | Transaction not completed |
| 49 | No confirmation from terminal |

| Why | Description |
| --- | --- |
| 50 | Partial Reversal |
| 51 | Payment Token Status Change<br>In this case (MTID='0100', Txn_Type='A', Proc_Code='360000' Token Event Notification) it indicates that the PaymentToken_creatorStatus has been changed by the payment token creator. The Thredd status may also have changed too.<br>• PaymentToken_id - indicates which payment token the status change is for<br>• PaymentToken_creatorStatus - indicates the new status as set by the creator<br>• PaymentToken_status - indicates the current Thredd status as set on Thredd Portal or Smart Client |
| 52 | Payment Token Replaced<br>In this case (MTID='0100', Txn_Type='A', Proc_Code='360000' Token Event Notification) it indicates that a new payment token has been digitised (i.e. personalised) with the following properties:<br>• There was already a previously digitised payment token on the same device<br>• The properties of the new digitised token as the same as the previous one, except that the expiry date has been updated.<br>• PaymentToken_id is the same (as same underlying payment token entry on the Thredd system)<br>• PaymentToken_expdate has the new payment token expiry date<br>• The previous expiry date is not included (if this is required, you should request it) |
| 53 | Activation code expired (e.g. for a payment token activation) |
| 54 | Activation code wrong (e.g. for a payment token activation) |
| 55 | Activation code maximum attempts exceeded (e.g. for a payment token activation) |
| 56 | Incremental authorisation |
| 57 | Resubmission |
| 58 | Delayed charges |
| 59 | Re-authorisation |
| 60 | No show |
| 61 | Account top up |
| 62 | Consumer Transaction Controls service |
| 63 | Dispute financial |
| 64 | Recurring payment Blocking Service |
| 65 | Merchant country on Issuers exclusion list |
| 66 | Office of Foreign Assets Control (OFAC) embargo |
| 67 | Cashback processing error |
| 68 | Invalid CAVV |
| 69 | Luhn check digit failure |

| Why | Description |
|---|---|
| 70 | Issuer does not support gambling transactions |
| 71 | Payment token created |
| 72 | Payment token provisioning result |
| 73 | Payment token activation code verification result |
| 74 | Payment token call centre activation result |
| 75 | Payment token mobile banking activation result |
| 76 | Payment token EMV session keys replenishment confirmation |
| 77 | Payment token provisioning-update results |
| 78 | PAN expiry date changed |
| 79 | PAN replaced |
| 80 | Payment token activated |
| 81 | Payment token suspended |
| 82 | Payment token deactivated |
| 83 | Network Payment Fraud Disruption service |
| 84 | Payment-Token Device binding |
| 85 | Payment-Token Device binding removed |
| 86 | Payment-Token Device binding complete without authentication |
| 87 | Payment-Token Device binding activation code verification result |
| 88 | Payment-Token Device binding call centre activation result |
| 89 | Payment-Token Device binding mobile banking verification result |
| 90 | Cardholder verification complete without authentication |
| 91 | Cardholder verification activation code verification result |
| 92 | Cardholder verification call centre activation result |
| 93 | Cardholder verification mobile banking activation results |
| 94 | Payment-Token re-personalised after personalisation data update |
| 95 | Payment-Token expiry date updated |
| 96 | Deferred Authorisation. (i.e. authorisation is received a long time after the cardholder interacted with the terminal. Could easily be many hours later. Common for mass-transit transactions, such as commuter railways and buses.) |

| Why | Description |
| --- | --- |
| 97 | Acquirer authorisation advice (Merchant/Acquirer approved authorisation offline) |
| 100 | Device binding with FIDO intent. |
| 101 | Device binding - implicit green flow. |
| other | Ask Thredd for updated information codes |

# 4.33 Scheme Transaction Identifier Values

The following are Scheme Transaction Identifier values for Visa and Mastercard.

## 4.33.1 Visa

| Value | Description |
|---|---|
| AA | Account to account |
| AL | AFT (Account Funding Transactions) or OCT (Original Credit Transactions) eligibility |
| BB | Business to business |
| BI | Bank initiated money transfers |
| BP | Non-card bill payment |
| CB | Consumer bill payment |
| CD | Cash deposit |
| CI | Cash in |
| CO | Cash out |
| CP | Card bill payment |
| FD | Funds disbursement (general) |
| GD | Government disbursement |
| GP | Gambling payout (other than online gambling) |
| LA | Liquid assets |
| LO | Loyalty and offers |
| MD | Merchant disbursement |
| MI | Merchant initiated OCT for faster refund |
| MP | Merchant payment |
| OG | Online gambling payout |
| PD | Payroll/pension disbursement |
| PG | Payment to government |
| PP | Person to person |
| PS | Payment for goods and services (general) |
| RP | Request to pay |

| Value | Description |
| --- | --- |
| TU | Top-up for enhanced prepaid loads |
| VA | Visa Accept |
| WT | Wallet Transfer |

## 4.33.2 Mastercard

| Value | Description |
| --- | --- |
| CO4 | Gaming replay |
| C07 | General person-to-person transfer |
| C09 | Issuer-Initiated P2P (Payment Transaction) |
| C51 | Mastercard send indicator (reserved for future use) |
| C52 | General transfer to own account |
| C53 | Agent cash out |
| C54 | Payment of own credit card bill |
| C55 | Business disbursement |
| C56 | Government/non-profit disbursement |
| C57 | Rapid merchant settlement |
| C58 | Cash in at ATM |
| C59 | Cash in at point-of-sale |
| C60 | Fast refund to original card |
| C61 | Mastercard send indicator (reserved for future use) |
| C62 | Mastercard send indicator (reserved for future use) |
| C63 | Mastercard send indicator (reserved for future use) |
| C64 | Mastercard send indicator (reserved for future use) |
| C65 | General business-to-business transfer |
| C66 | Mastercard send indicator (reserved for future use) |
| F07 | General person-to-person transfer |
| F08 | Person-to-person transfer to card account |
| F09 | Issuer-Initiated P2P (Funding Transaction) |

| Value | Description |
| --- | --- |
| F52 | General transfer to own account |
| F53 | Agent cash out |
| F54 | Payment of own credit card bill |
| F55 | Business disbursement |
| F61 | Transfer to own staged digital wallet account |
| F64 | Transfer to own staged debit or prepaid account |
| F65 | General business-to-business transfer |
| P10 | Purchase repayment |
| P11 | Business-to-business payment |
| P70 | Direct purchase of floating cryptocurrencies and other crypto tokens (for example, Bitcoin or Ethereum) |
| P71 | High-risk securities |
| P72 | All other specialty merchants. |
| P73 | Global Reach Program (Mastercard use only) |
| P76 | Direct purchase of fully fiat-backed stablecoins and Central Bank Digital Currencies (CBDCs) (for example, USDC, PYUSD, eNaira) |

# 4.34 SenderData and ReceiverData Fields

The SenderData and ReceiverData fields provide details of the sender and receiver in a money transfer message. Both fields are represented as a TLV with following order and lengths:

- Tag - two characters
- Length - two decimal digits
- Value - the number of characters as given by the length

The table below describes the subfields (tags).

| Tag | Field Name | Description |
|---|---|---|
| 1 | FirstName | First name |
| 2 | MiddleName | Middle name |
| 3 | LastName | Last name |
| 4 | StreetAddress | Street address |
| 5 | City | City |
| 6 | Province | Province |
| 7 | Country | Three letter ISO country code (e.g., CYP = Cypress) |
| 8 | PostCode | Postcode |
| 9 | PhoneNumber | Phone number |
| 10 | DateOfBirth | Date of birth (MMDDYYYY). For example 12311996. |
| 11 | AccountNumber | Account number |
| 12 | IdType | Type of Identity Document (ID). (00 = passport; 01 = National Identification Card; 02 = Driver's License; 03 = Government Issued; 04 = Other; 05-10 reserved for future use) |
| 13 | IdNbr | ID number |
| 14 | IdCtryCode | ID three-letter country code (e.g., MLT = Malta) |
| 15 | IdExpDate | ID expiry date (MMDDYYYY) |
| 16 | Nationality | Nationality (three character alpha ISO code) |
| 17 | BirthCtry | Country of birth (three character alpha ISO code) |
| 18 | AcctNbrType | Type of account number. See Account Number Type. |
| 19 | ReceiverOrganizationName | If a Mastercard Send transaction recipient is an organisation, this field is used to submit the company name.<br>**Note:** Mastercard Send applies to all funding transactions including MoneySend Payment Transactions and Mastercard Gaming or Gambling Payment Transactions. |

| Tag | Field Name | Description |
| --- | --- | --- |
| 20 | SenderOrganizationName | If a Mastercard Send transaction is initiated by an organisation, this field is used to submit the company name.<br><br>**Note:** Mastercard Send applies to all funding transactions including MoneySend Payment Transactions and Mastercard Gaming or Gambling Payment Transactions. |
| V1 | FundsSource | Source of funds. See Source of Funds. |
| V2 | ClaimCode | Claim code |

Example

*0106Mickey0305Mouse0411Main Street0508Annaheim0703USA*

# 4.35 Special Characters

Special characters include any printable characters not counted as alphanumeric. Special characters may be used in fields of Data Type ANS (Alphanumeric and Special). Special characters received from the card schemes are based on the following standards:

- For Mastercard Banknet - any printable ISO8859-1 character (excluding alphanumeric)
- For Visa Base1 - any printable IBM EBCDIC code page 1148 character (excluding alphanumeric). See the figure below.

| HEX DIGITS 1ST → 2ND ↓ | 4- | 5- | 6- | 7- | 8- | 9- | A- | B- | C- | D- | E- | F- |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -0 | (SP) SP010000 | & SM030000 | - SP100000 | ø LO610000 | Ø LO620000 | ° SM190000 | µ SM170000 | ¢ SC040000 | { SM110000 | } SM140000 | \ SM070000 | 0 ND100000 |
| -1 | (RSP) SP300000 | é LE110000 | / SP120000 | É LE120000 | a LA010000 | j LJ010000 | ~ SD190000 | £ SC020000 | A LA020000 | J LJ020000 | ÷ SA060000 | 1 ND010000 |
| -2 | â LA150000 | ê LE150000 | Â LA160000 | Ê LE160000 | b LB010000 | k LK010000 | s LS010000 | ¥ SC050000 | B LB020000 | K LK020000 | S LS020000 | 2 ND020000 |
| -3 | ä LA170000 | ë LE170000 | Ä LA180000 | Ë LE180000 | c LC010000 | l LL010000 | t LT010000 | · SD630000 | C LC020000 | L LL020000 | T LT020000 | 3 ND030000 |
| -4 | à LA130000 | è LE130000 | À LA140000 | È LE140000 | d LD010000 | m LM010000 | u LU010000 | © SM520000 | D LD020000 | M LM020000 | U LU020000 | 4 ND040000 |
| -5 | á LA110000 | í LI110000 | Á LA120000 | Í LI120000 | e LE010000 | n LN010000 | v LV010000 | § SM240000 | E LE020000 | N LN020000 | V LV020000 | 5 ND050000 |
| -6 | ã LA190000 | î LI150000 | Ã LA200000 | Î LI160000 | f LF010000 | o LO010000 | w LW010000 | ¶ SM250000 | F LF020000 | O LO020000 | W LW020000 | 6 ND060000 |
| -7 | å LA270000 | ï LI170000 | Å LA280000 | Ï LI180000 | g LG010000 | p LP010000 | x LX010000 | ¼ NF040000 | G LG020000 | P LP020000 | X LX020000 | 7 ND070000 |
| -8 | ç LC410000 | ì LI130000 | Ç LC420000 | Ì LI140000 | h LH010000 | q LQ010000 | y LY010000 | ½ NF010000 | H LH020000 | Q LQ020000 | Y LY020000 | 8 ND080000 |
| -9 | ñ LN190000 | ß LS610000 | Ñ LN200000 | ` SD130000 | i LI010000 | r LR010000 | z LZ010000 | ¾ NF050000 | I LI020000 | R LR020000 | Z LZ020000 | 9 ND090000 |
| -A | [ SM060000 | ] SM080000 | ¦ SM650000 | : SP130000 | « SP170000 | ª SM210000 | ¡ SP030000 | ¬ SM660000 | (SHY) SP320000 | 1 ND011000 | 2 ND021000 | 3 ND031000 |
| -B | . SP110000 | $ SC030000 | , SP080000 | # SM010000 | » SP180000 | º SM200000 | ¿ SP160000 | \| SM130000 | ô LO150000 | û LU150000 | Ô LO160000 | Û LU160000 |
| -C | < SA030000 | * SM040000 | % SM020000 | @ SM050000 | ð LD630000 | æ LA510000 | Ð LD620000 | ¯ SM150000 | ö LO170000 | ü LU170000 | Ö LO180000 | Ü LU180000 |
| -D | ( SP060000 | ) SP070000 | _ SP090000 | ' SP050000 | ý LY110000 | ¸ SD410000 | Ý LY120000 | ¨ SD170000 | ò LO130000 | ù LU130000 | Ò LO140000 | Ù LU140000 |
| -E | + SA010000 | ; SP140000 | > SA050000 | = SA040000 | þ LT630000 | Æ LA520000 | Þ LT640000 | ´ SD110000 | ó LO110000 | ú LU110000 | Ó LO120000 | Ú LU120000 |
| -F | ! SP020000 | ^ SD150000 | ? SP150000 | " SP040000 | ± SA020000 | € SC200000 | ® SM530000 | × SA070000 | õ LO190000 | ÿ LY170000 | Õ LO200000 | (EO) |

*Figure 20: IBM Special Characters - EBCDIC code page 1148*

**Note:** Ignore the EBCDIC encoding value for the characters, as Thredd sends you the values encoded in UTF-8 format.

For more information on ISO-8859-1 character sets, see: charset.org: Character sets > ISO-8859-1 (Western Europe)

For more information on IBM character sets defined in EBCDIC code page 1148, see ibm.com: docs > Character sets

# 4.36 Transaction Matching - Authentications and Authorisations

There are a number of the checks you can perform as part of PSD2 Dynamic SCA Linking to verify whether the details provided in the original 3D Secure authentication matches the details that were provided during the transaction authorisation. For example, matching of the authorised amount to the authenticated amount, and matching of the merchant name.

## 4.36.1 Matching the Authorised Amount

From EHI version 5.0 we provide an AuthenticationAmountUpper field, which can be used to determine whether the amount authorised in a 3D Secure authentication session matches the amount that was authorised in the authorisation message.

**Note:** In addition to doing your own checks, you can use the value returned in the GPS_POS_Data field position 26 to identify if the authentication amount does not match the authorisation amount.

For Visa, the amount will always be the exact amount, but for Mastercard, if the amount is above 14000 in minor units, the amount may be an estimate, due to their rounding algorithm. See the examples below.

| Currency | Amount | Value in Minor Units | Rounding? |
|---|---|---|---|
| Japanese Yen (0dp currency | 14000 | <=14000 Yen | No, exact amount |
| Japanese Yen (0dp currency) | 14011 | > 14000 Yen | Yes, Upper bound |
| GBP (2dp currency) | 140 | <= 140.00 Pounds | No, exact amount |
| GBP (2dp currency) | 140.11 | > 140.00 Pounds | Yes, Upper bound |
| Jordanian Dinar (3dp currency) | 14.000 | <= 14.000 Dinar | No, exact amount |
| Jordanian Dinar (3dp currency) | 14.010 | > 14.000 Dinar | Yes, Upper bound |

## 4.36.2 Matching Merchant Name

The merchant name hash is returned in the response to a 3D Secure authentication session. Below are guidelines for how to match the merchant name in the Merch_Name_DE43 field of the Authorisation message to the merchant name hash returned in the AuthenticationMerchantHash field for a 3D Secure authentication.

### Guidelines

Since the merchant name is provided as a hashed value, you will need to hash the Merch_Name_DE43 field using the SHA-256 algorithm and then compare it to the hashed value in the AuthenticationMerchantHash field.

- The merchant name field may contain '00000000' or an IP address, depending on your setup at the card scheme. In this case it will not be possible to match.
- For Mastercard, the merchant name that was hashed at authentication time might not match the name provided in the authorisation if the 3D Secure provider and the acquirer were using different naming conventions.
- The merchant name must have the same letters and Case in order for the hash to match. For example, "Microsoft*Store" and "MICROSOFT*STORE" will return different hashed values:
  • "Microsoft*Store" is hashed as 3a884dcdb1bcea65c907e61d90c1c6cd4b3acf4a1b5696406cfb453743c82ccb.
  • "MICROSOFT*STORE" is hashed as 7b7a55d1690a2f6061550fb824322b9d71f7ae0b3e9a7584fad54a970011c544.

See the examples below of common merchant name hashes:

## Mastercard Examples

| Merchant name | Hex of ASCII chars | SHA256 hash |
|---|---|---|
| Microsoft | 4D6963726F736F6674 | C7BAC46904BE785CD0C965BF5659610044F0CDB4CBB02D2EC398DC56648988FD |
| Microsoft*Store | 4D6963726F736F66742A53746F7265 | 3A884DCDB1BCEA65C907E61D90C1C6CD4B3ACF4A1B5696406CFB453743C82CCB |
| Microsoft*Xbox | 4D6963726F736F66742A58626F78 | F32B0B5416D7C9C15A653AF18EDD52ABBF88CA2178EA0686C42F98D7F7284159 |
| MICROSOFT*XBOX | 4D4943524F534F46542A58424F58 | EC4CFC1BBB33769BDD299E0443A652341B84144AE846C566920EED69680524DB |
| PLAYSTATIONNETWORK | 504C415953544154494F4E4E4554574F524B | B50D55B889F8B068EB8144145E2BD007C0C332BEC5284F06C8DC45C6D1AC6FC3 |
| CRV | 435256 | 0107A39935A165F3AB2A3DD226802294E2BD417A0DB8EB6B71A16420DB3FB070 |
| CRV* | 4352562A | 1B49BAF46A3B718691623FF9E3BC9A70DF0816AB30B9305FE2A95E5EA100C48C |
| Just Eat | 4A75737420456174 | 7FBFB81FC52DFEFEF50ACA038126ABCD46505B3FB5672DAA3E473558E507EB48 |
| PADDLE.NET* RENDRFORST | 504144444C452E4E45542A2052454E4452464F525354 | B18D1EF6F5A03AD39FBC4E8DBB94BE7A1CD5E098C3120C7CAA926A16589509B0 |
| Nintendo of Europe Gmb | 4E696E74656E646F206F66204575726F706520476D62 | 152FFDEBDC5E99FB2B44E40E02F7B2010E13D43641F7A2706CEB012FD1EA022C |
| Mango.com | 4D616E676F2E636F6D | 937ED44169DB30AAFB3F423FD24954F38BD7B2E69A397F604611240BE2565710 |

## Visa Examples

**Note:** For Visa, most merchants are using the Merchant_Name field in UPPERCASE, after removing non-alphanumeric characters. Some merchants may use a different name to that provided in the Merchant_Name field (see the example of PlaystationNetwork/SONY)

| DE43 merchant name (as provided in Merchant_Name) | AuthenticationMerchantHash | Actual merchant name used to generate the DE126.9 Merchant name hash (found by Thredd by Trial and Error) |
|---|---|---|
| Play Online Solutions | 17722204 | PLAYONLINESOLUTIONS |
| PlaystationNetwork | 24837652 | SONY |
| MICROSOFT*STORE | 36838472 | MICROSOFT |

| DE43 merchant name (as provided in Merchant_Name) | AuthenticationMerchantHash | Actual merchant name used to generate the DE126.9 Merchant name hash (found by Thredd by Trial and Error) |
|---|---|---|
| CK Stores B.V. | 31186286 | CKSTORESBV |
| PayU*Allegro | 93816075 | PAYUALLEGRO |

# 4.37 Transaction Status Codes

The table below provides details of available Transaction Status Code (`Txn_Stat_Code`) values. (See also Get Transaction Message fields: Txn_Stat_Code)

| Value | Description | Impacts Balance? |
|---|---|---|
| A | Accepted | Yes. Authorised amount is blocked. |
| C | Cleared | No |
| I | Declined | No |
| S | Settled | Yes. The actual balance is adjusted by the settled amount. |
| V | Reversed | Yes. Reversed amount is unblocked (if matching authorisation found) |

**Note:** When Thredd receives a presentment which matches an existing authorisation message, the Authorisation message status is updated to *Cleared (C)* and the Presentment message status is updated at the same time to *Settled (S)*. If Thredd controls the balance, we will adjust the balance by the settlement amount. If your systems control the balance, you can adjust the balance by the settled amount.

# 4.38 Transaction Types

The table below provides details of available Transaction Type (`Txn_Type`) values. (See also Get Transaction Message fields: Txn_Type)

| Value | Description | Mapping | Impacts Balance |
|---|---|---|---|
| A | Authorisation | Authorisation (if MTID=0100)<br>Financial (if MTID=1240) | Yes (If approved) |
| B | Balance Adjustment | Bal Adjustment/Expiry | Yes |
| C | Chargeback | Financial | Yes |
| D | Auth Reversal | Authorisation | Yes (If matching auth exists) |
| E | Financial Reversal | Financial | Yes |
| G | Payment | Load/Unload | Yes |
| H | Chargeback - Non Credit | Financial | No |
| J | Authorisation Advice | Authorisation | Yes (if approved) |
| K | Chargeback Reversal | Financial | Yes |
| L | Load | Load/Unload | Yes |
| N | Sec Presentment | Financial | Yes |
| P | Presentment | Financial | Yes |
| U | Unload | Load/Unload | Yes |
| Y | Card Expiry | Bal Adjustment/Expiry | Yes |

# 4.39 Trans_Link Field

The Trans_Link field is a string between 0-19 digits, the length and value of which depends on the type of transaction as described in the table below.

| Transaction Description | Type | Other Criteria | Trans_Link Content | Trans_link Examples |
|---|---|---|---|---|
| Dummy authorisation<br>(Created from unmatched First Presentment) | A | Description begins '*OFFLINE*', MTID 1240 (Mastercard) or 5, 6 or 7 (Visa) | 19 digits:<br>'1' + *date* + *digit locator* + *Acquirer BIN*<br>Where:<br>• '1' – is the offline transaction indicator<br>• *date (yymmdd )* – is the 6 digit acquirer process date from the Acquirer Reference Number (ARN)<br>• *Digit locator*– is the last 6 digits of ARN<br>• *Acquirer BIN*– is the 6 digit acquiring BIN/ID from ARN<br>**Note**: Ensure it does not match other normal values. | 1230310339532446366<br>1230310321639446366<br>1230311008318483857 |
| Most normal authorisation requests and advices | A, J | MTID 0100, 0101, 0120 | 18 digits:<br>*date* (*yymmdd* ) + *6 digit STAN* + *6 digit Acquirer ID*<br>**Note**: the 0120 advice and 0100 request should have the same trans_Link values. | 230311604412007460 |
| Most normal authorisation reversals | D | MTID 0400, 0420 | 18 digits:<br>*date (YYMMDD*) + *6 digit OrigSTAN* + *6 digit Acquirer ID*<br>Where:<br>*OrigSTAN* comes from DE90.2 and contains the same STAN (DE11) as the original being reversed.<br>**Note**: 0400 and 0420 reversals should have same trans_Link values as the original authorisation request or advice. | |
| Some declined authorisations | A | Some declined MTID 01xx with Acquirer ID present | 16 digits:<br>*date (YYMM) + 6 digit STAN + 6 digit Acquirer ID* | 2302994754416361<br>2302134370016901 |
| Visa 0620 TCN or TEN | J | MTID 0620 with no Acquirer ID present<br>(These are always ProcessingCode 35xxxx or 36xxxx, from Visa) | 12 digits:<br>*date (YYMMDD) + 6 digit STAN* | 230225030928<br>230225005491 |
| Recurring Fees,<br>Activation Fees | P | Meets both of these criteria:<br>ProcessingCode ends with '999'<br>ProcessingCode indicates Recurring or | Fixed value of '0' | 0<br>0<br>0 |

| Transaction Description | Type | Other Criteria | Trans_Link Content | Trans_link Examples |
|---|---|---|---|---|
| | | Activation Fees | | |
| Fees related to Balance Transfers or Loads | P | Meets both of these criteria:<br>ProcessingCode ends with '999' (A Fee)<br>ProcessingCode indicates Balance Transfer Fees or Load Fees | Transaction ID of the related Balance Transfer or Load | 12659871933<br>12659347510 |
| First Presentments that matches a prior authorisation | P | Meets both of these criteria:<br>ProcessingCode does not end with '999' (not a Fee)<br>Matched to an authorisation | Set to the trans_Link value of the original authorisation | 230310784631401134<br>230309725008494605<br>230308638653443973 |
| First presentment with no matching auth (and not a refund) | P | Meets both of these criteria:<br>ProcessingCode does not begin with '20' and does not end with '999' (Not a Refund, not a Fee)<br>No matching authorisation | 19 digits:<br>'1' + *date* + *digit locator* + *Acquirer BIN*<br>Where:<br>• '1' – is the offline transaction indicator<br>• *date (yymmdd )* – is the 6 digit acquirer process date from the Acquirer Reference Number (ARN)<br>• *Digit locator* – is the last 6 digits of ARN<br>• *Acquirer BIN* – is the 6 digit acquiring BIN/ID from ARN<br>**Note**: ARN is the unique Acquirer Reference Number received in the clearing message. | 1230310339532446366<br>1230310321639446366 |
| First Presentment of a refund, with no matching auth, but a matching non-refund first presentment | P | Meets both of these criteria:<br>ProcessingCode begins with '20' (Refund)<br>No matching authorisation, but a matching non-refund first presentment | Set to the trans_link of the matching first presentment. | |
| First Presentment of a refund, with no matching authorisation, and no matching non-refund first presentment | P | Meets both of these criteria:<br>ProcessingCode begins with '20' (Refund)<br>No matching authorisation, and no matching non-refund first presentment | 18 digits: *transaction date ("YYMMDDmssxxx") + last 6 digits of DE031 ARN* | 230218621277522576<br>230218621287522584<br>230218621297522592 |
| Chargeback | H, C | | Set to the trans_Link value of the matching Presentment. | 221023402304009260<br>1230108385918520914 |
| Financial Reversal (received in | E | Matching financial found | Set to the trans_Link value of the matching Presentment. | 1230310299729410157 |

| Transaction Description | Type | Other Criteria | Trans_Link Content | Trans_link Examples |
|---|---|---|---|---|
| clearing file), and matches a previous financial | | | | |
| Financial Reversal (received in clearing file), but no matching financial found | E | No matching financial found | 18 digits: *YYMMDDmssxxx + last 6 digits of ARN*. | 230311243300809653 |
| Second Presentment, matching a chargeback | N | Matching chargeback found | Set to the trans_Link value of the matching chargeback. | 221023402304009260<br>1230108385918520914 |
| Second Presentment, but related chargeback not found | N | No matching chargeback found | 18 digits: *YYMMDDmssxxx + last 6 digits of ARN*. | 230307223653154848<br>230303431430593766 |
| Balance Adjustment (debit) | B | ProcessingCode='190000' | Transaction ID value of this transaction. | 12613916745 |
| Balance Update from EHI response, net debit | B | ProcessingCode begins with '60' | Transaction ID value of the related transaction that caused this Balance Adjustment.<br>(Due to new Balance Update information being sent back in an EHI response message to an online authorisation.) | 12613979001 |
| Balance Update from Web Service call, net debit | B | ProcessingCode begins with '61' | Set to empty string. | *Empty string* |
| Balance Update from EHI response, net credit | B | ProcessingCode begins with '65' | Transaction ID value of the related transaction that caused this Balance Adjustment.<br>(Due to new Balance Update information being sent back in an EHI response message to an online authorisation.) | 12613917117 |
| Balance Update from Web Service call, net credit | B | ProcessingCode begins with '66' | Set to empty string. | *Empty string* |
| Payment Transaction | G | | Transaction ID value of this transaction. | 12613921478<br>12668419405 |
| Load, relating to a prior Unload | L | Relates to a prior Unload | Transaction ID value of the related unload. | 12639991950<br>12668158805 |
| Load (not related to an Unload) | L | Unrelated to a prior Unload | Transaction ID value of this transaction. | 12613916737 |
| Unload, relating to a prior Load | U | Relates to a prior Load | Transaction ID of the related load. | 12672545523 |

| Transaction Description | Type | Other Criteria | Trans_Link Content | Trans_link Examples |
|---|---|---|---|---|
| Unload (not related to an Load) | U | Unrelated to a prior Load | Transaction ID value of this transaction. | 12613916878 |

# Matching the Trans_Link to a Previous Transaction

Refer to the table below for a summary of how to match the Trans_Link value in the current transaction to the value in a previous transaction.

| Current Transaction Type | How it matches to a previous transaction |
|---|---|
| Authorisation Advices (TxnType ‘J') and Authorisation Reversals (TxnType 'D’ | Has the same value as the original Authorisation Request it relates to (if any). |
| Presentments (TxnType 'P') | Has the same value as the original Authorisation Request or Advice it relates to. |
| Chargebacks (TxnType ‘C' or ‘H’) | Has the same value as original Presentment (TxnType ‘P’ or 'N’). |
| Balance Adjustments (TxnType 'B') | Has the same value as the related transaction. |
| For Loads (TxnType 'L') | Has the same value as the prior related Unload. |
| Unloads (TxnType 'U') | Has the same value as the prior related Load. |

# 4.40 Visa_POS_Data_DE60

The Visa_POS_Data_DE60 field contains the raw Visa POS data Thredd received in Visa online authorisation related messages. It can be useful for diagnosis in exception cases. Thredd processes this field to set the GPS_POS_Data and GPS_POS_Capability fields.

**Note:** The values supplied in this field are subject to change by Visa. We advise you not to configure your systems to make decisions based on this field.

## 4.40.1 Visa_POS_Data_DE60 Positions

Each different position holds a different piece of POS information. Note that not all positions may arrive.

For more information on this field, refer to Visa. Only a summary of the relevant values are given below.

The position is the character offset in the field; the first character is “position 1”.

| Position | Description | More Information |
|---|---|---|
| 1 | Terminal Type | See Position 1 - Terminal Type |
| 2 | Terminal Entry Capability | See Position 2 - Terminal Entry Capability |
| 3 | Chip Condition Code | See Position 3 - Chip Condition Code |
| 4 | Special Condition indicator - existing debt | See Position 4 - Special condition (existing debt) |
| 5 - 6 | RFU | |
| 7 | Chip Transaction Indicator | See Position 7 - Chip Transaction indicator |
| 8 | Chip Card Authentication reliability indicator | See Position 8 - Chip card authentication reliability indicator |
| 9 - 10 | Mail/Phone/E-Commerce/Payment indicator | See Position 9-10 - Mail/Phone/E-Commerce/Payment indicator |
| 11 | Cardholder ID method indicator | See Position 11 - Cardholder ID Method Indicator |
| 12 | Additional authorisation indicators | See Position 12 - Additional Authorisation Indicators |
| 13 and up | Unknown | Reserved for future use |

## 4.40.2 Position 1 - Terminal Type

| Value | Description |
|---|---|
| 0 | Unspecified |
| 1 | Unattended cardholder-activated, no authorization, below-floor-limit transaction (not allowed in zero floor markets) |
| 2 | ATM |
| 3 | Unattended cardholder-activated, authorized transaction |
| 4 | Electronic cash register |
| 5 | Home terminals, which include personal computers, personal digital assistants, interactive televisions, and telephones |

| Value | Description |
|---|---|
| 7 | Telephone device (including Visa dial terminals) |
| 8 | Reserved for future use |
| 9 | Mobile acceptance solution (mPOS) |
| Any other value | Unknown |

## 4.40.3 Position 2 – Terminal Entry Capability

| Value | Description |
|---|---|
| 0 | Unknown |
| 1 | Terminal not used |
| 2 | Magnetic Stripe read capability |
| 3 | Barcode read capability |
| 4 | OCR-read capability |
| 5 | Chip-capable terminal |
| 8 | Proximity-read-capable terminal |
| 9 | Terminal does not have the capability to read card data |
| Any other value | Unknown |

## 4.40.4 Position 3 – Chip Condition Code

| Value | Description |
|---|---|
| 0 | Not applicable |
| 1 | Transaction was initiated from a magnetic stripe with a service code beginning with 2 or 6 and the last read at VSDC terminal was a successful chip read or was not a chip transaction |
| 2 | Transaction was initiated at a chip-capable terminal from a magnetic stripe that contains service code 2 or 6, and the previous transaction initiated by that terminal was an unsuccessful chip read. |
| Any other value | Unknown |

## 4.40.5 Position 4 – Special Condition (existing debt)

| Value | Description |
|---|---|
| 0 | Default value |
| 1 | Purchase of Central Bank Digital Currency (CBDC) or tokenized depositsCentral Bank Digital Currency (CBDC) or tokenized deposits |
| 2 | Purchase of Stablecoin (Fiat-backed) |
| 3 | Purchase of Blockchain Native Token/Coin |
| 4 | Purchase of Non-Fungible Token (NFT) |
| 7 | Purchase of Cryptocurrency |
| 8 | Quasi-Cash |
| 9 | Existing debt indicator |
| Any other value | Unknown |

## 4.40.6 Position 7 – Chip Transaction Indicator

| Value | Description |
|---|---|
| 0 | Not applicable |
| 1 | Standard third bitmap or field 55 used to submit chip data |
| 2 | Expanded third bitmap used to submit chip data |
| 3 | Visa dropped chip data due to invalid format for chip card type |
| 4 | Token-based transaction |
| Any other value | Unknown |

## 4.40.7 Position 8 – Chip Card Authentication Reliability Indicator

| Value | Description |
|---|---|
| 0 | No information / not applicable |
| 1 | Acquirer indicates that Card Authentication may not be reliable |
| 2 | Visa indicates acquirer inactive for Card Authentication |
| 3 | Visa indicates issuer inactive for Card Authentication |
| Any other value | Unknown |

## 4.40.8 Position 9-10 – Mail/Phone/E-Commerce/Payment Indicator

| Value | Description |
|---|---|
| 00 | Not applicable |
| 01 | Mail/Phone Order (MOTO).<br>Indicates that the transaction is a mail/phone order purchase, not a recurring transaction or installment payment. |
| 02 | Recurring transaction from acquirer in Visa US region |
| 03 | Installment payment.<br>Indicates a purchase of goods or services that is billed to the account in multiple charges over a period of time agreed upon by the cardholder and merchant. |
| 04 | Unknown classification/other mail order. Indicates that the type of mail/telephone order is unknown. |
| 05 | Secure electronic commerce transaction.<br>Indicates that the electronic commerce transaction has been authenticated using a Visa-approved protocol, such as 3D Secure. |
| 06 | Non-authenticated security transaction at a 3D Secure-capable merchant, and merchant attempted to authenticate the cardholder using 3D Secure<br>Identifies an electronic commerce transaction where the merchant attempted to authenticate the cardholder using 3D Secure, but was unable to complete the authentication because the issuer or cardholder does not participate in the 3D Secure program. |
| 07 | Non-authenticated Security Transaction<br>Identifies an electronic commerce transaction that uses data encryption for security; however, cardholder authentication is not performed using a Visa-approved protocol, such as 3D Secure. |
| 08 | Non-secure transaction<br>Identifies an electronic commerce transaction that has no data protection. (This value is not allowed in Europe) |
| 09 | Reserved for future use |
| Any other value | Unknown |

## 4.40.9 Position 11 – Cardholder ID Method Indicator

| Value | Description |
|---|---|
| 0 | Unspecified |
| 1 | Signature |
| 2 | Online PIN |
| 3 | Unattended terminal, no PIN pad |
| 4 | Mail/Telephone/Electronic Commerce |
| Any other value | Unknown |

## 4.40.10 Position 12 – Additional Authorisation Indicators

| Value | Description |
|---|---|
| 0 | Not applicable |
| 1 | Terminal accepts partial authorization responses, amount is not an estimate. |
| 2 | Estimated amount, terminal does not support partial authorization responses. |
| 3 | Estimated amount and terminal accepts partial authorization responses |
| Any other value | Unknown |

# 4.41 Visa_ResponseInfo_DE44

The Visa_ResponseInfo_DE44 field contains a summary of verifications performed by the Visa system on the transaction, before it reached Thredd. It is a useful source of additional information for Visa authorisation-related transactions.

**Note:** The values supplied in this field are subject to change by Visa. We advise you not to configure your systems to make decisions based on this field.

**Note:** Only some of the values below apply to the Thredd to Visa connection.

## 4.41.1 Visa_ResponseInfo_DE44 Positions

Each position holds the result of a verification check at Visa. The Visa system may vary on which checks it performs on which transactions.

The position is the character offset in the field; the first character is *position 1*. A space character in any position indicates the information is not provided.

In the table below, *Issuer* indicates Thredd, *STIP* indicates the Visa Stand-In Processing system and *Switch* refers to the Visa Network.

**Note:** Only a summary of the relevant values are given below. For more information, refer to the Visa documentation.

| Position | Description | More Information |
|---|---|---|
| 1 | Response Source/Reason | See Position 1 - Response Source/Reason Code. |
| 2 | AVS result | See AVS_Results. |
| 3 | Reserved for future use | See Visa documentation |
| 4 | Reserved for future use | See Visa documentation |
| 5 | CVV/iCVV/dCVV result | Values:<br>Space = CVV, iCVV or dCVV was not verified<br>0 = CVV, iCVV or dCVV could not be verified<br>1 = CVV, iCVV, dCVV, or Online CAM failed verification, or Offline PIN authentication was interrupted<br>2 = CVV, iCVV, dCVV, or Online CAM passed verification.<br>3 = Transaction passed CVV, Emergency Replacement Card (ERC) service value only, which is used exclusively by the Global Customer Assistance Service (GCAS). |
| 6 - 7 | PACM diversion level | See Visa documentation |
| 8 | PACM diversion reason | See Visa documentation |
| 9 | Card Authentication Results | Values:<br>Space = no information<br>1 = EMV ARQC checked and failed verification<br>2 = EMV ARQC checked and passed verification |
| 10 | Reserved for future use | See Visa documentation |
| 11 | CVV2 Result | See Position 11 - CVV2 Result Code |
| 12-13 | Original Response code | See Visa documentation |
| 14 | Cheque settlement code (USA only) | See Visa documentation |

| Position | Description | More Information |
|---|---|---|
| 15 | CAVV result | See Position 15 – CAVV Result Code |
| 16 - 19 | Response Reason Code | See Visa documentation. (Not applicable to Thredd) |
| 20 - 23 | Last 4 digits of PAN for receipt | Holds the last four digits of the cardholder PAN, for some payment-token transactions. |
| 24 | CVM requirement for PIN-less | Values:<br>Space = no information<br>0 = No CVM required<br>1 = Signature prompt required |
| 25 and up | Unknown | See Visa documentation |

## 4.41.2 Position 1 – Response Source/Reason Code

This position explains who responded to the acquirer and why. Thredd already map this into the Response_Source and Response_Source_Why fields.

In the table below, Issuer indicates Thredd, and STIP indicates the Visa Stand-In Processing system.

| Value | Description |
|---|---|
| space | No information |
| 0 | Advice of Exception file change initiated by Global Customer Assistance Service (GCAS) or Automatic Cardholder Database Update (Auto-CDB) Service |
| 1 | Response provided by STIP because the request was timed out by Switch (ATR) or the response contained invalid data |
| 2 | Response provided by STIP because the transaction amount was below issuer limit (PCAS processing), or transaction amount is below sliding dollar limit (PACM processing), or in response to a verification request |
| 4 | Response provided by STIP because issuer was not available for processing |
| 5 | Response provided by issuer |
| 7 | Reversal message matched to the original authorization request message |
| 8 | No matching original authorization request message found. V.I.P. attempts to match reversals with originals when possible; however, 8 does not guarantee that<br>an original was not received |
| A | Automated Fuel Dispenser Advice |
| B | Response provided by STIP: Transaction met Visa Transaction Advisor Service criteria |
| C | Response provided by STIP for conditions not listed. See the Thredd fields Response_Source_Why and Visa_STIP_Reason_Code for why (see section Visa_STIP_Reason_Code field) |
| Any other value | Unknown |

## 4.41.3 Position 11 - CVV2 Result Code

Result of Visa's CVV2 verification.

| Value | Summary |
|---|---|
| space | No information |
| M | CVV2/dCVV2 match verified by issuer or Visa |
| N | CVV2/dCVV2 verified but did not match |
| P | CVV2/dCVV2 not performed due to system settings or STIP |
| S | System error (e.g., missing expiry date or CVV2) |
| U | Issuer [actual issuer, not Thredd] does not participate or lacks encryption keys |
| Any other value | Unknown |

## 4.41.4 Position 15 - CAVV Result Code

Result of Visa's CAVV (3D-secure) verification.

| Value | CAVV result |
|---|---|
| space | No information |
| 0 | CAVV could not be verified or CAVV data was not provided when expected |
| 1 | CAVV failed verification–authentication. |
| 2 | CAVV passed verification–authentication. |
| 3 | CAVV passed verification–attempted authentication.<br>A 3D Secure (3DS) authentication value of 07 from the Issuer Attempts Server indicates that authentication was attempted.<br>Issuer attempts CAVV key was used to generate the CAVV. |
| 4 | CAVV failed verification–attempted authentication.<br>A 3D Secure (3DS) authentication value of 07 from the Issuer Attempts Server indicates that authentication was attempted.<br>Issuer attempts CAVV key was used to generate the CAVV. |
| 5 | RFU |
| 6 | CAVV not verified, issuer not participating in CAVV verification (except as noted, only Visa generates this code, issuers do not). |
| 7 | CAVV failed verification–attempted authentication.<br>A 3D Secure (3DS) Authentication Results Code value of 07 from Visa Attempts Service indicates that an authentication attempt was performed.<br>(Visa CAVV attempts key was used to generate the CAVV) |
| 8 | CAVV passed verification–attempted authentication<br>A 3D Secure (3DS) Authentication Results Code value of 07 from Visa Attempts Service indicates that an authentication attempt was performed. |

| Value | CAVV result |
| --- | --- |
| | (Visa CAVV attempts key was used to generate the CAVV) |
| 9 | CAVV failed verification–attempted authentication<br>A 3D Secure (3DS) Authentication Results Code value of 08 from Visa Attempts Service indicates that an authentication attempt was performed when the Issuer Access Control Server (ACS) was not available.<br>(Visa CAVV attempts key was used to generate the CAVV) |
| A | CAVV passed verification–attempted authentication<br>A 3D Secure (3DS) Authentication Results Code value of 08 from Visa Attempts Service indicates that an authentication attempt was performed when the Issuer ACS was not available.<br>Visa CAVV attempts key was used to generate the CAVV. |
| B | CAVV passed verification–attempted authentication, no liability shift.<br>Only Visa generates this code, issuers do not. |
| C | CAVV was not verified–attempted authentication.<br>If 3D Secure (3DS) Authentication Results Code value is 07 in the CAVV and the issuer did not return a CAVV results code in the authentication response, or, if, Field 44.13 = 0 in the response message and the CAVV encryption keys do not exist in V.I.P., V.I.P.. sets the value to C in Field 44.13.<br>Only Visa generates this code, issuers do not. |
| D | CAVV was not verified–cardholder authentication.<br>If 3D Secure (3DS) Authentication Results code value is 00 in the CAVV and the issuer did not return a CAVV results code in the authorization response, or, if, Field 44.13 = 0 in the response message and the CAVV encryption keys do not exist in V.I.P., V.I.P. sets the value to D in Field 44.13.<br>Only Visa generates this code, issuers do not. |
| Any other value | Unknown |

# 4.42 Visa_STIP_Reason_Code

The Visa_STIP_Reason_Code field provides Visa's reason codes for why an advice was generated. This information can be used to supplement the details returned in the Message_Why and Response_Source_Why fields of an advice message that originated from Visa.

**Note:** The values supplied in this field are subject to change by Visa. We advise you not to configure your systems to make decisions based on this field.

**Note:** Only some of the values below apply to the Thredd to Visa connection.

Definitions used below:

- Issuer - means Thredd in this scenario
- STIP – Visa's STand-In Processing system
- Switch – the Visa Network

| Value | Action taken by Visa | Detailed reason (why action was taken) |
|---|---|---|
| 9001 | STIP processed transaction | Issuer is signed off [to Visa] |
| 9002 | STIP processed transaction | Issuer was signed off by Visa |
| 9011 | STIP processed transaction | Line [from] Visa to Issuer is down |
| 9012 | STIP processed transaction | Forced STIP because of N0 (Force STIP) original response from issuer |
| 9020 | STIP processed transaction | Response from Issuer timed out |
| 9022 | STIP processed transaction | PACM (Positive Authorisation Capacity Management) - diverted |
| 9023 | STIP processed transaction | PCAS (Positive Cardholder Authorisation Service) -diverted |
| 9024 | STIP processed transaction | Transaction declined due to Visa Payment Controls (VPC) rule |
| 9025 | STIP processed transaction | Declined by Selective Acceptance Service |
| 9026 | STIP processed transaction | Transaction reviewed by the Visa Transaction Advisor Service: additional authentication required. |
| 9027 | STIP processed transaction | Declined by token provisioning service |
| 9030 | STIP processed transaction | Based on the Issuer response, the account was either listed in the ASAF via the Auto-CDB Service or updated by the ASAF Downgrade feature. |
| 9031 | STIP processed transaction | Original processed in stand-in |
| 9033 | STIP processed transaction | Declined due to active account management threshold exceeded |
| 9034 | STIP processed transaction | Unable to deliver response to Acquirer |
| 9035 | STIP processed transaction | Process recurring payment in STIP |
| 9037 | STIP processed transaction | Declined by Visa CTC (Consumer Transaction Controls) service |
| 9038 | STIP processed transaction | Merchandise return authorization processed in STIP |

| Value | Action taken by Visa | Detailed reason (why action was taken) |
|---|---|---|
| 9041 | STIP processed transaction | There was a PIN verification error |
| 9042 | STIP processed transaction | Offline PIN authentication was interrupted |
| 9045 | STIP processed transaction | Switch was unable to translate the PIN |
| 9047 | STIP processed transaction | Declined by Real-Time Decisioning (RTD) processing |
| 9048 | STIP processed transaction | There is an invalid CVV with the All Respond Option |
| 9054 | STIP processed transaction | There is an invalid CAM [EMV ARQC invalid normally] |
| 9063 | STIP processed transaction | Transaction declined, processing requirements not met. This value is set by Visa when the value in field 39 is 96 and:<br>• Transaction required to process in-country, but the in-country Visa system is unavailable, or,<br>• Transaction not eligible to be processed by the in-country Visa System |
| 9091 | STIP processed transaction | Dispute financial |
| 9095 | STIP processed transaction | Issuer notification of token vault provisioned or status change |
| 9050 | STIP generated advice | Source or destination does not participate in this service |
| 9061 | Switch-Detected Error | There is an internal system error or other switch-detected error condition |
| 9102 | Switch-Generated Reversal Advice | Switch generated this 0420 reversal advice because an approval response could not be delivered to the acquirer. Visa Europe only |
| 9103 | Switch-Generated Reversal Advice | An approval response could not be delivered to the acquirer because the issuer timed out |
| 9201 | STIP Decline Advice | Decline due to PPCS (Stop recurring payment service) |
| 9202 | STIP Decline Advice | Decline due to issuer country exclusion list |
| 9203 | STIP Decline Advice | Decline due to Office of Foreign Assets Control (OFAC) embargo |
| 9204 | STIP Decline Advice | Cashback processing error |
| 9205 | STIP Decline Advice | Invalid CAVV with Visa Verify and decline options (V and W) |
| 9206 | STIP Decline Advice | Mod-10 check failure |
| 9207 | STIP Decline Advice | Issuer does not support gambling transactions |
| 9208 | STIP Decline Advice | Declined because issuing identifier and/or routing identifier is blocked |
| 9209 | STIP Decline Advice | Declined because issuer does not support transaction type |
| 9210 | STIP Decline Advice | Declined because of issuer participation options |

| Value | Action taken by Visa | Detailed reason (why action was taken) |
|---|---|---|
| 9211 | STIP Decline Advice | Declined because acquirer does not support the service requested |
| 9212 | STIP Decline Advice | Declined due to fraud condition |
| 9213 | STIP Decline Advice | Declined because call-out to an external service timed out |
| 9214 | STIP Decline Advice | Declined because of error return from call-out to external service |
| 9215 | STIP Decline Advice | Declined because issuer blocked specific POS entry mode |
| 9218 | STIP Decline Advice | Product subtype is MB (Interoperable mobile branchless) and business application identifier is not MP or business application identifier is MP and product subtype is not MB. |
| 9219 | STIP Decline Advice | Merchant Blocking Service Decline Reason Code |
| 9302 | STIP Decline Advice | Exceeds Settlement Risk Exposure Cap. This code appears in 0120 messages |
| Any other value | Unknown | Ignore this.<br><br>**Note**: Visa may add other values at any time without prior warning, so you must ignore any values that you are not expecting. |

# Section 5: FAQs

This section provides answers to Frequently Asked Questions:

- General FAQs
- Troubleshooting FAQs

# General FAQs

This section provides answers to frequently asked questions. It is divided into the following sections:

- EHI Setup
- EHI Modes
- Duplicate Checking and Transaction Matching
- EHI Cut Off Messages
- Transaction Processing
- Transaction Lifecycle

# EHI Setup

## Q. How do I change my EHI configuration?

Please discuss changes with your implementation manager or account manager.

## Q. Can I use a private IP in the Test Environment?

A private IP is used internally within your own network and will require a secure connection for EHI to access. In the test environment Thredd recommends the EHI connection resolves to a public IP.

In the test environment Thredd recommends the EHI connection resolves to a public IP using Thredd's Secure Connectivity framework. However, you can use a private IP internally within your own network, which also uses the Thredd's Secure Connectivity framework. For more information, see the Connecting to Thredd Guide.

# EHI Setup and Modes

## Q. Which EHI mode should I choose?

Thredd offers four EHI setup options (modes), which are configured when your account is set up on the Thredd platform.

You should select your EHI mode based on how you want the balance on the cards in your programme to be held and how you want to handle payment authorisation transactions:

- Gateway Processing (mode 1) is used where you want full to control the card balance and authorisation process
- Cooperative Processing (mode 2) offers flexible scenarios where Thredd maintains the balance and performs authorisation, but you can override an approval decision.
- Full Service Processing (mode 3) is used where you want Thredd to control the card balance and authorisation process
- Gateway Processing with STIP (mode 4) is similar to Gateway Processing (mode 1), but offers Thredd Stand-in processing if your systems are unavailable.

For more information, see EHI Operating Modes.

## Q. Can I be on more than one EHI mode?

You can only choose one EHI mode per product.

## Q. Can I change my EHI mode?

Yes. The following are typical reasons why you may decide to change your EHI mode at a later stage:

- You started using Full Service Processing (mode 3) for convenience and to launch your service quickly, but later decide to maintain your own card balance ledger and payment authorisation process. In this case, you could switch to Gateway Processing (mode 1) or Gateway Processing with STIP (mode 4).
- You started using Gateway Processing (mode 1), but have been experiencing persistent processing issues and timeouts on your end, so decide to switch to one of the EHI options that provide Thredd stand-in processing (STIP) when your systems are unavailable. For example: Gateway Processing with STIP (mode 4).

For more information, see EHI Operating Modes.

## Q. How do I change my EHI mode?

To change your EHI mode, please contact your Account Manager.

**Note:** Your Account Manager will need to fully assess and cost any changes to your EHI mode.

Changing your EHI mode may require changes to the way in which Thredd and your external host systems maintain the card balance and respond to authorisation requests. It may also require other EHI configuration changes and testing.

# Duplicate Checking and Transaction Matching

## Q. What is duplicate checking and how can I ensure a message is unique?

EHI is designed to resend messages if a successful acknowledgement is not received by Thredd. Even if you respond with a valid acknowledgement, due to network issues, this may not be received by Thredd, in which case Thredd resends the message. This ultimately means that any message can be received through EHI more than once. You must ensure that accounts are not debited or credited multiple times due to duplicate messages.

Duplicate checking must be performed for any new message received through EHI. You can use the transaction ID (`Txn_ID`) field to check the uniqueness of a transaction in EHI.

## Q. What is transaction matching and how should I perform this?

You are likely to receive multiple linked messages for a card payment transaction throughout its lifecycle (for example, from authorisation, through to presentment and so on). Incoming messages must be linked with each other. The main reason for linkage is to compare financial effect of new messages with previous messages and re-calculate card balances.

Matching of a received message to an earlier message is done by comparison of some key data fields. For details see Transaction Matching.

## Q. What fields should I use for transaction matching?

You can use the following fields to match your transactions:

1. `traceID_lifecyle` - this is the primary identifier to match a message to a previous transaction.
2. `authcode` and `date`- can be used to match where you cannot find a match using `traceID_lifecyle`

# EHI Cut Off Messages

## Q. What are Cut Off messages and what are they used for?

The EHI cut off message is an optional service, which provides a summary of messages sent to the External host in the last X hours (where X is configurable). This is set at product level and sent every X hours to the specified URL you provided.

The cut off message enables you to check all the messages that Thredd has sent to and received from the external host and to identify where any messages were not received/acknowledged (e.g., because of a network connection issue or timeout). It is an important aid to transaction reconciliation and troubleshooting.

The cut off message structure is different to the normal EHI transaction message structure, so Thredd recommends you use a different URL for your cut off messages.

## Q. How do the timings on EHI Cut off messages work?

EHI starts sending the cut off message at the end of the cut-off period that was applied to a product.

For example if you select a cut off period of every 6 hours, if added to a product at 1 am, EHI will start sending at 7 am.

Cut of times often vary per product as they can be added to different products at different times.

## Q. What happens if there is no data within the cut off period?

If there is no data, then zero is sent as a count at the end of the cut-off period.

# Transaction Processing

## Q: What are processing codes and how can I identity them?

The processing code (`Proc_Code`) is a 6 digit field made up of a 2 character transaction code identifying the type of payment, a 2 character source account type code and a 2 character destination account type code. The (`Proc_Code`) is based on information obtained from the card scheme networks as well as Thredd's own systems. You can use the processing code to apply processing rules to the transaction (for example, to restrict card usage or charge fees based on the type of transaction. For details, see Processing Codes.

## Q: What is the difference between Card Scheme Stand In Processing (STIP) and Thredd STIP?

Scheme STIP is configured on the Card Scheme network:

- The Scheme makes the authorisation decision when the Issuer Processor (Thredd) is unavailable or does not respond in time.
- STIP is enabled only up to a maximum predefined Stand-in authorisation amount
- Configured on the Scheme's systems at BIN level

Thredd STIP is configured on Thredd systems:

- Thredd make the authorisation decision when the Program Manager's external host system is unavailable or does not respond in time.
- Allows flexible STIP authorisation amounts, within the limit set for the product
- Configured on Thredd systems at Product level

## Q: How does Mastercard STIP work?

A Mastercard STIP allows Mastercard to complete a transaction when the systems for the Issuer or Thredd are unavailable. Each transaction where Mastercard has processed on Thredd or the Issuer's behalf is followed by an Authorisation Advice message (MTID: 0120), indicating the outcome of the transaction, for example, Accepted or Declined.

## Q. How are fees applied and reported for declined transactions?

When a transaction is declined, the system applies a pre-configured decline fee. This fee is processed and reported in EHI messages as follows:

- The *Fixed Fee* and *Rate Fee* are set to 0.
- The *Note* field is updated to include details of both the *Fixed Fee* and *Rate Fee*.
- If a *Decline Fee* is defined for the specific card product:
    - This fee is deducted from the card balance.
    - The deducted amount is populated in the *Fixed fee* field in the EHI message.

  This will be the only fee that is applied to the card for a declined transaction.

**Note:** Applicable if you are using the Thredd Fees module to apply fees to transactions. See Fees Guide > Completing your PSF: Decline Fees.

# Transaction Lifecycle

## Authorisations

### Q. What are Authorisations and how do they work?

Authorisation is the stage in a transaction life-cycle where a merchant requests approval for a card payment amount. If the authorisation is approved, the amount is ring-fenced on the card. Ring-fencing means that the amount is blocked and the available balance on the card is reduced by this amount.

There are different types of authorisations:

- **Pre-auth** - the merchant requests authorisation for an initial amount. This may be followed by authorisation requests for additional amounts.
- **Auth** - the merchant requests authorisation for a purchase amount. This could either be the full amount of the purchase or a partial amount.
- **Auth and Capture** - the merchant requests the authorisation and taking of the amount at the same time.

When Thredd receives the authorisation request, this is processed according to your EHI mode. In Full Service Processing (mode 3), Thredd approves or declines. In Gateway Processing (mode 1), the Program Manager approves or declines. Other modes use a combination of Thredd and Program Manager approval. Where the Program Manager maintains the card balance, they need to block the approved amount on the card and reduce the available balance. See EHI Operating Modes.

For an approved transaction, typically the merchant then has up to 7-10 days to request settlement of the authorised amount. The time-period when a merchant needs to request settlement of the authorised amount may vary, depending on their Merchant Category Code (MCC) and can be up to 28 days. They can respond by:

- Sending an **authorisation reversal request** - for example, if the transaction is a duplicate or was submitted in error. When the Program Manager receives the authorisation reversal message and they hold the card balance, they should unblock the amount reserved on the card.
- Sending a **presentment request** - to take part or all of the authorised amount. When the Program Manager receives the presentment request, they should match it to the original authorisation; where they hold the card balance, they should deduct the amount from the balance on the card.

  This captured amount is transferred from the card issuer to the merchant's acquirer during the settlement process. (Thredd is not involved in settlement, although we do receive copies of settlement reports.)

If no response is received from the card scheme network within the Thredd configured hanging filter time period, Thredd automatically issues an authorisation reversal message. When the Program Manager receives the authorisation reversal message and they hold the card balance, they should unblock the amount reserved on the card.

For more information, see Transaction Flow Scenarios.

### Q. What is an incremental authorisation and how do I identify it?

An incremental authorisation is an additional authorisation, following a previous transaction authorisation, which is used to request an additional amount for the same product or service purchased by the cardholder. It is commonly used by merchants in the hospitality and tourism industry, for items such as hotel bills and car rentals, where the final amount is not known at the time the original authorisation is requested.

Multiple incremental authorisations are usually linked to a single presentment.

**Note:** The incremental authorisation is for an additional payment and doesn't affect any previous authorisations made on the card.

You can identify an incremental authorisation as follows:

- `txn_type` = A (authorisation)
- In `Message_Why`, the `Response_Source_Why` value = 56 (for Visa) and will be blank for Mastercard. See Response_Source_Why and Message_Why.
- `auth_type` = 0 or P (used for both preauths and incremental auths)
- The following fields are the same as in the original authorisation: `Token`, `Txn_CCy` and `traceid_lifecycle`
- The `Network_Transaction_ID` field will be unique.

Other ways you can use to identify incremental authorisations:

- For Mastercard, you can use the Traceid_Original field. Positions 1-9 will have the same value as the original authorisation.

  **Note:** The same Traceid_Original value can also appear in subscription payments and recurring payment scenarios. You should exclude these non-incremental cases, which can be identified where position 1 of GPS_POS_Data is equal to 4.

- For Visa, Reason_ID = 3900 (incremental auth for Visa).

  **Note:** In some instances, this field may be blank, so you should not rely on it.

## Q. What is an ASI transaction and how do I identify it?

Account Status Inquiry (ASI) is a type of authorisation transaction, supported by Mastercard, which allows a merchant to check the Card Validation Code (CVC) and, if address details are provided, to optionally use the Address Verification Service (AVS). If these checks are successful, Thredd responds to the merchant with 00 (approve). The merchant typically then submits a second authorisation transaction, with an actual transaction amount included.

(Note: for a decline, the typical response is *62 - Restricted card*)

You can identify the Authorisation Request/0100 message for an ASI transaction as follows:

- Proc_Code has a value of *39*.
- Bill_Amt has a value of zero.
- auth_type field has a value of V to identify account verifications
- POS_Data_DE61 subfield 7 (POS Transaction Status), has a value of 8 (Account Status Inquiry Service (ASI))
- Additional_Data_DE48 subelement 82 (Address Verification Service Request), has a value of 52 (AVS and Authorization Request/0100) for AVS requests (optional)
- Additional_Data_DE48 subelement 92 (CVC 2 Value), has a CVC 2 value (optional)

## Q. What is the MerchantAdvice field and how is it used?

The MerchantAdvice field contains a Merchant Advice Code (MAC), which provides the merchant with some further information about the decline, which they can use to decide what to do next: whether to obtain updated details from the cardholder, re-try the transaction later or not attempt any further transactions on the card.

- Where Thredd manages the authorisation response on your behalf (Full Service Processing), the system returns an appropriate advice to the merchant in the authorisation response. This advice code is based on the card status and available funds.
- Where your systems manage the authorisation response (Gateway or Cooperative Processing), you can optionally return one of the advice codes listed in the description of the MerchantAdvice field. See GetTransaction Message Fields: MerchantAdvice.

When declining a transaction and returning a Merchant Advice Code value of “03” (Merchant should not retry again), you must not approve any future transactions on this card. This advice code is reserved for lost, stolen or destroyed cards that are permanently blocked.

**Note:** Be aware that Mastercard could impose issuer fines for transactions that are authorised on a PAN where previously a Merchant Advice Code value of “03” (Merchant should not retry again) was returned to the merchant.

## Q. What is an offline transaction and how do I handle it?

In an offline transaction, Thredd has not received a previous authorisation transaction from the card network. In this case you will not receive any authorisation request message. See the Presentments section below for details of how to handle a presentment message for an offline transaction.

## Q. What is the traceid_lifecycle field and how is it constructed?

This is a unique transaction lifecycle identifier which can be used to track a transaction across its lifecycle, enabling linking of authorisations and financial messages relating to the same transaction.

The traceid_lifecycle is a concatenation of: *network_id + "-" + date_yyyymmdd + "-" + a unique identifier*

For details of how this is constructed for different networks, see the following table:

| Card Scheme (Network) | network_id | date_yyyymmdd | Unique identifier | Example |
|---|---|---|---|---|
| Mastercard Banknet | BNET | Banknet trace date from DE15 that corresponds to the Banknet serial number (from DE63). | The traceid from field 63 (or equivalent from field 48.63, e.g., for incremental authorisations) | "BNET-20181231-MCC1234XY" |

| Card Scheme (Network) | network_id | date_yyyymmdd | Unique identifier | Example |
|---|---|---|---|---|
| Visa Base I | VIS1 | Date from inside the Visa Transaction ID | The Base field 62.2 Visa Transaction Id. For details, see Visa's Base II documentation. | "VIS1-20180331-918090604354364" |
| VDEP/Visa-Tokenisation-System API call | VDEP | No date.<br>The traceid_lifecycle format is: "*VDEP" + 1 space + X-REQUEST-ID"* | The 36-character X-REQUEST-ID from VDEP API incoming HTTP header field. | "VDEP 90bc1da9-4f7e-491d-ba3b-1e0d70c1b601" |

## Presentments

### Q. What are presentments and how do they work?

A presentment (settlement or clearing request) is a financial transaction where Thredd receives a request to settle an amount that was previously authorised on a card. A presentment is typically linked to a previous authorisation transaction. Thredd receives several daily batch clearing files from the card schemes, containing, amongst other records, presentments.

The majority of presentment transactions are requests for settlement of transactions authorised the previous day. However, for a normal authorisation, under current card scheme rules, merchants have up to 7-10 days to request settlement of an authorisation. For some merchant category codes (e.g., card rentals and hotels), settlement can be up to 28 days after the authorisation.

Thredd processes the presentments in the batch file, records details in the Thredd database, and sends a presentment message for each presentment, via EHI to the external host (Program Manager's system).

When you receive a presentment, you should try and match to an existing preauthorisation. Where your systems hold the card balance, you should reduce the balance by the amount of the presentment.

### Q. Are there any cases where Thredd receives a presentment which does not have a linked previous authorisation?

Yes. In the case of offline transactions, the authorisation approval is made without Thredd and we will have no record of the transaction in the system. In this case, Thredd creates a new authorisation transaction and sends this to the Program Manager, followed by the linked presentment message. For more information, see First Presenment for an Offline Transaction.

### Q. What are incremental presentments and how do I handle them?

An incremental presentment may occur when a merchant requests an authorisation for a specific amount, but then submits multiple presentments for different partial amounts. So, an incremental presentment has one authorisation and multiple presentment files. The final presentment total usually equals the total of the original authorised amount.

An incremental presentment can be identified in a GetTransaction financial message if the multi_part_txn field = 1. Additional fields provide information on the sequence and number of expected partial presentments: multi_part_txn, multi_part_txn_final, multi_part_number and multi_part_count (Visa only). See GetTransaction Message Fields.

When you receive an incremental presentment, you should only unblock the amount stated and not the full amount previously authorised. When you have received the final presentment, you can calculate the total and unblock any amount left on the original authorisation.

**Note:** A presentment must be correctly flagged by the acquirer in order for Thredd to identify it as an incremental presentment. This option is specific to Visa and some acquirers may not report this information.

### Q. How is a partial presentment processed?

For a partial presentment (i.e., for part of the authorised amount), the authorised fees are partially cleared as well, with the remaining amount blocked on the card.

### Q. What happens if a presentment is more than the amount available on the card?

The presentment always debits or credits the card balance, regardless of the existing amount. If the presentment is more than the amount held on the card, the card account would go into a negative balance.

**Note:** whether negative balances are permitted on your programme will depend on the nature of the program type and the agreements with the issuer.

### Q: How do I identify a negative card balance?

In processing modes where Thredd manages the balance (Full Service Processing - mode 3 and Cooperative Processing - mode 2) a negative balance is indicated in the balance and available_balance fields.

## Clearing Files

### Q. How often do Thredd receive clearing files from the schemes?

Mastercard send 8 clearing files per day, seven days a week. Visa send 2 clearing files per day.

### How often does Thredd process clearing files?

It is possible for Thredd to process clearing files 7 days a week. Please note, this does not change the date of settlement. If you are interested in enabling 7 day clearing file processing, please contact your account manager for more details.

### How long does it take Thredd to process the clearing files?

It takes Thredd a few hours to process the clearing files and send notifications via EHI.

### Q. What happens if Thredd does not receive a presentment for a previously authorised card amount?

If no presentment is received within a defined hanging filter period, Thredd sends a financial authorisation reversal message, via EHI, to the external host. The Program Manager should unblock any amount ring-fenced on the card, so that it is available to the cardholder.

## Credit Transactions

### Q. Can a refund be online?

Yes. Visa and Mastercard allow acquirers to send refunds with or without authorisation. If an online refund (authorisation) is received, it will be normally followed by a presentment (financial) similar to purchase authorisation flow. Thredd recommend that you do not make the funds available to the cardholder before the financial is received.

### Q. What is the difference between refund authorisation and reversal authorisation?

Authorisation reversals occur against authorisations that have not yet become financial (no presentment is created). Reversals are typically received on the same day. If a reversal authorisation is received for a purchase which is already cleared (i.e. the presentment is received before the authorisation reversal), it indicates a transaction processing error on the acquirer's side.

Refunds are standalone transactions that have their own lifecycle (financial message and possibly an authorisation message). Refunds might be linked with a previous purchase or they may not. Unlike reversals, there is no strict linking requirement for refunds against previous purchases (due to the independent flow, there is no need to backward balance update).

### Q. What is the difference between Refunds and Fund Transfers (Original Credits)?

Refunds are common way of returning funds to customers relating to a previous card transaction. Thredd recommends that you only transfer the refund to the cardholder after you have received the financial message confirming the refund.

Original credits are fund transfer transactions from one entity to another and are not linked to a previous transaction. Visa Fast Funds and Mastercard Money Send are examples. Unlike refunds, most of the Fund Transfer transactions should be funded to the target card within 30 minutes of authorisation. This needs a careful approach to detect the appropriate fund transfers and credit the cards in 30 minutes and not credit the cards again when financials are received. (Please check with your Visa / Mastercard representative to confirm the funding requirements for your region/country).

## Network Fees

### Q. How are Acquirer fees applied and reported?

Acquirer fees do not affect the cardholder balance at Thredd and are passed as data only, requiring program managers to handle fees separately. This fee data is provided in the EHI field Amt_Tran_Fee_DE28.

## Q. How are Acquirer ATM fees applied and reported?

Acquirer fees for ATM balance inquiries, PIN changes and cash withdrawals are sent in the EHI field `Amt_Tran_Fee_DE28` and are not included in the `Bill_Amt` used for card limit checks. See the example below, showing a cash withdrawal of 100 GBP and an Acquirer ATM fee of 1.5 GBP.

```
<GetTransaction
            xmlns="http://tempuri.org/">
            <Acquirer_id_DE32>0852729540</Acquirer_id_DE32>
            <ActBal>884.9800</ActBal>
            <Additional_Amt_DE54 />
            <Amt_Tran_Fee_DE28>D00015000</Amt_Tran_Fee_DE28>
            <Auth_Code_DE38>129833</Auth_Code_DE38>
            <Avl_Bal>660.7800</Avl_Bal>
            <Bill_Amt>-100.0000</Bill_Amt>
            <Bill_Ccy>826</Bill_Ccy>
            <BlkAmt>-100.0000</BlkAmt>
```

During transaction authorisation for an ATM withdrawal, for EHI modes (e.g., Full Service Processing) where Thredd controls the card balance, the authorisation approval is made only for the amount in the `Bill_Amt` field. If there is a sufficient balance held on the card, the request will be approved.

## Q. Does Thredd provide an option to deduct Issuer transaction-related fees from a card?

This applies to EHI modes (e.g., Cooperative Processing and Full Service Processing) where Thredd controls the card balance.

You can use the Thredd Fees module to deduct Issuer fees (e.g., ATM withdrawals and balance inquiries) from the card at the time of the transaction authorisation.

If there is sufficient balance on the card, the fee will be deducted from the card's available balance.

If there is insufficient balance on the card and you have enabled *Partial Fees*, then Thredd will deduct a part of the fee amount and create a Pending Fee Record. If you have not enabled Partial Fees, the transaction will be declined.

For other EHI modes (e.g. Gateway Processing) where Thredd does not control the card balance, the Issuer fees must be calculated and sent in the relevant EHI fields to the External Host.

For more information, see the Fees Guide.

# Troubleshooting FAQs

This section provides answers to common integration queries.

## System timeouts and connection issues

### Q.How can I identify if a transaction has been timed out and view details of the response time?

You can view details in Thredd Portal or in Smart Client: In the **View Transactions** screen, double-click the declined transaction.

The **Response Status (DE039)** field indicates "*92 - Unable to route*". The **difference (in Milliseconds)** field shows the response time.

### Q. Why is the Thredd default timeout set to its current level and should I request a change for my program?

The default Thredd limit for a timeout is set to its current level to avoid potential network timeouts by the card scheme (Visa/Mastercard/Discover) as well as to reduce delays for the cardholder which may result in them abandoning their purchase. Each card scheme has different timeout rules. For details, check with your Implementation Manager. The Thredd timeout limit takes into account the full, end-to-end transaction round trip, which involves several parties and systems, each of which take a portion of the available time. See the figure below.

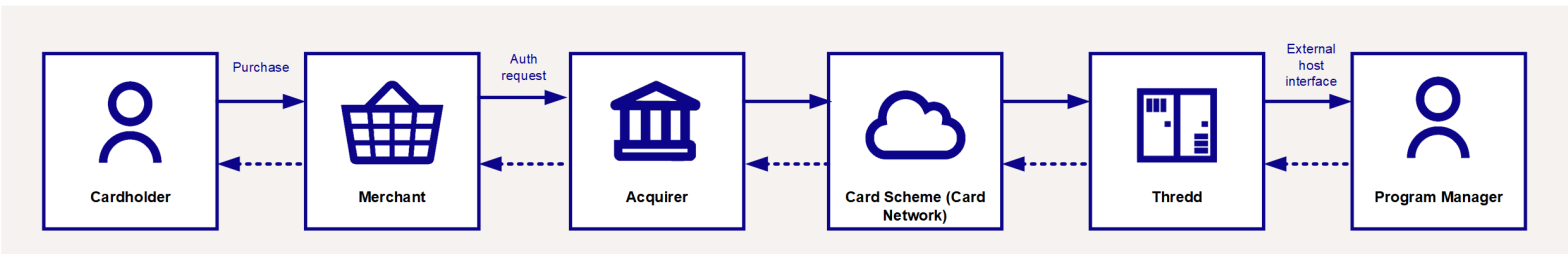


*Figure 21: Parties involved in transaction authorisation*

For suggestions as to how you can reduce response timeouts, see below.

### Q. How can I reduce the number of response timeouts (where my external host does not respond within the allowed time period)?

The default permitted response time (see EHI Configuration Options) is the full round-trip time, including your processing and routing, between Thredd and your external host.

Factors that could impact on your response time include your system processing time and the network transport time. Below are some suggestions as to how you can improve your external host response times and avoid response timeouts during real-time authorisation requests:

- Make sure you have an appropriate level of monitoring and logging on your systems so that you can quickly identify potential issues affecting your service.
- Where response delays are due to slow processing on your systems, consider upgrading your hardware, software or processing logic. As a general rule, you should be processing a message and returning a decision as quickly as possible, in order to enable sufficient time for the message to pass over the network. Your system design should also take into account future traffic loads as your service grows.
- Implement a separate endpoint for your Cut-off messages (to reduce traffic going into your main data feed).
- We recommend you provide Thredd with IP addresses for your external host endpoints and do not use a DNS as this can create potential additional lookup traffic overhead prior to the authorisation being sent.
- It may be possible to request a higher limit for much longer geographical (e.g.,intercontinental) distances from the Thredd data centres. (**Note**: any permanent higher timeouts may be chargeable.)
- If you are experiencing occasional timeouts, consider moving to Gateway Processing with STIP (mode 4), where Thredd can provide the approve or decline decision for an authorisation request in the event that your external host system does not respond with the timeout limit. See EHI Operating Modes.
- If you are experiencing consistent timeouts, try confirm the days and times when this occurs. This may help identify a possible cause.
- Consider the time it takes to connect to any external third party services you are using for your authorisation decisions, such as fraud screening and foreign exchange (FX) conversion services.

- If you are using an older version of EHI, you can reduce the number of connection timeouts by upgrading to a later version. See Upgrading your EHI Version.
- If you have high traffic volumes, you should consider requesting a dedicated session for your authorisation traffic (set up between the card scheme and Thredd). Thredd will need to negotiate this with the card scheme (Visa/Mastercard). For details, check with your Implementation Manager.

# Transactions and Matching

## Q. I am receiving an unexpectedly high volume of repeat messages per day via EHI

This could be due to a number of reasons:

- Check that the message format of your external response matches the EHI specifications. An invalidly formatted response may result in the response message being rejected and the original advice or authorisation request message being resent to your external host.
- Make sure you remove the namespace from the response as this causes EHI to resend the messages.
- Ensure you are acknowledging all Thredd messages with a value of `acknowledge` = 1. See Processing EHI Transactions.
- If you do not acknowledge messages within the permitted period, this will result in EHI resending messages. This may be due to your systems processing and responded to messages slowly. See How can I reduce the number of response timeouts?
- At times of peak traffic load, consider prioritising messages that require real-time decision-making, such as authorisations.

## Q. How can I ensure the card balance is always correctly updated?

For Gateway and Cooperative Processing (modes 1, 2 and 4) where you maintain the balance, Thredd does not match advices received from the card networks; we will pass the advice through to your external host system. When you receive an advice for an approved authorisation, you should block the funds and match the subsequent presentment using appropriate matching criteria; see Transaction Matching.

For Full Service Processing (mode 3), since Thredd maintains the balance, Thredd matches transactions and updates the balance on your behalf.

**Note:** In some circumstances, the card schemes may perform Stand-In processing on our behalf and approve an authorisation request (e.g.,where the Thredd system is unavailable and or does not respond in time). In these circumstances Thredd does not block the approved amount on the card. Once we receive the presentment, we will create an authorisation advice and send this to you, along with the presentment advice.

## Q. How can I prevent a card balance going into negative on a card?

In certain circumstances, such as for offline transactions or where Thredd or the card scheme performs Stand-In processing this may potentially result in the card not having sufficient funds available to cover the presentment, and therefore going into a negative balance. Other examples include late presentments or where merchants send in a presentment for a declined transaction.

When Thredd receive a presentment from the merchant, we will always take the money from the card (Full Service Processing - mode 3). If you receive a presentment, you must update the balance (Gateway and Cooperative Processing - modes 1, 2 and 4). You cannot decline a presentment. If the original transaction was declined and you subsequently receive a presentment, you may have the right to a chargeback. If a late presentment is received after the original authorisation block has expired, this could result in the card going into a negative balance. In this case you *may* have the right to a chargeback.

You cannot fully prevent a card going into a negative balance. To mitigate the risks, Thredd recommends you consider the following options:

- Prevent offline transactions. This option is recommended for prepaid cards. However, note that this will also reduce the available merchant locations where the card can be used.
- Reduce the need for stand-in authorisation processing by ensuring your external host system is able to respond to authorisation requests in a timely manner.
- Consider implementing an automated reminder notification to cardholders to top up when their card balance is running low. The terms and conditions of your service may allow you to implement a service charge or a standing order instruction that debits the cardholder's linked account to cover any negative card balances.

## Q. I cannot match the Acquirer reference in linked messages

The `Trans_link` field provides a reference which can be used to match different types of linked authorisation and financial messages; this reference contains acquirer reference data, such as the *Acquirer Reference Number (ARN)* and *Acquirer Bank Identification Number (BIN)*.

For Mastercard transactions the acquirer reference data is unique and should always match across transactions. For Visa transactions, this data may not be unique and traceid_lifecycle can be used as an alternative for transaction matching. In general, the traceid_lifecycle field is a good field to use for matching transactions across the transaction lifecyle, as the value of this field should be identical for all messages relating to the same transaction.

Other EHI fields which contain acquirer reference data that can be used for matching include:

- Acquirer_Reference_Data_031 – contains the Acquirer Reference Number (ARN) used for clearing messages only.
- Acquirer_id_DE32 – the Acquiring Bank Identification Number as assigned by the network.
- Acquirer_Forwarder_ID – the ID of the Acquiring institution forwarding a Request or Advice message.

For more information on transaction matching criteria, see Transaction Matching.

**Note:** In most cases, the Acquirer reference data for Authorisation and Financial messages and any linked transactions (e.g., reversals) should be the same. However, some acquirers may not follow the standard processing rules, which could result in Acquirer reference data values that are not the same in linked messages. In this case, you should contact the acquirer for clarification.

## Q. What's the difference between the processing codes 01, 12 and 17?

The Proc_Code for 01, 12 and 17 are based on information received from the card scheme networks. See below for details.

On Mastercard networks:

| Processing Code | Type of Transaction | Mastercard Product | MCC |
|---|---|---|---|
| 01 | ATM cash withdrawals | All Mastercard cards | 6011 |
| 01 | Manual cash disbursements - Authorisation transactions<br>Example of a manual cash disbursement: A POS device in a bank branch operated by bank staff is used, and if approved, the bank employee hands cash over the counter to the cardholder. | Maestro cards only | 6010 |
| 12 | Manual cash disbursements - Clearing transactions | All Mastercard cards | 6010 |
| 17 | Manual cash disbursements - Authorisation transactions | Mastercard Credit, Cirrus and Mastercard Debit. | 6010 |

On Visa networks:

| Processing Code | Type of Transaction | Visa Product | MCC |
|---|---|---|---|
| 01 | ATM cash withdrawals | All Visa cards | 6011 |
| 01 | Manual cash disbursements - Authorisation and Clearing transactions | All Visa cards | 6010 |
| 12 | Not used | | |
| 17 | Not used | | |

## Q. How to handle processing errors due to invalid characters?

Thredd receives data in the authorisation messages from the Card Scheme/Acquirer, which occasionally contains fields that have been populated with unrecognised hexadecimal characters. The inclusion of such characters is typically within String fields of type AN or ANS, such as <Merch_Name_DE43>, <Txn_Desc>, <MCC_Desc>, <Merch_ID_DE42>, <Network_Transaction_ID>,<Merch_City>, <GPS_POS_Capability> and <GPS_POS_Data>.

The Thredd Platform is able to successfully process data in these fields, irrespective of special character formats.

During conversion in EHI to the JSON format, data is encoded according to the JSON specification.

Where the converter does not recognise a character, this results in character substitution in the field, based on the conversion standard. You can find several examples below.

### Substitution Examples

| Hexa-decimal character | Descrip-tion | Con-verted to in JSON | Exampl-e: Ori-ginal 0100 Mes-sage | Example: Conversion to JSON Format |
|---|---|---|---|---|
| 20 | space | \u0000 | <GPS_POS_ Data> </GPS_POS_ Data> | "GPS_POS_Data": "\u0000\u0000\u0000\u0000\u0000\u0000\u0000\u0000\u0000\u0000\u0000\u0000\u0000\u0000\u0000000", "GPS_POS_Capability": "\u0000\u0000 \u0000\u0000\u0000\u0000\u0000\u0000\u0000", |

Your systems should be able to handle such invalid characters (for example, by using regular expressions to blank out or convert the invalid characters).

# Known Issues

For a list of known issues, please contact your Implementation Manager.

# EHI Versions

This section provides details of the differences in fields between EHI versions 3.0 and 5.1.

**Note:** For information on fields after EHI 5.1, see EHI Versions Continued.

## Fields included in the EHI Request

| EHI Version 3.0 | EHI Version 4.0 | EHI Version 4.1 | EHI Version 5.0 | EHI Version 5.1 |
|---|---|---|---|---|
| Account_Type_From | | | | |
| Account_Type_To | | | | |
| | Acquirer_Forwarder_ID | Acquirer_Forwarder_ID | Acquirer_Forwarder_ID | Acquirer_Forwarder_ID |
| | | | Acquirer_Country | Acquirer_Country |
| Acquirer_id_DE32 | Acquirer_id_DE32 | Acquirer_id_DE32 | Acquirer_id_DE32 | Acquirer_id_DE32 |
| Acquirer_Reference_Data_031 | Acquirer_Reference_Data_031 | Acquirer_Reference_Data_031 | Acquirer_Reference_Data_031 | Acquirer_Reference_Data_031 |
| ActBal | ActBal | ActBal | ActBal | ActBal |
| Additional_Amt_DE54 | Additional_Amt_DE54 | Additional_Amt_DE54 | Additional_Amt_DE54 | Additional_Amt_DE54 |
| Additional_Data_DE124 | Additional_Data_DE124 | Additional_Data_DE124 | Additional_Data_DE124 | Additional_Data_DE124 |
| Additional_Data_DE48 | Additional_Data_DE48 | Additional_Data_DE48 | Additional_Data_DE48 | Additional_Data_DE48 |
| Amt_Tran_Fee_DE28 | Amt_Tran_Fee_DE28 | Amt_Tran_Fee_DE28 | Amt_Tran_Fee_DE28 | Amt_Tran_Fee_DE28 |
| Auth_Code_DE38 | Auth_Code_DE38 | Auth_Code_DE38 | Auth_Code_DE38 | Auth_Code_DE38 |
| | auth_expdate_utc | auth_expdate_utc | auth_expdate_utc | auth_expdate_utc |
| | auth_type | auth_type | auth_type | auth_type |
| Authorised_by_GPS | Authorised_by_GPS | Authorised_by_GPS | Authorised_by_GPS | Authorised_by_GPS |
| Avl_Bal | Avl_Bal | Avl_Bal | Avl_Bal | Avl_Bal |
| AVS_Result | AVS_Result | AVS_Result | AVS_Result | AVS_Result |
| Balance_Sequence | Balance_Sequence | Balance_Sequence | Balance_Sequence | Balance_Sequence |
| Balance_Sequence_Exthost | Balance_Sequence_Exthost | Balance_Sequence_Exthost | Balance_Sequence_Exthost | Balance_Sequence_Exthost |
| Bill_Amt | Bill_Amt | Bill_Amt | Bill_Amt | Bill_Amt |

| EHI Version 3.0 | EHI Version 4.0 | EHI Version 4.1 | EHI Version 5.0 | EHI Version 5.1 |
|---|---|---|---|---|
| Bill_Ccy | Bill_Ccy | Bill_Ccy | Bill_Ccy | Bill_Ccy |
| BlkAmt | BlkAmt | BlkAmt | BlkAmt | BlkAmt |
| | | | ClearingFileId | ClearingFileId |
| | Clearing_Process_Date | Clearing_Process_Date | Clearing_Process_Date | Clearing_Process_Date |
| CU_Group | CU_Group | CU_Group | CU_Group | CU_Group |
| | Currency_Code_Fee | Currency_Code_Fee | Currency_Code_Fee | Currency_Code_Fee |
| | Currency_Code_Fee_Settlement | Currency_Code_Fee_Settlement | Currency_Code_Fee_Settlement | Currency_Code_Fee_Settlement |
| Cust_Ref | Cust_Ref | Cust_Ref | Cust_Ref | Cust_Ref |
| CVV2 | CVV2 | CVV2 | CVV2 | CVV2 |
| | DCC_Indicator | DCC_Indicator | DCC_Indicator | DCC_Indicator |
| dest_bank_account | dest_bank_account | dest_bank_account | dest_bank_account | dest_bank_account |
| dest_bank_account_format | dest_bank_account_format | dest_bank_account_format | dest_bank_account_format | dest_bank_account_format |
| dest_bank_ctry | dest_bank_ctry | dest_bank_ctry | dest_bank_ctry | dest_bank_ctry |
| | Dispute_Condition | Dispute_Condition | Dispute_Condition | Dispute_Condition |
| Dom_Fee_Fixed | Dom_Fee_Fixed | Dom_Fee_Fixed | Dom_Fee_Fixed | Dom_Fee_Fixed |
| Dom_Fee_Rate | Dom_Fee_Rate | Dom_Fee_Rate | Dom_Fee_Rate | Dom_Fee_Rate |
| Expiry_Date | Expiry_Date | Expiry_Date | Expiry_Date | Expiry_Date |
| Fee_Fixed | Fee_Fixed | Fee_Fixed | Fee_Fixed | Fee_Fixed |
| Fee_Rate | Fee_Rate | Fee_Rate | Fee_Rate | Fee_Rate |
| Fx_Fee_Fixed | Fx_Fee_Fixed | Fx_Fee_Fixed | Fx_Fee_Fixed | Fx_Fee_Fixed |
| Fx_Fee_Rate | Fx_Fee_Rate | Fx_Fee_Rate | Fx_Fee_Rate | Fx_Fee_Rate |
| FX_Pad | FX_Pad | FX_Pad | FX_Pad | FX_Pad |
| GPS_POS_Capability | GPS_POS_Capability | GPS_POS_Capability | GPS_POS_Capability | GPS_POS_Capability |
| GPS_POS_Data | GPS_POS_Data | GPS_POS_Data | GPS_POS_Data | GPS_POS_Data |
| ICC_System_Related_Data_DE55 | ICC_System_Related_Data_DE55 | ICC_System_Related_Data_DE55 | ICC_System_Related_Data_DE55 | ICC_System_Related_Data_DE55 |
| InstCode | InstCode | InstCode | InstCode | InstCode |

| EHI Version 3.0 | EHI Version 4.0 | EHI Version 4.1 | EHI Version 5.0 | EHI Version 5.1 |
|---|---|---|---|---|
| | Interchange_ Amount_Fee | Interchange_ Amount_Fee | Interchange_Amount_Fee | Interchange_Amount_Fee |
| | Interchange_ Amount_Fee_ Settlement | Interchange_ Amount_Fee_ Settlement | Interchange_Amount_Fee_ Settlement | Interchange_Amount_Fee_ Settlement |
| LoadSRC | LoadSRC | LoadSRC | LoadSRC | LoadSRC |
| LoadType | LoadType | LoadType | LoadType | LoadType |
| | Matching_Txn_ID | Matching_Txn_ID | Matching_Txn_ID | Matching_Txn_ID |
| MCC_Code | MCC_Code | MCC_Code | MCC_Code | MCC_Code |
| MCC_Desc | MCC_Desc | MCC_Desc | MCC_Desc | MCC_Desc |
| MCC_Pad | MCC_Pad | MCC_Pad | MCC_Pad | MCC_Pad |
| Merch_City | Merch_City | Merch_City | Merch_City | Merch_City |
| Merch_Contact | Merch_Contact | Merch_Contact | Merch_Contact | Merch_Contact |
| Merch_Country | Merch_Country | Merch_Country | Merch_Country | Merch_Country |
| Merch_ID_DE42 | Merch_ID_DE42 | Merch_ID_DE42 | Merch_ID_DE42 | Merch_ID_DE42 |
| Merch_Name | Merch_Name | Merch_Name | Merch_Name | Merch_Name |
| Merch_Name_DE43 | Merch_Name_DE43 | Merch_Name_DE43 | Merch_Name_DE43 | Merch_Name_DE43 |
| Merch_Name_Other | Merch_Name_Other | Merch_Name_Other | Merch_Name_Other | Merch_Name_Other |
| Merch_Net_id | Merch_Net_id | Merch_Net_id | Merch_Net_id | Merch_Net_id |
| Merch_Postcode | Merch_Postcode | Merch_Postcode | Merch_Postcode | Merch_Postcode |
| Merch_Region | Merch_Region | Merch_Region | Merch_Region | Merch_Region |
| Merch_Street | Merch_Street | Merch_Street | Merch_Street | Merch_Street |
| Merch_Tax_id | Merch_Tax_id | Merch_Tax_id | Merch_Tax_id | Merch_Tax_id |
| Merch_Tel | Merch_Tel | Merch_Tel | Merch_Tel | Merch_Tel |
| Merch_URL | Merch_URL | Merch_URL | Merch_URL | Merch_URL |
| Message_Source | Message_Source | Message_Source | Message_Source | Message_Source |
| Message_Why | Message_Why | Message_Why | Message_Why | Message_Why |
| MTID | MTID | MTID | MTID | MTID |
| | multi_part_count | multi_part_count | multi_part_count | multi_part_count |

| EHI Version 3.0 | EHI Version 4.0 | EHI Version 4.1 | EHI Version 5.0 | EHI Version 5.1 |
|---|---|---|---|---|
| | multi_part_number | multi_part_number | multi_part_number | multi_part_number |
| | multi_part_txn | multi_part_txn | multi_part_txn | multi_part_txn |
| | multi_part_txn_final | multi_part_txn_final | multi_part_txn_final | multi_part_txn_final |
| | | | Network_Fraud_Data Format | Network_Fraud_Data Format |
| | Network_ Chargeback_ Reference_Id | Network_ Chargeback_ Reference_Id | Network_Chargeback_ Reference_Id | Network_Chargeback_ Reference_Id |
| Non_Dom_Fee_ Fixed | Non_Dom_Fee_ Fixed | Non_Dom_Fee_ Fixed | Non_Dom_Fee_Fixed | Non_Dom_Fee_Fixed |
| Non_Dom_Fee_Rate | Non_Dom_Fee_Rate | Non_Dom_Fee_Rate | Non_Dom_Fee_Rate | Non_Dom_Fee_Rate |
| Note | Note | Note | Note | Note |
| Other_Fee_Amt | Other_Fee_Amt | Other_Fee_Amt | Other_Fee_Amt | Other_Fee_Amt |
| PAN_Sequence_ Number | PAN_Sequence_ Number | PAN_Sequence_ Number | PAN_Sequence_Number | PAN_Sequence_Number |
| PaymentToken_ activationCode | PaymentToken_ activationCode | PaymentToken_ activationCode | PaymentToken_ activationCode | PaymentToken_ activationCode |
| PaymentToken_ activationExpiry | PaymentToken_ activationExpiry | PaymentToken_ activationExpiry | PaymentToken_ activationExpiry | PaymentToken_ activationExpiry |
| PaymentToken_ activationMethod | PaymentToken_ activationMethod | PaymentToken_ activationMethod | PaymentToken_ activationMethod | PaymentToken_ activationMethod |
| PaymentToken_ activationMethodDat a | PaymentToken_ activationMethodDat a | PaymentToken_ activationMethodDat a | PaymentToken_ activationMethodData | PaymentToken_ activationMethodData |
| PaymentToken_ creator | PaymentToken_ creator | PaymentToken_ creator | PaymentToken_creator | PaymentToken_creator |
| PaymentToken_ creatorStatus | PaymentToken_ creatorStatus | PaymentToken_ creatorStatus | PaymentToken_ creatorStatus | PaymentToken_ creatorStatus |
| PaymentToken_ deviceId | PaymentToken_ deviceId | PaymentToken_ deviceId | PaymentToken_deviceId | PaymentToken_deviceId |
| PaymentToken_ deviceIp | PaymentToken_ deviceIp | PaymentToken_ deviceIp | PaymentToken_deviceIp | PaymentToken_deviceIp |
| PaymentToken_ deviceName | PaymentToken_ deviceName | PaymentToken_ deviceName | PaymentToken_ deviceName | PaymentToken_ deviceName |
| PaymentToken_ deviceTelNum | PaymentToken_ deviceTelNum | PaymentToken_ deviceTelNum | PaymentToken_ deviceTelNum | PaymentToken_ deviceTelNum |
| PaymentToken_ deviceType | PaymentToken_ deviceType | PaymentToken_ deviceType | PaymentToken_ deviceType | PaymentToken_ deviceType |

| EHI Version 3.0 | EHI Version 4.0 | EHI Version 4.1 | EHI Version 5.0 | EHI Version 5.1 |
|---|---|---|---|---|
| PaymentToken_ expdate | PaymentToken_ expdate | PaymentToken_ expdate | PaymentToken_expdate | PaymentToken_expdate |
| PaymentToken_id | PaymentToken_id | PaymentToken_id | PaymentToken_id | PaymentToken_id |
| PaymentToken_lang | PaymentToken_lang | PaymentToken_lang | PaymentToken_lang | PaymentToken_lang |
| | | | PaymentToken_PanSource | PaymentToken_PanSource |
| PaymentToken_ status | PaymentToken_ status | PaymentToken_ status | PaymentToken_status | PaymentToken_status |
| PaymentToken_type | PaymentToken_type | PaymentToken_type | PaymentToken_type | PaymentToken_type |
| PaymentToken_ wallet | PaymentToken_ wallet | PaymentToken_ wallet | PaymentToken_wallet | PaymentToken_wallet |
| PIN | PIN | PIN | PIN | PIN |
| PIN_Enc_Algorithm | PIN_Enc_Algorithm | PIN_Enc_Algorithm | PIN_Enc_Algorithm | PIN_Enc_Algorithm |
| PIN_Format | PIN_Format | PIN_Format | PIN_Format | PIN_Format |
| PIN_Key_Index | PIN_Key_Index | PIN_Key_Index | PIN_Key_Index | PIN_Key_Index |
| POS_Data_DE22 | POS_Data_DE22 | POS_Data_DE22 | POS_Data_DE22 | POS_Data_DE22 |
| POS_Data_DE61 | POS_Data_DE61 | POS_Data_DE61 | POS_Data_DE61 | POS_Data_DE61 |
| POS_Termnl_DE41 | POS_Termnl_DE41 | POS_Termnl_DE41 | POS_Termnl_DE41 | POS_Termnl_DE41 |
| POS_Time_DE12 | POS_Time_DE12 | POS_Time_DE12 | POS_Time_DE12 | POS_Time_DE12 |
| Proc_Code | Proc_Code | Proc_Code | Proc_Code | Proc_Code |
| ProductID | ProductID | ProductID | ProductID | ProductID |
| | Reason_ID | Reason_ID | Reason_ID | Reason_ID |
| | | | ReceiverData | ReceiverData |
| Record_Data_DE120 | Record_Data_DE120 | Record_Data_DE120 | Record_Data_DE120 | Record_Data_DE120 |
| Resp_Code_DE39 | Resp_Code_DE39 | Resp_Code_DE39 | Resp_Code_DE39 | Resp_Code_DE39 |
| Response_Source | Response_Source | Response_Source | Response_Source | Response_Source |
| Response_Source_ Why | Response_Source_ Why | Response_Source_ Why | Response_Source_Why | Response_Source_Why |
| Ret_Ref_No_DE37 | Ret_Ref_No_DE37 | Ret_Ref_No_DE37 | Ret_Ref_No_DE37 | Ret_Ref_No_DE37 |
| | | | SenderData | SenderData |
| SendingAttemptCoun t | SendingAttemptCoun t | SendingAttemptCoun t | SendingAttemptCount | SendingAttemptCount |

| EHI Version 3.0 | EHI Version 4.0 | EHI Version 4.1 | EHI Version 5.0 | EHI Version 5.1 |
|---|---|---|---|---|
| Settle_Amt | Settle_Amt | Settle_Amt | Settle_Amt | Settle_Amt |
| Settle_Ccy | Settle_Ccy | Settle_Ccy | Settle_Ccy | Settle_Ccy |
| | Settlement_Date | Settlement_Date | Settlement_Date | Settlement_Date |
| | SettlementIndicator | SettlementIndicator | SettlementIndicator | SettlementIndicator |
| source_bank_ account | source_bank_ account | source_bank_ account | source_bank_account | source_bank_account |
| source_bank_ account_format | source_bank_ account_format | source_bank_ account_format | source_bank_account_ format | source_bank_account_ format |
| source_bank_ctry | source_bank_ctry | source_bank_ctry | source_bank_ctry | source_bank_ctry |
| Status_Code | Status_Code | Status_Code | Status_Code | Status_Code |
| SubBIN | SubBIN | SubBIN | SubBIN | SubBIN |
| TLogIDOrg | TLogIDOrg | TLogIDOrg | TLogIDOrg | TLogIDOrg |
| Token | Token | Token | Token | Token |
| traceid_lifecycle | traceid_lifecycle | traceid_lifecycle | traceid_lifecycle | traceid_lifecycle |
| Trans_link | Trans_link | Trans_link | Trans_link | Trans_link |
| Txn_Amt | Txn_Amt | Txn_Amt | Txn_Amt | Txn_Amt |
| Txn_CCy | Txn_CCy | Txn_CCy | Txn_CCy | Txn_CCy |
| Txn_Code | | | | |
| Txn_Ctry | Txn_Ctry | Txn_Ctry | Txn_Ctry | Txn_Ctry |
| Txn_Desc | Txn_Desc | Txn_Desc | Txn_Desc | Txn_Desc |
| Txn_GPS_Date | Txn_GPS_Date | Txn_GPS_Date | Txn_GPS_Date | Txn_GPS_Date |
| TXn_ID | TXn_ID | TXn_ID | TXn_ID | TXn_ID |
| Txn_Stat_Code | Txn_Stat_Code | Txn_Stat_Code | Txn_Stat_Code | Txn_Stat_Code |
| TXN_Time_DE07 | TXN_Time_DE07 | TXN_Time_DE07 | TXN_Time_DE07 | TXN_Time_DE07 |
| Txn_Type | Txn_Type | Txn_Type | Txn_Type | Txn_Type |
| VL_Group | VL_Group | VL_Group | VL_Group | VL_Group |
| | | Traceid_Message | Traceid_Message | Traceid_Message |
| | | Traceid_Original | Traceid_Original | Traceid_Original |
| | | Network_ Transaction_ID | Network_Transaction_ID | Network_Transaction_ID |

| EHI Version 3.0 | EHI Version 4.0 | EHI Version 4.1 | EHI Version 5.0 | EHI Version 5.1 |
|---|---|---|---|---|
| | | POS_Date_DE13 | POS_Date_DE13 | POS_Date_DE13 |
| | | Network_Currency_Conversion_Date | Network_Currency_Conversion_Date | Network_Currency_Conversion_Date |
| | | Network_TxnAmt_To_BillAmt_Rate | Network_TxnAmt_To_BillAmt_Rate | Network_TxnAmt_To_BillAmt_Rate |
| | | Network_TxnAmt_To_BaseAmt_Rate | Network_TxnAmt_To_BaseAmt_Rate | Network_TxnAmt_To_BaseAmt_Rate |
| | | Network_BaseAmt_To_BillAmt_Rate | Network_BaseAmt_To_BillAmt_Rate | Network_BaseAmt_To_BillAmt_Rate |
| | | Network_Original_Data_Elements_DE90 | Network_Original_Data_Elements_DE90 | Network_Original_Data_Elements_DE90 |
| | | Network_Replacement_Amounts_DE95 | Network_Replacement_Amounts_DE95 | Network_Replacement_Amounts_DE95 |
| | | Network_Issuer_Settle_ID | Network_Issuer_Settle_ID | Network_Issuer_Settle_ID |
| | | Visa_ResponseInfo_DE44 | Visa_ResponseInfo_DE44 | Visa_ResponseInfo_DE44 |
| | | Visa_POS_Data_DE60 | Visa_POS_Data_DE60 | Visa_POS_Data_DE60 |
| | | Visa_STIP_Reason_Code | Visa_STIP_Reason_Code | Visa_STIP_Reason_Code |
| | | Mastercard_AdviceReasonCode_DE60 | Mastercard_AdviceReasonCode_DE60 | Mastercard_AdviceReasonCode_DE60 |
| | | Misc_TLV_Data | Misc_TLV_Data | Misc_TLV_Data |
| | | | AuthenticationCurrency | AuthenticationCurrency |
| | | | AuthenticationAmountUpper | AuthenticationAmountUpper |
| | | | AuthenticationMerchantHash | AuthenticationMerchantHash |
| | | | FxProviderCardholderRate | FxProviderCardholderRate |
| | | | | SchemeTransactionIdentifier |
| | | | | TokenUniqueReference |
| | | | | PaymentTokenPan |

# Fields included in the External Host Response

| EHI Version 3.0 | EHI Version 4.0 | EHI Version 4.1 | EHI Version 5.0 | EHI Version 5.1 |
|---|---|---|---|---|
| | | | MerchantAdvice | MerchantAdvice |
| Responsestatus | Responsestatus | Responsestatus | Responsestatus | Responsestatus |
| CurBalance | CurBalance | CurBalance | CurBalance | CurBalance |
| AvlBalance | AvlBalance | AvlBalance | AvlBalance | AvlBalance |
| Acknowledgement | Acknowledgement | Acknowledgement | Acknowledgement | Acknowledgement |
| LoadAmount | LoadAmount | LoadAmount | LoadAmount | LoadAmount |
| Bill_Amt_Approved | Bill_Amt_Approved | Bill_Amt_Approved | Bill_Amt_Approved | Bill_Amt_Approved |
| Update_Balance | Update_Balance | Update_Balance | Update_Balance | Update_Balance |
| New_Balance_ Sequence_Exthost | New_Balance_ Sequence_Exthost | New_Balance_ Sequence_Exthost | New_Balance_ Sequence_Exthost | New_Balance_ Sequence_Exthost |
| CVV2_Result | CVV2_Result | CVV2_Result | CVV2_Result | CVV2_Result |
| AvlBalance_GPS_STIP | AvlBalance_GPS_STIP | AvlBalance_GPS_STIP | AvlBalance_GPS_STIP | AvlBalance_GPS_STIP |
| CurBalance_GPS_STIP | CurBalance_GPS_STIP | CurBalance_GPS_STIP | CurBalance_GPS_STIP | CurBalance_GPS_STIP |

# EHI Versions (Continued)

This section provides details of the differences in fields between supported from EHI version 5.2.

**Note:** For information on fields prior to EHI 5.2, see EHI Versions.

## Fields included in the EHI Request

| EHI Version 5.2 | EHI Version 5.3 | EHI Version 5.4 | EHI Version 5.5 |
|---|---|---|---|
| Acquirer_Forwarder_ID | Acquirer_Forwarder_ID | Acquirer_Forwarder_ID | Acquirer_Forwarder_ID |
| Acquirer_Country | Acquirer_Country | Acquirer_Country | Acquirer_Country |
| Acquirer_id_DE32 | Acquirer_id_DE32 | Acquirer_id_DE32 | Acquirer_id_DE32 |
| Acquirer_Reference_Data_031 | Acquirer_Reference_Data_031 | Acquirer_Reference_Data_031 | Acquirer_Reference_Data_031 |
| ActBal | ActBal | ActBal | ActBal |
| Additional_Amt_DE54 | Additional_Amt_DE54 | Additional_Amt_DE54 | Additional_Amt_DE54 |
| Additional_Data_DE124 | Additional_Data_DE124 | Additional_Data_DE124 | Additional_Data_DE124 |
| Additional_Data_DE48 | Additional_Data_DE48 | Additional_Data_DE48 | Additional_Data_DE48 |
| Amt_Tran_Fee_DE28 | Amt_Tran_Fee_DE28 | Amt_Tran_Fee_DE28 | Amt_Tran_Fee_DE28 |
| Auth_Code_DE38 | Auth_Code_DE38 | Auth_Code_DE38 | Auth_Code_DE38 |
| auth_expdate_utc | auth_expdate_utc | auth_expdate_utc | auth_expdate_utc |
| auth_type | auth_type | auth_type | auth_type |
| Authorised_by_GPS | Authorised_by_GPS | Authorised_by_GPS | Authorised_by_GPS |
| Avl_Bal | Avl_Bal | Avl_Bal | Avl_Bal |
| AVS_Result | AVS_Result | AVS_Result | AVS_Result |
| Balance_Sequence | Balance_Sequence | Balance_Sequence | Balance_Sequence |
| Balance_Sequence_Exthost | Balance_Sequence_Exthost | Balance_Sequence_Exthost | Balance_Sequence_Exthost |
| Bill_Amt | Bill_Amt | Bill_Amt | Bill_Amt |
| Bill_Ccy | Bill_Ccy | Bill_Ccy | Bill_Ccy |
| BlkAmt | BlkAmt | BlkAmt | BlkAmt |
| ClearingFileId | ClearingFileId | ClearingFileId | ClearingFileId |
| Clearing_Process_Date | Clearing_Process_Date | Clearing_Process_Date | Clearing_Process_Date |

| EHI Version 5.2 | EHI Version 5.3 | EHI Version 5.4 | EHI Version 5.5 |
|---|---|---|---|
| CU_Group | CU_Group | CU_Group | CU_Group |
| Currency_Code_Fee | Currency_Code_Fee | Currency_Code_Fee | Currency_Code_Fee |
| Currency_Code_Fee_ Settlement | Currency_Code_Fee_ Settlement | Currency_Code_Fee_ Settlement | Currency_Code_Fee_ Settlement |
| Cust_Ref | Cust_Ref | Cust_Ref | Cust_Ref |
| CVV2 | CVV2 | CVV2 | CVV2 |
| DCC_Indicator | DCC_Indicator | DCC_Indicator | DCC_Indicator |
| dest_bank_account | dest_bank_account | dest_bank_account | dest_bank_account |
| dest_bank_account_format | dest_bank_account_format | dest_bank_account_format | dest_bank_account_format |
| dest_bank_ctry | dest_bank_ctry | dest_bank_ctry | dest_bank_ctry |
| Dispute_Condition | Dispute_Condition | Dispute_Condition | Dispute_Condition |
| Dom_Fee_Fixed | Dom_Fee_Fixed | Dom_Fee_Fixed | Dom_Fee_Fixed |
| Dom_Fee_Rate | Dom_Fee_Rate | Dom_Fee_Rate | Dom_Fee_Rate |
| Expiry_Date | Expiry_Date | Expiry_Date | Expiry_Date |
| Fee_Fixed | Fee_Fixed | Fee_Fixed | Fee_Fixed |
| Fee_Rate | Fee_Rate | Fee_Rate | Fee_Rate |
| Fx_Fee_Fixed | Fx_Fee_Fixed | Fx_Fee_Fixed | Fx_Fee_Fixed |
| Fx_Fee_Rate | Fx_Fee_Rate | Fx_Fee_Rate | Fx_Fee_Rate |
| FX_Pad | FX_Pad | FX_Pad | FX_Pad |
| GPS_POS_Capability | GPS_POS_Capability | GPS_POS_Capability | GPS_POS_Capability |
| GPS_POS_Data | GPS_POS_Data | GPS_POS_Data | GPS_POS_Data |
| ICC_System_Related_Data_ DE55 | ICC_System_Related_Data_ DE55 | ICC_System_Related_Data_ DE55 | ICC_System_Related_Data_ DE55 |
| InstCode | InstCode | InstCode | InstCode |
| Interchange_Amount_Fee | Interchange_Amount_Fee | Interchange_Amount_Fee | Interchange_Amount_Fee |
| Interchange_Amount_Fee_ Settlement | Interchange_Amount_Fee_ Settlement | Interchange_Amount_Fee_ Settlement | Interchange_Amount_Fee_ Settlement |
| LoadSRC | LoadSRC | LoadSRC | LoadSRC |
| LoadType | LoadType | LoadType | LoadType |

| EHI Version 5.2 | EHI Version 5.3 | EHI Version 5.4 | EHI Version 5.5 |
|---|---|---|---|
| Matching_Txn_ID | Matching_Txn_ID | Matching_Txn_ID | Matching_Txn_ID |
| MCC_Code | MCC_Code | MCC_Code | MCC_Code |
| MCC_Desc | MCC_Desc | MCC_Desc | MCC_Desc |
| MCC_Pad | MCC_Pad | MCC_Pad | MCC_Pad |
| Merch_City | Merch_City | Merch_City | Merch_City |
| Merch_Contact | Merch_Contact | Merch_Contact | Merch_Contact |
| Merch_Country | Merch_Country | Merch_Country | Merch_Country |
| Merch_ID_DE42 | Merch_ID_DE42 | Merch_ID_DE42 | Merch_ID_DE42 |
| Merch_Name | Merch_Name | Merch_Name | Merch_Name |
| Merch_Name_DE43 | Merch_Name_DE43 | Merch_Name_DE43 | Merch_Name_DE43 |
| Merch_Name_Other | Merch_Name_Other | Merch_Name_Other | Merch_Name_Other |
| Merch_Net_id | Merch_Net_id | Merch_Net_id | Merch_Net_id |
| Merch_Postcode | Merch_Postcode | Merch_Postcode | Merch_Postcode |
| Merch_Region | Merch_Region | Merch_Region | Merch_Region |
| Merch_Street | Merch_Street | Merch_Street | Merch_Street |
| Merch_Tax_id | Merch_Tax_id | Merch_Tax_id | Merch_Tax_id |
| Merch_Tel | Merch_Tel | Merch_Tel | Merch_Tel |
| Merch_URL | Merch_URL | Merch_URL | Merch_URL |
| Message_Source | Message_Source | Message_Source | Message_Source |
| Message_Why | Message_Why | Message_Why | Message_Why |
| MTID | MTID | MTID | MTID |
| multi_part_count | multi_part_count | multi_part_count | multi_part_count |
| multi_part_number | multi_part_number | multi_part_number | multi_part_number |
| multi_part_txn | multi_part_txn | multi_part_txn | multi_part_txn |
| multi_part_txn_final | multi_part_txn_final | multi_part_txn_final | multi_part_txn_final |
| Network_Fraud_Data Format | Network_Fraud_Data Format | Network_Fraud_Data Format | Network_Fraud_Data Format |
| Network_Chargeback_ Reference_Id | Network_Chargeback_ Reference_Id | Network_Chargeback_ Reference_Id | Network_Chargeback_ Reference_Id |

| EHI Version 5.2 | EHI Version 5.3 | EHI Version 5.4 | EHI Version 5.5 |
|---|---|---|---|
| Non_Dom_Fee_Fixed | Non_Dom_Fee_Fixed | Non_Dom_Fee_Fixed | Non_Dom_Fee_Fixed |
| Non_Dom_Fee_Rate | Non_Dom_Fee_Rate | Non_Dom_Fee_Rate | Non_Dom_Fee_Rate |
| Note | Note | Note | Note |
| Other_Fee_Amt | Other_Fee_Amt | Other_Fee_Amt | Other_Fee_Amt |
| PAN_Sequence_Number | PAN_Sequence_Number | PAN_Sequence_Number | PAN_Sequence_Number |
| PaymentToken_ activationCode | PaymentToken_ activationCode | PaymentToken_ activationCode | PaymentToken_activationCode |
| PaymentToken_ activationExpiry | PaymentToken_ activationExpiry | PaymentToken_ activationExpiry | PaymentToken_ activationExpiry |
| PaymentToken_ activationMethod | PaymentToken_ activationMethod | PaymentToken_ activationMethod | PaymentToken_ activationMethod |
| PaymentToken_ activationMethodData | PaymentToken_ activationMethodData | PaymentToken_ activationMethodData | PaymentToken_ activationMethodData |
| PaymentToken_creator | PaymentToken_creator | PaymentToken_creator | PaymentToken_creator |
| PaymentToken_creatorStatus | PaymentToken_creatorStatus | PaymentToken_creatorStatus | PaymentToken_creatorStatus |
| PaymentToken_deviceId | PaymentToken_deviceId | PaymentToken_deviceId | PaymentToken_deviceId |
| PaymentToken_deviceIp | PaymentToken_deviceIp | PaymentToken_deviceIp | PaymentToken_deviceIp |
| PaymentToken_deviceName | PaymentToken_deviceName | PaymentToken_deviceName | PaymentToken_deviceName |
| PaymentToken_deviceTelNum | PaymentToken_deviceTelNum | PaymentToken_deviceTelNum | PaymentToken_deviceTelNum |
| PaymentToken_deviceType | PaymentToken_deviceType | PaymentToken_deviceType | PaymentToken_deviceType |
| PaymentToken_expdate | PaymentToken_expdate | PaymentToken_expdate | PaymentToken_expdate |
| PaymentToken_id | PaymentToken_id | PaymentToken_id | PaymentToken_id |
| PaymentToken_lang | PaymentToken_lang | PaymentToken_lang | PaymentToken_lang |
| PaymentToken_PanSource | PaymentToken_PanSource | PaymentToken_PanSource | PaymentToken_PanSource |
| PaymentToken_status | PaymentToken_status | PaymentToken_status | PaymentToken_status |
| PaymentToken_type | PaymentToken_type | PaymentToken_type | PaymentToken_type |
| PaymentToken_wallet | PaymentToken_wallet | PaymentToken_wallet | PaymentToken_wallet |
| PIN | PIN | PIN | PIN |
| PIN_Enc_Algorithm | PIN_Enc_Algorithm | PIN_Enc_Algorithm | PIN_Enc_Algorithm |
| PIN_Format | PIN_Format | PIN_Format | PIN_Format |

| EHI Version 5.2 | EHI Version 5.3 | EHI Version 5.4 | EHI Version 5.5 |
|---|---|---|---|
| PIN_Key_Index | PIN_Key_Index | PIN_Key_Index | PIN_Key_Index |
| POS_Data_DE22 | POS_Data_DE22 | POS_Data_DE22 | POS_Data_DE22 |
| POS_Data_DE61 | POS_Data_DE61 | POS_Data_DE61 | POS_Data_DE61 |
| POS_Termnl_DE41 | POS_Termnl_DE41 | POS_Termnl_DE41 | POS_Termnl_DE41 |
| POS_Time_DE12 | POS_Time_DE12 | POS_Time_DE12 | POS_Time_DE12 |
| Proc_Code | Proc_Code | Proc_Code | Proc_Code |
| ProductID | ProductID | ProductID | ProductID |
| Reason_ID | Reason_ID | Reason_ID | Reason_ID |
| ReceiverData | ReceiverData | ReceiverData | ReceiverData |
| Record_Data_DE120 | Record_Data_DE120 | Record_Data_DE120 | Record_Data_DE120 |
| Resp_Code_DE39 | Resp_Code_DE39 | Resp_Code_DE39 | Resp_Code_DE39 |
| Response_Source | Response_Source | Response_Source | Response_Source |
| Response_Source_Why | Response_Source_Why | Response_Source_Why | Response_Source_Why |
| Ret_Ref_No_DE37 | Ret_Ref_No_DE37 | Ret_Ref_No_DE37 | Ret_Ref_No_DE37 |
| SenderData | SenderData | SenderData | SenderData |
| SendingAttemptCount | SendingAttemptCount | SendingAttemptCount | SendingAttemptCount |
| Settle_Amt | Settle_Amt | Settle_Amt | Settle_Amt |
| Settle_Ccy | Settle_Ccy | Settle_Ccy | Settle_Ccy |
| Settlement_Date | Settlement_Date | Settlement_Date | Settlement_Date |
| SettlementIndicator | SettlementIndicator | SettlementIndicator | SettlementIndicator |
| source_bank_account | source_bank_account | source_bank_account | source_bank_account |
| source_bank_account_format | source_bank_account_format | source_bank_account_format | source_bank_account_format |
| source_bank_ctry | source_bank_ctry | source_bank_ctry | source_bank_ctry |
| Status_Code | Status_Code | Status_Code | Status_Code |
| SubBIN | SubBIN | SubBIN | SubBIN |
| TLogIDOrg | TLogIDOrg | TLogIDOrg | TLogIDOrg |
| Token | Token | Token | Token |
| traceid_lifecycle | traceid_lifecycle | traceid_lifecycle | traceid_lifecycle |

| EHI Version 5.2 | EHI Version 5.3 | EHI Version 5.4 | EHI Version 5.5 |
|---|---|---|---|
| Trans_link | Trans_link | Trans_link | Trans_link |
| Txn_Amt | Txn_Amt | Txn_Amt | Txn_Amt |
| Txn_CCy | Txn_CCy | Txn_CCy | Txn_CCy |
| Txn_Ctry | Txn_Ctry | Txn_Ctry | Txn_Ctry |
| Txn_Desc | Txn_Desc | Txn_Desc | Txn_Desc |
| Txn_GPS_Date | Txn_GPS_Date | Txn_GPS_Date | Txn_GPS_Date |
| TXn_ID | TXn_ID | TXn_ID | TXn_ID |
| Txn_Stat_Code | Txn_Stat_Code | Txn_Stat_Code | Txn_Stat_Code |
| TXN_Time_DE07 | TXN_Time_DE07 | TXN_Time_DE07 | TXN_Time_DE07 |
| Txn_Type | Txn_Type | Txn_Type | Txn_Type |
| VL_Group | VL_Group | VL_Group | VL_Group |
| Traceid_Message | Traceid_Message | Traceid_Message | Traceid_Message |
| Traceid_Original | Traceid_Original | Traceid_Original | Traceid_Original |
| Network_Transaction_ID | Network_Transaction_ID | Network_Transaction_ID | Network_Transaction_ID |
| POS_Date_DE13 | POS_Date_DE13 | POS_Date_DE13 | POS_Date_DE13 |
| Network_Currency_ Conversion_Date | Network_Currency_ Conversion_Date | Network_Currency_ Conversion_Date | Network_Currency_ Conversion_Date |
| Network_TxnAmt_To_BillAmt_ Rate | Network_TxnAmt_To_BillAmt_ Rate | Network_TxnAmt_To_BillAmt_ Rate | Network_TxnAmt_To_BillAmt_ Rate |
| Network_TxnAmt_To_ BaseAmt_Rate | Network_TxnAmt_To_ BaseAmt_Rate | Network_TxnAmt_To_ BaseAmt_Rate | Network_TxnAmt_To_ BaseAmt_Rate |
| Network_BaseAmt_To_ BillAmt_Rate | Network_BaseAmt_To_ BillAmt_Rate | Network_BaseAmt_To_ BillAmt_Rate | Network_BaseAmt_To_ BillAmt_Rate |
| Network_Original_Data_ Elements_DE90 | Network_Original_Data_ Elements_DE90 | Network_Original_Data_ Elements_DE90 | Network_Original_Data_ Elements_DE90 |
| Network_Replacement_ Amounts_DE95 | Network_Replacement_ Amounts_DE95 | Network_Replacement_ Amounts_DE95 | Network_Replacement_ Amounts_DE95 |
| Network_Issuer_Settle_ID | Network_Issuer_Settle_ID | Network_Issuer_Settle_ID | Network_Issuer_Settle_ID |
| Visa_ResponseInfo_DE44 | Visa_ResponseInfo_DE44 | Visa_ResponseInfo_DE44 | Visa_ResponseInfo_DE44 |
| Visa_POS_Data_DE60 | Visa_POS_Data_DE60 | Visa_POS_Data_DE60 | Visa_POS_Data_DE60 |
| Visa_STIP_Reason_Code | Visa_STIP_Reason_Code | Visa_STIP_Reason_Code | Visa_STIP_Reason_Code |

| EHI Version 5.2 | EHI Version 5.3 | EHI Version 5.4 | EHI Version 5.5 |
|---|---|---|---|
| Mastercard_ AdviceReasonCode_DE60 | Mastercard_ AdviceReasonCode_DE60 | Mastercard_ AdviceReasonCode_DE60 | Mastercard_ AdviceReasonCode_DE60 |
| Misc_TLV_Data | Misc_TLV_Data | Misc_TLV_Data | Misc_TLV_Data |
| AuthenticationCurrency | AuthenticationCurrency | AuthenticationCurrency | AuthenticationCurrency |
| AuthenticationAmountUpper | AuthenticationAmountUpper | AuthenticationAmountUpper | AuthenticationAmountUpper |
| AuthenticationMerchantHash | AuthenticationMerchantHash | AuthenticationMerchantHash | AuthenticationMerchantHash |
| FxProviderCardholderRate | FxProviderCardholderRate | FxProviderCardholderRate | FxProviderCardholderRate |
| SchemeTransactionIdentifier | SchemeTransactionIdentifier | SchemeTransactionIdentifier | SchemeTransactionIdentifier |
| TokenUniqueReference | TokenUniqueReference | TokenUniqueReference | TokenUniqueReference |
| PaymentTokenPan | PaymentTokenPan | PaymentTokenPan | PaymentTokenPan |
| FleetData | FleetData | FleetData | FleetData |
| | ElapsedTimeToLive | ElapsedTimeToLive | ElapsedTimeToLive |
| | NumberOfTransactionsCount | NumberOfTransactionsCount | NumberOfTransactionsCount |
| | TotalOfTransactionAmounts | TotalOfTransactionAmounts | TotalOfTransactionAmounts |
| | | FlexEligibilityIndicator | FlexEligibilityIndicator |
| | | FlexEligibleUseCaseIds | FlexEligibleUseCaseIds |
| | | | NetworkLinkValidation |
| | | | NetworkRelatedTransactionId |
| | | | NetworkTransactionId2 |

## Fields included in the External Host Response

| EHI Version 5.2 | EHI Version 5.3 | EHI Version 5.4 |
|---|---|---|
| MerchantAdvice | MerchantAdvice | MerchantAdvice |
| Responsestatus | Responsestatus | Responsestatus |
| CurBalance | CurBalance | CurBalance |
| AvlBalance | AvlBalance | AvlBalance |
| Acknowledgement | Acknowledgement | Acknowledgement |

| EHI Version 5.2 | EHI Version 5.3 | EHI Version 5.4 |
| --- | --- | --- |
| LoadAmount | LoadAmount | LoadAmount |
| Bill_Amt_Approved | Bill_Amt_Approved | Bill_Amt_Approved |
| Update_Balance | Update_Balance | Update_Balance |
| New_Balance_Sequence_Exthost | New_Balance_Sequence_Exthost | New_Balance_Sequence_Exthost |
| CVV2_Result | CVV2_Result | CVV2_Result |
| AvlBalance_GPS_STIP | AvlBalance_GPS_STIP | AvlBalance_GPS_STIP |
| CurBalance_GPS_STIP | CurBalance_GPS_STIP | CurBalance_GPS_STIP |
| | | FlexPaymentCredential |
| | | FlexSelectedUseCaseId |

# Glossary

This page provides a list of glossary terms used in this guide.

## #

3D Secure

3D Secure (3-domain structure), also known as a payer authentication, is a security protocol that helps to prevent fraud in online credit and debit card transactions. This security feature is supported by Visa and Mastercard and is branded as ‘Verified by Visa/Visa Secure’ and ‘Mastercard SecureCode/Mastercard Identity Check’ respectively.

## A

Account Funding Transaction (AFT)

Card Scheme transaction to debit funds from a card account. It is used to "pull" funds from a card account in order to fund a real-time "push" OCT to a different account, which can be either the cardholder's or another person's account.

Account Status Inquiry (ASI)

A standard message type which allows the merchant to check the Card Validation Code (CVC) and, if address details are provided, to optionally use the Address Verification Service (AVS). If these checks are successful Thredd responds with an 00 approval to the merchant. They normally then submit a second transaction, but with an actual transaction amount included.

Account Verification

A type of authorisation transaction which is intended to confirm that the account is genuine and active. Account Verifications are always for a zero amount, so only appear in Authorisation messages and never in clearing messages.

Acquirer

The merchant acquirer or bank that offers the merchant a trading account, to enable the merchant to take payments in store or online from cardholders.

Adjustment Credits

Indicates a Credit adjustment.

Authentication

This includes checks to confirm the cardholder identity, such as PIN, CVV2 and CAVV.

Authorisation

Stage where a merchant requests approval for a card payment by sending a request to the card issuer to check that the card is valid, and that the requested authorisation amount is available on the card. At this stage the funds are not deducted from the card.

Authorisation Reversal

An authorisation reversal occurs when a merchant wants to reverse a previously submitted authorisation request (e.g., because the authorised amount was entered incorrectly or the customer cancelled the order). The authorisation reversal normally occurs very soon after the original authorisation and can be matched to the original authorisation using the traceid_lifecycle.

Automated Fuel Dispenser (AFD)

Automatic fuel dispensers (AFDs) are used at petrol or gas stations for customer self-service fuel payments. Typically the customer inserts their card and enters a PIN number and the AFD authorises a fixed amount (e.g. £99). Once the final payment amount is known, the AFD may reverse the authorisation and/or request a second authorisation.

## C

Card Scheme

Card network, such as MasterCard or Visa, responsible for managing transactions over the network and for arbitration of any disputes.

Cards API

The Thredd Cards API is a new REST-based API which can be used to connect to the Thredd system in place of using the traditional Thredd SOAP-based Web Services. The REST API provides messages in JSON format. If you are interested in the Cards API, please contact your Account Manager.

### Cash Disbursement

Type of transaction where cash is given to the cardholder, for example, from a bank branch by a member of staff using a Point of Sale (POS) terminal.

### Chargeback

Where a cardholder disputes a transaction on their account and is unable to resolve directly with the merchant, they can raise a chargeback with their card issuer. The chargeback must be for a legitimate reason, such as goods and services not received, faulty goods, or a fraudulent transaction.

### Clearing File/Clearing Transaction

Thredd receive batch clearing files from the card networks, containing clearing transactions, such as presentments and network fees. The card issuer transfers the requested settlement amount to the acquirer and 'clears' the amount on the card, reducing the available card balance accordingly.

### Credits (for deposit)

Credit transaction for deposit. Not supported in Dual Message System networks.

### Credits (for Payment Transaction)

Mastercard-specific Money Send transaction.

## D

### Debit Adjustments

May be received for non-card money transfers (out), manual/one-off balance adjustments or additional fees.

## E

### EMV

EMV originally stood for "Europay, Mastercard, and Visa", the three companies which created the standard. EMV cards are smart cards, also called chip cards, integrated circuit cards, or IC cards which store their data on integrated circuit chips, in addition to magnetic stripes for backward compatibility.

### EMV 3D Secure

EMV 3-D Secure (3DS) is a new 3D Secure specification that supports app-based authentication and integration with digital wallets, as well as traditional browser-based e-commerce transactions. See: https://www.emvco.com/emv-technologies/3d-secure/

### External Host

The external system to which Thredd sends real-time transaction-related data. The URL to this system is configured within Thredd per programme or product. The Program Manager uses their external host system to hold details of the balance on the cards in their programme and perform transaction-related services, such as payment authorisation, transaction matching and reconciliation.

## F

### Fee Groups

Groups which control the card transaction authorisation fees, and other fees, such as recurring fees and Thredd web service API fees.

### Financial Reversal

A financial reversal occurs when the acquirer cancels all or part of a prior transaction (which may be a purchase, refund, cashback, cash, PIN change, or any other transaction type). For example, if the acquirer has already taken the funds and are aware of a processing error (e.g., double charging), they can submit an 1240 Financial Reversal.

### Form Factor

A payment device's physical design features which define the size, shape and other physical specifications of the device.

## H

### Hanging Filter

The period of time during which Thredd waits for an approved authorisation amount to be settled. This is defined at a Thredd product level. A typical default is 7 days for an auth and 10 days for a pre-auth.

# I

Incremental Authorisation

A request for an additional amount on a prior authorisation. An incremental authorisation is used when the final amount for a transaction is greater than the amount of the original authorisation. For example, a hotel guest might register for one night, but then decide to extend the reservation for additional night. In that case, an incremental authorisation might be performed in order to get approval for additional charges pertaining to the second night.

Issuer

The card issuer, typically a financial organisation authorised to issue cards. The issuer has a direct relationship with the relevant card scheme.

# J

JSON

JSON is an open standard file format and data interchange format that uses human-readable text to store and transmit data objects consisting of attribute-value pairs and arrays.

# M

Mastercard Debit Switch (MDS)

This is a Single Message System at Mastercard for sending online financial messages (e.g., 0200). It includes transactions from Mastercard, Cirrus and Maestro cards. Thredd supports processing messages from this system.

Mastercard Network Exchange

Enables smaller networks to use Mastercard as a routing platform for payments. Can also be referred to as MNEX or MNGS.

Merchant

The shop or store providing a product or service that the cardholder is purchasing. A merchant must have a merchant account, provided by their acquirer, in order to trade. Physical stores use a terminal or card reader to request authorisation for transactions. Online sites provide an online shopping basket and use a payment service provider to process their payments.

Merchant Category Code (MCC)

A unique identifier of the merchant, to identity the type of account provided to them by their acquirer.

MIP

Mastercard Interface Processor (MIP) The processing hardware and software system that interfaces with Mastercard's Global Payment System communications network.

# O

Offline Transaction

This is often used in scenarios where the merchant terminal is not required to request authorisation from the card issuer (for example for certain low risk, small value transactions used by airlines and transport networks). The card CHIP EMV determines if the offline transaction is permitted; if not supported, the terminal declines the transaction. Note: Since the balance on the card is not checked in realtime, there is a risk that the card may not have the amount required to cover the transaction.

Online Financial Message

In Single Message Systems operated in some regions (such as the US and some Asia Pacific countries), the card scheme sends real-time financial messages for payment authorisations. Examples of online financial messages include: Online Financial Request, Online Financial Advice and Online Financial Reversal.

Original Credit Transaction (OCT)

Card Scheme transaction to credit funds to a card account. It can be used to send or "push" funds to an eligible card account, resulting in a real-time credit of funds to the cardholder's account.

Original Credits

Visa-specific Money Send transaction. Also called an Original Credit Transaction (OCT).

# P

Partial Amount Approval

Some acquirers support a partial amount approval for Debit or Prepaid payment authorisation requests. The issuer can respond with an approval amount less than the requested amount. The cardholder then needs to pay the remainder using another form of tender.

Payments Service Directive Two (PSD2)

PSD2 is a European regulation for payment services that has the purpose of making payments more secure in Europe. It introduces legislation to improve the payment service authentication process.

Presentment

Stage in a transaction where the funds authorised on a card are captured (deducted from the cardholder's account). See also Clearing. Also referred to as the First presentment.

Program Manager

A Thredd customer who manages a card program. The program manager can create branded cards, load funds and provide other card or banking services to their end customers.

# Q

Quasi-Cash

Visa-specific quasi-cash transaction. This is used for specific merchants where the purchased items could be converted to cash (e.g., gaming chips, money orders). Identified by the (11xxxx) processing code.

# R

Refund

A refund transaction occurs when a merchant refunds a customer part or all of a previously purchased item. Refunds are standalone transactions that have their own lifecycle (financial message and possibly authorisation message). The refunds may be linked with a previous purchase or not, as there is no strict linking requirement for refunds against previous purchases.

# S

sFTP

Secure File Transfer Protocol. File Transfer Protocol FTP) is a popular unencrypted method of transferring files between two remote systems. SFTP (SSH File Transfer Protocol, or Secure File Transfer Protocol) is a separate protocol packaged with SSH that works in a similar way but over a secure connection.

Smart Client

Smart Client is Thredd's legacy desktop application for managing your cards and transactions on the Thredd Platform.

SOAP

SOAP (Simple Object Access Protocol) SOAP is a messaging protocol for exchanging structured information. It uses Extensible Markup Language (XML) for its message format and relies on application layer protocols such as HTTP for message negotiation and transmission. SOAP allows developers to invoke processes running on disparate operating systems (such as Windows, macOS, and Linux) to authenticate, authorise and communicate using XML.

SSL Certification

An SSL certificate displays important information for verifying the owner of a website and encrypting web traffic with SSL/TLS, including the public key, the issuer of the certificate, and the associated subdomains.

Stand In Processing (STIP)

The card network (Visa and Mastercard) may perform approve or decline a transaction authorisation request on behalf of the card issuer. Depending on your Thredd mode, Thredd may also provide STIP on your behalf, where your systems are unavailable.

Strong Customer Authentication (SCA)

When the cardholder is authenticated during a payment transaction using a combination of at least two of the following authentication methods: Knowledge (Something the cardholder knows, such as a password), Possession (Something the cardholder has access to, such as a phone number or email account) and Biometrics (such as a fingerprint, face or voice) Under the Payment Service Directive 2 (PSD2), strong customer authentication is required on all cardholder-initiated transactions when both the card issuer and acquirer are within the European Economic Area (EEA).

# T

Tag-Length-Value (TLV)

TLV is an encoding scheme. A TLV-encoded record contains the record type (tag), followed by record Length, and finally the Value itself. Example: 0104John where: tag type = 01 (first name) tag length = 4 digits tag value = John

Thredd Portal

Thredd Portal is Thredd's new web application for managing your cards and transactions on the Thredd Platform.

Triple DES

Triple DES (3DES or TDES), is a symmetric-key block cipher, which applies the DES cipher algorithm three times to each data block to produce a more secure encryption.

# U

Unique Transaction (requires unique MCC)

Mastercard-specific transaction category. Similar to Visa's quasi-cash, this is used for specific merchants where the purchased items could be converted to cash (e.g., gaming chips, money orders). Identified by the (18xxxx) processing code.

# V

Validation

Checks to confirm the card is valid, such as CHIP cryptograms, mag-stripe data (if available) and expiry date

Visa DPS

This is a processing network for US issuers, where messages are processing based on Single Message System flow. Thredd supports messages from this system.

VROL System

Visa Dispute Resolution Online system, provided by Visa for managing transaction disputes.

# Document History

This section contains details of all changes to this guide.

**Note:** In version 4.1.08 and 5.0 we changed the section numbering. We've added links in the comments section below which take you to the relevant section or topic.

| Version | Date | Comments | Revised by |
|---|---|---|---|
| 5.5 | 10/09/2026 | Removed the W and R AVS response codes. The U response code now indicates that AVS is not used. See AVS Results. See PRN-325. | KD |
| | 10/09/2026 | Updated the Additional_Amount_DE54 description to mention that the field now handles between 1 and 12 different amounts. The character length in the GetTransaction message is now extended to 240 characters. See Additional Amount Field and GetTransaction Message fields. See PRN-329. | KD |
| | 02/09/2026 | Added Mastercard Reason Codes from 7640 to 7649 for fee collections. See Reason ID and PRN-307. | KD |
| | 18/08/2026 | Removed update to Additional_Data_DE48 field for PRN-316 as Mastercard have cancelled this requirement. | JB |
| | 05/08/2026 | Added new C09 and F09 Scheme Transaction Identifier Values. See PRN-310.<br>Added MCCs 3306, 3884, 3885 and 3886 to Merchant Category Codes. See PRN-311.<br>Added enhanced validation the Additional_Data_DE48 field, where if Mastercard indicates that systemic controls were not applied then Thredd will automatically decline the transaction. This is shared with the customer using sub-element 71 (SE71) field. See PRN-316.<br>Added new P73 Scheme Transaction Identifier Values to support merchants enrolled in the Global Reach Acquiring Program. See PRN-308. | JB |
| | 14/07/2026 | Revised the description of response codes 91 and 92 to clarify the behaviour for Gateway Processing customers. See See Response Status Values. | JB |
| | 07/07/2026 | Added more details for each of the EHI operating modes. See EHI Operating Modes. | JB |
| | 09/06/2026 | Corrected Step 2 of Scenario 1: Maximum preauthorisation example and Scenario 2: Nominal preauthorisation example for AFD Authorisations. See Transaction Flow Scenarios: AFD Authorisations. | JB |
| | 05/06/2026 | Added functionality to support edge cases where a programme has inputs from multiple sources. See EHI Configuration Options. | JB |
| 5.5 | 22/05/2026 | Added *Z5* and *1A* response codes. See Response Status Values and Resp_Code_DE39 Values. | GF |
| | 18/05/2026 | Updated the office address to reflect the London Thredd, United Kingdom office relocation. See Contact Us. | GF |
| | 27/04/2026 | Added SenderOrganizationName and ReceiverOrganizationName fields to comply with Mastercard Send transaction enhancements on participant data. See SenderData and ReceiverData Fields and PRN- | KD |

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| | | 290. | |
| | 22/04/2026 | Included new Transaction Identifier code from Mastercard (P72) to identify other speciality merchants. See Scheme Transaction Identifier Values and PRN-294. | KD |
| | 22/04/2026 | Added Transaction Link Identifier fields of *NetworkTransactionId2, NetworkRelatedTransactionId*, and *NetworkLinkValidation* to the GetTransaction message fields. Updated the EHI Versions page to include these new fields for 5.5. See GetTransaction Message Fields and EHI Versions Continued and PRN-291. | KD |
| 5.4 | 31/03/2026 | Updated the description of the P70 Mastercard Scheme Transaction Identifier value, and added the P76 Mastercard Scheme Transaction Identifier value. See Scheme Transaction Identifier Values. | JB |
| 5.4 | 18/03/2026 | Added R0, R1 and R3 response codes to support VISA subscription management. See Response Status Values. | JB |
| 5.4 | 13/03/2026 | Removed support for CVV2 result codes *C*, *D*, *K*, and *L* to align with Visa's updated Field 44.10 CVV2 response code mandate. See Visa_ResponseInfo_DE44. | GF |
| 5.4 | 09/03/2026 | EHI version 5.4 now released for general availability. See EHI Versions. | JB |
| | | | |
| 5.3 | 19/02/2026 | Added links to the STIP Balance Update endpoint in the API Hub. See EHI Operating Modes. | JB |
| | | | |
| 5.3 | 18/02/2026 | Amended amount sign examples to ensure correct credit and debit information appears in the table. See Examples of Amount Signs. | KD |
| 5.3 | 10/02/2026 | Corrected the match criteria for an Authorisation Advice. See Transaction Matching Criteria. | KD |
| | 09/02/2026 | EHI version 5.3 now released for general availability. See EHI Versions. | JB |
| 5.2 | 27/01/2026 | Added support for Tokenization Authentication Framework (TAF) as an entry for the Cardholder Authentication Method. See GPS_POS_Data field. | JB |
| | 06/01/2026 | Amended an incorrect link to the *Response Source Why and Message Why* page in the Incremental Authorisation FAQ item. See Q. What is an Incremental Authorisation and how do I identify it? | KD |
| | 11/12/2025 | Added new Mastercard Advice Reason code for Mastercard Send or other transaction blocking service. See Positions 1-3 Advice Reason Code. | KD |
| | 19/11/2025 | Updated the description and examples of Financial Notification messages to indicate that the Acknowledgement in the response is mandatory and that the response status is optional. See EHI Connections and Messages and Processing EHI Transactions. | KD |

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| | 14/10/2025 | Added a new page in the appendix for Scheme Transaction Identifier values for Visa and Mastercard. | KD |
| | 15/10/2025 | Provided further details of transaction flows for Automated Fuel Dispenser (AFD) transactions. See Transaction Flow Scenarios: AFD Authorisations. | WS |
| | 30/09/2025 | EHI version 5.2 now released for general availability. See EHI Versions. | JB |
| 5.1 | 22/09/2025 | Added the *Remote Terminal Value* to subfield 10 in GPS_POS_Capability and subfield 49 in POS_Data_DE61. See GPS_POS_Capability Fields and POS_Data_DE61 field. | KD |
| | 12/09/2025 | Added clarification related to how the Additional_Data_DE48 field is passed through for scheme transaction risk scores. See GetTransaction Message Fields. | JB |
| | 03/09/2025 | Included an example ATM cash withdrawal authorisation request and presentment. Added a note to indicate that the Amt_Tran_Fee_DE28 field is populated with a value when there is a transaction fee for withdrawal. See Example ATM Cash Withdrawal Messages (Mastercard). | KD |
| | 09/09/2025 | Added a new value of *S*, *Frictionless flow, Smart attempts*, to the GPS_POS_Data field, position 15, 3D secure authentication method. See GPS_POS_Data field. | WS |
| | 03/09/2025 | Added Network Fee section to the FAQs to explain acquirer and issuer transaction-related network fees. | KD |
| | 03/09/2025 | Added a note in the field description for ICC_System_Related_Data_DE55 that the field applies to both Visa and Mastercard (see JSON Data Types and EHI Fields). | KD |
| | 23/07/2025 | EHI version 5.1 now released for general availability. See EHI Versions. | WS |
| | 24/07/2025 | Added details to clarify how Acquirer fees are reported and how this affects card authorisation and balance updates. See How are Acquirer fees applied and reported? | WS |
| | 06/08/2025 | Updated the list of Merchant Category Codes (MCCs) to include MCCs 3304 and 3841-3853. See Merchant Category Codes. | WS |
| | 24/07/2025 | Added a note to clarify support for Master Virtual Cards (MVCs) on EHI Cooperative Processing (mode 2) with *approve with load*. See EHI Operating Modes: Approve with Load. | WS |
| | 15/07/2025 | Updates to the descriptions of the Processing Codes for PIN Change and PIN Unblock to clarify use of these codes. | WS |
| | 10/07/2025 | Removed references to EHI mode 5, which has been decommissioned. | WS |
| | 03/07/2025 | Added additional information to the Transaction Matching section on matching for incremental authorisations and revised the FAQ on incremental authorisations and how to identify them. | WS |
| 5.0.17 | 03/07/2025 | Added a note to the description of Additional_data_de48 to clarify the | WS |

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| | | usage of this field. See GetTransaction Message Fields. | |
| | 03/07/2025 | Added further details on the use of the MerchantAdvice field and use of Merchant Advice Code 03. See GetTransaction Message Fields: MerchantAdvice. See also the FAQs: What is the MerchantAdvice field and how is it used? | WS |
| | 03/07/2025 | Updated the example for POS_Date_DE13. Provided more details of how traceid_lifecycle is constructed. See GetTransaction Message Fields. | WS |
| | 27/06/2025 | Updated the card status codes page to indicate that Card Status Codes G5 and G6 (temporary blocks) can also be set by Fraud Transaction Monitoring (FTM) service. See Card Status Codes. | WS |
| | 20/06/2025 | Clarified the description of multi_part_txn_final. See GetTransaction Message Fields. | SH |
| | 16/05/2025 | Added notes to clarify the use of the SubBIN field for 6-digit and 8-digit BINs. See GetTransaction Message Fields. | WS |
| | 15/05/2025 | Updated the FAQs with additional information on incremental authorisations and how to identify them. | WS |
| | 08/05/2025 | Added EHI response codes 12 and 15 to the Response Status Values page. Revised the description of response code 57. Removed card status code 57 from the Card Status Codes page. See PRN-220. | WS |
| | 08/05/2025 | The Matching_Txn_ID field in EHI is now populated with data for the following types of transactions:<br>Presentments, Authorisation Reversals, Incremental Authorisations and Incremental Authorisation Reversals. See GetTransaction Message Fields. See also PRN-224. | WS |
| | 08/05/2025 | Removed references to the 0120 A message type, as this is not supported. The appropriate message type to process is the 1240 A (for Mastercard) or 05 A, 06 A and 07 A (For Visa). | WS |
| | 30/04/2025 | Updated the description of the Settlement_Date field. See GetTransaction Message Fields. | WS |
| | 16/04/2025 | Added digital asset categories, for example Central Bank Digital Currency (CBDC) or tokenised deposits, to the list of POS codes. See Position 4 – Special Condition (existing debt) in Visa_POS_Data_DE60. | KD |
| | 16/04/2025 | Added the following codes for device binding that supports FIDO: 3749 and 3760. See Reason ID for an Authorisation. | KD |
| 5.0.17 | 09/04/2025 | Added Response Code 72 and 46 to the Response Status Values and the Resp_Code_DE39 pages. | KD |
| | 09/04/2025 | Added two new Visa response codes: 5C - Transaction not supported or blocked by issuer and 9G - Blocked by cardholder, contact cardholder. See Response Status Values. | WS |

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| 5.0.16 | 27/03/2025 | Added references to the Thredd Secure Connectivity Framework. | KD |
| | 17/02/2025 | Multiple EHI endpoints functionality has been deprecated. See EHI Configuration Options. | WS |
| | 07/03/2025 | Updated descriptions and examples for how to handle processing errors due to invalid characters. See Troubleshooting FAQs. | JB |
| | 07/03/2025 | Added extra values 100 and 100 for 'Message_Why' field in Appendix A.26 (Response_Source_Why + Message_Why). | JB |
| | 17/02/2025 | Added details of how to set up multiple EHI endpoints (URLs). See EHI Configuration Options. | WS |
| | 13/02/2025 | Added new processing codes for Credit Account Status Inquiry (ASI) and Debit ASI to Transaction Codes. | KD |
| | 13/02/2025 | Updated the description of the 9030 reason code in the Visa_STIP_Reason_Code field. | WS |
| | 12/02/2025 | Added references to Thredd Portal, our new web application for managing your cards and transactions. | WS |
| | 20/01/2025 | Added 3169 RIYADH AIR to Merchant Category Codes. | WS |
| | 16/01/2025 | Added the *V1045D0082* tag, 35AN Plan Registration System Identifier, to the Misc_TLV_Data Field. | WS |
| 5.0.16 | 16/01/2025 | Corrections to JSON tokenisation examples: ACN, TCN and TEN messages should have Txn_Type = J. ACN messages should have an MTID = 0120, while TCN and TEN messages have an MTID = 0620. See GetTransaction Example Messages. | WS |
| 5.0.16 | 19/12/2024 | Added incremental authorisation message examples to the section GetTransaction Example Messages. | KD |
| 5.0.16 | 06/12/2024 | Updated the format of the Acquirer_Reference_Data_031 field to AN (8,23). See GetTransaction Message Fields. See PRN-200. | WS |
| 5.0.16 | 29/11/2024 | Added a note to indicate that the functionality to update the balance in Mode 4 (Gateway Processing with STIP) is currently only available via SOAP Web Services. See EHI Operating Modes. | WS |
| 5.0.16 | 08/11/2024 | Added examples of tokenisation messages to the section GetTransaction Example Messages. | WS |
| 5.0.16 | 06/11/2024 | Added the following codes for Reason ID: 3717, 3748, 3755. See Reason ID | KD |
| 5.0.16 | 06/11/2024 | Updated AVS Results page. Removed unused codes, and clarified address and postcode/zip code results for US and non-US addresses. | KD |
| | 07/11/2024 | Updated the description of response code 61 to remove the previous restriction on Visa usage, as this code is now supported by Visa. See Response Status Values. | WS |
| | 31/10/2024 | Added FAQ item for Mastercard STIP. See General FAQs. | KD |

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| | 01/10/2024 | Added an example of a balance enquiry message. See GetTransaction Example Messages. | WS |
| 5.0.16 | 12/09/2024 | Removed references to VPN. | WS |
| | 02/09/2024 | The inclusion of the Merch_Country field is typically *Optional*, but may be mandatory in certain cases, depending on the program or service being processed. See GetTransaction Message Fields. | WS |
| | 15/08/2024 | Added 3437 CITE RENT-A-CAR to Merchant Category Codes. | JB |
| | 13/08/2024 | Added notes to clarify that some credit/refund transactions may be reported as follows:<br>• Visa: MTID '05pp', Txn_type 'P' (with processing code 20xxxx).<br>• Mastercard: MTID '1240', Txn_type 'P' (with processing code 20xxxx).<br>See Transaction Matching. | WS |
| | 06/08/2024 | New FAQ added, explaining how fees are applied and reported for declined transactions. See the FAQs. | WS |
| | 06/08/2024 | Clarification that response code 96 may trigger card Scheme Stand-In Processing (STIP) for both Visa and Mastercard, depending on your STIP setup. See Response Codes. | WS |
| | 01/08/2024 | Added sort functionality to the tables in the online guide version. | WS |
| | 25/07/2024 | Added "U - No data received" to the list of possible AVS Results. | WS |
| | 17/07/2024 | Updated the description of Txn_GPS_Date. See GetTransaction Message Fields. | WS |
| | 02/07/2024 | Updated the company address. | PC |
| 5.015 | 22/04/2024 | Updates to field descriptions in JSON Data Types and EHI Fields. | WS |
| | 27/06/2024 | Removed the MTID value of 0100 from the Automatic Authorisation Reversal message on the Transaction Matching and GetTransaction Message Fields pages. | JB |
| | 31/05/2024 | Clarification on use of the 3-digit country code for Romania. See Country Codes. | WS |
| | 28/05/2024 | Added a new value to the GPS_POS_DATA field position 32, to indicate, whether the acquirer requested a 30-day clearing extension (Visa Only). See GPS_POS_Data Field. | WS |
| | 22/04/2024 | Revised description of the usage of the 0101 A Authorisation Repeat message (Visa Only). See Transaction Matching. | WS |
| | 28/03/2024 | Added descriptions of usage of positions 27-31 in the GPS_POS_Data field. See GPS_POS_Data Field. | WS |
| 5.0.14 | 14/03/2024 | Added note to state that EHI feeds in JSON cannot send fields to externally hosted systems where its data values are blank. This differs from EHI data feeds for XML that allow the sending of fields with blank values. See JSON Data Types and EHI Fields. | KD |

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| 5.0.14 | 14/03/2024 | New terminology introduced around EHI modes: *Gateway Processing* (mode 1), *Cooperative Processing* (mode 2), *Full Service Processing* (mode 3) and *Gateway Processing with STIP* (mode 4). See EHI Modes. | WS |
| | 12/03/2024 | New Merchant Category Code (MCC) added: 3168 Hainan Airlines (as part of Visa mandate 2024 Q2 VISA Article 2.5 Changes to Merchant Category Codes and Response Code). See Merchant Category Codes. | WS |
| | 12/03/2024 | Added additional processing codes and account types now supported by Visa (as part of Article 2.1 Changes to Support Global Processing Alignment for Issuer). See Processing Codes. For more information, see PRN-179. | WS |
| | 07/03/2024 | Clarified how the transaction status of *Cleared (C)* and *Settled (S)* impacts the card balance. See Transaction Status Codes. | WS |
| | 07/03/2024 | Correction to description of the processing code for ASI transactions listed in the FAQs section. Should be 39. | WS |
| | 14/02/2024 | Added examples of Financial Reversals (1240 type E messages). See GetTransaction Example Messages. | WS |
| | 14/02/2024 | Updated the list of values that can be returned in the `Visa_ResponseInfo_DE44` field position 5 (CVV/iCVV/dCVV result). See Visa_ResponseInfo_DE44. | WS |
| | 10/01/2024 | Added details to clarify the usage of the `Resp_Code_DE39` field. See GetTransaction Message Fields. | WS |
| | 02/01/2024 | Clarified usage of the `Auth_Code_DE38` field: an authorisation code is generated for both approved and declined authorisations. See GetTransaction Message Fields. | WS |
| | 02/01/2024 | Added a new page to describe the HTTP header fields in EHI request and response messages. See HTTP Message Format. | WS |
| | 02/01/2024 | Added a note to clarify that the EHI message response should not contain the value "null" in any response fields where EHI is expecting a numeric value, as this may result in EHI declining the transaction. See Response Message Fields. | WS |
| 5.0.13 | 13/12/2023 | Added MCC code 5262 to the Merchant Category Codes page. See Merchant Category Codes. | KD |
| | 13/12/2023 | Added details of how to use the `Resp_Code_DE39` field when returning a decline response to Thredd. See the appendix Resp_Code_DE39 Values. | WS |
| | 06/11/2023 | Correction to matching logic table for transactions of type 1240 N. See Transaction Matching. | WS |
| | 02/11/2023 | Updates to the WSDL for the EHI XML version. See GetTransaction WSDL. | JB |
| | 24/10/2023 | EHI can now support up to two External Host URLs per card product. See EHI Configuration Options. | WS |

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| | 21/09/2023 | Added details to clarify that the field PaymentToken_creatorStatus can contain " " or be empty when no value has been provided. See Payment Token Fields. | WS |
| | 14/09/2023 | In the section Checking fields used for 3D Secure Authentication, added a note and reference to the PSD2 and SCA Guide. | WS |
| | 22/08/2023 | In the GetTransaction Message Fields section, added information on the interchange fee received in the Interchange_Amount_Fee and Interchange_Amount_Fee_Settlement fields. | WS |
| 5.0.12 | 31/07/2023 | In the GetTransaction Message Fields section, updated the Request Message Fields headings to clarify whether this applies to authorisation, financial or non-card network messages.<br>On the GPS_POS_Data field page, fixed the link to the Card Present Indicator section.<br>Added further information describing the use of transaction processing codes 01,02,11, 12, 21, 26, 28 and 39. See Processing Codes. | WS |
| | 23/06/2023 | Added a new section describing implementation of Dynamic CVV2 functionality. This section is also available as a stand-alone document. | WS |
| | 31/05/2023 | Updated Operations email address to be occ@thredd.com | MW |
| 5.0.12 | 16/05/2023 | Updated the Trans_link field data type from *Number* (Long) to *String*, to align with the RFC 8259 Standard for JSON fields. See JSON Data Types and EHI Fields. See PRN-154. | WS |
| 5.0.12 | 27/04/2023 | Guide rebrand to new company name and brand identity. | WS |
| 5.0.11 | 06/04/2023 | Added a new appendix which provides details of the contents of the Trans_Link Field. | WS |
| | 07/03/2023 | Added a note to explain that in EHI Mode 2, you can override the Thredd decline code of 51 (Insufficient Funds) with another decline code, if you would like to use a more specific decline reason to be passed to cardholder. See EHI Operating Modes. | WS |
| 5.0.11 | 02/03/2023 | Added further details and clarification on the use of JSON data types and the compatibility of EHI fields with the IEEE 754 binary-64 (double precision) format. See JSON Data Types and EHI Fields. | WS |
| 5.0.11 | 02/03/2023 | Correction to description of the *token* field and its possible values. See GetTransaction Message Fields. | WS |
| | 02/03/2023 | In the GetTransaction Message Fields section, updated the maximum length and maximum values for the following fields: *Token*, *TXn_ID*, *TLogIDOrg*, *Trans_link* and *Matching_Txn_ID*. | WS |
| | 28/02/2023 | Added Chinese Offshore Renminbi (currency code CNH) to the list of supported currencies. See Currency Codes. | WS |
| | 20/02/2023 | Added two new Visa Merchant Category Codes (MCC): 3839 and 5723. See PRN-147.<br>Added a note to clarify the use of *GPS_POS_Capability* position 44. See GPS_POS_Capability field. | WS |
| 5.0.10 | 15/02/2023 | Added a note to *GPS_POS_DATA* Cardholder Authentication | WS |

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| | | Methods, to indicate that it is possible for merchants to send two authentication values, which are recording in positions 4 and 5.<br>Added details to clarify how the transaction processing codes 01, 12 and 17 are used. See Processing Codes and the Troubleshooting FAQs.<br>Fixed version numbering issue. | |
| | 25/01/2023 | Updated the FAQs with additional information around clearing files.<br>Updated the description of the following fields to clarify their usage: *POS_Data_DE61*, *POS_Data_DE22* and *Merch_Name_DE43*. See GetTransaction Message Fields. | WS |
| 5.0.10 | 20/01/2023 | Updated the GetTransaction Example Messages. | JB |
| 5.0.10 | 05/01/2023 | Added a note to indicate that if the *CVV2_Result* field is blank, then the merchant did not provide this information. In this case, Thredd will not complete the CVV2 pre-check and will authorise or decline the transaction based on the card usage group settings for your programme. See GetTransaction Message Fields.<br>Amended the description of *Auth_Code_DE38*. Thredd will generate this code for an approved authorisation request. | WS |
| | 01/12/2022 | Updated the Copyright Statement<br>Updated the headings for the GPS_POS_Capability field, GPS_POS_Data field and the POS_Data_DE61 field. | MW |
| 5.0.10 | 01/12/2022 | New cut-off messages in JSON format now available. See Cut-Off Message Example. | WS |
| 5.0.9 | 22/11/2022 | Added further matching criteria for the MTIDs TC25, TC26 and TC27 in transaction matching. | JB |
| | 11/11/2022 | Added a note to the transaction matching section for 0400 authorisation reversals about Visa transactions potentially missing an Auth_Code_DE38 value and how to treat this. | WS |
| | 10/11/2022 | Added Glossary definitions for OCT and AFT transactions. | WS |
| 5.0.8 | 26/10/2022 | Added a note and examples of cut-off message, which are currently only available in XML format. | WS |
| | 13/10/2022 | Added a new value of '*L*' (delegated authentication) to the *GPS_POS_Data* field, position 15 (3D secure authentication method). See GPS_POS_Data field. | WS |
| | 03/10/2022 | Added status code 59 to the table of status values appearing in the Resp_Code_DE39 field. | WS |
| | 03/10/2022 | Added new sections on Refunds and Financial Reversals to the Transaction Flow Scenarios section. | WS |
| 5.0.8 | 14/09/2022 | Updated the examples on the GetTransaction Example Messages page. | JB |
| 5.0.8 | 08/09/2022 | Added new column to 3D Secure Authentication Method section of GPS_POS_Data field to differentiate between the differences between Mastercard and Visa. Also clarified content for Mastercard SPA v2. | JB |
| | 05/09/2022 | Added a new Currency Code, SLE, for the new Sierra Leonean leone. | WS |

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| | 01/09/2022 | Added a note to the description of data types *AmountUnsigned* and *AmountSigned* to clarify that values can contain up to four decimal places. For customers processing currencies that have more than 2 decimal places, we now round this off to 2 decimal places and add zero padding for the remaining decimal places; see GetTransaction Message Fields > Rounding off of currencies with exponents greater than 2. See PRN-116. | WS |
| 5.0.7 | 18/08/2022 | New Merchant Category Codes added. | WS |
| | 04/07/2022 | For fields of data type *AmountSigned*, the number of supported decimal places has been updated from 9.2 to 19.4. For example: *72.1230*. See GetTransaction Message Fields.<br>Examples in the GetTransaction Example Messages also updated for this change. See PRN-114.<br>Corrections made to POS_DATA_DE22 Authorisation and POS_DATA_DE22 Mastercard appendices.<br>Corrections made to MTID references on Processing EHI Transactions. | WS |
| 5.0.6 | 10/03/2022 | Added a new appendix to describe Special Characters that may be used in fields of Data Type ANS. | WS |
| | 31/03/2022 | Removed the field *FxProviderBookedRate*. | |
| | 07/04/2022 | Processing Code (*Proc_Code*) = 39 is now used to identify an Account Verification transaction. See Processing Codes. See PRN-102. | |
| | 19/04/2022 | Updates to the description of the *Acquirer Exempt from SCA Indicator* in GPS_POS_Data field position 25.<br>Added a new tag for Visa Base 1 e-commerce data to the Misc_TLV_Data Field. | |
| | | Standardised the field values used in the EHI field PaymentToken_PanSource so that they align with existing values already used in the EHI field GPS_POS_Data field position 3 (Card Data Input Method). See PRN-104.<br>Updated examples in the guide to reflect that fields with no data are sent in a closed tag format and not as an open and close tag (e.g., as <Note /> and not as <Note> </Note>). | |
| 5.0.5 | 02/02/2022 | New section added to explain Updating the STIP Balance (EHI Modes 4 and 5 only) | WS |
| | 26/01/2022 | GPS_POS_Data field position 18, *ExemptFromSCA* value 8 changed to "*Not a transaction under PSD2 rules*". | |
| 5.0.4 | 22/12/2021 | Updates to Misc_TLV_Data Field description to include new Sender and Receiver data tags.<br>Updates to descriptions in SenderData and ReceiverData Fields.<br>**Note**: Changed guide version number from 5.1 to 5.0.4 to reflect actual current version of EHI (5.0). | WS |
| | 14/12/2021 | Additional information provided on Responding to Authorisation Declines and Responding to Partial Approvals.<br>Changes to the description of the DECIMAL data type. See Data Types. | WS |

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| | 08/12/2021 | Minor change to description in MTID field 1240.<br>New fields added for Currency Cloud FX service: FxProviderCardholderRate and *FxProviderBookedRate*. | AL |
| | 18/11/2021 | New Visa examples provided for *AuthenticationMerchantHash*. See Matching Merchant Name.<br>New data type of DECIMAL added to Data Types page. | WS |
| 5.0.3 | 21/10/2021 | New values in *GPS_POS_DATA* for 3D Secure Authentication: v = Authenticated by Mastercard IDCX ('Identity Check Express') service; z = AAV refresh transaction successfully authenticated by ACS. See 3D Secure Authentication Method.<br>New guide using the EHI REST version is now available. Both versions of the guide have been updated to clarify differences between REST and XML message formats. | WS |
| | 04/11/2021 | For a Visa purchase with Cashback, Thredd now sends the value of *Proc_Code* as 09 (instead of 00) and includes the cashback amount in the *Additional_Amt_DE54* field. Thredd has standardised the format of the *Additional_Amt_DE54* field in the GetTransaction Message to use the format provided by GCMS IPM / Visa Base 2, which contains only the data (a multiple of 20 characters). See PRN-72.<br>In ResponseStatus and Response_Code_DE39 the description of response code *78* has been updated to *Card is not active (including created but not yet activated)* | |
| | 11/11/2021 | Document updates:<br>Corrected the spelling of *Responsestatus* in Transaction Flow Scenarios and Processing EHI Transactions.<br>Additional details provided on transaction matching of Financial Reversals for Visa transactions. See Transaction Matching. New information provided to support matching transactions where the Acquirer data does not match; see Troubleshooting FAQs: Transactions and Matching.<br>Information provided on Account Status Inquiry (ASI) transactions and how to identify them.<br>Corrected the field name of AuthenticationMerchantHash. (This was previously incorrectly communicated as AuthenticationMerchantNameHash) | |
| 5.0.2 | 27/09/2021 | New value V = Account Verification added to the Auth_Type field in the GetTransaction message. See PRN-69.<br>New description of how to respond to Authorisation Reversals. See Processing EHI Transactions.<br>Updates to Card Status Codes to reflect new card block status codes. See PRN-48.<br>Note: For additional information about Thredd updates to status and response codes, see the guide Changes to Thredd Card Status and Response Codes. | WS |
| 5.0.1 | 10/08/2021 | Added new EHI fields to authorisation messages for EHI version 5.0, which can be used to compare the 3D Secure authentication amount and currency to the authorised amount and currency:<br>AuthenticationCurrency<br>AuthenticationAmountUpper<br>AuthenticationMerchantHash<br>These fields can be used to comply with the PSD2 Strong Customer Authentication (SCA) Dynamic Linking requirements (see PRN-56). See Checking fields used for 3D Secure Authentication. | WS |

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| | | Positions 25 and 26 have been added to GPS_POS_Data field, which you can use to identify if the authentication amount does not match the authorisation amount.<br>Updates to recommendations for matching and handling authorisation advises and authorisation reversal requests.<br>New appendix with Transaction Matching - Authentications and Authorisations.<br>New optional MerchantAdvice response field added, for use when returning decline responses.<br>In the ResponseStatus Values section, clarified when to use response codes 70 and 93. | |
| 5.0 | 16/07/2021 | Updates to reflect new fields added for EHI version 5.0. For details, see EHI Versions. New fields:<br>Acquirer_Country<br>ClearingFileId<br>Network_Fraud_Data<br>PaymentToken_PanSource<br>ReceiverData<br>SenderData<br>Addition of new appendices: Network_Fraud_Data Format and SenderData and ReceiverData Fields. Changes to numbering in Appendices.<br>Document corrections:<br>Updated the GPS_POS_Data field, position 16 and 17 descriptions.<br>Updated the incorrect spelling of the *Proc_Code* field in some descriptions which refered to this field.<br>Updated the *PaymentToken_status* field description to point to the correct appendix to use for possible values: Card Status Codes.<br>Changed the following field names to lower-case, to be consistent with how these are used in the GetTransaction message: auth_type, auth_expdate_utc, multi_part_txn, multi_part_txn_final, multi_part_number, multi_part_count.<br>Updated the description for Incremental presentments | WS |
| 4.1.13 | 06/07/2021 | Updates to Amount Type Codes for the Additional Amounts field: added values 12, 42, 57 and 58. | WS |
| 4.1.12 | 01/06/2021 | Updates to response code appendices: new appendices for ResponseStatus Response Codes and Response_Code_DE39 Response Codes.<br>New value of *N* for *Non-Card* and updates to description of *J* value in PaymentToken_deviceType. | WS |
| 4.1.11 | 20/05/2021 | In GPS_POS_Data field, changed the descriptions for SCA Assessment Result.<br>Updates to Card Status Codes and Response Codes.<br>New EHI E value for a mini-card in appendix PaymentToken_deviceType.<br>New GPS_POS_Data field position 24: Card/Device Type (Form Factor). | WS |
| 4.1.10 | 23/04/2021 | In GPS_POS_Data field, added a new value of '3' for position 19, and news values of 8 and 9 for position 18; rewrote the SCA section to improve usability. Added new section for position 23. | WS |
| 4.1.09 | 26/03/2021 | Added new tokenisation transaction codes 32, 37 and 28 to Processing Codes.<br>New tokenisation examples added<br>New page with details of fields per EHI Versions | WS |

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|---|---|---|---|
| 4.1.08 | 25/02/2021 | Major revamp to guide. New format and content rewrite. New Getting Started section and FAQs. Topics and appendices have been reorganised. | WS |
| 4.1.07 | 16/03/2021 | Added new values to ExemptFrom SCA field. | Mark |
| 4.1.06 | 19/02/2021 | Corrected 'CutoffDate' field in Cut-Off message as follows:<br>Section 10.1 (Cut-off message request fields) – both Description and Data Type corrected.<br><br>GPS_POS_Data field changes (Appendix A.24)<br>'ExemptFromSCA' position (Appendix A.24.13)<br>Corrected 'Low Value' character from 'L' to 'V'<br>Corrected 'SCA Delegation character from 'S' to 'D'<br>Added new value 'O' (15th letter of alphabet in capitals) for 'Authentication Outage Exemption'<br>New positions added after 'ExemptFromSCA'<br>Updated position list in A.24.1, and added comments after the table<br>Extra example (with 22 positions) in Appendix A.24.18 added<br>Correct field name typo from "Txn_Stat_Cde" to "Txn_Stat_Code" (see GetTransaction Message)<br>New EHI response codes: 46, 78, 6P, 59, 93 (Appendix A.4)<br>New Response_Source_Why and Message_Why values 83 to 97 (Appendix A.26)<br>Appendix A.37 – Noted that for sending Visa Base1 raw values, 'xx' will be used for 'all datasets', and 'xxxx' will be used for 'all tags'. | Mark |
| 4.1.05 | 10/02/2021 | Corrected section 7.1.1 (WSDL response requirements). Updated contact details on first page. | Mark |
| 4.1.04 | 27/01/2021 | Added new Appendix A.41 to describe Additional_Data_DE48 format for Mastercard Authorisations & Clearing messages. | Mark |
| 4.1.03 | 06/01/2021 | Added new Cardholder Authentication Method values 7,9,A,B,C,D,E in GPS_POS_Data field (Appendix A.24.5)<br>Added new Cardholder Authentication Entity value 7 in GPS_POS_Data field (Appendix A.24.6)<br>Added info in A.24.10 (GPS_POS_Data 3d-secure method) to clarify that for Mastercard SPA v2, this information is not received by Thredd.<br>Added explanation of DES in PIN fields (previously A.14 ) | Mark |
| 4.1.02 | 20/10/2020 | Added in A.37 the plans for Misc_TLV_Data tags | Mark |
| 4.1.01 | 15/07/2020 | Appendix A.37 (Misc_TLV_Data):<br>- added 'Value Format' column<br>- added tags: 'CGBRDEBT01', 'CGBRDEBT02', 'CGBRDEBT03', 'CGBRDEBT04' for UK debt repayment transaction information.<br>Appendix A.7<br>- Standardised the headings<br>- Renumbered Appendix A.7.8 (Examples of Amount Signs) from A.7.8 to A.7.9.<br>- Inserted number Appendix A.7.8 with a Card Expiry example request and response | Mark |
| 4.1.00 | 03/06/2020 | Noted that Bill_Amt_Approved response field in section 9.1.2 GetTransaction Message Fields can be positive or negative (Thredd takes absolute value.)<br>Section 9.1.1 fields 'interchange_amount_fee' and 'interchange_ | Mark |

<table>
<tr><th>Version</th><th>Date</th><th>Comments</th><th>Revised by</th></tr>
<tr><td></td><td></td><td>
amount_fee_settlement' – corrected the case of their names.<br>
Added new field formats into section 8:<br>
- DatetimeRaw(Y_to_D)<br>
- Traceid<br>
- TraceidRaw<br>
- Rate<br>
Added 14 new fields, to provide additional diagnostic information for transactions:
<table>
<tr><td>- Traceid_Message</td><td>- Traceid_Original</td></tr>
<tr><td>- Network_Transaction_ID</td><td>- POS_Date_DE13</td></tr>
<tr><td>- Network_Currency_ Conversion_Date</td><td>- Network_TxnAmt_To_BillAmt_ Rate</td></tr>
<tr><td>- Network_TxnAmt_To_ BaseAmt_Rate</td><td>- Network_BaseAmt_To_BillAmt_ Rate</td></tr>
<tr><td>- Network_Original_Data_ Elements_DE90</td><td>- Network_Replacement_ Amounts_DE95</td></tr>
<tr><td>- Network_Issuer_Settle_ID</td><td>- Visa_ResponseInfo_DE44</td></tr>
<tr><td>- Visa_POS_Data_DE60</td><td>- Visa_STIP_Reason_Code</td></tr>
<tr><td>- Mastercard_ AdviceReasonCode_DE60</td><td>- Misc_TLV_Data</td></tr>
</table>
Existing fields can take new values:<br>
- Reason_ID – Visa Base 1 reason code loaded here now<br>
- ProcCode – new Transaction code “10” Account Funding<br>
Existing field size extended: Additional_data_de48 now up to 5000 long<br>
Split Appendix A.7.2 into A.7.2M (for Mastercard examples) and A.7.2V (for Visa Examples)<br>
Added new appendices:
<table>
<tr><td>A.32.4 for new Reason_ID values from Visa</td><td>A.36 for Mastercard_ AdviceReasonCode_DE60</td></tr>
<tr><td>A.37 for Misc_TLV_Data</td><td>A.38 for Visa_STIP_Reason_ Code</td></tr>
<tr><td>A.39 for Visa_ResponseInfo_ DE44</td><td>A.40 for Visa_POS_Data_DE60</td></tr>
</table>
Altered some Appendices:
<table>
<tr><td>A.10 Currency Code: table now takes less space</td><td>A.13 Merchant Category Codes: corrected table headings, table now takes less space</td></tr>
<tr><td>A.17 POS_Data_DE22: corrected to take into account different format for Visa Authorisation messages.</td><td>A.19 Country Codes: table now takes less space</td></tr>
</table>
Corrected order of fields in WSDL
<table>
<tr><td>From this:<br>- DCC_Indicator<br>- multi_part_txn<br>- multi_part_txn_final<br>- multi_part_number<br>- multi_part_count</td><td>To this:<br>- Currency_Code_Fee<br>- Currency_Code_Fee_ Settlement<br>- Interchange_Amount_Fee<br>- Interchange_Amount_Fee_ Settlement</td></tr>
</table>
</td><td></td></tr>
</table>

| Version | Date | Comments | Revised by |
|---|---|---|---|
| | | - SettlementIndicator<br>- Clearing_Process_Date<br>- Settlement_Date<br>- Currency_Code_Fee<br>- Currency_Code_Fee_ Settlement<br>- Interchange_Amount_Fee<br>- Interchange_Amount_Fee_ Settlement<br>- Clearing_Process_Date<br>- Settlement_Date<br>- DCC_Indicator<br>- multi_part_txn<br>- multi_part_txn_final<br>- multi_part_number<br>- multi_part_count<br>- SettlementIndicator<br>Corrected order of fields in all examples to match the WSDL order.<br>Clarified section 9.1.1 descriptions of both “POS_Data_DE22” and “POS_Data_DE61” to make clearer differences between Visa/Mastercard and authorisation/clearing. (see GetTransaction Message Fields)<br>Appendix A.24.10 – 3D secure auth method: Added new value ‘C’<br>Section 7.4 -> added entry for MTID=0120 TxnType=’A’ (see GetTransaction WSDL and Examples)<br>Section 7.4 -> corrected entry for MTID=0120 TxnType=’J’ | |
| 4.0.03 | 14/02/2020 | Corrected links in A.24 GPS_POS_Data field to these:<br>- InstantFunding_GPS<br>- InstantFunding_Network<br>- ExemptFromSCA<br>Added Txn_Type value ‘K’ (Chargeback Reversal) to sections: A.2, 9.4, 5, 7.4, 7.3, 9.2<br>In A.17POS_Data_DE22 in Authorisation message – ‘10’ is valid for Mastercard (same meaning as Visa ‘10’)<br>In 7.3, noted that matching is not 100% accurate, and expanded rule on matching presentment (1240/05/06/07,P) to Auth (0100/0120,A/J)<br>In 7.4, note on 0400/D and 0420/D reversals to state that if the Txn_ Amt matches, it is a full reversal.<br>In A.1 (processing codes), added ‘11’ (Quasi cash).<br>Corrected subsection 7.6.1 and 7.6.2 that were labelled 7.1.1 & 7.1.2<br>In A.24.13 (GPS_POS_Data field ExemptFromSCA position) added new value ‘1’<br>In 9.1.1 SettlementIndicator added values ‘3’ and ‘4’ (see GetTransaction Message Fields)<br>Renumbered Appendix A.7.7 (GetTransaction WSDL and Examples) to A.7.8 (to allow below insert)<br>Added Fee transaction (MTID=empty, Txn_Type=’P’) to sections 5, 7.3 and 7.4, 9.2, 9.5, and an example in inserted Appendix A.7.7 | Mark |
| 4.0.02 | 05/11/2019 | Added new positions to GPS_POS_Data field: ExemptFromSCA<br>Throughout:<br>- Added in details for MTID 0101 Authorisation Duplicate (Visa only)<br>- Added in clarification for Visa second presentment MTIDs (05/06/07 N)<br>- Corrected the CVV2 field description and examples<br>- Added appendix A.24.11 for ExemptFromSCA field<br>- Added appendix A.34 for CVV2 field char 1 (if 6 chars)<br>- Added appendix A.35 for CVV2 field char 2 (if 6 chars) | Sarah + Mark |
| 4.0.00 | 14/06/2019 | Changed order of the following fields to match WSDL:<br>- Matching_Txn_ID (was underneath TLogIDOrg, now under auth_ expdate_utc)<br>- Auth_Type (was underneath GPS_POS_Data now under Merch_ | Sarah |

<table>
<tr><th>Version</th><th>Date</th><th>Comments</th><th>Revised by</th></tr>
<tr><td></td><td></td><td>Contact)<br>- Auth_Expdate_UTC (still underneath Auth_Type but auth_type moved)<br>- Reason_ID (was underneath Message_Why but now under Matching_Txn_ID)<br>- Dispute_Condition (still underneath Reason_ID but Reason_ID has moved)<br>Added new fields:<table><tr><td>- Settlement_Service</td><td>- Central_Process_Date</td></tr><tr><td>- Settlement_Date</td><td>- Acquirer_Forwarding_ID</td></tr><tr><td>- multi_part_txn</td><td>- multi_part_txn_final</td></tr><tr><td>- multi_part_number</td><td>- multi_part_count</td></tr><tr><td>- currency_code_fee</td><td>- currency_code_fee_settlement</td></tr><tr><td>- interchange_amount_fee</td><td>- interchange_amount_fee_ settlement</td></tr><tr><td>- DCC_Indicator</td><td>- Network_Chargeback_ Reference_Id</td></tr><tr><td>Added new positions to GPS_ POS_Data</td><td>- InstantFunding_GPS</td></tr><tr><td>- InstantFunding_Network</td><td></td></tr></table>9.1 Field formats - clarified CVV2 formatting with position details (see GetTransaction Message Fields)<br>A.4. Response Codes - Added new response codes C0 and C1 for PSD2 compliance and response code 86<br>A.6 AVS results - added code Z<br>A.29 PaymentToken_Wallet<br>Added a number of new wallet providers supported by Visa</td><td></td></tr>
<tr><td>3.1.0</td><td>12/03/2019</td><td>New request fields<br>- Matching_Txn_ID to indicate the TXn_ID of the matching Authorisation for Financial transactions.<br>- Auth_Type (to indicate if preauth, final-auth, or unknown)<br>- Auth_Expdate_UTC (when Thredd/acquirer think authorisation will expire)<br>- Reason_ID (eg reason code for a chargeback)<br>- Dispute_Condition (Visa chargeback Dispute Condition)<br>- Updated section 9 and examples in appendex A.7 for this.<br>Removed spurious ‘dd’ from end of section A.7.2.1 (Auth example) and A.7.2.3 (Financial example).<br>Added new section “3.3 EHI Interface Design considerations for Customers”<br>Added notes to A.4 “Response Code Values” to state that for EHI modes 1,2, for Mastercards, response codes 91,92,96 will invoke STIP.<br>Section 9.2 removed spurious sentence about “Authorisation Message Types” above the table. (see GetTransaction Message Fields)<br>Removed these fields that are not provided (Thredd internal refs: DEV_MT_CORE-1429 and DEV_MT_CORE-1606)<br>- Account_Type_From<br>- Account_Type_To<br>- Txn_Code<br>Sections 9.1.1, 9.3.1, 9.4.1, 9.5.1 – re-ordered fields to match WSDL order of arrival. Now all field tables are in exactly the same order. (see</td><td>Mark</td></tr>
</table>

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|---|---|---|---|
| | | GetTransaction Message Fields) | |
| 3.0.9 | 26/04/2018 | Added value 26 (Original Credits) to Appendix 1.1, Transaction Code Values.<br>Added additional response fields, AvlBalance_GPS_STIP and CurBalance_GPS_STIP in EHI response message components for Mode 4 enhanced functionality, in the following sections:<br>9.1.2 Response Field Formats (see GetTransaction Message Fields)<br>9.3.2 Response Message Fields<br>A.7.1 GetTransaction WSDL<br>A.7.2.2 Example Authorisation Response Message | Chip |
| 3.0.8 | 24/04/2018 | Appendix A.4 Response Code Values changes:<br>- Removed spurious “Note – not all codes are” sentence<br>- Added code 92 (Mark)<br>- Added code 32 (Harry C) | Mark (92)<br>Harry C (32) |
| 3.0.7 | 05/04/2018 | Added the value 12 to Transaction Code values in Appendix A.1.1 (part of ProcCode field). (see Processing Codes) | Harry C |
| 3.0.6 | 07/03/2018 | Section 9.1.1 correct format of “PaymentToken_activationExpiry” from Datetime(Y_to_ss) to Datetime(Y_to_nnn) to reflect what is actually sent. (DEV_MT_CORE-2613)<br>Corrected date of 3.0.5 spec from 29/01/2018 to 06/03/2018 (in change logs at top and bottom.)<br>Added Payment Token Activation Request (appendix A.7.2.5) | Mark |
| 3.0.5 | 06/03/2018 | Appendix A.29 PaymentToken_wallet values – ‘ANDROID’ wallet name changed from ‘Android Pay’ to ‘Google Pay’. No field changes.<br>Removed (MTID=0120, Txn_Type=A) and (MTID=0100, Txn_Type=D) from sections 9.2 and 9.3, as these combinations do not exist.<br>Added MTIDs 25,26,27 (Visa Financial Reversals) into sections: 7.3, 7.4.<br>Added MTIDs 05,06,07,25,26,27 into MTID field in section 9.1.1 (request message fields.) (see GetTransaction Message Fields) | Mark |
| 3.0.4 | 09/01/2018 | Added additional description in Appendix A.1.1 (Transaction Code values) for ‘36’ Transaction code.<br>Added extra values 51 to 55 for ‘Message_Why’ field in Appendix A.26 (Response_Source_Why + Message_Why)<br>Added new PaymentToken_creatorStatus value ‘D’ in Appendix A.28<br>Corrected email address on first page. | Mark |
| 3.0.3 | 22/12/2017 | Added values 47 to 50 for Response_source_why + message_why in section A.26<br>Added new wallet values FITBIT + PAYNETPHYR in section A.29 PaymentToken_wallet.<br>Added table borders in appendices A.25 to A.31.<br>Removed MTID=0120 Txn_Type=A from section ‘7’ as this combination does not exist.<br>Removed MTID=0100 Txn_Type=D from section ‘7’, as this combination does not exist (hanging auth removals are always created with MTID=’’ (blank).<br>Added enhanced description of reversals in section 7.4. | Mark |
| 3.0.2 | 15/11/2017 | Added 2 missing fields in GetTransaction to sections: A.7.1 (WSDL), Field info sections: 9.1.1, 9.3.1, 9.4.1, 9.5.1: (see GetTransaction Message Fields) | Mark |

<table>
<tr><th>Version</th><th>Date</th><th>Comments</th><th>Revised by</th></tr>
<tr><td></td><td></td><td>PaymentToken_deviceId<br>PaymentToken_deviceName<br>Added GPS_POS_Capability and GPS_POS_Data values and made POS/Merchant fields more consistent in examples in sections:<br>- A.7.2.1 (Auth request example)<br>- A.7.2.3 (Auth Advice example)<br>- A.7.3.1 (Financial request example)<br>Added fields after Message_Why to Auth Advice example in section A.7.3.</td><td></td></tr>
<tr><td>3.0.19</td><td>19/02/2019</td><td><table>
<tr><td>7.1.1 WSDL GetTransaction response</td><td>Txn_Stat_Cde and Resp_Code_DE39 could indicate approval for EHI mode 4<br>SendingAttemptCount is value-1 for EHI mode 4</td></tr>
<tr><td>7.3 Transaction Matching</td><td>1240 dummy auth - added 05pp 06pp 07pp<br>corrected 05,06,07,25,26,27 -> add 2 spaces on the end</td></tr>
<tr><td>7.4 Transaction processing by receiver</td><td>0120 J -> add note in Description to say can arrive for network STIP and AFD<br>0420 D -> fix note as visa use both 0400 and 0420.<br>1240 A dummy -> add 05pp 06pp 07pp<br>05,06,07,25,26,27 -> add 2 spaces on end</td></tr>
<tr><td>7.5 Incremental auths</td><td>Added expected final transaction amount<br>added notes on if final tranasaction amount too high or too low<br>clarified some language</td></tr>
<tr><td>7.6 Added section on Exception transactions</td><td></td></tr>
<tr><td>9.1.1 Request fields: (see GetTransaction Message Fields)</td><td>Settle_Amt: description corrected<br>LoadType: corrected link to valid values<br>POS_Time_DE12: clarified description<br>Status_Code: clarified description<br>payment-token fields corrected examples for visa/mc:<br>- PaymentToken_id<br>- PaymentToken_expdate<br>- PaymentToken_type<br>- PaymentToken_status<br>- PaymentToken_creatorStatus<br>- PaymentToken_wallet<br>- PaymentToken_deviceType<br>- PaymentToken_lang<br>- PaymentToken_deviceTelNum<br>- PaymentToken_deviceIp<br>- PaymentToken_activationCode<br>- PaymentToken_activationMethod<br>- PaymentToken_activationMethodData</td></tr>
<tr><td>9.1.2 Response fields:</td><td>- Update_Balance - added note that WS_BalanceUpdate can also be used to update the balance.</td></tr>
</table></td><td>Mark + Glenn</td></tr>
</table>

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<tr><th>Version</th><th>Date</th><th>Comments</th><th>Revised by</th></tr>
<tr><td></td><td></td><td>
<table>
<tr><td>9.2 = added visa clearing mtids</td><td>05pp,06pp,07pp (fin)<br>25pp,26pp,27pp (fin rev)</td></tr>
<tr><td>9.3.1 - request fields:</td><td>- Resp_Code - notes for modes 4 added</td></tr>
<tr><td>9.3.2 - response fields</td><td>- CurBalance + AvlBalance conditional based on EHI mode, proccode and if approved<br>- AvlBalance_GPS_STIP + CurBalance_GPS_STIP - now made conditional with explanation.</td></tr>
<tr><td>9.4 - added the visa MTIDs</td><td>05pp,06pp,07pp (txntype A and P)<br>25pp,26pp,27pp (txntype='E' financial reversal)</td></tr>
<tr><td>9.4.2 - Response message fields:</td><td>AvlBalance_GPS_STIP + CurBalance_GPS_STIP - now made conditional with explanation.</td></tr>
<tr><td>A.1.1 added 70, 71, 72 proccodes</td><td></td></tr>
<tr><td>A.3 clarified Txn_Stat_Cde 'C' (Cleared)</td><td></td></tr>
<tr><td>A.7.7 – new section added to aid understanding of amount signs</td><td></td></tr>
<tr><td>A.13 MCC ranges:</td><td>- removed all non-descript ranges of 2+ MCCs<br>- removed entries which were duplicated (kept correct description)<br>- removed “DISALLOWED” if not appropriate (Various entries)<br>added 3733 "Boca Raton Resort"<br>added 3736 "Colorado Belle Edgewater Resort"<br>added 3739 "Woodside hotels and resorts"</td></tr>
<tr><td>A.19 Country codes</td><td>- Added Kosovo, to see UNMI Kosovo</td></tr>
<tr><td>A.22 Bank Account Format</td><td>- Added table borders</td></tr>
<tr><td>A.26 added why values 71 to 82 inclusive</td><td></td></tr>
<tr><td>A.27 paymenttoken_type</td><td>added BW - Browser Accessible Wallet</td></tr>
<tr><td>A.28 Paymenttoken_creatorStatus</td><td>added I - Inactive</td></tr>
<tr><td>A.29 PaymentToken_wallet</td><td>- Added STOCARD</td></tr>
</table>
</td><td></td></tr>
<tr><td>3.0.18</td><td>04/01/2019</td><td>Field POS_Termnl_DE41 is only mandatory for electronically-card-read transactions, so changed:<br>Section 9.1.1 – POS_Termnl_DE41 description to add note (see GetTransaction Message Fields)<br>Section 9.3.1 – Authorisation request fields: POS_Termnl_DE41</td><td>Mark</td></tr>
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| Version | Date | Comments | Revised by |
|---|---|---|---|
| | | changed from “Mandatory” to “Optional”<br>Section 9.4.1 - Financial request fields: POS_Termnl_DE41 changed from “Mandatory” to “Optional”<br>Repeated the headers in country code table in A.19 | |
| 3.0.17 | 17/10/2018 | Existing section A.10 (currency codes) enhanced to provide the names of all the currency codes.<br>Added a full table of country codes, providing the following details:<br>- Country name / - Country 3-alpha code<br>- Country 2-alpha code / - Country 3-numeric code | Ajeesh |
| 3.0.16 | 16/10/2018 | Addition of Garmin Pay and Mont Blanc pay<br>Noted in section 1.2 that real time data feed permits sending real-time alerts to cardholders<br>Numerous linguistic changes | Matt Clare |
| 3.0.15 | 17/09/2018 | Corrected MTID data type from N(1,4) to ANP(1,4) in section 9.1.1 (see GetTransaction Message Fields) | Harry C |
| 3.0.14 | 14/08/2018 | Corrected the following WSDL types in section A.7.1 from “s:int” (-2^31 to 2^31-1) to “s:long” (-2^63 to 2^63-1), so that data types are appropriate as per https://www.w3.org/2001/XMLSchema.xsd for the data content as described in chapter 9 (see GetTransaction Message Fields).<br>These GetTransaction WSDL elements were corrected:<br>“SubBin” from “s:int” to “s:long”<br>“Balance_Sequence” from “s:int” to “s:long”<br>“Balance_Sequence_Exthost” from “s:int” to “s:long”<br>These GetTransactionResponse WSDL elements were corrected: “New_Balance_Sequence_Exthost” from “s:int” to “s:long”<br>Added note at top section A.7 (WSDL) that the datatype definitions are found as per https://www.w3.org/2001/XMLSchema.xsd | Mark |
| 3.0.13 | 07/08/2018 | Corrected the Datatype (min,max) for:<br>- Balance_Sequence (in section 9.1.1) (see GetTransaction Message Fields)<br>- Balance_Sequence_Exthost (in section 9.1.1)<br>- New_Balance_Sequence_Exthost (in section 9.1.2)<br>Included that for all, the maximum value is 2^63-1 which has 19 digits. | Mark |
| 3.0.12 | 31/07/2018 | Section A.7.1 GetTransaction Message Fields, corrected request message:<br>- Balance_Sequence changed minOccurs from “1” to “0”<br>- Balance_Sequence_Exthost changed minOccurs from “1” to “0”<br>Because these fields only exist properly for transactions sent at the time they occur (not for transactions sent after the event on the queue mechanism.)<br>Expanded description in section 9.1.1 for fields “Balance_Sequence” and “Balance_Sequence_Exthost”. (see GetTransaction Message Fields) | Mark |
| 3.0.11 | 20/06/2018 | Removed spurious ‘7’ at start of section 9.1.2 (see GetTransaction Message Fields)<br>Reinserted 3.0.8 comment above<br>Added 3.0.9 + 3.0.10 comment above<br>Appendix A.26 (‘why’ codes) - added value 56 to 70, and enhanced | Mark |

<table>
<tr><th>Version</th><th>Date</th><th>Comments</th><th>Revised by</th></tr>
<tr><td></td><td></td><td>description of codes 51 (token status change), and 52 (token replacement)<br>Ensured this table is not too wide for the page.<br>Fixed some spacing in the changelog at top and bottom.<br>Improved spacing and commas (grammar) in section 5 (Transaction Types.)</td><td></td></tr>
<tr><td>3.0.10</td><td>07/06/2018</td><td>Minor corrections for editing errors in previous version.</td><td>Chip</td></tr>
<tr><td>3.0.1</td><td>15/11/2017</td><td>Added new fields in WSDL section Appendix A.7<br>Added new fields to examples in section A.7.1 and A.7.2.3.<br>Removed fields Txn_Code, Account_Type_From, Account_Type_To (from WSDL GetTransaction in Appendix A.7) as these are not sent.<br>Added these fields to the GetTransaction request example in section A.7.2.1 and A.7.2.3
<table>
<tr><td>source_bank_ctry</td><td>source_bank_account_format</td></tr>
<tr><td>source_bank_ account</td><td>dest_bank_ctry</td></tr>
<tr><td>dest_bank_ account_format</td><td></td></tr>
<tr><td>dest_bank_account</td><td></td></tr>
<tr><td>GPS_POS_ Capability</td><td></td></tr>
<tr><td>GPS_POS_Data</td><td></td></tr>
</table>
Aligned fields in the examples in sections A.7.2.1 and A.7.2.3 so fields are in WSDL order (and same order as we send)<br>Added MTID=0120 Txn_Type=J (Auth Advice) to section 9.2 – Transaction Type Decoding, and top of section 9.3 – “Transaction Type – Authorisation” to include it in the Authorisation message types. (see GetTransaction Message Fields)<br>Renamed Appendix A.18 from “POS_Data_DE22 in Financial Messages” to “POS_Data_DE22 in Mastercard Financial Messages” to stress that this does not apply for Visa messages at all.<br>Added notes to existing fields as follows:
<table>
<tr><td>Merch_Name_ DE43</td><td>now depreciated in favour of new Merch_... fields (for card txns)</td></tr>
<tr><td>POS_Data_DE61</td><td>now depreciated in favour of new GPS_POS_ Capability and GPS_POS_Data</td></tr>
<tr><td>POS_Data_DE22</td><td>now depreciated in favour of new GPS_POS_ Capability and GPS_POS_Data</td></tr>
<tr><td>Txn_Desc</td><td>see new Merch_... fields that may be more useful</td></tr>
</table></td><td></td></tr>
<tr><td>3.0.0</td><td>15/11/2017</td><td>Added new normalized POS and Merchant data fields as follows:<br>Added new fields to GetTransaction messages:
<table>
<tr><td><Merch_Name></td><td><Merch_Street></td><td><Merch_City></td></tr>
<tr><td><Merch_Region></td><td><Merch_Postcode></td><td><Merch_Country></td></tr>
<tr><td><Merch_Tel></td><td><Merch_URL></td><td><Merch_Name_Other></td></tr>
<tr><td><Merch_Net_id></td><td><Merch_Tax_id></td><td><Merch_Contact></td></tr>
</table>
(Updated sections 9.1.1, 9.3.1, 9.4.1, A.7.1 as a result)</td><td>Mark</td></tr>
</table>

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|---|---|---|---|
| | | GPS_POS_Capability (Appendix A.23) Added definitions of new positions 3-49 inclusive.<br>GPS_POS_Data (Appendiox A.24) Added definitions of new positions 1-22 inclusive. | |
| 2.0.6 | 08/11/2017 | Added Txn_Type=J (Auth Advice) to:<br>- section 7.3 Transaction matching<br>- section 7.4 Transaction processing<br>- Appendix A.2 Txn_Type values<br>Improved matching rules in section 7.3 for the following (MTID, Txn_ Type) combinations:<br>(0100, 'A'): added THIS.token=OTHER.token<br>(0120, 'A'): added traceid_lifecycle and Auth_Code_DE38<br>(0120, 'D'): added traceid_lifecycle and Auth_Code_DE38<br>(0120, 'J'): added new rule<br>(0400, all): added traceid_lifecycle, but noted it and auth_code_DE38 may be missing for timeout reversals<br>(0420, all): added traceid_lifecycle, but noted it and auth_code_DE38 may be missing for timeout reversals<br>(1240, 'P'): Changed to 2 rules, first with trans_link, then without trans_ link.<br>Added notes to section 7.4 that for 0400, 0420 reversals, first check the reversal is not a duplicate before doing any unblocking if needed.<br>Added rules in 7.4 for Txn_Type='J' MTID=0120 | Mark |
| 2.0.5 | 18/10/2017 | Section 7.3 Matching criteria corrected the following:<br>- Removed Acquirer_Reference_Data_031 from all MTID=1240 TxnType='P' matching to Auths (as no DE31 in auth.)<br>- Added traceid_lifecycle as a matching criteria (if it exists in financial) for MTID=1240 TxnType='P' matching to auths<br>- Changed the MTID=05, 06, 07 (i.e. Visa presentments) matching to Auths to say do as MTID=1240 TxnType='P'<br>Updated company info on front page | Mark |
| 2.0.4 | 29/08/2017 | Edited section 9.1 to specify MC/VISA fields. (see GetTransaction Message Fields)<br>Edited section 9.4.1 to make the Resp_Code_DE39, TXN_Time_DE07 optional for financial messages.<br>Included details for VISA in sections A.17, A.18, A.20 | Sudheesh |
| 2.0.4 | 07/09/2017 | Added section 7.5 for incremental authorisations | Sudheesh |
| 2.0.3 | 29/06/2017 | Changed Txn_Time_DE07 to TXN_Time_DE07 in WSDL | Sudheesh |
| 2.0.2 | 26/06/2017 | Changed field ICC_System_Related_Data_DE55 internal format:<br>From:<br>(if Mastercard)<br>- display binary (ASCII '0' and '1' chars – 8 chars for 1 byte) where the encoded bytes represent:<br>- first 3 bytes: length of following data in binary bytes (1 binary byte is 8 ASCII '0'/'1' chars in the string), encoded as 3 ASCII digits '0' to '9'.<br>- following bytes: EMV TLV data as Tag, Length, Value bytes encoded as Basic Encoding Rules (BER) as described in EMV Book 4.3 Annex B "Rules for BER-TLV data objects"<br>- note that alls tags sent from the acquirer will be present (even if not defined by EMV)<br>(if Visa) | Mark |

<table>
<tr><th>Version</th><th>Date</th><th>Comments</th><th>Revised by</th></tr>
<tr><td></td><td></td><td>- Hexadecimal digits (‘0’-‘9’ and ‘A’-‘F’) where 2 hexadecimal digits represent 1 byte, where the encoded bytes represent:<br>- First byte is full length of data<br>- Next byte is value 1 (hex ‘01’)<br>- Next 2 bytes (4 hex digits) is the length of the following TLV data in binary bytes (eg ‘000F’ if 15 bytes (30 hex digits) follows<br>- Following bytes: EMV TLV data as Tag, Length, Value bytes encoded as Basic Encoding Rules (BER) as described in EMV Book 4.3 Annex B “Rules for BER-TLV data objects”<br>- note that alls tags sent from the acquirer will be present (even if not defined by EMV)<br>From examples (eg if sending tags 9F35 and 82)<br>Mastercard: 0011000000110000001110001001111100110101000000001<br>00100010100000100000001000011001100000000<br>Visa: 0B0100089F35012282021980<br>To:<br>- Hexadecimal digits (0-9 and A-F) where 2 hexadecimal digits represent 1 byte, where the encoded bytes mean:<br>- EMV TLV data as Tag, Length, Value bytes encoded as Basic Encoding Rules (BER) as described in EMV Book 4.3 Annex B “Rules for BER-TLV data objects”<br>- Note that alls tags sent from the acquirer will be present (even if not defined by EMV)<br>To example (eg if sending tags 9F35 and 82)<br>(for Visa and Mastercard): 9F35012282021980<br>Shrank text in section 9.1.2 (response fields) for field “New_Balance_Sequence_Exthost” to ensure it can all be read. (see GetTransaction Message Fields)<br>Added new note in section 7.3 (Transaction Matching) and section 7.4 (Transaction Processing) so that customer can match a 0100 incremental authorisation to a previous 0100 authorisation.</td><td></td></tr>
<tr><td>2.0.1</td><td>20/06/2017</td><td>1.Corrected casing for:<br>Acquirer_ID_DE32 -> Acquirer_id_DE32<br>Txn_ID -> TXn_ID<br>Txn_Time_DE07<br>Traceid_Lifecycle -> traceid_lifecycle<br>2.New response field CVV2_Result (sections 9.1.2, 9.3.2, 9.4.2, 9.5.2)</td><td>Sudheesh</td></tr>
<tr><td>2.0.0</td><td>02/06/2017</td><td>DEV_MDES-19 changes:<br>Added the following new optional PaymentToken_... fields for MDES:<table><tr><td>- PaymentToken_id</td><td>- PaymentToken_creator</td></tr><tr><td>- PaymentToken_expdate</td><td>- PaymentToken_type</td></tr><tr><td>- PaymentToken_status</td><td>- PaymentToken_creatorStatus</td></tr><tr><td>- PaymentToken_wallet</td><td>- PaymentToken_deviceType</td></tr><tr><td>- PaymentToken_lang</td><td>- PaymentToken_deviceTelNum</td></tr><tr><td>- PaymentToken_deviceIp</td><td>- PaymentToken_activationCode</td></tr><tr><td>- PaymentToken_ activationExpiry</td><td>- PaymentToken_ activationMethod</td></tr><tr><td>- PaymentToken_ activationMethodData</td><td></td></tr></table>So therefore updated the following places:</td><td>Mark</td></tr>
</table>

<table>
<tr><th>Version</th><th>Date</th><th>Comments</th><th>Revised by</th></tr>
<tr><td></td><td></td><td>- Section 9.1.1 field definitions (see GetTransaction Message Fields)<br>- Section 9.3.1 Authorisation request fields<br>- Section 9.4.1 Financial request fields<br>- Section 9.5.1 Non-Card-Network-Transaction request fields<br>- Appendix A.7.1 WSDL for GetTransaction<br>Added extra SOURCE codes to section A.25 (Response_Source and Message_Source values) as MDES PaymentToken_creator field uses some of the new values.<br>Added new formats “Datetime(Y_to_D)” and “Datetime(Y_to_ss)” in section 8.1 Data Types<br>Added the following new Appendices, for new values related to PaymentToken_... fields:<br>Appendix A.27: PaymentToken_type<br>Appendix A.28: PaymentToken_creatorStatus<br>Appendix A.29: PaymentToken_wallet<br>Appendix A.30: PaymentToken_deviceType<br>Appendix A.31: PaymentToken_activationMethod and PaymentToken_activationMethodData</td><td></td></tr>
<tr><td>1.5.9</td><td>28/04/2017</td><td>Changed WSDL for FirstTxn_ID and<br>LastTxn_ID to Long from Int, A.8 Cut-Off Message WSDL and Examples.</td><td>Arjun C V</td></tr>
<tr><td>1.5.8</td><td>27/03/2017</td><td>Made the following changes, in order to merge this version of the spec (hosted on confluence) with the changes I made to the incorrect version of the spec (hosted on JIRA DEV_EHI15-19)<br>Updated format of CutOffDate in CutOff message specification to YYYY/MM/DD hh:mm:ss – CS_PAGOBOX-16, 10.1 Request Message.<br>Replaced GetTransaction message WSDL with correct version – DEV_EHI15-26, A.7.1 GetTransaction WSDL. Changes from the original include:
<table>
<tr><td>- <s:all>, replaced by <s:sequence></td><td></td></tr>
<tr><td>- GPS_POS_Capability</td><td>- GPS_POS_Data</td></tr>
<tr><td>- Acquirer_Reference_Data_031</td><td>- Response_Source</td></tr>
<tr><td>- Response_Source_Why</td><td>- Message_Source</td></tr>
<tr><td>- Message_Why</td><td>- traceid_lifecycle</td></tr>
<tr><td>- Balance_Sequence</td><td>- Balance_Sequence_Exthost</td></tr>
<tr><td>- Txn_Code</td><td>- Account_Type_From</td></tr>
<tr><td>- Account_Type_To (these are in request)</td><td>- Bill_Amt_Approved</td></tr>
<tr><td>- Update_Balance" type="s:int</td><td></td></tr>
</table>
New_Balance_Sequence_Exthost (these are in response)<br>Added note on processing code values - CS_OX2B-30, A.1 ProcCode (Processing Code) values.<br>Removed section on Keepalive Timeout, as this functionality is not currently scheduled for release - DEV_MT_EHI-81, 3.2 Protocol Layer connection.<br>Added to description of Txn_GPS_Date, clarifying when this is set - CS_HOLVI-95, 9.1.1 Request Field Formats</td><td>Jake</td></tr>
<tr><td>1.5.7</td><td>27/03/2017</td><td>Added 3 new fields as different parts of existing Proc_Code field:</td><td>Mark</td></tr>
</table>

| Version | Date | Comments | Revised by |
|---|---|---|---|
| | | <table><tr><td>Account_Type_From</td><td>Account_Type_To</td></tr><tr><td>Txn_Code</td><td></td></tr></table><br>For DEV_MT_CORE-1429.<br>Changed as a result:<br><table><tr><td>Fields in sections 9.x</td><td>WSDL for GetTransaction</td></tr></table><br>Examples<br>Added these fields (introduced in 1.5.3 above) into sections 9.3, 9.4, 9.5 (where it was missing):<br><table><tr><td>Balance_Sequence (request field)</td><td>- Balance_Sequence_Exthost (request field)</td></tr></table><br>Added these to Authorisation example in section A.7.2.<br>Corrected typo ‘Responsestaus’ in section 9.5.2 (Non-Card Network Transaction response message.) | |
| 1.5.6 | 17/02/2017 | Added missing response fields:<br>- Bill_Amt_Approved<br>- Update_Balance<br>- New_Balance_Sequence_Exthost<br>to tables in sections:<br>9.3 (Transaction Type – Authorisation)<br>9.4 (Transaction Type – Financial)<br>9.5 (Transaction Type – Non-Card Network)<br>And added these to the authorisation example in section A.7 | Mark |
| 1.5.5 | 14/02/2017 | Section A.8 – Cut-Off Message WSDL<br>Corrected Cut-Off Response Message element name from ‘th’ to ‘Cut_OffResult’ for Response element. (Example is correct.) | Mark |
| 1.5.4 | 02/02/2017 | Added new EHI mode 4 for DEV_EHI15-2 (balance stand-in.)<br>Added new response fields:<br>- Balance_Update<br>- New_Balance_Sequence_Exthost<br>For DEV_EHI15-2 balance stand-in.<br>Clarified in MTID in section 9.1.1 that value ‘1240’ is used for both Financial Notification and Chargeback Notification (user must check TransactionType to tell the difference.)<br>Section 9.1.1 value MTID ‘1442’ removed as we currently do not use this for chargebacks.<br>(We may add 1442 in the future.) | Mark |
| 1.5.3 | 21/10/2016 | Added fields:<br><table><tr><td>- GPS_POS_Capability (in card related requests)</td><td>- GPS_POS_Data (in card related requests)</td></tr><tr><td>- Bill_Amt_Approved (in responses)</td><td></td></tr></table><br>Added new Appendices:<br><table><tr><td>- A.23 GPS_POS_Capability</td><td>- A.24 GPS_POS_Data</td></tr></table><br>Initially done to support partial approvals.<br>Added these new fields to example Auth request message and Financial request message. | Mark,<br>Jake |

<table>
<tr><th>Version</th><th>Date</th><th>Comments</th><th>Revised by</th></tr>
<tr><td></td><td></td><td>Added field traceid_lifecycle for GetTransaction request messages (DEV_EHI15-5)<br>Added in changes from EHI spec version 1.4.6 (adding MTID=”0120”, Txn_Type=”D” (Auth reversal due to AFD 0120 advice):-<br>Added the Automated Fuel Dispenser (AFD) Auth Reversal (due to AFD auth advice) which is:<table><tr><td>- MTID=”0120” (auth advice)</td><td>- Txn_Type=”D” (auth reversal)</td></tr></table>into the MTID + Transaction type tables in sections 7.3 (Transaction Matching), 7.4 (Transaction Processing) and 9.2 (Transaction Type Decoding.<br>Added fields:<table><tr><td>- Acquirer_Reference_Data_031</td><td>Added Acquirer_Reference_Data_031 into the Financial matching logic.</td></tr></table>Corrected POS_Data_DE22 for authorisation messages (appendix A.17) - position 3 was slightly inaccurate regarding online vs offline PIN support (DEV_MT_EHI-88)<br>Added these fields for DEV_EHI15-2 for balance updating:<table><tr><td>- Balance_Sequence (request field)</td><td>- Balance_Sequence_Exthost (request field)</td></tr><tr><td>- Update_Balance (response field)</td><td>- New_Balance_Sequence_Exthost (response field)</td></tr></table>Added information on field usage.<br>Added these fields for DEV_EHI15-17<table><tr><td>- Response_Source</td><td>- Response_Source_Why</td></tr><tr><td>- Message_Source</td><td>- Message_Why</td></tr></table>The values are as described in DEV_TRXSCR-3 and fields map to columns of the same name on AUTHORISATION and 0120_STORE database tables.<br>Added Appendix A.25 to describe Response_Source and Message_Source values.<br>Added Appendix A.26 to describe Response_Source_Why and Message_Why values.<br>Added new Transaction type decoding combination of:<br>MTID=0120<br>Txn_Type=’A’<br>to all the message decoding tables.<br>Added missing value “82” (PAN data on file) to POS_Data_DE22 in Authorisation message section (appendix A.17)<br>Added paragraph on keepalive timeout setting, configurable for every product, in 3.2 Protocol Layer connection.</td><td></td></tr>
<tr><td>1.5.12</td><td>30/05/2017</td><td>Corrected definition of POS_Time_DE12 field in section 9.1.1 Request Field Formats</td><td>Mark</td></tr>
<tr><td>1.5.11</td><td>16/05/2017</td><td>Removed spurious first sentence of section 7.1.1</td><td>Mark</td></tr>
<tr><td>1.5.10</td><td>02/05/2017</td><td>Corrected capitalisation of Agency Banking fields in GetTransaction to lower case to match WSDL and code:<table><tr><td>source_bank_ctry</td><td>source_bank_account_format</td></tr><tr><td>source_bank_account</td><td>dest_bank_account_format</td></tr></table></td><td>Mark</td></tr>
</table>

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|---|---|---|---|
| | | dest_bank_account \| dest_bank_ctry<br>Fixed typo in section A.22 'r' missing from 'Source_Bank_Account_ Format'<br>Added 2 new responsestatus code values in section A.4:<br>30 – Format Error (to be used if customer thinks our request is invalid) \| 96 – System Malfunction (to be used if customer system has fatal error)<br>Commented on these existing codes:<br>17 – customer cancellation \| 68 – Response received too late<br>82 – Timeout at IEM \| 91 – Issuer unavailable<br>To clarify usage in each case<br>Note: DEV_EHI16-7 will handle this on Thredd side.<br>For DEV_MT_CORE-1804 - Section 9.1.1 Request Field Formats new future trans_link format for offline cleared transactions (implementation date TBC). Also clarified existing formats. | |
| 1.4.5 | 18/07/2016 | Moved this full change log down to this appendix.<br>GetTransaction Request field 'POS_Data_DE61' no longer has leading subfield 0 (3 digit length) – presence of this leading subfield was fixed in DEV_MT_EHI-26.)<br>Fixed example Authorisation messages in section A.7 to remove leading '026' in field POS_Data_DE61 | Mark |
| 1.4.4 | 12/04/2016 | Corrected Fx_Pad in Authorisation and Financial to state that this amount is in the Billing Currency (Bill_Ccy.) Previously incorrectly stated as in the Transaction Currency (Txn_CCy.)<br>Clarified that the Bill_Amt in Authorisation message does not include Fx_Pad amount field or MCC_Pad amount field.<br>Inserted new section 8 – Data Types, which describes the common data types used for both GetTransaction and Cut_Off WSDL messages. Therefore, most of original section 8 (message formats) is now section 9.<br>Created new table under new section 9.1 (Field Definitions for GetTransaction), which describes in a single place all of the field formats.<br>This has been done so it is clear for the reader the overall format of each field, instead of describing it per message (Authorisation/Financial/Non-Card-Network.) | Mark |
| | | Altered the Authorisation, Financial and Non-Card-Network tables to remove the field definitions, as these are now described in a single place in new section 9.1.<br>Now you only need to record for Authorisation/Financial/Non-Card-Network which fields are mandatory / optional / omitted.<br>Added section A.21 (Calculating the Total Transaction impact to the balance), and referenced it in section 6, so external hosts authorising the transaction are clear on the total transaction impact.<br>(Note that partial auth approving by External Host (as per calculation in DEV_MT_CORE-587) would require the original fee rate percentages to be sent to External Host. Therefore, External hosts should not partial approve unless they are clear on the total balance impact with the partial approved amount.) | |
| | | Noted in section A.4 (Response Codes) that Refer-to-issuer codes (i.e. "01") is not permitted from 16 April 2016 for Visa Transactions.<br>Corrected POS_Data_DE61 field as Thredd send it including the 3 | |

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| | | Banknet length digits at the front (although length may no longer match this due to trailing space removal on EHI transmission.)<br>Renamed section 7 from “Request Response” to “Transaction Processing Requirements”, and included new sections on:<br>- How receiver should duplicate check<br>- How receiver should match transactions<br>Added 6 new fields to bottom of all GetTransaction Request messages for Agency Banking (Source_Bank_Ctry, Source_Bank_Account_Format, Source_Bank_Account, Dest_Bank_Ctry, Dest_Bank_Account_Format, Dest_Bank_Account.)<br>Added new section A.22 for the values for Source_Bank_Account_Format and Dest_Bank_Account_Format.<br>Added new fields for Agency Banking to the GetTransaction WSDL message (only present for Non-Card-Network transactions, of type Payment with LoadSRC=64 (bank transfer)). | |
| | | Adjusted the payment transaction examples for new Agency Banking fields.<br>Adjusted Appendix A.16 (Authorisation field Merch_Name_DE43) to state that if card acceptor is in Canada, then the 2-character Canadian province codes are present (instead of country code.)<br>Corrected Cut_Off response message (section 10.2 Response Message) as the response field was incorrectly named.<br>Removed initial text from section 7.1 Response requirements as other parts of the specification state the same thing clearer.<br>Corrected “Acknowledgment” to “Acknowledgement” as that is what the field (defined in section 9.1.2 Response Field Formats).<br>Renumbered section 8.1.1 to 8.1, and 8.1.2 to 8.2 (as there was no original section 8.1)<br>Removed extraneous text from A.5 POS_Data_DE61 Values<br>Added ‘Payment’ to section 5 (Transaction Types.)<br>Added ‘Omitted’ as a Data Usage Type in section 8.2. | |
| 1.4.3 | 09/03/2016 | Adding message repeat counter field “SendingAttemptCount” for project DEV_EHI14-7.<br>This indicate will tell the receiver how many times we have repeated a message. (0=not repeated, 1=first repeat, 2=second repeat …)<br>This field is applied to all non-CutOff messages.<br>Clarified that currently, Thredd defines “Thredd Calculated Non-Domestic Fees” as Fees that apply when Txn_CCy ≠ Bill_Ccy.<br>Clarified that currently, Thredd defines “Thredd Calculated Domestic Fees” as Fees that apply when Txn_CCy = Bill_Ccy.<br>Updated all applicable fee descriptions as a result.<br>Clarified in section 7 (Request and response), that Thredd will continue to re-send an EHI message until either <Acknowledgement> is set to “1” in response or Thredd reach maximum permitted re-tries. | Mark |
| | | Added Txn_Type=’N’ (Second Presentment) into the Txn_Type values for MTID=1240. This is processed in the Financial Request message format.<br>Renamed section 10.2 (TxnType), to use actual field name of Txn_Type (instead of TxnType.)<br>Corrected setion 10.2 (Txn_Type) to specify that Txn_Type=’A’ (Authorisation) transactions can be either “Authorisation” or “Financial” formatted messages, as determined by the MTID field.<br>Added Txn_Type new value of ‘G’ (Payment Transaction) for DEV_EHI14-4 project. Added to section 8.2 (Txn_Type / MTID) Txn_Type ‘G’.<br>In the section 8 the “Balance Adjustment / Expiry” transaction types | |

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|---|---|---|---|
| | | and “Load Unload” transaction types have been merged into a single section “Non-Card-Network Transactions”. This is clearer and simpler.<br><br>Renamed appendix “TxnStatCde” to “Txn_Stat_Cde” to precisely match the name of the field.<br>Renamed appendix “AVS Result values” to “AVS_Result values” to precisely match the name of the field.<br>Renamed appendix “POS Data DE61 …” to “POS_Data_DE61 …” to precisely match the name of the field.<br>Renamed appendix “POS Data DE 22 …” to “POS_Data_DE22 …” to precisely match the name of the field.<br>Added information from project DEV_MT_EHI-44. Added to section 7 and section 8 (Authorisation subsection) to indicate how customer detects a 0100 auth request being sent as an advice (due to original auth request was not correctly responded to in time.) | |
| 1.4.2 | 07/03/2016 | Inserted new section at 8.2 “Transaction Type Table” to indicate which Transaction type section is applicable for every message.<br>Added Transaction type ‘C’ (Chargeback) to section 8 – Financial request message section, as chargeback comes under here.<br>Clarified what combinations of MTID + Txn_Type mean in new section 8.2, and start of other sections in section 8.<br>Added expanded descriptions of all the fee fields in section 8.<br>Clarified that Bill_Amt does not include Thredd Calculated fees (Fee_Fixed and Fee_Rate).<br>Changed examples in section 10.7 to have non-zero fee amounts.<br>Clarified that Settle_Amt is what is received from the Network. | Mark |
| 1.4.1 | 03/03/2016 | Corrected field names in section 8 and WSDL section to ensure case correct to match actual fields sent in live.<br>Corrected:<br>- Txn_Ccy -> Txn_CCy<br>- TXN_Time_DE07 -> TXN_Time_DE07<br>Updated description for Additional_Data_DE48 to clarify customers should ignore this unless mutually agreed with Thredd (in which case Thredd would instruct you how to extract the required data from this field.)<br>Added Authorised_by_Thredd field to Financial Request Message to align with existing functionality.<br>Changed Authorised_by_Thredd field in Authorisation request message from Mandatory to Optional, as it might not be present (to align with existing functionality.)<br>Added AVS_Result field to Financial Request message (to align with existing functionality.)<br>Renamed new field PAN_sequence_number to PAN_Sequence_Number to align with standard field formatting for names and cases (first letter in each word in field is normally upper case.)<br>Indented section A.8 Cut-Off Message WSDL to make easier to read.<br>Corrected the Response field names to align with WSDL response in section 8.<br>Renamed section 8 from “Data Dictionary” to “EHI GetTransaction Message Fields” to better reflect the fact that it corresponds to the GetTransaction in WSDL.<br>In the WSDL Appendix, I’ve added an example request and response for each different message type. | Mark |
| 1.4.0.c | 26/02/2016 | Fixed typo in changelog for v.1.3.4 release (year 2014 -> 2015)<br>Added section 10.20 for financial type message Merch_Name_DE43 | Mark |

<table>
<tr><th>Version</th><th>Date</th><th>Comments</th><th>Revised by</th></tr>
<tr><td></td><td></td><td>field.<br>Added response code 58 – Transaction not permitted to Terminal. (E.g. this might be used by client if card is not allowed in ATMs, but cardholder attempted to use at ATM.)<br>Added response code 43 – Stolen Card (Pickup).<br>Clarified in the Status Code section that not all codes are appropriate for card status values.<br>Corrected response code “85” to action Approve instead of Decline.<br>Section 6.3 – corrected wording of “Mode 3”, to clarify that Thredd will ignore any authorisation response messages received from customer in this mode.<br>Removed Hyperlinks in the section 8 name fields – as links are all clearly mentioned in the description field. So now max of 1 link per field.</td><td></td></tr>
<tr><td>1.4.0.b</td><td>25/02/2016</td><td>Changed PIN encryption from using double length DES keys to Triple length DES keys.<br>Triple DES with a triple length key is NIST approved up to 2030, and HSMs are known to support this.<br>(See http://nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.800-57pt1r4.pdf section 4.2.2.2).<br>It provides a key space of 2^168 (about 3.7*10^50) possibilities.<br>Currently Thredddoes not supporting AES PIN encryption as HSM support for this is unknown. But Pin fields support a possible future seamless migration.<br>Inserted new section 8.1.2 Usage, to clarify that if a field is optional, it can be present with an empty value, even if Data Type does not permit an empty value.<br>Clarified that POS_Data_DE61 might have anywhere between first 9 and all 14 subfields.</td><td>Mark</td></tr>
<tr><td>1.4.0.a</td><td>25/02/2016</td><td>Added:<table><tr><td>- CVV2</td><td>- Expiry_Date</td></tr><tr><td>- PAN_sequence_number</td><td>- PIN</td></tr><tr><td>- PIN_Key_Index</td><td>- PIN_Format</td></tr><tr><td>- PIN_Enc_Algorithm</td><td></td></tr></table>All these fields will only be present if both:<table><tr><td></td><td>- Customer is configured to receive them</td></tr><tr><td></td><td>- And relevant data is received in the transaction</td></tr></table>Corrected Appendix 10.1 Processing code to correctly describe the 6 digit field (previously only the first two digits – the Transaction Code, were described.)<br>Fixed Hyperlinks and Cross References.<br>Cross reference example:<br>A.1 ProcCode (Processing Code) values<br>Hyperlink example:<br>10.1 ProcCode (Processing Code) values<br>Re-wrote Appendix 10.5 (DE 61 POS Data) to add missing field values and clarify that not all fields may be present, and that subfields are concatenated.<br>Added the following Appendices:<br>Added PIN Block Formats appendix (10.14.1)<br>Added PIN Encryption example appendix (10.14.2)</td><td>Mark</td></tr>
</table>

| Version | Date | Comments | Revised by |
|---|---|---|---|
| | | Added Additional Amounts formatting appendix (10.15)<br>Added Merchant name/location formatting appendix (10.16)<br>Added POS Data DE22 Authorisation field formatting appendix (10.17)<br>Added POS Data DE22 Financial field formatting (10.18)<br>Added Country Codes (10.19)<br>Removed Response code “32 – Completed partially” as not applicable. (For partial approval, use code 10.)<br>Added Action column to Response code values appendix.<br>Made Merch_ID_DE42 Optional in Authorisation and Financial, as this is not guaranteed to arrive for ATM transactions.<br>New section 8.1 “Data Types” explains precisely what the formats mean in the rest of section 8 Data Dictionary.<br>Changed all the data-types in section 8 to better describe the field content, in line with the new Data-Types.<br>Corrected ActBal (actual balance amount in billing currency) from Numeric (5,2) to Amount (9,2)<br>Reformatted document to remove the super-tables that 99% of the entire document was sitting inside. This cause lots of formatting problems. Now the ‘Navigation’ of heading works (MS Word -> View -> Navigation Pane.)<br>Deleted all existing tables in the appendix, and re-created with the same data, as they had broken formatting. | |
| 1.3.6 | 02/11/2015 | Added Approval with Load functionality | Ajeesh |
| 1.3.6 | 17/12/2015 | Added details on fees Dom_Fee_Fixed, Non_Dom_Fee_Fixed, Fx_ Fee_Fixed, Other_Fee_Amt, Fx_Fee_Rate, Dom_Fee_Rate and Non_ Dom_Fee_Rate. Added DE124 | Ajeesh |
| 1.3.6 | 14/01/2016 | Added comment on Approval with Load | Sudheesh |
| 1.3.6 | 17/11/2015 | Removed ‘06’ from Response code values | Ajeesh |
| 1.3.5 | 16/10/2015 | Data type length amended from Char(2) to Char(3) for field LoadSRC. Added appendix for field LoadType | Ajeesh |
| 1.3.4 | 23/09/2015 | Added valid values for AVS result field | Ajeesh |
| 1.3.3 | 22/09/2015 | Modified the data type for field Authorised_by_Thredd | Ajeesh |
| 1.3 | 16/09/2015 | Stand In for Mode 2, Cut off message, Added new fields to EHI - Additional_Data_DE48, Authorised_by_Thredd, AVS_Result, CU_ Group, InstCode, MTID, ProductID, Record_Data_DE120, SubBIN, TLogIDOrg, VL_Group | Ajeesh |
| 1.2 | 25/08/2015 | Applied consistencies in naming fields | Ajeesh |
| 1.1 | 22/07/2015 | Corrected Txn_Type and Txn_Stat_Code sample data values. | Ajeesh |
| 1.1 | 13/08/2015 | Correction in Web Services Security at Transport Level and Message Level | Ajeesh |
| 1.1 | 23/06/2015 | Added DE022 | Ajeesh |
| 1.1 | 25/06/2015 | Added EHI WSDL, DE28 and DE54 | Ajeesh |
| 1.1 | 09/07/2015 | Removed HTTP GET and POST from WSDL, Amount data type to double | Ajeesh |

| Version | Date | Comments | Revised by |
|---|---|---|---|
| 1.1 | 24/06/2015 | Added mapping column in Transaction type table | Ajeesh |
| 1.0 | 28/04/2015 | Corrections | Ajeesh |
| 1.0 | 06/05/2015 | Corrections | Ajeesh |
| 1.0 | 26/04/2015 | Comments | Vlad Yanpolsky |

# Contact Us

Please contact us if you have queries relating to this document. Our contact details are provided below.

## Thredd UK Ltd.

Company registration number 09926803

**Support Email**: occ@thredd.com

**Telephone**: +44 (0) 203 740 9682

# Our Head Office

33 Kingsway

London

WC2B 6UF

UK

# Technical Publications

If you want to contact our technical publications team directly, for queries or feedback related to this guide, you can email us at: docs@thredd.com.