CardEase 3DS Server

NMI Technical Documentation

Document Version: 1.0.6
EMV 3DS Version: 2.2.0
Date: 2024-10-08

nmi

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Document Control

Version	Author	Date	Pages Changed	Summary of Changes
1.0.0	Jarrett Chamberlin	2021-07-15	All	Initial Draft for EMV 3DS 2.1.0
1.0.1	Jarrett Chamberlin	2021-08-24	19	Added a required field to the Authentication call - **transType** is mandatory for Visa 3DS2 so this has been made clear.
1.0.2	Jarrett Chamberlin	2021-11-15	18, 27, 61	Made it clear that **cardholderName** is a required field within the Authentication models. Added a few notes regarding the carcapitalisation differences between **cardHolderInfo** and the **cardholderName** contained within it. Test card section updated to make name and expiry date requirements more clear.
1.0.3	Jarrett Chamberlin	2021-03-21	15, 17, 20	Added details about how to perform 3DS2 authentications when using CardEase tokens (*cardGuid* / *cardHash*).
1.0.4	Jarrett Chamberlin	2022-10-26	44, 45	Update Events section to include information about 3DSMethodHasError event. Updated wording on InitAuthTimedOut event.

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				Updated callback example with the two above events.
1.0.5	Jarrett Chamberlin	2022-12-19	31	Added a new note to the cardholder name field regarding the transliteration of non-ASCII characters.
1.0.6	Art Hatch	2024-10-08	All	Updated to include v2.2.0 changes

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CardEase 3DS Server Integration

Introduction

The CardEase 3DS Server is a hosted 3-D Secure Server (3DS Server) that allows for E-Commerce sites to accept and process Visa Secure, Mastercard Identity Check, Amex SafeKey 2.0 and Discover ProtectBuy 2.0 authentications.

The result of these authentications can then be used during the payment authorisation process providing conformance with card scheme rules and greater liability shift for the merchant.

There's a lot more additional data able to be collected as a part of the EMV 3DS flow. Many of these fields are gathered during the Authenticate step.

Most of these fields are not considered mandatory, however you are encouraged to include as much data as possible.

By providing more data, the issuer has more to draw upon when deciding whether they need to initiate a challenge step up or to allow the authentication process to follow the frictionless flow.

The CardEase 3DS Server makes use of the HTTP protocol using various methods (GET / POST) in order to perform cardholder authentication via the EMV 3DS 2.2 protocol.

Detailed below are the specifics on how to integrate with the CardEase 3DS Server in order to perform Browser Based EMV 3DS 2.2 authentication.

This includes going over the ideas of a "3DS Web Adapter" and a "3DS Requestor" which are considered two key parts of your integration.

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Pre-requisites

This documentation assumes that you already have a merchant boarded onto our 3DS Server.

Once an EMV 3-D Secure enabled merchant has been boarded to CardEase, you'll need the following fields:

- Merchant ID
- Merchant Name
- Merchant Token

These can be supplied by NMI once the boarding has been completed.

CardEase 3DS Server v2.1.0 to v2.2.0 Notes

- For backward compatibility, by default CardEase 3DS Server uses the 3DS Server Reference number issued by EMVco during v2.1.0 certification in the 2.0.0 release. The default reference number is only valid for sending v2.1.0 requests and the card scheme Directory Servers will likely reject the v2.2.0 requests using this reference number.
- During card scheme compliance testing, it may be required to overwrite the 2.1.0 reference number with the new 2.2.0 reference number. It will also be required to overwrite the 2.1.0 reference number with the new 2.2.0 reference number on your production instance, although this should only be done after compliance testing is completed.

Test Platform Merchant Details

For details of our test platform merchant details, please see Appendix C.

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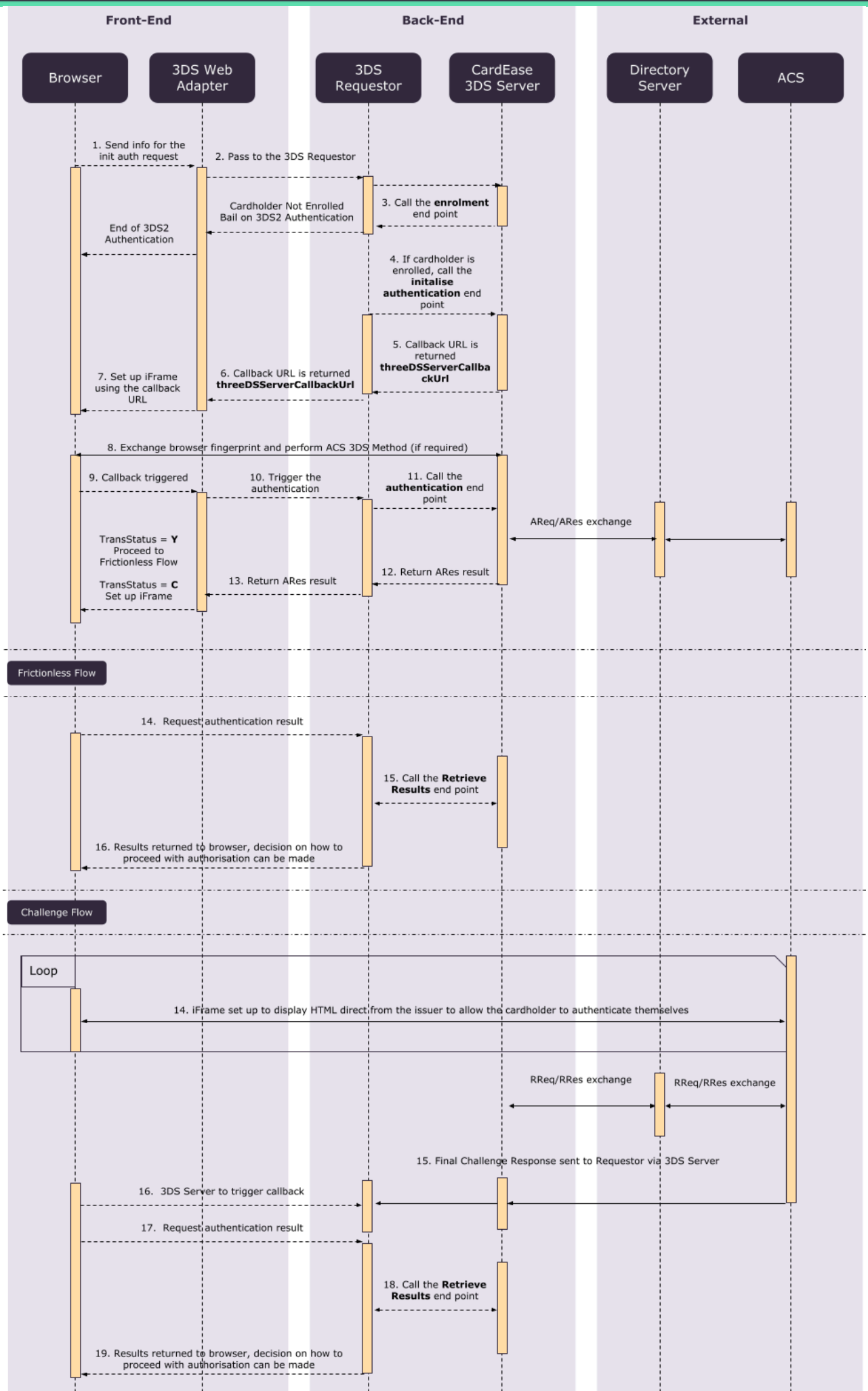
Front-End
Back-End
External
Browser
3DS Web Adapter
3DS Requestor
CardEase 3DS Server
Directory Server
ACS
1. Send info for the init auth request
2. Pass to the 3DS Requestor
3. Call the enrolment end point
Cardholder Not Enrolled Bail on 3DS2 Authentication
End of 3DS2 Authentication
4. If cardholder is enrolled, call the initalise authentication end point
5. Callback URL is returned threeDSServerCallbackUrl
6. Callback URL is returned threeDSServerCallbackUrl
7. Set up iFrame using the callback URL
8. Exchange browser fingerprint and perform ACS 3DS Method (if required)
9. Callback triggered
10. Trigger the authentication
11. Call the authentication end point
AReq/ARes exchange
TransStatus = Y Proceed to Frictionless Flow
TransStatus = C Set up iFrame
12. Return ARes result
13. Return ARes result
Frictionless Flow
14. Request authentication result
15. Call the Retrieve Results end point
16. Results returned to browser, decision on how to proceed with authorisation can be made
Challenge Flow
Loop
14. iFrame set up to display HTML direct from the issuer to allow the cardholder to authenticate themselves
RReq/RRes exchange
RReq/RRes exchange
15. Final Challenge Response sent to Requestor via 3DS Server
16. 3DS Server to trigger callback
17. Request authentication result
18. Call the Retrieve Results end point
19. Results returned to browser, decision on how to proceed with authorisation can be made

EMV v2.2.0 migration

This section outlines the technical migration guide from the EMV 3DS 2.1.0 specification to the v2.2.0 specification. From CardEase 3DS Server version 2.0.0 onwards, EMV v2.2.0 authentication requests are supported by specifying the `messageVersion` field in the API requests.

Change summary

- There are no breaking changes included in the EMV v2.2.0 specifications. Your existing 3DS Requestor implementation can continue sending authentication requests using EMV v2.1.0 messages after the upgrade is complete.

- A number of new fields were added and new values were added to current fields in the Authentication API to support the EMV v2.2.0 specifications. However, all newly added v2.2.0 fields are optional, having been introduced to enhance existing procedures.

- A new optional messageVersion field was added to the Authentication endpoint. This field is optional and is used to override the message version.

- If v2.2.0 fields are specified in a v2.1.0 request, **the 3DS Server** will ignore the fields when forming the AReq.

  For example, if a new field added in 2.2.0 was sent in the authentication API request, but the ACS card range only supports EMV v2.1.0 messages, then **the 3DS Server** will try to downgrade the request to v2.1.0 and ignore the field.

  However, if v2.2.0 only values such as *challengeInd=07* are provided in a v2.1.0 request, then it will result in error code **203** as per EMV specification requirements.

- The /api/v2/auth/enrol API was updated to include the ACS supported message versions (**supportedMessageVersions**) and ACS Information Indicator (**acsInfoInd**).

- The new merchant whitelisting feature was introduced in EMV v2.2.0. See below for details.

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Merchant whitelisting

Whitelisting has been introduced in the EMV v2.2.0 specifications, which is the process of an ACS enabling the cardholder to place the merchant on their trusted beneficiaries list. This allows the issuer to exempt transactions in the future from SCA requirements such as PSD2.

The new field **whiteListStatus** was added to support this feature. Refer to the Authentication API documentation for more information.

In order to check if the ACS supports whitelisting, the 3DS Requestor can call the Enrol API. If the ACS supports whitelisting, the **acsInfoInd** field will contain value **04**. Note that **the 3DS Server** does not do strict validation in accordance with **acsInfoInd**, i.e. even if **acsInfoInd** does not have the value **04** but **whiteListStatus** is provided by the 3DS Requestor, it does not throw an error.

Authentication Flow

Step-By-Step

1. The browser sends an “initialise authentication” request via the 3DS Web Adapter
    - The 3DS Web Adapter is a Javascript component/application written by the integrator that interacts with the 3DS Requestor via asynchronous calls from the browser.
2. The 3DS Web Adapter passes on the request to the 3DS Requestor.
    - The 3DS Requestor is a server-side component written by the integrator that receives requests from the 3DS Web Adapter and interacts with the 3DS Server.
3. The 3DS Requestor performs an enrolment check by sending a request to the Cardholder Enrolment Check end-point
    - If the card is not enrolled, the 3DS Requestor shall not continue with the 3DS2 authentication

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4. The 3DS Requestor formulates and sends an “initialise authentication” request to the 3DS Server to the Initialise Authentication end-point
    - **Important:** eventCallBackUrl will be used by the 3DS Server in order to send requests from 3DS Server to the 3DS Requestor.
    - **Important:** authUrl is the URL to be used to execute the auth call
    - **Important:** monUrl is the URL to be used in the event of a timeout with the ACS. This should be set up in it’s own iFrame.
5. The 3DS Server will respond with a `threeDSServerCallbackUrl` to the 3DS Requestor
6. The 3DS Requestor returns this Callback URL to the 3DS Web Adapter
7. The 3DS Web Adapter sets up an iFrame in the Browser with the returned callback URL as its source
8. The iFrame will automatically perform browser finger-printing and post the data to the necessary places
    - This will always be posted to the 3DS Server
    - If there is a “3DS Method URL” assigned to the card range, this is the point at which any browser data will be posted to the necessary 3DS Access Control Server (3DS ACS)
9. Once fingerprinting has been completed, the 3DS Server will trigger a callback to the 3DS Requestor via the 3DS Web Adapter
    - See Event Callback section below for what will be sent alongside the request here
    - **Important:** The `param` parameter value provided in the Event Callback contains some data that **must** be provided verbatim to the Authentication call in the next step.
10. The 3DS Web Adapter then sends the Authentication call to the 3DS Requestor
    - This can be done via Javascript / AJAX
    - **Important:** The `browserInfo` field of this request **must** be provided as it is received in the previous step.
11. The 3DS Requestor then formulates the Authentication request to be sent to the 3DS Server via the Authentication end-point

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- 3DS Server will perform the AReq / ARes part of the EMV 3DS process with the scheme directory servers

12. The 3DS Server will then send the results of the ARes call back to the 3DS Requestor, including a transStatus indicator.
13. The 3DS Requestor then sends this response back to the 3DS Web Adapter

What happens now depends on the value of **`transStatus`**.

If the value is **Y** - please view the steps for the Frictionless Flow below.

If the value is **C** - please view the steps for the Challenge flow below.

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Frictionless Flow

14. The 3DS Web Adapter then sends a request to the 3DS Requestor with any required data to allow the 3DS Requestor to make a call to the Result end-point

15. The 3DS Requestor then formulates and sends a request to the Retrieve Result end point to retrieve the results of the authentication and return the results to the 3DS Web Adapter

16. The 3DS Web Adapter can then use the values returned as required. Please see the below Retrieve Result response model for more information on what can be returned here

NB: The 3DS Requestor may get all the result information as a part of the Authentication response. However, it's good practice to go back to the 3DS Server to get the results from the Retrieve Result end-point.

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Challenge Flow

When you get a transStatus result of **C** from the Authenticate call, there will also be a **`challengeUrl`** field containing a URL.

14. The 3DS Web Adapter to set up another iFrame using the **`challengeUrl`** value as the **`src`**
    - This iFrame will allow the browser to connect directly to the Issuers ACS to allow the user to authenticate themselves
15. Once the user has authenticated themselves, thee 3DS Server will receive the challenge result
    - This comes via the RReq/RRes messages sent by the ACS once the user has authenticated themselves
16. Once the user has authenticated themselves, the 3DS Server will call the Event Callback URL to trigger the next step with the 3DS Requestor
    - This will have the **`AuthResultReady`** event value when the user has finished
17. The 3DS Web Adapter the sends a request to the 3DS Requestor with any required data to allow the 3DS Requestor to make a call to the Result end-point
18. The 3DS Requestor then formulates and sends a request and then call the Retrieve Result end point to retrieve the results of the authentication and return the results to the 3DS Web Adapter
19. 3DS Web Adapter can then use the values returned as required. Please see the below Retrieve Result response model for more information on what can be returned here

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Authentication

Header Name: **`C3DS-Merchant-Token`**

Header Value: Merchant token as provided after boarding, GUID format

To successfully authenticate with our hosted 3DS Server, you need to include the above header as a part of each request, with the merchant token that can be retrieved once the merchant has been boarded to the 3DS Server.

This token will only work when attempting authentications with the specific merchant for which it has been generated.

Authentication Error

In the event that you try to use a merchant token that doesn't match up with the boarded merchant, you'll receive the below HTML back, with the HTTP Code 401 (Unauthorized).

An example of such a response would be:

```
<!DOCTYPE HTML PUBLIC "-//IETF//DTD HTML 2.0//EN">
<html>
<head>
     <title>401 Unauthorized</title>
</head>
<body>
     <h1>Unauthorized</h1>
     <p></p>
</body>
</html>
```


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End-Points & Models

- All requests to use POST unless otherwise noted
- All requests/responses will be in JSON format and require the below header to be a part of each request
    - **`Content-Type: application/json`**
- All of the request/responses assume a HTTP Code of 200 to mean a successful request
- For error responses (HTTP Code 400), see the API Error Response section below
- Please ensure all requests have the authentication header as detailed in the Authentication section
- Fields formatted in **bold*** are considered mandatory fields and must be supplied with every request

Test Domain

https://test3ds2s.cardeasexml.com:9603

Live Domain

https://3ds2s.cardeasexml.com:9603

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Cardholder Enrollment Check

Path

`/api/v2/auth/enrol`

Models

Request

Field	Value	Format
acctNumber*	Account number that will be used in the authorisation request for payment transactions.	Minimum Length: 13 Maximum Length: 19 Account number, numeric **Mandatory** when not using CardEase tokens.
cardGuid	The Card GUID part of the CardEase token. **Note:** This field, in combination with **cardHash**, replaces the need to provide the **acctNumber** field as a part of your enrollment check.	Length: 36 characters GUID
cardHash	The Card Hash part of the CardEase token. **Note:** This field, in combination with **cardGuid**, replaces the need to provide the **acctNumber** field as a part of your enrollment check.	
merchantId*	Acquirer-assigned Merchant identifier as boarded to the 3DS Server	Minimum Length: 0 Maximum Length: 35

Response

Field	Value	Format
acsInfoInd	ACS Information Indicator: Additional information obtained from the ACS during the PReq/PRes process. The returned values describe the functions available on the ACS side.	Length: 2 characters JSON Data Type: Array of String Optional Card scheme specific values are outlined below:

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	Values accepted: • 01 = Authentication Available at ACS • 02 = Attempts Supported by ACS or DS • 03 = Decoupled Authentication Supported • 04 = Whitelisting Supported • 80–99 = Reserved for future DS use	[Mastercard] • 80 = Card Range is enrolled is Smart Authentication Stand-In Service • 81 = Card Range is enrolled in Smart Authentication Direct • 82 = Undefined • 83 = Undefined • 84 = Card Range supports payment transactions • 85 = Card Range supports non-payment transactions • 86 = Card Range supports the app channel • 87 = Card Range supports the browser channel • 88 = Card Range supports app-based ACS/Issuer Challenge Capabilities • 89 = Card Range supports browser-based ACS/Issuer Challenge Capabilities • 90 = Card Range is Enrolled in Identity Check Express • 91 = Card range supports Authentication Express Merchant Delegation for Identity Check Express (Type I) • 92 = Card range supports Authentication Express Low Fraud Merchant (Type II) • 93 = Card Range participates in Authentication Express Wallet Delegation • 94 = Card Range participates in Authentication Express Device Delegation • 95 ~ 99 = Undefined [Visa, AMEX, JCB, Discovers, UnionPay] • 80 ~ 99 = Undefined
enrolmentStatus	Whether or not PAN provided is enrolled in 3DS2	Length: 2 characters, numeric, left-padded with 0s 00 = Not enrolled with 3DS2 01 = Enrolled with 3DS2

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		02 - 09 = Reserved for future use.
supportedMessageVersions	The supported protocol message versions for the account number. The 3DS requestor can override the **messageVersion** field in the authentication request with any of the versions returned in the list.	Data Type: Array of version strings, EG: ["2.1.0", "2.2.0"]
threeDSMethod	Whether or not the Three DS Method is available.	Length: 1 character Y = Three DS Method is available N = Three DS Method is unavailable

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Initialise Authentication

Path

`/api/v2/auth/brw/init`

Models

Request

Field	Value	Format
acctNumber*	Account number that will be used in the authorisation request for payment transactions.	Minimum Length: 13 Maximum Length: 19 Account number, numeric **Mandatory** when not using CardEase tokens.
cardGuid	The card GUID part of the CardEase token. **Note:** This field, in combination with **cardHash**, replaces the need to provide the **acctNumber** field as a part of your initialise authentication request.	Length: 36 characters GUID
cardHash	The card hash part of the CardEase token. **Note:** This field, in combination with **cardGuid**, replaces the need to provide the **acctNumber** field as a part of your initialise authentication request.	
eventCallbackUrl*	This is a 3DS requestor URL in which the 3DS requestor receives events during authentication. The 3DS requestor backend needs a handler method to accept the call from the 3DS Server. See the Event Callback section below for more details.	Min Length: 0 Max Length: 2000 Valid URL required
merchantId*	Acquirer-assigned Merchant identifier as boarded to the 3DS Server.	Minimum Length: 0 Maximum Length: 35

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threeDSRequestorTransID*	Universal unique transaction identifier assigned by the 3DS Requestor to identify a single transaction. Must be unique per transaction.	Length: 36 characters GUID

Response

Field	Value	Format
authUrl	This URL is returned by the 3DS server that is to be used to perform authentication. The 3DS requestor makes a POST request to this URL when it receives the 3DSMethodSkipped or 3DSMethodFinished event as POSTed to the eventCallbackUrl to execute authentication. Please see the Authenticate section for more details on when this is used.	Min Length: 0 Max Length: 2000 URL
monUrl	This URL returned by 3DS Server is used for the purpose of monitoring the timeout process for browser information collecting and 3DS method. It allows the 3DS Server to notify the 3DS requestor when the 3DS method times out. An iFrame should be created with the src attribute to allow for time outs within the Browser Fingerprinting process. Once the iFrame is created, it checks for the timeout for a maximum of 15 seconds (10 seconds for the 3DS method and 5 seconds for browser information collecting). The timer is started when the 3DS requestor calls the Intialise Authentication end-point and it will check periodically if the transaction with the given transaction ID has successfully called the Authenticate end-point. If a valid Authenticate request is not sent	Min Length: 0 Max Length: 2000 URL

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	and the timer is up, it will notify the 3DS requestor through the iFrame to the eventCallbackUrl sent, with an event 'InitAuthTimedOut' so the 3DS requestor can terminate the transaction.	
threeDSServerCallbackUrl	This URL is returned by 3DS Server where the 3DS Requestor can use it to collect browser information as well as executing the 3DS method if supported by ACS for the BIN range.	Min Length: 0 Max Length: 2000 URL
threeDSServerTransID	Universal unique transaction identifier assigned by the 3DS Server to identify a single transaction.	Length: 36 characters GUID

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Authentication

End-Point

Retrieved from the Initialise Authentication response field: **`authUrl`**

Models

Request

Top Level

Field	Value	Format
acctNumber*	Account number that will be used in the authorisation request for payment transactions.	Minimum Length: 13 Maximum Length: 19 Account number, numeric **Mandatory** when not using CardEase tokens.
cardExpiryDate*	Expiry Date of the PAN or token supplied to the 3DS Requestor by the Cardholder.	Length: 4 characters Format: YYMM **Mandatory** when not using CardEase tokens.
cardGuid	The card GUID part of the CardEase token. **Note:** This field, in combination with **cardHash**, replaces the need to provide the **acctNumber** and **cardExpiryDate** fields as a part of your authentication request.	Length: 36 characters GUID
cardHash	The card hash part of the CardEase token. **Note:** This field, in combination with **cardGuid**, replaces the need to provide the **acctNumber** and **cardExpiryDate** fields as a part of your authentication request.	
authenticationInd*	Indicates the type of Authentication request.	Authentication Indicator

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	This data element provides additional information to the ACS to determine the best approach for handling an authentication request.	
browserInfo*	As provided by the **param** parameter as POSTed to the Event Callback page. Do not alter this field.	Minimum Length: 0 characters Maximum Length: 2000 characters
cardHolderInfo*	Nested JSON Field **Note #1**: The **cardholderName** part of this model is considered a mandatory field and **must** be supplied. **Note #2**: Please be aware of the difference in capitalisation of this field compared to the **cardholderName** field.	Card Holder Information
merchantId*	Acquirer-assigned Merchant identifier as boarded to 3DS Server.	Min Length: 0 characters Max Length: 36 characters
merchantName	Providing this field overrides the merchant name sent in the AReq. If this field is not provided, then the merchant name used when boarding the merchant is used. Can be used for scenarios where card schemes require the merchant name to be dynamic, such as the travel industry. Same name used in the authorisation message as defined in ISO 8583.	Min Length: 0 characters Max Length: 40 characters
messageCategory*	This field must be specified to choose either payment authentication or non-payment authentication.	Payment Authentication: 01 or pa Non-payment Authentication: 02 or npa
threeDSServerTransID*	Universal unique transaction identifier assigned by the 3DS Server to identify a single transaction. Should be the same as provided in the Initialise Authentication response.	Length: 36 characters GUID

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transType*	Identifies the type of transaction being authenticated. **This field is mandatory for the Visa card scheme, hence the mandatory tagging.** Additionally, this field is required in some markets, e.g. for Merchants in Brazil. Otherwise, it is optional.	Length: 2 characters See Appendix A for values.
acctID	Additional information about the account, optionally provided by the 3DS Requestor.	Maximum Length: 64 characters
acctInfo	Additional information about the Cardholder's account provided by the 3DS Requestor. Optional, but strongly recommended to include to help reduce challenges. Nested JSON field.	Account Information
acctType	Indicates the type of account. For example, for a multi-account card product. Required if 3DS Requestor is asking Cardholder which Account Type they are using before making the purchase. This is also required in some markets (for example, for Merchants in Brazil). Otherwise, it is optional.	Account Type
authenticationInfo	Information about how the 3DS Requestor authenticated the cardholder before or during the transaction Optional, recommended to include Nested JSON Field	Authentication Information
cardExpiryDate	Expiry Date of the PAN or token supplied to the 3DS Requestor by the Cardholder.	Length: 4 characters Format: YYMM

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challengeInd	Indicates whether a challenge is requested for this transaction. This field is optional. With **messageCategory** set to PA, a 3DS Requestor may have concerns about the transaction, and request a challenge. With **messageCategory** set to NPA, a challenge may be necessary when adding a new card to a wallet.	Length: 2 characters, 0 left-padded See Appendix A for values.
messageVersion	Protocol version identifier. By calling the Cardholder Enrollment Check, the 3DS requestor knows the message versions in which the card range supports. If the "supportedMessageVersions" contains "2.2.0" then the 3DS requestor can utilise the V2.2.0 message version by setting this field to "2.2.0". **Optional, but required if the forceMessageVersion field in the row below is presented.**	Length: 5 characters Default: 2.2.0 (if card range supports it) Values accepted: • 2.2.0 • 2.1.0 2.2.0 = Utilise EMVCo protocol version V2.2.0 if card range supports it. 2.1.0 = Utilise EMVCo protocol version V2.1.0
forceMessageVersion	Optional field to force Message Version to be 2.2.0 instead of 2.1.0, overriding the current Message Version selection process which will automatically downgrade the Message Version to 2.1.0 if the DS or ACS does not support the specified version. **This field, when presented, can only have a value of true**. **If it is presented but the Message Version field is not presented, the Auth Request will fail.**	String Values accepted: • true
merchantRiskIndicator	Nested JSON field	Merchant Risk Indicator

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payTokenInd	EMV Payment Token Indicator A value of True indicates that the transaction was de-tokenised prior to being received by the ACS. This data element will be populated by the system residing in the 3-D Secure domain where the de-tokenisation occurs (i.e., the 3DS Server or the DS). Note: The Boolean value of true is the only valid response for this field when it is present.	Boolean true false
priorTransID	The 3DS Server Transaction ID for a prior authenticated transaction of a cardholder. It will fill the threeDSPriorAuthenticationInfo field of the AReq from the authenticationInfo field given in the previous transaction for the cardholder. Optional, recommended to include.	Length: 36 characters GUID
purchaseAmount	Purchase amount in minor units of currency with all punctuation removed. The purchaseCurrency will be used to determine the purchase currency exponent for the purchase amount if applicable. Required for PA or NPA (when 3DS Requestor Authentication Indicator = 02 or 03) transactions, otherwise it is Optional.	Max Length: 48 characters Minor Units e.g. if specifying £123.45 you would provide the value 12345.
purchaseCurrency	Currency in which the purchase amount is expressed. If this value is not presented for PA or NPA (when 3DS Requestor Authentication Indicator = 02 or 03), 3DS Server will use the Default Currency as boarded to 3DS Server. If this value is present in the API request, it will be used instead of Default Currency boarded alongside the merchant.	Length: 3 characters Value should be an ISO 4217 three-digit currency code, other than those listed in Table A.5 in EMVCo Protocol and Core Functions Specification.

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	The purchaseCurrency will be used to determine the purchase currency exponent for the purchase amount if applicable.	
purchaseDate	Date and time of the purchase, expressed in UTC This field is always required for 01-PA and conditionally required for 02-NPA when 3DS Requestor Authentication Indicator = 02 or 03.	Format: yyyyMMddHHmmss e.g. 20180122153045
purchaseInstalData	Indicates the maximum number of authorisations permitted for instalment payments. (Required if the Merchant and Cardholder have agreed to instalment payments. This field is required if "authenticationInd" = 03. Omitted if not an instalment payment authentication.)	Length: 3 characters, number padded with left 0s. Numeric, from 001 to 999.
recurringExpiry	Date after which no further authorisations shall be performed. This field is always required for 01-PA for recurring transactions and conditionally required for 02-NPA when 3DS Requestor Authentication Indicator = 02 or 03.	Format: yyyyMMdd e.g. 20180131
recurringFrequency	Indicates the minimum number of days between authorisations. This field is always required for 01-PA for recurring transactions and conditionally required for 02-NPA when 3DS Requestor Authentication Indicator = 02 or 03.	Max Length: 4 Example Scenario If recurring transaction occurs 3, 5 and 7 days after the purchase date, then this field should be set to 2 because the minimum days is between after 3 and 5 days
threeDSRequestorTransID	Universal unique transaction identifier assigned by the 3DS Requestor to identify a single transaction. Should be the same as provided in the Initialise Authentication request.	Length: 36 characters GUID

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transType	Identifies the type of transaction being authenticated. This field is required for some card schemes such as Visa, or in some markets, e.g. for Merchants in Brazil. Otherwise, it is optional.	Length: 2 characters See Appendix A for values.
whiteListStatus	[From V2.2.0] Enables the communication of trusted beneficiary/whitelist status between the ACS, the DS and the 3DS Requestor. The "**whiteListStatusSource**" in the **AReq** will be set to '01' by 3DS server if this field is present.	Length: 1 character JSON Data Type: String Values accepted: • Y = 3DS Requestor is whitelisted by cardholder • N = 3DS Requestor is not whitelisted by cardholder Optional

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Account Information

Field	Value	Format
chAccAgeInd	Length of time that the cardholder has had the account with the 3DS Requestor.	Length: 2 characters, 0 left padded number 01 = No account (guest check-out) 02 = Created during this transaction 03 = Less than 30 days 04 = 30−60 days 05 = More than 60 days
chAccChange	Date that the cardholder's account with the 3DS Requestor was last changed. Including Billing or Shipping address, new payment account, or new user(s) added.	Format: yyyyMMdd e.g. 20180131
chAccChangeInd	Length of time since the cardholder's account information with the 3DS Requestor was last changed. Including Billing or Shipping address, new payment account, or new user(s) added.	Length: 2 characters, 0 left padded number 01 = Changed during this transaction 02 = Less than 30 days 03 = 30−60 days 04 = More than 60 days
chAccDate	Date that the cardholder opened the account with the 3DS Requestor.	Format: yyyyMMdd e.g. 20180131
chAccPwChange	Date that the cardholder's account with the 3DS Requestor had a password change or account reset.	Format: yyyyMMdd e.g. 20180131
chAccPwChangeInd	Indicates the length of time since the cardholder's account with the 3DS Requestor had a password change or account reset.	Length: 2 characters, 0 left padded number 01 = No change 02 = Changed during this transaction 03 = Less than 30 days 04 = 30−60 days 05 = More than 60 days

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nbPurchaseAccount	Number of purchases with this cardholder account during the previous six months.	Maximum Length: 4 Min Value: 0 Max Value: 9999
paymentAccAge	Date that the payment account was enrolled in the cardholder's account with the 3DS Requestor.	Format: yyyyMMdd e.g. 20180131
paymentAccInd	Indicates the length of time that the payment account was enrolled in the cardholder's account with the 3DS Requestor.	Length: 2 characters, 0 left padded number 01 = No account (guest check-out) 02 = During this transaction 03 = Less than 30 days 04 = 30−60 days 05 = More than 60 days
provisionAttemptsDay	Number of Add Card attempts in the last 24 hours.	Maximum Length: 3 characters Min Value: 0 Max Value: 999
shipAddressUsage	Date when the shipping address used for this transaction was first used with the 3DS Requestor.	Format: yyyyMMdd e.g. 20180131
shipAddressUsageInd	Indicates when the shipping address used for this transaction was first used with the 3DS Requestor.	Length: 2 characters, 0 left padded number 01 = This transaction 02 = Less than 30 days 03 = 30−60 days 04 = More than 60 days
shipNameIndicator	Indicates if the Cardholder Name on the account is identical to the shipping Name used for this transaction.	Length: 2 characters, 0 left padded number 01 = Account Name identical to shipping Name 02 = Account Name different than shipping Name
suspiciousAccActivity	Indicates whether the 3DS Requestor has experienced suspicious activity (including previous fraud) on the cardholder account.	Length: 2 characters, 0 left padded number 01 = No suspicious activity has been observed

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		02 = Suspicious activity has been observed
txnActivityDay	Number of transactions (successful and abandoned) for this cardholder account with the 3DS Requestor across all payment accounts in the previous 24 hours.	Max Length: 3 characters Min Value: 0 Max Value: 999
txnActivityYear	Number of transactions (successful and abandoned) for this cardholder account with the 3DS Requestor across all payment accounts in the previous year.	Max Length: 3 characters Min Value: 0 Max Value: 999

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Authentication Information

Field	Value	Format
threeDSReqAuthData	Data that documents and supports a specific authentication process.	Max Length: 2,048 characters [V2.1.0 Only] 20,000 characters [From V2.2.0] JSON Data
threeDSReqAuthMethod	Mechanism used by the Cardholder to authenticate to the 3DS Requestor.	Length: 2 characters, 0 left padded number See Appendix A for values.
threeDSReqAuthTimestamp	Date and time in UTC of the cardholder authentication.	Format: YYYYMMDDHHMM e.g. 201711071307

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Card Holder Information

Field	Value	Format
cardholderName*	Name of the Cardholder Required unless market or regional mandate restricts sending this information. **Note**: Please be aware of the difference in capitalisation of this field compared to the **cardHolderInfo** field.	Min Length: 2 characters Max Length: 45 characters **Note:** Special characters (eg öüäéèê) in cardholder name are not allowed. Any non-ASCII characters should be transliterated to a close latin character. For example, any cases of the character “é”, should be replaced with “e” and “ø” should become “o”.
billAddrCity	The city of the Cardholder billing address associated with the card used for this purchase. For a pa authentication: required unless market or regional mandate restricts sending this information. For a npa authentication: Required (if available) unless market or regional mandate restricts sending this information.	Min Length: 0 characters Max Length: 50 characters
billAddrCountry	The country of the Cardholder's billing address associated with the card used for this purchase. pa: Required unless market or regional mandate restricts sending this information npa: Required (if available) unless market or regional mandate restricts sending this information. Required if the Cardholder Billing Address State is present.	Length: 3 characters Valid ISO 3166-1 three-digit country code, other than those listed in Table A.5. of EMVCo Protocol and Core Functions Specification.
billAddrLine1	First line of the street address or equivalent local portion of the Cardholder billing	Min Length: 0 characters Max Length: 50 characters

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	address associated with the card used for this purchase. pa: Required unless market or regional mandate restricts sending this information. npa: Required (if available) unless market or regional mandate restricts sending this information	
billAddrLine2	Second line of the street address or equivalent local portion of the Cardholder billing address associated with the card used for this purchase. pa: Required unless market or regional mandate restricts sending this information. npa: Required (if available) unless market or regional mandate restricts sending this information.	Min Length: 0 characters Max Length: 50 characters
billAddrLine3	Third line of the street address or equivalent local portion of the Cardholder billing address associated with the card used for this purchase. pa: Required unless market or regional mandate restricts sending this information. npa: Required (if available) unless market or regional mandate restricts sending this information.	Min Length: 0 characters Max Length: 50 characters
billAddrPostCode	ZIP or other postal code of the Cardholder billing address associated with the card used for this purchase. pa: Required unless market or regional mandate restricts sending this information. npa: Required (if available) unless market or regional mandate restricts sending this information.	Min Length: 0 characters Max Length: 16 characters
billAddrState	The state or province of the Cardholder billing address associated with the card used for this purchase.	Min Length: 0 characters Max Length: 3 characters

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	pa: Required unless market or regional mandate restricts sending this information. npa: Required (if available) unless market or regional mandate restricts sending this information.	
email	The email address associated with the account that is either entered by the Cardholder, or is on file with the 3DS Requestor. Required unless market or regional mandate restricts sending this information.	Min Length: 0 characters Max Length: 254 characters Must meet requirements of Section 3.4 of IETF RFC 5322.
homePhone	The home phone number provided by the Cardholder. Nested JSON field	Phone Number
mobilePhone	The mobile phone number provided by the Cardholder. Nested JSON field	Phone Number
shipAddrCity	City portion of the shipping address requested by the Cardholder.	Min Length: 0 characters Max Length: 50 characters
shipAddrCountry	Country of the shipping address requested by the Cardholder. Required if the Cardholder Shipping Address State is present.	Length: 3 characters Valid ISO 3166-1 three-digit country code, other than those listed in Table A.5. of EMVCo Protocol and Core Functions Specification.
shipAddrLine1	First line of the street address or equivalent local portion of the shipping address requested by the Cardholder.	Min Length: 0 characters Max Length: 50 characters
shipAddrLine2	The second line of the street address or equivalent local portion of the shipping address requested by the Cardholder.	Min Length: 0 characters Max Length: 50 characters
shipAddrLine3	The third line of the street address or equivalent local portion of the shipping address requested by the Cardholder.	Min Length: 0 characters Max Length: 50 characters

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shipAddrPostCode	The ZIP or other postal code of the shipping address requested by the Cardholder.	Min Length: 0 characters Max Length: 16 characters
shipAddrState	The state or province of the shipping address associated with the card being used for this purchase.	Min Length: 0 characters Max Length: 3 characters
workPhone	The work phone number provided by the Cardholder.	Phone Number

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Phone Number

Field	Value	Format
cc	Country Code	Min Length: 1 characters Max Length: 3 characters
subscriber	Subscriber Sections of the Number	Min Length: 0 characters Max Length: 15 characters

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Merchant Risk Indicator

Field	Value	Format
deliveryEmailAddress	For Electronic delivery, the email address to which the merchandise was delivered.	Min Length: 0 characters Max Length: 254 characters Email Address
deliveryTimeframe	Indicates the merchandise delivery timeframe.	Length: 2 characters 01 = Electronic Delivery 02 = Same day shipping 03 = Overnight shipping 04 = Two-day or more shipping
giftCardAmount	For prepaid or gift card purchase, the purchase amount total of prepaid or gift card(s) in major units	Min Length: 0 characters Max Length: 15 characters Minor Units e.g. if specifying £123.45 you would provide the value 12345.
giftCardCount	For prepaid or gift card purchase, total count of individual prepaid or gift cards/codes purchased.	Length: 2 characters Min Value: 0 Max Value: 99
giftCardCurr	For prepaid or gift card purchase, the currency code of the card.	Length: 3 characters Value should be an ISO 4217 three-digit currency code, other than those listed in Table A.5 in EMVCo Protocol and Core Functions Specification.
preOrderDate	For a pre-ordered purchase, the expected date that the merchandise will be available.	Length: 8 characters Format: YYYYMMDD e.g. 20180102
preOrderPurchaseInd	Indicates whether the Cardholder is placing an order for merchandise with a future availability or release date.	Length: 2 01 = Merchandise available 02 = Future availability

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reorderItemsInd	Indicates whether the cardholder is reordering previously purchased merchandise.	Length: 2 characters 01 = First time ordered 02 = Reordered
shipIndicator	Indicates shipping method chosen for the transaction. Merchants must choose the Shipping Indicator code that most accurately describes the cardholder's specific transaction, not their general business. If one or more items are included in the sale, use the Shipping Indicator code for the physical goods, or if all digital goods, use the Shipping Indicator code that describes the most expensive item.	Length: 2 characters See Appendix A for values.

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Response

Field	Value	Format
acsChallengeMandated	Indication of whether a challenge is required for the transaction to be authorised due to local/regional mandates or other variables.	Length: 1 Y = Challenge is mandated N = Challenge is not mandated
acsDecConInd	[From V2.2.0] Indicates whether the ACS confirms utilisation of Decoupled Authentication and agrees to utilise Decoupled Authentication to authenticate the Cardholder. Notes: • If 3DS Requestor Decoupled Request Indicator = N or is not set then, a value of Y cannot be returned in the ACS Decoupled Confirmation Indicator. • If Transaction Status = D, a value of N is not valid • **Required if Transaction Status = D**	Length: 1 character JSON Data Type: String Values accepted: • Y = Confirms Decoupled Authentication will be utilised • N = Decoupled Authentication will not be utilised Conditional
acsReferenceNumber	ACS Reference Number. Unique identifier assigned by the EMVCo Secretariat upon testing and approval.	Min Length: 0 characters Max Length: 32 characters
acsTransID	Universal unique transaction identifier assigned by the ACS to identify a single transaction.	Length: 36 characters GUID
authenticationType	Indicates the type of authentication method the Issuer used to challenge the Cardholder. Only present in challenge flow authentications.	Length: 2 characters See Appendix A for values
authenticationValue	Payment System-specific value provided as part of the ACS registration for each supported DS. For a PA authentication, this is required if Transaction Status = Y or A. Omitted from the RReq message when sent as an abandonment notification. For an NPA authentication; this is Conditional based on DS rules.	Length: 28 characters **This is the value used alongside an authorisation to prove that the user was authenticated.**

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cardholderInfo	Text provided by the ACS/Issuer to the Cardholder during a Frictionless or Decoupled transaction. If this field is populated this information is required to be conveyed to the cardholder by the merchant.	Length: Up to 128 characters e.g. “Additional authentication is needed for this transaction, please contact (Issuer Name) at xxx-xxx-xxxx.”
challengeUrl	The challenge URL returned by 3DS Server if a challenge is required. Only present in challenge flow authentications.	Min Length: 0 characters Max Length: 2000 characters URL
dsReferenceNumber	DS Reference Number. EMVCo-assigned unique identifier to track approved DS.	Min Length: 0 characters Max Length: 32 characters
dsTransID	Universal unique transaction identifier assigned by the DS to identify a single transaction.	Length: 36 characters GUID
eci	Payment System-specific value provided by the ACS to indicate the results of the attempt to authenticate the Cardholder. Defined by the DS.	Length: 2 characters
messageVersion	Protocol version identifier. This shall be the Protocol Version Number of the specification utilised by the system creating this message. The Message Version Number is set by the 3DS Server which originates the protocol with the AReq message. The Message Version Number does not change during a 3DS transaction. By calling the Cardholder Enrollment Check, the 3DS requestor knows the message versions in which the card range supports. If the "supportedMessageVersions" contains "2.2.0" then the 3DS requestor can utilise the V2.2.0 message version by setting this field to "2.2.0".	Length: 5 Default: 2.2.0 (if card range supports it) Accepted values: 2.2.0 - Utilise EMVCo protocol version V2.2.0 if card range supports it. 2.1.0 - Utilise EMVCo protocol version V2.1.0

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threeDSServerTransID	Universal unique transaction identifier assigned by the 3DS Server to identify a single transaction.	Length: 36 characters GUID
transStatus	Indicates whether a transaction qualifies as an authenticated transaction.	Length: 1 character See Appendix A for values.
transStatusReason	Provides information on why the Transaction Status field has the specified value. For a PA authentication, this value is present if the Transaction Status field = N, U, or R. For a NPA authentication, may be conditionally returned as defined by the DS.	Length: 2 characters See Appendix A for values.

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Retrieve Results (GET request)

Path

`/api/v2/auth/brw/result?threeDSServerTransID=<GUID>`

Example

`/api/v2/auth/brw/result?threeDSServerTransID=9c696eaa-7dbe-4bb4-b6fa-6f035c40da6f`

Models

Request

Field	Value	Format
threeDSServerTransID*	The 3DS Server assigned Transaction ID related to this authentication attempt	Length: 36 characters GUID

Response

Field	Value	Format
acsReferenceNumber	ACS Reference Number. Unique identifier assigned by the EMVCo Secretariat upon testing and approval.	Min Length: 0 Max Length: 32 Alphanumeric
acsTransID	Universal unique transaction identifier assigned by the ACS to identify a single transaction.	Length: 36 characters GUID
authenticationType	Indicates the type of authentication method the Issuer used to challenge the Cardholder. Only present in challenge flow authentications	Length: 2 characters Numerical, left-padded with 0s.
authenticationValue	Payment System-specific value provided as part of the ACS registration for each supported DS. Authentication Value may be used to provide proof of authentication. With a PA authentication - this value will be present for any transactions with a transStatus of Y or A. With an NPA authentication - this value may be present	Length: 28 characters **This is the value used alongside an authorisation to prove that the user was authenticated.**

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	depending on the Directory Server / scheme rules	
dsReferenceNumber	DS Reference Number. EMVCo-assigned unique identifier to track approved DS.	Length: Up to 32 characters
dsTransID	Universal unique transaction identifier assigned by the DS to identify a single transaction.	Length: 36 characters GUID **This is a value used alongside an authorisation.**
eci	Payment System-specific value provided by the ACS to indicate the results of the attempt to authenticate the Cardholder.	Length: 2 characters **This is a value used alongside an authorisation.**
interactionCounter	Indicates the number of authentication cycles attempted by the Cardholder. Only present in challenge flow authentications.	Length: 2 characters
messageVersion	Protocol version identifier. This shall be the Protocol Version Number of the specification utilised by the system creating this message. The Message Version Number is set by the 3DS Server which originates the protocol with the AReq message. The Message Version Number does not change during a 3DS transaction.	Minimum Length: 5 Maximum Length: 8 Example: 2.1.0 for 3DS 2.1 or 2.2.0 for 3DS 2.2. **This is a value used alongside an authorisation.**
threeDSServerTransID	Universal unique transaction identifier assigned by the 3DS Server to identify a single transaction.	Length: 36 characters GUID **This is a value used alongside an authorisation.**
transStatus	Indicates whether a transaction qualifies as an authenticated transaction.	Length: 1 character See Appendix A for values.
transStatusReason	Provides information on why the Transaction Status field has the specified value. For a PA authentication, this will be present if the Transaction Status field = N, U, or R.	Length: 2 characters See Appendix A for values.

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	For an NPA authentication, it may be present depending on the scheme Directory Server rules.	

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Event Callback

The 3DS Server will use the eventCallbackUrl provided in the Initialise Authentication request in order to notify the 3DS Requestor of the next action to be taken.

This is done via a POST request to the URL.

POST Parameters

Parameter	Potential Values
requestorTransId	Universal unique transaction identifier assigned by the 3DS Requestor to identify a single transaction. This value will be as provided in the Initialise Authentication request.
param	With the events: 3DSMethodFinished and 3DSMethodSkipped and InitAuthTimedOut: This param will contain the browserInfo to be included as a part of the Authenticate request. With the event: 3DSMethodHasError This param will contain the specific error that occurred during the 3DS Method call.
event	See the below events section for details about this parameter.

Events

There are 4 events that need to be handled - the event will be passed back in the above **event** parameter, and can be one of the below values.

3DSMethodFinished

Browser information collection by the 3DS Server and ACS has finished the 3DS method successfully and collected additional browser information. The 3DS Server is ready to perform authentication.

This event will be sent through the threeDSServerCallbackUrl iFrame.

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3DSMethodSkipped

Browser information collection by the 3DS Server is finished but 3DS method is not supported by the ACS, so the optional browser information collection was skipped. This event signals that the 3DS Server is ready to perform authentication.

This event will be sent through the threeDSServerCallbackUrl iFrame.

3DSMethodHasError

If the 3DS Server receives the 3DS method notification after the timeout of 10 seconds from ACS, this event will be sent.

The 3DS requestor should log this event for further troubleshooting with the ACS on why the 3DS method was delayed.

This event is only sent if the 3DS requestor has implemented the "monUrl".

If "monUrl" is not implemented, 3DSMethodFinished will be sent instead.

The "param" attribute will be set to the error message.

This event will be sent through the threeDSServerCallbackUrl iFrame.

InitAuthTimedOut

3DS method (10 seconds timeout) and browser information (5 seconds timeout) collecting has reached the timeout of 15 seconds. ACS 3DS method may be temporary unavailable, and this event can be used as a fallback mechanism e.g. retry authentication.

You are recommended to proceed to 3DS2 authentication upon receiving this event.

This event will be sent through the monUrl iFrame.

AuthResultReady

Cardholder has completed the challenge flow with the ACS. Final authentication result is ready to be requested from the 3DS Server. The 3DS Server receives the final authentication result receipt (RReq/RRes) from the DS/ACS.

This event will be sent through the challengeUrl iFrame.

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Callback Example (PHP)

```
<?php

$trans_id = isset($_REQUEST["requestorTransId"]) ?
html_encode($_REQUEST["requestorTransId"]) : "";
$event = isset($_REQUEST["event"]) ? html_encode($_REQUEST["event"]) : "";
$param = isset($_REQUEST["param"]) ? html_encode($_REQUEST["param"]) : "";

switch($event)
{
	case "3DSMethodFinished":
		$callback = "threeds_callback_method_finished";
		break;

	case "3DSMethodSkipped":
		$callback = "threeds_callback_method_skipped";
		break;

	// $param here contains the error
	case "3DSMethodHasError":
		// Log error for troubleshooting purposes
		break;

	case "AuthResultReady":
		$callback = "threeds_callback_auth_result_ready";
		break;

	case "InitAuthTimedOut":
		$callback = "threeds_callback_method_init_auth_timeout";
		break;
	default:
		$callback = "threeds_callback_method_unknown";
		break;
}

if(!isset($callback))
{
    // If there is no callback set, exit from script
    // This is because the 3DSMethodHasError doesn't require an action to be taken from
this callback
    exit(0);
}

?>

<!DOCTYPE html>
<html lang="en">
<head>
	<meta charset="UTF-8"/>
	<title>3DSecure 2.0 Authentication</title>
</head>
<body>
<form>
	<input type="hidden" id="notifyCallback" name="notifyCallback"
data-th-value="<?php echo $callback; ?>"/>
	<input type="hidden" id="transId" name="transId" data-th-value="<?php echo
$trans_id; ?>"/>
	<input type="hidden" id="param" name="param" data-th-value="<?php echo $param;
?>"/>
</form>
```


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```
<script>
	let callbackFn = parent["<?php echo $callback; ?>"];

	if (typeof callbackFn === 'function') {
		callbackFn("<?php echo $trans_id ?>", "<?php echo $param ?>");
	}
</script>
</body>
</html>
```

API Error Response

Errors can be returned by any request and at any point in the process.

The following HTTP Error codes may be used to signify an error:

- 400 (Invalid Request)
- 401 (Unauthorised)
- 403 (Forbidden)
- 500 (Internal Server Error)

Associated with these error codes, you may also receive an error response which will give you more information about the error that has been encountered.

Error Response

Field	Value	Format
errorCode	Code indicating the type of problem identified in the message. Error codes having length of 3 are error codes defined by the EMVCo core specifications. Error codes having length of 4 are custom error codes.	Min Length: 3 characters Max Length: 4 characters Please see Error Codes for list of potential values.
errorComponent	Code indicating the 3-D Secure component that identified the error.	Length: 1 character C - Client S - 3DS Server D - Directory Server

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		A - ACS
errorDescription	Text describing the problem identified in the message.	Min Length: 0 characters Max Length: 2048 characters
errorDetail	Additional detail regarding the problem identified in the message.	Min Length: 0 characters Max Length: 2048 characters
errorMessageType	Identifies the Message Type that was identified as erroneous. If the validation fails for the request sent from the 3DS requestor, this value is set to empty or 'AReq'.	Length: 4 characters AReq ARes CReq CRes RReq RRes Erro
messageType	Always returns value = ‘Erro’	Length: 4 Always Erro
messageVersion	Protocol version identifier. Required. This shall be the Protocol Version Number of the specification utilised by the system creating this message. The Message Version Number is set by the 3DS Server which originates the protocol with the AReq message. The Message Version Number does not change during a 3DS transaction.	Minimum Length: 5 Maximum Length: 8 Accepted values: 2.2.0 - V2.2.0 protocol was used in AReq. 2.1.0 - V2.1.0 protocol was used in AReq.
sdkTransID	Universal unique transaction identifier assigned by the 3DS SDK to identify a single transaction.	Length: 36 characters GUID
threeDSServerTransID	Universal unique transaction identifier assigned by the 3DS Server to identify a single transaction.	Length: 36 characters GUID

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Appendix A: API Values

TransStatus

Value	Description
Y	Authentication/ Account Verification Successful
N	Not Authenticated /Account Not Verified; Transaction denied
U	Authentication/ Account Verification Could Not Be Performed; Technical or other problem, as indicated in ARes or RReq
A	Attempts Processing Performed; Not Authenticated/Verified, but a proof of attempted authentication/verification is provided
C	Challenge Required; Additional authentication is required using the challenge set up
R	Authentication/ Account Verification Rejected; Issuer is rejecting authentication/verification and request that authorisation not be attempted.

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TransStatusReason

Value	Description
01	Card authentication failed
02	Unknown Device
03	Unsupported Device
04	Exceeds authentication frequency limit
05	Expired card
06	Invalid card number
07	Invalid transaction
08	No Card record
09	Security failure
10	Stolen card
11	Suspected fraud
12	Transaction not permitted to cardholder
13	Cardholder not enrolled in service
14	Transaction timed out at the ACS
15	Low confidence
16	Medium confidence

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17	High confidence
18	Very High confidence
19	Exceeds ACS maximum challenges
20	Non-Payment transaction not supported
21	3RI transaction not supported
80 ~ 90	Reserved for DS use

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Account Type

Value	Description
01	Not Applicable
02	Credit
03	Debit
80 ~ 99	Reserved for DS use

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Authentication Indicator

Value	Description
01	Payment transaction
02	Recurring transaction
03	Instalment transaction
04	Add card
05	Maintain card
06	Cardholder verification as part of EMV token ID and V
80 ~ 99	Reserved for DS use

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AuthenticationType

Value	Description
01	Static
02	Dynamic
03	OOB
80 ~ 99	Reserved for DS use

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ChallengeInd

Value	Description
01	No preference
02	No challenge requested
03	Challenge requested: 3DS Requestor Preference
04	Challenge requested: Mandate
05	No challenge requested (transactional risk analysis is already performed) [From V2.2.0]
06	No challenge requested (Data share only) [From V2.2.0]
07	No challenge requested (strong consumer authentication is already performed) [From V2.2.0]
08	No challenge requested (utilise whitelist exemption if no challenge required) [From V2.2.0]
09	Challenge requested (whitelist prompt requested if challenge required) [From V2.2.0]
80 ~ 99	Reserved for DS use

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TransType

Value	Description
01	Goods/ Service Purchase
03	Check Acceptance
10	Account Funding
11	Quasi-Cash Transaction
28	Prepaid Activation and Load

Note: Values derived from the 8583 ISO Standard.

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ThreeDSReqAuthMethod

Value	Description
01	No 3DS Requestor authentication occurred (i.e. cardholder “logged in” as guest)
02	Login to the cardholder account at the 3DS Requestor system using 3DS Requestor’s own credentials
03	Login to the cardholder account at the 3DS Requestor system using federated ID
04	Login to the cardholder account at the 3DS Requestor system using issuer credentials
05	Login to the cardholder account at the 3DS Requestor system using third-party authentication
06	Login to the cardholder account at the 3DS Requestor system using FIDO Authenticator
07	Login to the cardholder account at the 3DS Requestor system using FIDO Authenticator (FIDO assurance data signed) [From V2.2.0]
08	SRC Assurance Data [From V2.2.0]
80 ~ 99	Reserved for DS use

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ShipIndicator

Value	Description
01	Ship to cardholder’s billing address
02	Ship to another verified address on file with merchant
03	Ship to address that is different than the cardholder’s billing address
04	“Ship to Store” / Pick-up at local store (Store address shall be populated in shipping address fields)
05	Digital goods (includes online services, electronic gift cards and redemption codes)
06	Travel and Event tickets, not shipped
07	Other (for example, Gaming, digital services not shipped, emedia subscriptions, etc.)

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Error Codes

3DS Error Codes

Value	Name	HTTP Code	Description
101	MESSAGE_RECEIVED_INVALID	400	Received message is invalid. Message is not AReq, ARes, CReq, CRes, PReq, PRes, RReq, or RRes. For example, 3DS Server receives an message from DS as a response to AReq that is not ARes or Erro message.
102	MESSAGE_VERSION_NUMBER_NOT_SUPPORTED	400	Unsupported message version number. Message Version Number received is not valid for the receiving component. For example, DS sends a messageVersion field set to an invalid value, or value that is not supported by the ACS.
201	REQUIRED_DATA_ELEMENT_MISSING	400	A message element required as defined according to the specification is missing. This error code will be returned if any of the fields marked as required is missing in the request.
202	CRITICAL_MESSAGE_EXTENSION_NOT_RECOGNISED	400	Message extension that is critical is not present.
203	FORMAT_OF_ONE_OR_MORE_DATA_ELEMENTS_IS_INVALID_ACCORDING_TO_THE_SPECIFICATION	400	Data element is not in the required format or value is invalid as defined according to the specification.
204	DUPLICATE_DATA_ELEMENT	400	Found duplicate data elements in the request.
301	TRANSACTION_ID_NOT_RECOGNISED	400	Transaction ID received is not valid for the receiving component.
302	DATA_DECRYPTION_FAILURE	500	Data could not be decrypted by the receiving system due to technical or other reasons.
303	ACCESS_DENIED_INVALID_ENDPOINT	401	Endpoint for the API request is invalid. Check the requesting URL.

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304	ISO_CODE_INVALID	400	ISO code not valid according to ISO tables (for either country or currency).
305	TRANSACTION_DATA_NOT_VALID	400	Transaction data is invalid. Please refer to the error description to find out why the transaction data was invalid.
306	MERCHANT_CATEGORY_CODE_MCC_NOT_VALID_FOR_PAYMENT_SYSTEM	400	Merchant category code is invalid. Invalid MCC received in the AReq message and DS may throw this error back to the 3DS Server.
402	TRANSACTION_TIMED_OUT	408	Transaction has timed out.
403	TRANSIENT_SYSTEM_FAILURE	500	System has failed for a short period. For example, a slowly processing back-end system.
404	PERMANENT_SYSTEM_FAILURE	500	System has failed permanently. For example, a critical database cannot be accessed.
405	SYSTEM_CONNECTION_FAILURE	500	Failed to connect to the system. For example, the sending component is unable to establish connection to the receiving component.

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Transaction Error Codes

Value	Name	HTTP Code	Description
1000	DIRECTORY_SERVER_NOT_AVAILABLE	500 / 402	If any errors occurred during the connection to Directory Server this error code may be returned. Error code 402 is returned instead if the reason for the connection error was because of timeout.
1002	ERROR_SAVE_TRANSACTION	500	Error occurred while saving transaction.
1004	UNHANDLED_EXCEPTION	500	An unhandled exception occurred during the transaction. Please report this if encountered.
1013	INVALID_TRANSACTION_ID	400	Transaction ID of 3DS Server is not recognised.
1014	INVALID_REQUESTOR_TRANSACTION_ID	400	Transaction ID of 3DS Requestor is not recognised
1016	MISSING_REQUIRED_ELEMENT	400	Required element missing.
1020	ERROR_TRANSMISSION_DATA	500	Thrown when there are errors in data transmission between any two 3DS components.
1021	PRIOR_TRANS_ID_NOT_FOUND	400	Prior Transaction ID could not be found in the database, or is invalid.
1022	INVALID_FORMAT	400	Format of one or more elements is invalid according to the EMV Co specification.
1026	MERCHANT_ID_THREEDS_REQUESTOR_ID_INVALID	400	Invalid merchantId is given to the authentication request.

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General Error Codes

Value	Name	HTTP Code	Description
2002	VALIDATION_ERROR	400	Invalid Inputs - may be returned if the request is not properly formatted JSON.
2005	ACCESS_DENIED	401	Access is denied - check the error detail for more information.
2007	INTERNAL_SERVER_ ERROR	500	An internal server error has occurred - check the error detail for more information.
2009	SESSION_TIMED_OUT	408	Session has timed out. Can be returned if the transaction has already been finished and you re-attempt a request.

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Appendix B: Glossary

Term	Acronym	Description
3DS Client		The cardholder / consumer facing component of EMV 3-D Secure (3DS). In browser based EMV 3DS, this part facilitates interaction between the cardholder / consumer's browser and the 3DS Requestor.
3DS Requestor		The initiator of the EMV 3-D Secure Authentication Request, known as the AReq message. As an example, this may be a hosted payment page or in the case of a direct integrator, it will be the direct integrators website.
3DS Server	3DSS	For the purposes of this documentation, this refers to the CardEase 3DS Server.
3-D Secure	3DS	This stands for Three Domain Secure. This is a fraud prevention authentication protocol that enables the secure processing of eCommerce payment transactions, and helps ensure that the person performing the payment is entitled to make payments.
Access Control Server	ACS	This is the 3-D Secure component that resides in the issuer domain. This is the component that verifies whether authentication is available for a specific card number, and also facilitates authentication of specific cardholders / consumers.
Authentication		The process of confirming that the person performing an eCommerce transaction has permission and is entitled to use the payment card before performing any authorisations.
Authentication Request Message	AReq	One of the EMV 3-D Secure messages sent by the 3DS Server to initiate the authentication process. This goes via the DS to the ACS to initiate the EMV 3-D Secure authentication process.
Authentication Response Message	ARes	The response message to the AReq message. This is returned by the ACS via the DS.
Authentication Value	AV	This is a cryptographic value generated by the ACS with the purpose of allowing the authorisation system to validate the integrity of the authentication result.

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		This will be required as a part of your authorisation. The algorithm used for this is defined by each Payment System.
Challenge / Challenge Flow		This is when the cardholder / consumer is required to authenticate themselves directly with the ACS.
Challenge Request Message	CReq	The request sent by the 3DS Server to the ACS in order to support the authentication process. This is where additional information about the cardholder is sent to the ACS in order to help facilitate the 3D Secure process.
Challenge Response Message	CRes	The response to the CReq message, sent by the ACS. This can indicate a successful authentication, or alternatively signal that further cardholder interaction is required in order to complete the authentication via a challenge.
Consumer Device		The cardholder device used to conduct authentications and payments. Some examples of a consumer device could be a laptop, or smartphone.
Directory Server	DS	This is a component that resides in the interoperability domain of the 3-D Secure specification. It performs a few different functions that includes authentication of the 3DS server, routing messages between the 3DS Server and the different ACS servers operated by issuers. These tend to be managed by the card schemes
Electronic Commerce Indicator	ECI	This value is provided by the ACS and indicates the results of the authentication attempt. This will be required as a part of your authorisation.
Frictionless / Frictionless Flow		This is when the cardholder / consumer isn't required to explicitly authenticate themselves with the ACS. As there is no cardholder / consumer interaction, this process can happen invisibly to the cardholder / consumer.
Non-Payment Authentication	NPA	EMV 3DS authentication type in which no transaction is attached. Used for identity verification.
Results Request Message	RReq	The request sent by the ACS (via the DS) that allows the results of an authentication to reach the 3DS Server.

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Results Response Message	RRes Y	The response to the RReq message sent by the 3DS Server to the ACS (via the DS). This allows the 3DS Server to acknowledge receipt of the RReq message.

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Appendix C: Test Platform Details

Test Merchant

On our test platform, only one merchant may be used.

Merchant ID	Merchant Name	Merchant Token
123456789012345	Test Card	b1cdf956-a4f4-4ce4-ade6-cd84d68e59f2

The Merchant Token is the required value for the **`C3DS-Merchant-Token`** header.

The Merchant ID should be used with any API requests that have the field **`merchantId`** as a part of the request.

Test Cards

Below are the details of the various test card numbers that can be used to test the different flows and results that can come from an EMV 3DS 2.1 or EMV 3DS 2.2 authentication.

Expiry Date / Cardholder Name

The expiry date and cardholder name for all these cards is always the same.

Important: These **must** be used otherwise any requests sent to the 3DS Server are likely to fail.

Expiry Date	Cardholder Name
08/2025	Test Card

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Successful Frictionless Flow Authentication

Scheme	Card Number
Amex	340000000000108
Discover/Diners	6440000000000104
Discover/Diners	36000000000008
Mastercard	5100000000000107
Visa	4100000000000100

3DS authentication will complete successfully without any challenge from the ACS.

ARes Result:

- Transaction Status = Y
- ECI = 05, or 02 (for Mastercard)
- Contains an Authentication Value

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Successful Challenge Flow Authentication

Scheme	Card Number
Amex	340000000005008
Discover/Diners	6440000000005004
Discover/Diners	36000000005007
Mastercard	5100000000005007
Visa	4100000000005000

These card numbers will trigger a step up to a challenge and request the user enter a password.

The password **123456** should be used in order to successfully authenticate the user.

ARes Result:

- Transaction Status = C

RReq Result:

- Transaction Status = Y
- ECI = 05, or 02 (for Mastercard)
- Contains an Authentication Value

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Authentication Attempted

Scheme	Card Number
Amex	340000000100007
Discover/Diners	6440000000100003
Discover/Diners	36000000100006
Mastercard	5100000000100006
Visa	4100000000100009

This transaction will attempt to perform authentication before returning an “Attempted” response.

ARes result:

- Transaction Status = A
- ECI = 06 or 01 (Mastercard)
- Contains an Authentication Value

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Authentication Failed

Scheme	Card Number
Amex	340000000300003
Discover/Diners	6440000000300009
Discover/Diners	36000000300002
Mastercard	5100000000300002
Visa	4100000000300005

With these test PANs, a Challenge step up will be initiated and the user asked for a password.

The password **111111** should be used in order to successfully trigger the failure case.

ARes Result:

- Transaction Status = C

RReq Result:

- Transaction Status = N
- ECI = 00
- Does not contain an Authentication Value

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Authentication Unavailable

Scheme	Card Number
Amex	340000000400001
Discover/Diners	6440000000400007
Discover/Diners	36000000400000
Mastercard	5100000000400000
Visa	4100000000400003

Transaction will end with the authentication being rejected by the ACS.

ARes result:

- Transaction Status = U
- ECI is dependant on card scheme specific rules
- Does not contain an Authentication Value

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Authentication Rejected

Scheme	Card Number
Amex	340000000500008
Discover/Diners	6440000000500004
Discover/Diners	36000000500007
Mastercard	5100000000500007
Visa	4100000000500000

Transaction will end with the authentication being rejected by the ACS.

ARes result:

- Transaction Status = R
- ECI is dependant on card scheme specific rules
- Does not contain an Authentication Value

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