

Risk Engine Adapter

About Risk Adapter

When cardholder authentication occurs during a transaction, a challenge may be necessary because the transaction is deemed high-risk, e.g. above certain thresholds.

To assess the risk associated with the transaction and if a challenge to the cardholder is necessary, the ACS sends/receives proper data elements to/from risk assessment systems via middleware, known as Risk Adapters.

How RBA works

ActiveAccess has been developed to support risk through the following models:

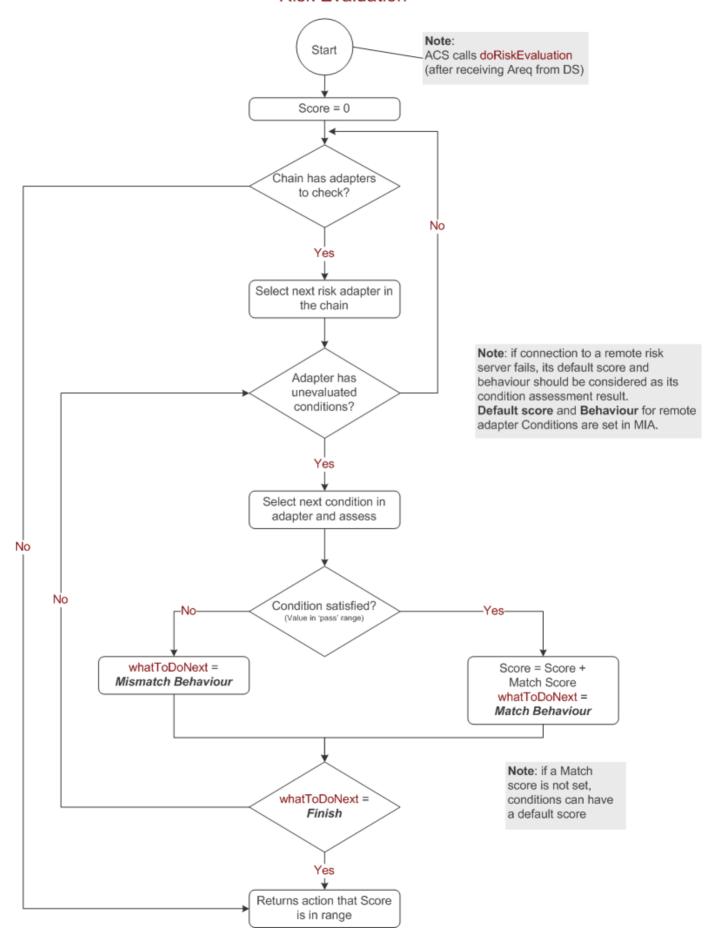
- Internal Risk: Risk rules pre-defined internally within the application by GPayments. This may
 include samples or rules commonly used by issuers. The rules are configurable on the
 Administration UI.
- External Risk via Adapter: You can create your customised rules in the form of JAR files, as per the Risk Adapter Specification. Once the path of the JAR files has been included in the ActiveAccess configuration file (<AA_HOME>/activeaccess.properties), the rules will be configurable on the Administration UI in the same way as the Internal Risk model. Basic or complex rules can be defined based on the issuer's specific requirements
- Remote Risk via Adapter: Rules are defined on an external server and called by ActiveAccess using a URL configured on the Administration UI.

The RBA adapters are also designed to have a configurable scoring system. Scoring is fully configurable and each score range can be linked with an authentication method: frictionless, static password, device or OOB.

The following diagram provides an overview of the risk evaluation process.



Risk Evaluation

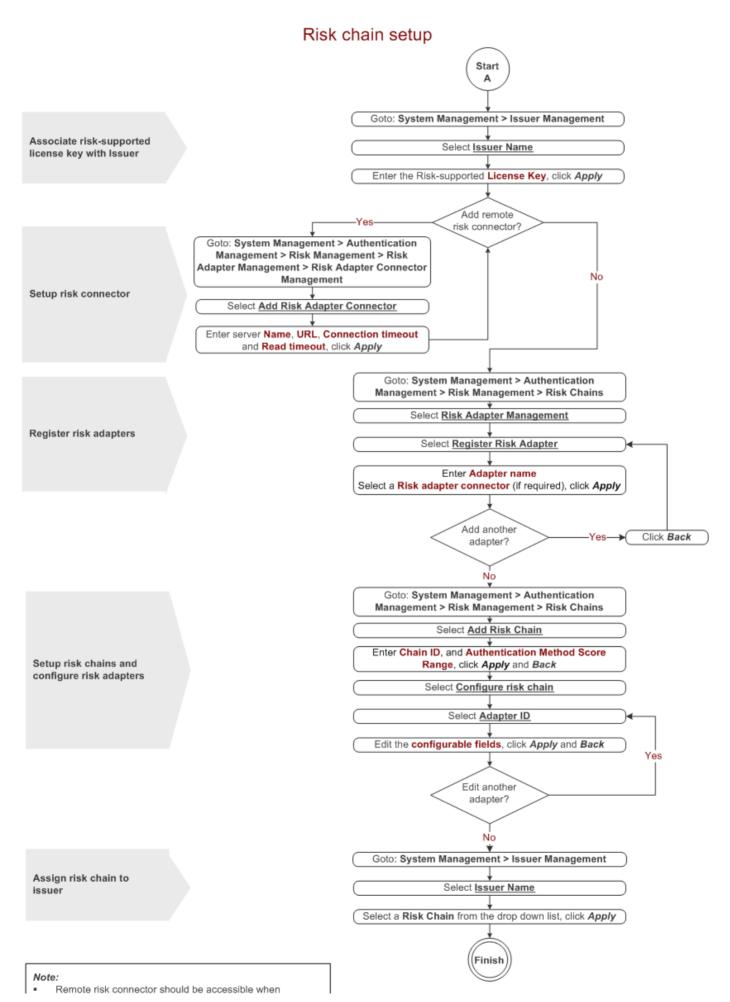




Each Risk Adapter has one Parameter and one or more Conditions. Risk assessment systems perform tasks based on values received for these attributes. Risk Adapters can be either Native APIs or REST APIs. These Risk Adapter APIs are explained in further detail in the following sections.

The following diagram shows how risk chains are setup and risk adapters are registered on the Administration UI.







Risk Adapter Specification

Native API Risk Adapter

The Native API Risk Adapter is a JAR file that implements an ACS specified adapter interface, known as Adapter, in a JAR file named rba.adapter. Note that you can rename your Risk Adapters as appropriate for your use.

Adapter development considerations

The following steps must be considered in Risk Adapter development:

- 1. Use the correct version of risk.adapter-x for your ACS version (where x represents the risk adapter API version) in your Risk Adapter project.
- 2. The Adapter interface in the risk.adapter-x JAR file must be implemented in your Risk Adapter project. This implementation is known as the *risk adapter provider*. The ACS loads this class at startup and uses it for transaction risk assessment. The ACS enforces the requirement for the *provider class* to have a public zero-argument constructor so that it can be instantiated during ACS loading.
- 3. A risk adapter provider is identified by placing a provider-configuration file in the resource directory META-INF/services. The file's name is the fully-qualified binary name of the service's type, e.g. com.gpayments.rba.api.v1.Adapter. The file contains a list of fully-qualified binary names of concrete provider classes, one per line. Space and tab characters surrounding each name, as well as blank lines, are ignored. The comment character is '#' ('\u0023', NUMBER SIGN); on each line all characters following the first comment character are ignored. The file must be encoded in UTF-8.

Adapter interface methods

The Adapter interface has four methods, which must be implemented in Risk Adapter:

- Method Name: getAdapterId
 - **Description:** Returns the ACS assigned *UUID* to Risk Adapter
 - Input: This method takes no arguments.
 - Output: The output of this method has the following properties:
 - **Description:** Risk Adapter ID.



■ Length: 36 characters

■ Format: String

■ Accepted Value: Canonical format as defined in IETF RFC 4122

■ Message Inclusion: Required

• Method Name: getAdapterInfo

• Description: Returns some information about Risk Adapter

• Input: This method takes no arguments

Output: An instance of AdapterInfo class that contains some information about Risk
 Adapter AdapterInfo is described in AdapterInfo Data Elements

Method Name: getParameter

• Description: Returns the used Parameter in the Risk Adapter.

• Input: This method takes no arguments.

- Output: An instance of Parameter class that contains some information about the used
 Parameter in Adapter conditions The Parameter class is Described in Parameter Data
 Elements
- Method Name: getConditions
 - Description: Returns a list of Risk Adapter conditions
 - Input: This method takes no arguments.
 - Output: List of available Conditions in Risk Adapter. The Condition class is described in Condition Data Elements

RESTful API Risk Adapter

For the RESTful API Risk Adapter, you should provide REST API endpoints that are accessible to the ACS. Note that Adapter-URL refers to the fully qualified RESTful Risk Adapter URL that will be used in transaction risk assessment.



We also provide a Swagger API for the sample REST RBA server that is included in the release package. To use it, run RBA Server and open https://localhost:8446/swagger-ui.html#/ in your browser.



Get Risk Adapter Information

The ACS sends an HTTP request to retrieve information about Risk Adapter, as follows:

- URL: Adapter-URL
- · Request Method: GET
- Request Parameters: there is no request parameter for this REST API
- · Response:
 - Name: restfulRBAAdapterInfo
 - Format JSON object of RestfulRBAAdapterInfo type.
 - Description RestfulRBAAdapterInfo . Described in RestfulRBAAdapterInfo Data Elements
 - Inclusion: Required

Transaction Risk Assessment

To estimate the risk for the transaction, the ACS calls an HTTP API of RESTful Risk Adapter, as follows:

- URL: Adapter-URL
- · Request Method: POST
- · Request Body:
 - Name: remoteAssessmentRequest
 - Format: JSON object of type RemoteAssessmentRequest, described in RemoteAssessmentRequest Data Elements
 - Inclusion: Required
- · Response:
 - Name: assessmentResult
 - Format: JSON object of type AssessmentResult, described in AssessmentResult Data Elements
 - Inclusion: Required



Authentication mechanism for the RESTful API

Certificate based mutual authentication is used as the authentication mechanism for the RESTful API, using the following steps:

- ACS publishes a CA for adapter communication, in this instance named Adapter CA
- ACS also issues a server certificate for the adapter. The server certificate should have a serial number attribute set to the AA generated Adapter ID or something to identify the RESTful adapter.
- ACS uses a client generated certificate issued by the same Adapter CA.
- the Adapter server implementation must be setup with the CA provided and mutual authentication.
- ACS will try to connect to the Adapter Server and, if the connection can be established and
 the serial number matches the record in the database for this adapter, ACS will continue
 with the adapter otherwise it will throw an error.

AdapterInfo Data Elements

· Field Name: id

• Description: The ACS assigned UUID to the Risk Adapter

Length: 36 characters

• Format: String

Accepted Value: Canonical format as defined in IETF RFC 4122

Message Inclusion: Required

• Field Name: name

• **Description:** The ACS assigned name to the Risk Adapter

Length: Variable, maximum 100 Characters

Format: String

Accepted Value:

Message Inclusion: Required



• Field Name: version

• Description: The number that indicates the Risk Adapter version

• **Length:** Variable

Format: String

Accepted Value:

Message Inclusion: Required

• Field Name: signature

• Description: Signature to validate Risk Adapter integrity, currently not used, will be

introduced in a future version

• Length: Variable

Format: String

Accepted Value:

Message Inclusion: Optional

Parameter Data Elements

• Field Name: name

• Description: The Risk Adapter name assigned to this parameter

• Length: 50 characters

• Format: String

Accepted Value: any

Message Inclusion: Required

• Field Name: displayName

• Description: The Risk Adapter assigned name for displaying this parameter

Length: 50 characters

• Format: String

Accepted Value: any

Message Inclusion: Required



Field Name: paramType

• **Description:** The type of Risk Adapter Parameter.

• Length:

• Format: ValueType. ValueType is described in ValueType Data Elements.

 Accepted Value: NULL, NUMERIC, STRING, RANGE, LIST_OF_NUMERIC and LIST_OF_STRING

Message Inclusion: Required

Field Name: validator

- **Description:** A validator for this <u>Parameter</u>. This validator is an instance of a class that implements the <u>ParameterValidator</u> interface.
- Length:
- Format: An instance of ParameterValidator interface implementor. This field should be ignored in mapping the Parameter object to the JSON object
- Accepted Value:
- Message Inclusion:

The ParameterValidator interface has a method named isParameterDataValid and returns the boolean result of parameter validation. This method takes two arguments: * The first argument of this method, is an instance of type AReq, described in AReq Data Elements. * The second is an instance of a callback class that implements TxCallback. TxCallback is described in TxCallback Data Elements.

Condition Data Elements

- Field Name: adapter
 - Description: The Adapter that the current Condition belongs to; a reference to the current adapter
 - Length:
 - Format: An instance of type Adapter . This field should be ignored in mapping
 Condition object to JSON object
 - Accepted Value:



Message Inclusion: Required

• Field Name: boundParameter

 Description: The Parameter that is used in this adapter. The current Condition uses it in the risk assessment process; a reference to the current Risk Adapter Parameter

• Length:

• Format:

Accepted Value:

Message Inclusion: Required

• Field Name: name

• **Description:** The Risk Adapter name assigned to this condition

Length: 50 characters

Format: String

Accepted Value: any

Message Inclusion: Required

• Field Name: displayName

• **Description:** The Risk Adapter name assigned for displaying this condition

Length: 50 characters

• Format: String

Accepted Value: any

Message Inclusion: Required

Field Name: valueType

Description: The value types that should be set for Condition values

• Length:

∘ Format: ValueType

 Accepted Value: NULL, NUMERIC, STRING, RANGE, LIST_OF_NUMERIC and LIST_OF_STRING

Message Inclusion: Required



- · Field Name: assessor
 - Description: The condition assessor that is assigned to the adapter Condition and is responsible for getting the condition assessment result
 - Length:
 - Format: An instance of ConditionAssessor interface implementor.
 ConditionAssessor interface is described in ConditionAssessor Data Elements
 This field should be ignored in mapping the Condition object to the JSON object.
 - Accepted Value:
 - Message Inclusion: Required

ValueType Data Elements

ValueType is an enum type with six constants that represent the type of the value. These named constants are NULL, NUMERIC, STRING, RANGE, LIST_OF_NUMERIC and LIST_OF_STRING.

The ValueType class also has an instance method named validateValue that takes an instance of type ConditionValue as method arguments and validate if the value matches the required type. The validateValue does not return any information but throws NullPointerException or IllegalArgumentException when the input value is null or does not match with indicated valueType.

ConditionAssessor Data Flements

The interface ConditionAssessor has one method, named assess. This method takes five parameters of type AReq, AdditionalInfo, TxCallback, Condition and ConditionValue and returns the assessment result as AssessmentResult. ConditionValue and AdditionalInfo are described in ConditionValue Data Elements and AdditionalInfo Data Elements.

AssessmentResult is described in AssessmentResult Data Elements.



TxCallback Data Elements

The TxCallback interface has callback mechanism so that ACS can provide proper historic transactions to the adapter. This interface has one method named onPreviousTXRequiredByCountOrDays that takes two integer arguments and returns a list of AReqWithTransStatus objects. The first parameter is the number of last transactions that should be returned and the second one is the number of days, which we should return the transactions occurred therein. The maximum transactions according to these parameter will be returned as result.

AssessmentResult Data Elements

· Field Name: score

• Description: Risk assessment as a number

• Length:

• Format: Integer

Accepted Value: 0-100

Message Inclusion: Required

• Field Name: whatToDoNext

 Description: The behavior that should be done about the remained risk-chain assessments

• Length:

• Format: JSON object of behaviour.

Accepted Value: CONTINUE, FINISH

Message Inclusion: Required

RestfulRBAAdapterInfo Data Elements

• Field Name: adapterInfo

• Description: Some information about Risk Adapter



Length:

 Format: JSON format of the AdapterInfo object, described in AdapterInfo Data Elements

Accepted Value:

Message Inclusion: Required

• Field Name: parameter

• Description: The Parameter used in the Risk Adapter

• Length:

• Format: JSON format of the Parameter object, described in Parameter Data Elements

Accepted Value:

Message Inclusion: Required

• Field Name: conditions

• **Description:** List of available conditions (RemoteCondition) in the current adapters

• Length:

 Format: List of RemoteCondition objects in JSON format, described in RemoteCondition Data Elements

Accepted Value:

Message Inclusion: Required

RemoteCondition Data Elements

In addition to the aforementioned Condition properties, RemoteCondition has two additional fields that may be necessary for historic data

• Field Name: previousTx

• Description: Indicates the number of previous transactions required for risk assessment

• Length:

Format: Integer

Accepted Value:

Message Inclusion: Optional



• Field Name: previousTxInDays

 Description: Indicates the number of days of previous transactions required for risk assessment

Length:

• Format: Integer

Accepted Value:

Message Inclusion: Optional

RemoteAssessmentRequest Data Elements

· Field Name: aReq

• **Description:** The AReq message of the current transaction.

• Length:

Format: JSON object of AReq type, described in AReq Data Elements

Accepted Value:

Message Inclusion: Required

• Field Name: additionalInfo

Description: Some additional Info for risk assessment

• Length:

 Format: JSON object of AdditionalInfo type. AdditionalInfo is explained in AdditionalInfo Data Elements section.

Accepted Value:

Message Inclusion: Optional

• Field Name: previousData

Description: The historic data required for risk assessment

• Length:

 Format: List of AReqWithTransStatus in JSON format. AReqWithTransStatus is explained in AReqWithTransStatus Data Elements section.

Accepted Value:



Message Inclusion: Optional

• Field Name: conditionName

Description: Name of Condition to be processed

• **Length:** 50 characters

• Format: String

Accepted Value: Any

Message Inclusion: Required

• Field Name: conditionValue

 Description: Some settings for Condition, such as condition value, default behaviour and the output score

• Length:

 Format: JSON object of ConditionValue type, described in ConditionValue Data Elements

Accepted Value:

Message Inclusion: Required

ConditionValue Data Elements

ConditionValue has the following private instance variables and some methods to access them.

• Field Name: condition

• **Description:** Condition that the condition value is assigned to

• Length:

Format: JSON object of Condition, described in Condition Data Elements

Accepted Value:

Message Inclusion: Required

• Field Name: numeric

Description: The condition value passed to the Risk Adapter if, and only if, ValueType of Condition is NUMERIC

• Length:



• Format: Number

Accepted Value:

Message Inclusion: Required

• Field Name: range

- Description: The condition value to be passed to the Risk Adapter, only if ValueType of Condition is equal to RANGE type
- Length:
- Format: An object of Range class. Range is explained in Range Data Elements
- Accepted Value:
- Message Inclusion: Required
- Field Name: string
 - Description: The condition value to be passed to the Risk Adapter if, and only if,
 ValueType of Condition is STRING
 - Length:
 - Format:
 - Accepted Value:
 - Message Inclusion: Required
- Field Name: listOfNumeric
 - Description: The condition value to be passed to the Risk Adapter if, and only if,
 ValueType of Condition is LIST_OF_NUMERIC
 - Length:
 - Format:
 - Accepted Value:
 - Message Inclusion: Required
- Field Name: listOfString
 - Description: The condition value to be passed to the Risk Adapter if, and only if,
 ValueType of Condition is LIST_OF_STRING
 - Length:
 - Format:
 - Accepted Value:



Message Inclusion: Required

• Field Name: when Matches

Description: The default behaviour when the condition matches

• Length:

∘ Format: behaviour

Accepted Value: CONTINUE, FINISH

Message Inclusion: Required

• Field Name: when Mismatch

• **Description:** The default behaviour when the condition mismatches

• Length:

Format: behaviour

Accepted Value: CONTINUE, FINISH

Message Inclusion: Required

• Field Name: scoreWhenMatches

Description: The output score when the condition matches

• Length:

• Format: Integer

Accepted Value: 0-100

Message Inclusion: Required

Here is the methods that can be used in Native API Risk Adapter:

- asNumeric(Condition condition, Number number) is a static method that takes two
 arguments. The first one is an instance of Condition class and the second one is a value of
 type Number. By calling this method, a new bject of ConditionValue class will be created
 and initialize the field for number. Then this new object will be assigned to the condition
 (first argument) and will be returned as method output.
- asString(Condition condition, String value) is a static method that takes two
 arguments. The first one is an instance of Condition class and the second one is a value of
 type String. By calling this method, a new bject of ConditionValue class will be created
 and initialize the field for string. Then this new object will be assigned to the condition
 (first argument) and will be returned as method output.



- asRange(Condition condition, Number start, Number end) is a static method that takes three arguments. The first one is an instance of Condition class, the second one is a value of type Number as minimum value of a range and the third one is a value of type Number as maximum value of a range. By calling this method, a new object of ConditionValue class will be created and initialize the field for range. Then this new object will be assigned to the condition (first argument) and will be returned as method output.
- asListOfNumeric(Condition condition, List<Number> value) is a static method that
 takes two arguments. The first one is an instance of Condition class and the second one is
 a List of Number. By calling this method, a new object of ConditionValue class will be
 created and initialize the field for listOfNumeric. Then this new object will be assigned to
 the condition (first argument) and will be returned as method output.
- asListOfString(Condition condition, List<String> value) is a static method that
 takes two arguments. The first one is an instance of Condition class and the second one is
 a List of String. By calling this method, a new object of ConditionValue class will be
 created and initialize the field for listOfString. Then this new object will be assigned to
 the condition (first argument) and will be returned as method output.

Also there is getter and setter methods for retrieving and updating value of ConditionValue instance variables.

Range Data Elements

A class to represent ranges of values. A range is defined to contain all the values between the start and end values, where the start and end values are considered included in the range.

This class has two instance variable of type Number that indicate minimum and maximum of the range.

Field Name: start

• **Description:** The minimum value of the range. This value included in the range.

• Length:

• Format: Number

Accepted Value:

Message Inclusion:



· Field Name: end

• **Description:** The maximum value of the range. This value included in the range.

• Length:

• Format: Number

Accepted Value:

Message Inclusion:

The Range class also has two methods:

- valueOf is a static method that takes two number as start and end of the range and returns an instance of Range class.
- inRange is an instance method that takes a value and returns a boolean. This method checks whether the input value is in the specified range or not.

ARegWithTransStatus Data Elements

Field Name: aReq

• **Description:** The AReg message of the transaction.

• Length:

• Format: JSON object of AReq type. AReq is explained in AReq Data Elements section.

Accepted Value:

Message Inclusion: Required

• Field Name: transStatus

 Description: Indicates whether a transaction qualifies as an authenticated transaction or account verification.

• Length: 1 character

Format: String

Accepted Value:

- 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 RReg
- A = Attempts Processing Performed; Not Authenticated/Verified, but a proof of attempted authentication/verification is provided
- C = ChallengeRequired; Additional authentication is required using the CReq/CRes
- R = Authentication/Account Verification Rejected; Issuer is rejecting authentication/ verification and request that authorisation not be attempted.
- Message Inclusion: Optional
- Field Name: transStatusReason
 - Description: Provides information on why the Transaction Status field has the specified value.
 - Length: 2 characters
 - Format: String
 - Accepted Value:
 - 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



- 17 = High confidence
- 18 = Very High confidence
- 19 = Exceeds ACS maximum challenges
- 20 = Non-Payment transaction not supported
- 21 = 3RI transaction not supported
- 22-79 = Reserved for EMVCo future use (values invalid until defined by EMVCo)
- 80-99 = Reserved for DS use
- Message Inclusion: Optional
- Field Name: challenge
 - **Description:** A value of true indicates that the transaction flow is Challenge.
 - Length:
 - Format: Boolean
 - Accepted Value: true, false
 - Message Inclusion: Optional
- Field Name: challengeCancel
 - Description: Indicator informing the ACS and the DS that the authentication has been cancelled.
 - Length: 2 characters
 - Format: String
 - Accepted Value:
 - ∘ 01 = No preference
 - 02 = No challenge requested
 - 03 = Challenge requested: 3DS Requestor Preference
 - ∘ 04 = Challenge requested: Mandate
 - 05-79 = Reserved for EMV future use (values invalid until defined by EMV 3DS)
 - ∘ 80-99 = Reserved for DS use
 - Message Inclusion: Optional
- Field Name: errorCode
 - **Description:** Code indicating the type of problem identified in the message.



• Length: 3 characters

Format: String

Accepted Value:

Message Inclusion: Optional

AReq Data Elements

• Field Name: threeDSCompInd

Description: Indicates whether the 3DS Method was successfully completed

• Length: 1 character

• Format: String

Accepted Value:

■ Y = Successfully completed

■ N = Did not successfully complete

■ U = Unavailable

Message Inclusion: Optional

• Field Name: threeDSRequestorAuthenticationInd

- Description: Indicates the type of authentication request. This data element provides additional information to the ACS to determine the best approach for handling the authentication request
- Length: 2 characters

Format: String

Accepted Value:

- 01 = Cardholder selected "Cancel"
- 02 = 3DS Requestor cancelled Authentication.
- 03 = Transaction Abandoned
- 04 = Transaction Timed Out at ACS— other timeouts
- 05 = Transaction Timed Out at ACS—First CReq not received by ACS
- 06 = Transaction Error
- 07 = Unknown



- 08-79 = Reserved for future EMVCo use(values invalid until defined by EMVCo)
- 80-99 = Reserved for future DS use
- Message Inclusion: Optional
- Field Name: threeDSRequestorAuthenticationInfo
 - Description: Data that documents and supports a specific authentication process. In the
 current version of the specification, this data element is not defined in detail, however
 the intention is that for each 3DS requestor authentication method, this field will carry
 the data that the ACS will use to verify the authentication process, described in
 threeDSRequestorAuthenticationInfo Data Elements

Length: Variable

Format: Object

Accepted Value:

Message Inclusion: Optional

Conditional Inclusion: Optional but inclusion recommended

• Field Name: threeDSRequestorChallengeInd

Description: Indicates whether a challenge is to be requested for the transaction

Length: 2 characters

Format: String

Accepted Value:

■ 01 = No preference

■ 02 = No challenge requested

■ 03 = Challenge requested: 3DS Requestor Preference

■ 04 = Challenge requested: Mandate

■ 05-79 = Reserved for EMVCo future use (values invalid until defined by EMVCo)

■ 80-99 = Reserved for DS use

Message Inclusion: Optional

Field Name: threeDSRequestorID

Description: DS assigned 3DS Requestor identifier.

Length: Variable, maximum 35 characters

Format: String



 Accepted Value: Any individual DS may impose specific formatting and character requirements on the contents of this field

Message Inclusion: Required

• Field Name: threeDSRequestorName

Description: DS assigned 3DS Requestor name.

• Length: Variable, maximum 40 characters

Format: String

 Accepted Value: Any individual DS may impose specific formatting and character requirements on the contents of this field

Message Inclusion: Required

• Field Name: threeDSRequestorPriorAuthenticationInfo

 Description: Information about how the 3DS Requestor authenticated the cardholder as part of a previous 3DS transaction, described in threeDSRequestorPriorAuthenticationInfo Data Elements

· Length: Variable

Format: Object

Accepted Value:

Message Inclusion: Optional

Conditional Inclusion: Optional but inclusion recommended

• Field Name: threeDSRequestorURL

Description: Fully qualified URL of 3DS Requestor website or customer care site. This
data element provides additional information to the receiving 3-D Secure system for
when a problem arises, and should provide contact information.

Length: Variable, maximum 2048 characters

Format: String

Accepted Value: Fully qualified URL

Message Inclusion: Required

• Field Name: threeDSServerRefNumber

 Description: Unique identifier assigned by the EMVCo Secretariat upon testing and approval



Length: Variable, maximum 32 characters

Format: String

Accepted Value: Set by the EMVCo Secretariat

Message Inclusion: Required

• Field Name: threeDSServerOperatorID

 Description: DS assigned 3DS Server identifier. Each DS can provide a unique ID to each 3DS Server

• Length: Variable, maximum 32 characters

Format: String

 Accepted Value: Any individual DS may impose specific formatting and character requirements on the contents of this field

Message Inclusion: Conditional

• Conditional Inclusion: Requirements for the presence of this field are DS specific

• Field Name: threeDSServerTransID

 Description: Universally unique transaction identifier assigned by the 3DS Server to identify a single transaction

Length: 36 characters

• Format: String

 Accepted Value: Canonical format as defined in IETF RFC 4122. May utilise any of the specified versions if the output meets specified requirements

Message Inclusion: Required

Field Name: threeDSServerURL

 Description: Fully qualified URL of the 3DS Server to which the DS will send the RReq message after the challenge has completed. Incorrect formatting will result in a failure to deliver the transaction results via the RReq message.

• **Length:** Variable, maximum 2048 characters

Format: String

Accepted Value: Fully qualified URL

Message Inclusion: Required



• Field Name: threeRIInd

 Description: Indicates the type of 3RI request. This data element provides additional information to the ACS to determine the best approach for handling the 3RI request

• Length: 2 characters

• Format: String

Accepted Value:

- 01 = Recurring transaction
- 02 = Instalment transaction
- 03 = Add card
- 04 = Maintain card information
- 05 = Account verification
- 06-79 = Reserved for EMVCo future use (values invalid until defined by EMVCo)
- 80-99 = Reserved for DS use
- Message Inclusion: Required
- Field Name: acctType
 - Description: Indicates the type of account. For example, for a multi-account card product
 - Length: 2 characters
 - Format: String
 - Accepted Value:
 - 01 = Not Applicable
 - 02 = Credit
 - 03 = Debit
 - Message Inclusion: Conditional
 - Conditional Inclusion: Required if 3DS Requestor is asking cardholder which Account
 Type they are using before making the purchase Required in some markets (for example,
 for Merchants in Brazil). Otherwise, it is optional.
- Field Name: acquirerBIN
 - Description: Acquiring institution identification code as assigned by the DS receiving the AReq message



Length: Variable, maximum 11 characters

Format: String

 Accepted Value: This value correlates to the Acquirer BIN as defined by each Payment System or DS.

Message Inclusion: 01-PA: Required, 02-NPA: Optional

• Field Name: acquirerMerchantID

 Description: Acquirer-assigned Merchant identifier. This may be the same value that is used in authorisation requests sent on behalf of the 3DS Requestor and is represented in ISO 8583 formatting requirements

• Length: Variable, maximum 35 characters

• Format: String

 Accepted Value: Individual DS may impose specific formatting and character requirements on the contents of this field

Message Inclusion: 01-PA: Required, 02-NPA: Optional

• Field Name: addrMatch

 Description: Indicates whether the cardholder Shipping Address and cardholder Billing Address are the same

Length: 1 characters

Format: String

Accepted Value:

■ Y = Shipping Address matches Billing Address

■ N = Shipping Address does not match Billing Address

Message Inclusion: Optional

• Field Name: broadInfo

Description: Unstructured information sent between the 3DS Server, the DS and the ACS

• Length: 4096

Format: String (JSON object)

Accepted Value:

Message Inclusion: Conditional

· Conditional Inclusion: Requirements for the presence of this field are DS specific



• Field Name: browserAcceptHeader

 Description: Exact content of the HTTP accept headers as sent to the 3DS Requestor from the cardholder's browser

• Length: Variable, maximum 2048 characters

Format: String

Accepted Value: If the total length of the accept header sent by the browser exceeds
 2048 characters, the 3DS Server truncates the excess portion

Message Inclusion: Required

• Field Name: browserTP

Description: IP address of the browser as returned by the HTTP headers to the 3DS
 Requestor

• Length: Variable, maximum 45 characters

Format: String

Accepted Value:

- IPv4 address is represented in the decimal format of 4 sets of decimal numbers separated by dots. The decimal number in each and every set is in the range 0 to 255. Example IPv4 address: 1.12.123.255
- IPv6 address is represented as eight groups of four hexadecimal digits, each group representing 16 bits (two octets). The groups are separated by colons (:). Example IPv6 address: 2011:0db8:85 a3:0101:0101:8a2e:03 70:7334

Message Inclusion: Conditional

Conditional Inclusion: Include this field where regionally acceptable.

• Field Name: browserJavaEnabled

Description: Boolean that represents the ability of the cardholder browser to execute
 Java. Value is returned from the navigator. javaEnabled property.

• Length:

Format: Boolean

Accepted Value: true, false

Message Inclusion: Required



• Field Name: browserLanguage

Description: Value representing the browser language as defined in IETF BCP47.
 Returned from navigator.language property

• Length: Variable, 1-8 characters

• Format: String

Accepted Value:

Message Inclusion: Required

• Field Name: browserColorDepth

- Description: Value representing the bit depth of the colour palette for displaying images, in bits per pixel. Obtained from the cardholder's browser using the screen.colorDepth property.
- Length: Variable, 1-2 characters
- Format: String
- Accepted Value:
 - 1 = 1 bit
 - 4 = 4 bits
 - 8 = 8 bits
 - 15 = 15 bits
 - 16 = 16 bits
 - 24 = 24 bits
 - 32 = 32 bits
 - 48 = 48 bits
- Message Inclusion: Required
- Field Name: browserScreenHeight
 - Description: Total height of the cardholder's screen in pixels. Value is returned from the screen.height property
 - Length: Variable, 1-6 characters
 - Format: String
 - Accepted Value:
 - Message Inclusion: Required



• Field Name: browserScreenWidth

 Description: Total width of the cardholder's screen in pixels. Value is returned from the screen.width property

Length: Variable, 1-6 characters

• Format: String

Accepted Value:

Message Inclusion: Required

• Field Name: browserTZ

 Description: Time difference between UTC time and the cardholder's browser local time, in minutes

Length: Variable, 1-5 characters

• Format: String

Accepted Value: Value is returned from the getTimezoneOffset() method

Message Inclusion: Required

• Field Name: browserUserAgent

Description: Exact content of the HTTP user-agent header

Length: Variable, maximum 2048 characters

Format: String

 Accepted Value: If the total length of the User-Agent sent by the browser exceeds 2048 characters, the 3DS Server truncates the excess portion

Message Inclusion: Required

Field Name: cardExpiryDate

 Description: Expiry date of the PAN or token supplied to the 3DS Requestor by the cardholder

Length: 4 characters

Format: String (accepted format: YYMM)

Accepted Value:

Message Inclusion: Conditional

• Conditional Inclusion: The requirements for the presence of this field are DS specific



• Field Name: acctInfo

 Description: Additional information about the cardholder's account provided by the 3DS Requestor, described in acctlnfo Data Elements

• Length: Variable

Format: Object

Accepted Value:

Message Inclusion: Optional

• Field Name: acctNumber

 Description: Account number that will be used in the authorisation request for payment transactions. May be represented by PAN, token.

• **Length:** Variable, 13-19 characters, • or up to 72 characters when encryption for sensitive data is enabled

Format: String

Accepted Value: Format represented in ISO 7812.

Message Inclusion: Required

• Field Name: acctID

 Description: Additional information about the account optionally provided by the 3DS Requestor

Length: Variable, maximum 64 characters

• Format: String

Accepted Value:

Message Inclusion: Optional

• Field Name: billAddrCity

 Description: The city of the cardholder billing address associated with the card used for this transaction

Length: Variable, maximum 50 characters

Format: String

Accepted Value:

Message Inclusion: Conditional



 Conditional Inclusion: 01-PA: Required unless market or regional mandate restricts sending this information, 02-NPA: Required (if available) unless market or regional mandate restricts sending this information.

• Field Name: billAddrCountry

 Description: The country of the cardholder billing address associated with the card used for this transaction

Length: 3 characters

Format: String

 Accepted Value: ISO 3166-1 numeric three-digit country code, other than exceptions listed in Table A.5.

Message Inclusion: Conditional

Conditional Inclusion: Required if cardholder billing address state is present. 01-PA:
 Required unless market or regional mandate restricts sending this information. 02-NPA:

 Required (if available) unless market or regional mandate restricts sending this information.

• Field Name: billAddrLine1

 Description: First line of the street address or equivalent local portion of the cardholder billing address associated with the card used for this transaction

Length: Variable, maximum 50 characters

Format: String

Accepted Value:

Message Inclusion: Conditional

 Conditional Inclusion: 01-PA: Required unless market or regional mandate restricts sending this information, 02-NPA: Required (if available) unless market or regional mandate restricts sending this information.

• Field Name: billAddrLine2

 Description: Second line of the street address or equivalent local portion of the cardholder billing address associated with the card used for this transaction

Length: Variable, maximum 50 characters

Format: String

Accepted Value:



- Message Inclusion: Conditional
- Conditional Inclusion: 01-PA: Required unless market or regional mandate restricts sending this information, 02-NPA: Required (if available) unless market or regional mandate restricts sending this information.
- Field Name: billAddrLine3
 - Description: Third line of the street address or equivalent local portion of the cardholder billing address associated with the card used for this transaction
 - Length: Variable, maximum 50 characters
 - Format: String
 - Accepted Value:
 - Message Inclusion: Conditional
 - Conditional Inclusion: 01-PA: Required unless market or regional mandate restricts sending this information, 02-NPA: Required (if available) unless market or regional mandate restricts sending this information.
- Field Name: billAddrPostCode
 - Description: ZIP or other postal code of the cardholder billing address associated with the card used for this transaction
 - Length: Variable, maximum 16 characters
 - Format: String
 - Accepted Value:
 - Message Inclusion: Conditional
 - Conditional Inclusion: 01-PA: Required unless market or regional mandate restricts sending this information, 02-NPA: Required (if available) unless market or regional mandate restricts sending this information.
- Field Name: billAddrState
 - Description: The state or province of the cardholder billing address associated with the card used for this transaction
 - Length: Variable, maximum 16 characters
 - Format: String
 - Accepted Value: Country subdivision code defined in ISO 3166-2
 - Message Inclusion: Conditional



 Conditional Inclusion: 01-PA: Required unless market or regional mandate restricts sending this information, or state is not applicable for this country. 02-NPA: Required (if available) unless market or regional mandate restricts sending this information, or State is not applicable for this country.

• Field Name: email

 Description: The email address associated with the account that is either entered by the cardholder or is on file with the 3DS Requestor

• Length: Variable, maximum 254 characters

• Format: String

• Accepted Value: To meet the requirements of Section 3.4 of IETF RFC 5322.

Message Inclusion: Conditional

 Conditional Inclusion: Required unless market or regional mandate restricts sending this information

• Field Name: homePhone

 Description: The home phone number provided by the cardholder, described in homePhone Data Elements

Message Inclusion: Conditional

 Conditional Inclusion: Required unless market or regional mandate restricts sending this information

• Field Name: mobilePhone

 Description: The mobile phone number provided by the cardholder, described in mobilePhone Data Elements

Message Inclusion: Conditional

 Conditional Inclusion: Required unless market or regional mandate restricts sending this information

• Field Name: cardholderName

• Description: Name of the cardholder

• **Length:** Variable, 2-45 characters, or up to 72 characters when encryption for sensitive data is enabled

Format: String

Accepted Value: Alphanumeric special characters, listed in EMV Book 4, "Appendix B".



Message Inclusion: Conditional

 Conditional Inclusion: Required unless market or regional mandate restricts sending this information

• Field Name: shipAddrCity

Description: City portion of the shipping address requested by the cardholder

• Length: Variable, maximum 50 characters

• Format: String

Accepted Value:

Message Inclusion: Conditional

 Conditional Inclusion: Required unless market or regional mandate restricts sending this information

• Field Name: shipAddrCountry

Description: Country of the shipping address requested by the cardholder

Length: 3 characters

Format: String

Accepted Value: ISO 3166-1 three-digit country code

Message Inclusion: Conditional

Conditional Inclusion: Required if cardholder shipping address state is present.
 Required, if available, unless market or regional mandate restricts sending this information.

• Field Name: shipAddrLine1

 Description: First line of the street address or equivalent local portion of the shipping address requested by the cardholder

• **Length:** Variable, maximum 50 characters

Format: String

Accepted Value:

Message Inclusion: Conditional

 Conditional Inclusion: Required unless market or regional mandate restricts sending this information



• Field Name: shipAddrLine2

 Description: Second line of the street address or equivalent local portion of the shipping address requested by the cardholder

• Length: Variable, maximum 50 characters

Format: String

Accepted Value:

Message Inclusion: Conditional

 Conditional Inclusion: Required unless market or regional mandate restricts sending this information

• Field Name: shipAddrLine3

 Description: Third line of the street address or equivalent local portion of the shipping address requested by the cardholder

Length: Variable, maximum 50 characters

• Format: String

Accepted Value:

Message Inclusion: Conditional

 Conditional Inclusion: Required unless market or regional mandate restricts sending this information

• Field Name: shipAddrPostCode

 Description: The ZIP or other postal code of the shipping address requested by the cardholder

Length: Variable, maximum 16 characters

Format: String

Accepted Value:

Message Inclusion: Conditional

 Conditional Inclusion: Required unless market or regional mandate restricts sending this information

• Field Name: shipAddrState

 Description: The state or province of the shipping address associated with the card being used for this transaction



Length: Variable, maximum 3 characters

Format: String

Accepted Value: Country subdivision code defined in ISO 3166-2

Message Inclusion: Conditional

 Conditional Inclusion: Required, if available, unless market or regional mandate restricts sending this information or state is not applicable for this country.

• Field Name: workPhone

 Description: The work phone number provided by the cardholder. Described in workPhone Data Elements

Message Inclusion: Conditional

 Conditional Inclusion: Required unless market or regional mandate restricts sending this information

• Field Name: deviceChannel

• **Description:** Indicates the type of channel interface being used to initiate the transaction

• Length: 2 characters

Format: String

Accepted Value:

■ 01 = App-based (APP)

■ 02 = Browser (BRW)

■ 03 = 3DS Requestor Initiated (3RI)

■ 04-79 = Reserved for EMVCo future use (values invalid until defined by EMVCo)

■ 80-99 = Reserved for DS use

Message Inclusion: Required

• Field Name: deviceInfo

 Description: Device information gathered by the 3DS SDK from a consumer device as Base64url encoded JSON name/value pairs. This will be obtained from the SDK as encrypted data and populated by the DS, as unencrypted data, to the ACS.

• Length: Variable, maximum 64000 characters

Format: Object

Accepted Value: Base64url encoded JSON object



Message Inclusion: Conditional

 Conditional Inclusion: Required between the DS and ACS but will not be present from 3DS Server to DS

• Field Name: deviceRenderOptions

 Description: Defines the SDK UI types that the device supports for displaying specific challenge user interfaces within the SDK, described in deviceRenderOptions Data Elements

Length: Variable, maximum 64000 characters

Format: JSON object

Message Inclusion: Required

Field Name: dsReferenceNumber

Description: EMVCo assigned unique identifier to track approved DS

Length: Variable, maximum 32 characters

• Format: String

Accepted Value:

Message Inclusion: Conditional

 Conditional Inclusion: The DS will populate the AReq with this data element prior to passing it to the ACS

• Field Name: dsTransID

 Description: Universally unique transaction identifier assigned by the DS to identify a single transaction

Length: 36 characters

Format: String

 Accepted Value: Canonical format as defined in IETF RFC 4122. May utilise any of the specified versions as long as the output meets specified requirements

Message Inclusion: Conditional

 Conditional Inclusion: The DS will populate the AReq with this data element prior to passing to the ACS. Required in error messages if available (e.g. can be obtained from a message or is generated).



· Field Name: dsURL

Description: URL of the DS to which the ACS will send the RReq if a challenge occurs.
 The ACS is responsible for storing this value for later use in the transaction for sending the RReq to the DS.

• Length: Variable, maximum 2048 characters

• Format: String

Accepted Value:

Message Inclusion: Conditional

 Conditional Inclusion: Required between the DS and ACS but will not be present between the 3DS Server and DS

• Field Name: payTokenInd

Description: A value of true indicates that the transaction was detokenised 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 detokenisation 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.

• Length:

Format: Boolean

Accepted Value: true

Message Inclusion: Conditional

Conditional Inclusion: Required if there is detokenisation of an account number

• Field Name: purchaseInstalData

 Description: Indicates the maximum number of authorisations permitted for instalment payments

Length: Variable, maximum 3 characters

Format: String

Accepted Value: Value greater than 1

Message Inclusion: Conditional

 Conditional Inclusion: Required if the merchant and cardholder have agreed to instalment payments, i.e. if 3DS Requestor Authentication Indicator = 03. Omitted if not an instalment payment authentication.



• Field Name: mcc

 Description: DS specific code describing the merchant's type of business, product or service

• Length: 4 characters

Format: String

 Accepted Value: This value correlates to the merchant category code as defined by each payment system or DS

Message Inclusion: 1-PA: Required, 02-NPA: Optional

• Field Name: merchantCountryCode

 Description: Country code of the merchant. This value correlates to the merchant country code as defined by each payment system or DS

• Length: 3 characters

Format: String

 Accepted Value: ISO 3166-1 numeric three-digit country code. The same value must be used in the authorisation request.

Message Inclusion: 1-PA: Required, 02-NPA: Optional

• Field Name: merchantName

Description: Merchant name assigned by the acquirer or payment system

Length: Variable, maximum 40 characters

• Format: String

Accepted Value: Same name used in the authorisation message as defined in ISO 8583

Message Inclusion: 1-PA: Required, 02-NPA: Optional

• Field Name: merchantRiskIndicator

 Description: Merchant's assessment of the level of fraud risk for the specific authentication for both the cardholder and the authentication being conducted, described in merchantRiskIndicator Data Elements

Length: Variable

Format: Object

 Accepted Value: Data will be formatted into a JSON object prior to being placed into the device merchant risk indicator field of the message.



Message Inclusion: Optional

• Field Name: messageCategory

Description: Identifies the category of the message for a specific use case

Length: 2 characters

• Format: String

Accepted Value:

■ 01-PA

■ 02-NPA

Message Inclusion: Required

• Field Name: messageExtension

Description: Data necessary to support requirements not otherwise defined in the 3-D
 Secure message are carried in a message extension, described in messageExtension
 Data Elements

Length: Variable, maximum 81920 bytes

• Format: Array

Accepted Value:

Message Inclusion: Conditional

Conditional Inclusion: Conditions to be set by each DS.

Field Name: messageVersion

 Description: Protocol version identifier. This is version of the protocol specification utilised by the system creating this message. The message version number is set by the protocol version of the 3DS Server from which AReq message originates. The message version number does not change during a 3DS transaction.

Length: Variable, 5-8 characters

Format: String

Accepted Value:

■ 2.0.0 (deprecated)

■ 2.1.0 (active)

Message Inclusion: Required



• Field Name: notificationURL

 Description: Fully qualified URL of the system that receives the CRes message or error message. The CRes message is posted by the ACS through the cardholder browser at the end of the challenge and on receipt of the RRes message.

• Length: Variable, maximum 256 characters

• Format: String

Accepted Value: Fully qualified URL

Message Inclusion: Required

• Field Name: purchaseAmount

Description: Purchase amount in minor units of currency with all punctuation removed.
 When used in conjunction with the purchase currency exponent field, proper punctuation can be calculated.

Length: Variable, 48 characters

Format: String

 Accepted Value: Example: If the purchase amount is USD 123.45, element will contain the value 12345

Message Inclusion: 1-PA: Required, 02-NPA: Conditional

 Conditional Inclusion: Required for 02-NPA if 3DS Requestor Authentication Indicator = 02 or 03

• Field Name: purchaseCurrency

• **Description:** Currency in which the purchase amount is expressed.

Length: 3 characters

Format: String

Accepted Value: ISO 4217 three-digit currency code

Message Inclusion: 1-PA: Required, 02-NPA: Conditional

 Conditional Inclusion: Required for 02-NPA if 3DS Requestor Authentication Indicator = 02 or 03

• Field Name: purchaseExponent

Description: Minor units of currency as specified in the ISO 4217 currency exponent

• Length: 1 character



- Format: String
- Accepted Value:
- Message Inclusion: 1-PA: Required, 02-NPA: Conditional
- Conditional Inclusion: Required for 02-NPA if 3DS Requestor Authentication Indicator = 02 or 03
- Field Name: purchaseDate
 - **Description:** Date and time of the purchase, expressed in UTC.
 - Length: 14 characters
 - Format: String (Date Format: YYYYMMDDHHMMSS)
 - Accepted Value:
 - Message Inclusion: 1-PA: Required, 02-NPA: Conditional
 - Conditional Inclusion: Required for 02-NPA if 3DS Requestor Authentication Indicator = 02 or 03
- Field Name: recurringExpiry
 - **Description:** Date after which no further authorisations shall be performed
 - Length: 8 characters
 - Format: String (Date Format: YYYYMMDDHH)
 - Accepted Value:
 - Message Inclusion: 1-PA: Conditional, 02-NPA: Conditional
 - Conditional Inclusion: Required if 3DS Requestor Authentication Indicator = 02 or 03
- Field Name: recurringFrequency
 - Description: Indicates the minimum number of days between authorisations.
 - Length: Variable, 4 characters
 - Format: String
 - Accepted Value:
 - Message Inclusion: 1-PA: Conditional, 02-NPA: Conditional
 - Conditional Inclusion: Required if 3DS Requestor Authentication Indicator = 02 or 03



• Field Name: sdkAppID

 Description: Universally unique ID created upon all installations and updates of the 3DS Requestor App on a Consumer Device. This will be newly generated and stored by the 3DS SDK for each installation or update

• Length: 36 characters

• Format: String

 Accepted Value: Canonical format as defined in IETF RFC 4122. This may utilise any of the specified versions as long as the output meets specified requirements.

Message Inclusion: Required

• Field Name: sdkEphemPubKey

 Description: Public key component of the ephemeral key pair generated by the 3DS SDK and used to establish session keys between the 3DS SDK and ACS

Length: Variable, 256 characters

Format: Object, JWK

Accepted Value:

Message Inclusion: Required

• Field Name: sdkMaxTimeout

Description: Indicates maximum amount of time, in minutes, for all exchanges.

Length: 2 characters

• Format: String

Accepted Value: Greater than or = 5

Message Inclusion: Required

• Field Name: sdkReferenceNumber

 Description: Identifies the vendor and version for the 3DS SDK that is integrated in a 3DS Requestor App, assigned by EMVCo when the 3DS SDK is approved

Length: Variable, 32 characters

Format: String

Accepted Value:

Message Inclusion: Required



• Field Name: sdkTransID

 Description: Universally unique transaction identifier assigned by the 3DS SDK to identify a single transaction.

• Length: 36 characters

Format: String

 Accepted Value: Canonical format as defined in IETF RFC 4122. This may utilise any of the specified versions as long as the output meets specified requirements

Message Inclusion: Required

• Field Name: transType

• Description: Identifies the type of transaction being authenticated.

• **Length:** 2 characters

• Format: String

Accepted Value:

■ 01 = Goods/ Service Purchase

■ 03 = Check Acceptance

■ 10 = Account Funding

■ 11 = Ouasi-Cash Transaction

■ 28 = Prepaid Activation and Load. Note: Values derived from the 8583 ISO Standard.

Message Inclusion: Conditional

 Conditional Inclusion: This field is required in some markets (e.g. for merchants in Brazil), otherwise, optional

threeDSRequestorAuthenticationInfo Data Elements

• Field Name: threeDSRegAuthData

Description: Data that documents and supports a specific authentication process. In the
current version of the specification, this data element is not defined in detail, however
the intention is that for each 3DS requestor authentication method, this field will carry
the data for the ACS to use to verify the authentication process. For example, for
method: 02—field can carry generic 3DS Requestor authentication information 03—data
element can carry information about the provider of the federated ID and related



information 04—data element can carry the FIDO attestation data (including the signature) In future versions of the specification, these details are expected to be included

Length: Variable, maximum 2048 bytes

• Format: String

Accepted Value: Any

Message Inclusion:

• Field Name: threeDSReqAuthMethod

Description: Mechanism used by the cardholder to authenticate to the 3DS Requestor

Length: 2 characters

• Format: String

Accepted Value:

- 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 a 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 a FIDO Authenticator
- 07-79 = Reserved for EMVCo future use (values invalid until defined by EMVCo)
- 80-99 = Reserved for DS use
- Field Name: threeDSRegAuthTimestamp
 - **Description:** Date and time in UTC of the cardholder authentication
 - Length: 12 characters
 - Format: String (Date Format: YYYYMMDDHHMM)
 - Accepted Value:



threeDSRequestorPriorAuthenticationInfo Data Elements

- Field Name: threeDSReqPriorAuthData
 - Description: Data that documents and supports a specific authentication process. In the current version of the specification this data element is not defined in detail, however the intention is that for each 3DS requestor authentication method, this field carry data that the ACS can use to verify the authentication process. In future versions of the specification, these details are expected to be included.
 - Length: Maximum 2048 bytes
 - Format: Any
 - Accepted Value:
- Field Name: threeDSReqPriorAuthMethod
 - Description: Mechanism used by the cardholder to previously authenticate to the 3DS Requestor
 - Length: 2 characters
 - Format: String
 - Accepted Value:
 - 01 = Frictionless authentication by ACS
 - 02 = Cardholder challenge by ACS
 - 03 = AVS verified 04 = Other issuer methods
 - 05-79 = Reserved for EMVCo future use (values invalid until defined by EMVCo)
 - 80-99 = Reserved for DS use
- Field Name: threeDSReqPriorAuthTimestamp
 - **Description:** Date and time in UTC of the prior cardholder authentication
 - Length: 12 characters
 - Format: String (Date Format: YYYYMMDDHHMM)
 - Accepted Value:
- Field Name: threeDSRegPriorRef
 - Description: This data element provides additional information to the ACS to determine the best approach for handling a request



Length: 36 characters

Format: String

 Accepted Value: This data element contains an ACS transaction ID for a prior authenticated transaction (for example, the first recurring transaction that was authenticated with the cardholder)

acctinfo Data Elements

• Field Name: chAccAgeInd

 Description: Length of time that the cardholder has had the account with the 3DS Requestor

Length: 2 characters

Format: String

Accepted Value:

■ 01 = No account (guest check-out)

■ 02 = Created during this transaction

■ 03 = Less than 30 days

 \blacksquare 04 = 30-60 days

■ 05 = More than 60 days

• Field Name: chAccChange

 Description: Date that the cardholder's account information with the 3DS Requestor was last changed. Information includes billing or shipping address, new payment account, or new user/s added

Length: 8 characters

Format: String (Date Format: YYYYMMDD)

Accepted Value:

• Field Name: chAccChangeInd

 Description: Length of time since the cardholder's account information with the 3DS Requestor was last changed. Information includes billing or shipping address, new payment account, or new user/s added.

Length: 2 characters



- Format: String
- Accepted Value:
 - 01 = Changed during this transaction
 - 02 = Less than 30 days
 - \blacksquare 03 = 30-60 days
 - 04 = More than 60 days
- Field Name: chAccDate
 - **Description:** Date that the cardholder opened the account with the 3DS Requestor
 - Length: 8 characters
 - Format: String (Date Format: YYYYMMDD)
 - Accepted Value:
- Field Name: chAccPwChange
 - Description: Date that cardholder's account with the 3DS Requestor had a password change or account reset
 - Length: 8 characters
 - Format: String (Date Format: YYYYMMDD)
 - Accepted Value:
- Field Name: chAccPwChangeInd
 - Description: Indicates the length of time since the cardholder's account with the 3DS
 Requestor had a password change or account reset
 - Length: 2 characters
 - Format: String
 - Accepted Value:
 - 01 = No change
 - 02 = Changed during this transaction
 - 03 = Less than 30 days
 - \blacksquare 04 = 30-60 days
 - \blacksquare 05 = More than 60 days



• Field Name: nbPurchaseAccount

 Description: Number of purchases using this cardholder account during the last six months

Length: Maximum 4 characters

Format: String

Accepted Value:

• Field Name: provisionAttemptsDay

Description: Number of attempts made to add a card in the last 24 hours

• Length: Maximum 3 characters

• Format: String

Accepted Value:

• Field Name: txnActivityDay

 Description: Number of transactions (successful and abandoned), in the last 24 hours, for this cardholder's account with the 3DS Requestor, across all payment accounts

Length: Maximum 3 characters

Format: String

Accepted Value:

• Field Name: txnActivityYear

 Description: Number of transactions (successful and abandoned), in the last year, for this cardholder account with the 3DS Requestor, across all payment accounts

Length: Maximum 3 characters

• Format: String

Accepted Value:

• Field Name: paymentAccAge

 Description: Date that the payment account was enrolled in the cardholder's account with the 3DS Requestor

Length: 8 characters

Format: String (Date Format: YYYYMMDD)

Accepted Value:



• Field Name: paymentAccInd

 Description: Indicates the length of time that the payment account was enrolled in the cardholder's account with the 3DS Requestor

• Length: 2 characters

Format: String

Accepted Value:

■ 01 = No account (guest check-out)

■ 02 = During this transaction

■ 03 = Less than 30 days

 \blacksquare 04 = 30-60 days

■ 05 = More than 60 days

• Field Name: shipAddressUsage

 Description: Date when the shipping address used for this transaction was first used with the 3DS Requestor

Length: 8 characters

Format: String (Date format = YYYYMMDD)

Accepted Value:

• Field Name: shipAddressUsageInd

 Description: Indicates when the shipping address used for this transaction was first used with the 3DS Requestor

• Length: 2 characters

• Format: String

Accepted Value:

■ 01 = This transaction

■ 02 = Less than 30 days

 \blacksquare 03 = 30-60 days

■ 04 = More than 60 days

• Field Name: shipNameIndicator

 Description: Indicates if the cardholder name on the account is identical to the shipping name used for this transaction



Length: 2 characters

Format: String

Accepted Value:

- 01 = Account name identical to shipping name
- 02 = Account name different to shipping name
- Field Name: suspiciousAccActivity
 - Description: Indicates whether the 3DS Requestor has experienced suspicious activity (including previous fraud) on the cardholder account

Length: 2 characters

• Format: String

Accepted Value:

- 01 = No suspicious activity has been observed
- 02 = Suspicious activity has been observed

homePhone Data Elements

• Field Name: cc

Description: Country code section of the number

• Length: 1-3 characters

Format: String

• Accepted Value: Refer to ITU-E.164 for additional information on format and length

Message Inclusion: Conditional

 Conditional Inclusion: Required, if available, unless market or regional mandate restricts sending this information

• Field Name: subscriber

o Description: Subscriber section of the number

Length: Variable, maximum 15 characters

Format: String

• Accepted Value: Refer to ITU-E.164 for additional information on format and length

Message Inclusion: Conditional



 Conditional Inclusion: Required, if available, unless market or regional mandate restricts sending this information

mobilePhone Data Elements

• Field Name: cc

Description: Country code section of the number

Length: 1-3 characters

Format: String

• Accepted Value: Refer to ITU-E.164 for additional information on format and length

Message Inclusion: Conditional

 Conditional Inclusion: Required, if available, unless market or regional mandate restricts sending this information

• Field Name: subscriber

Description: Subscriber section of the number

Length: Variable, maximum 15 characters

Format: String

• Accepted Value: Refer to ITU-E.164 for additional information on format and length

Message Inclusion: Conditional

 Conditional Inclusion: Required, if available, unless market or regional mandate restricts sending this information

workPhone Data Elements

• Field Name: cc

Description: Country code section of the number

Length: 1-3 characters

Format: String

• Accepted Value: Refer to ITU-E.164 for additional information on format and length

Message Inclusion: Conditional

 Conditional Inclusion: Required, if available unless market or regional mandate restricts sending this information



• Field Name: subscriber

Description: Subscriber section of the number

• Length: Variable, maximum 15 characters

• Format: String

• Accepted Value: Refer to ITU-E.164 for additional information on format and length

Message Inclusion: Conditional

 Conditional Inclusion: Required, if available, unless market or regional mandate restricts sending this information

deviceRenderOptions Data Elements

• Field Name: sdkInterface

 Description: Lists all SDK interface types supported by the device for displaying specific challenge user interfaces within the SDK

• Length: 2 characters

Format: String

Accepted Value:

■ 01 = Native

■ 02 = HTML

■ 03 = Both

• Field Name: sdkUiType

 Description: Lists all UI types supported by the device for displaying specific challenge user interfaces within the SDK

Length: 2 characters

Format: Array of String

Accepted Value:

■ 01 = Text

■ 02 = Single Select

■ 03 = Multi Select

■ 04 = 00B



■ 05 = HTML Other (valid only for HTML UI)

merchantRiskIndicator Data Elements

• Field Name: deliveryEmailAddress

 Description: For electronic delivery, the email address to which the merchandise was delivered

• Length: Maximum 254 characters

• Format: String

Accepted Value:

• Field Name: deliveryTimeframe

Description: Indicates the merchandise delivery timeframe

• Length: 2 characters

Format: String

Accepted Value:

■ 01 = Electronic delivery

■ 02 = Same day shipping

■ 03 = Overnight shipping

■ 04 = Two or more days shipping

• Field Name: giftCardAmount

 Description: For prepaid or gift card purchases, the purchase amount total of prepaid or gift cards, in major units (for example, USD 123.45 is 123).

Length: Maximum 15 characters

Format: String

Accepted Value:

• Field Name: giftCardCount

 Description: For prepaid or gift card purchases, the total count of individual prepaid or gift cards/codes purchased

• Length: 2 characters

Format: String



Accepted Value:

• Field Name: giftCardCurr

 Description: For prepaid or gift card purchases, the currency code of the cards as defined in ISO 4217, other than those listed in Table A.5

• Length: 3 characters

• Format: String

Accepted Value:

• Field Name: preOrderDate

 Description: For a pre-ordered purchase, the expected date that the merchandise will be available

Length: 8 characters

Format: String (Date format = YYYYMMDD)

Accepted Value:

• Field Name: preOrderPurchaseInd

 Description: Indicates whether the cardholder is placing an order for merchandise with a future availability or release date

• Length: 2 characters

• Format: String

Accepted Value:

■ 01 = Merchandise available

■ 02 = Future availability

• Field Name: reorderItemsInd

 Description: Indicates whether the cardholder is reordering previously purchased merchandise

Length: 2 characters

• Format: String

Accepted Value:

■ 01 = First time ordered

■ 02 = Reordered



• Field Name: shipIndicator

• Description: Indicates the 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 goods are digital, use the shipping indicator code that describes the most expensive item.

Length: 2 characters

Format: String

Accepted Value:

- 01 = Ship to cardholder's billing address
- 02 = Ship to another verified address on file with merchant
- 03 = Ship to address that is different to the cardholder's billing address
- 04 = "Ship to store" / pick-up at local store (Store address to 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, media subscriptions, etc.)

messageExtension Data Elements

• Field Name: criticalityIndicator

 Description: A Boolean value indicating whether the recipient must understand the contents of the extension to interpret the entire message

• Length:

Format: Boolean

Accepted Value: true, false

Field Name: data

Description: The data carried in the extension

Length: Variable, maximum 8059 characters

Format: String (JSON text)



Accepted Value:

• Field Name: id

 Description: A unique identifier for the extension. Note: the payment system registered application provider identifier (RID) is required as a prefix of the ID

• Length: Variable, maximum 64 characters

• Format: String

Accepted Value:

• Field Name: name

• Description: The name of the extension data set as defined by the extension owner

• Length: Variable, maximum 64 characters

Format: String

Accepted Value:

AdditionalInfo Data Elements

• Field Name: clientId

• Description: Client ID

Length: 15 characters

Format: String

Accepted Value: Decimal numbers

 Message Inclusion: Optional (this field will be excluded from RESTful JSON message when it has no value)