SHIFT4

API Specifications

Payments Gateway

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Introduction

The purpose of this document is to provide an in-depth description of the *Shift4* Payment Gateway API, a proprietary platform for Payment Gateway services.

The *Shift4* API is connected to various Payment Processors around the world. You must be registered with at least one Payment Processor in order to accept payments.

The *Shift4* API employs a basic 'request-response' model where the Merchant instructs the gateway to perform an operation and the gateway responds with that operation's status.

It also employs a simple-to-use name/value pair data format based on HTML form-urlencoded data.

This document describes the Payment Gateway processing features supported by the *Shift4* API. Note, however, that processors may differ in their support of these operations and features, and some may not be available when used with a specific processor.

Glossary

Term	Description
Payment Gateway	A Payment Gateway is an application for authorising payment transactions such as those made with debit and credit cards, or with alternative payment methods. It is designed for both online and physical businesses. A Payment Gateway facilitates a payment transaction by transferring information between a merchant portal (such as a website, a point-of-sale device (POS), a mobile phone application or Interactive Voice Response (IVR) service) and the Payment Processor or acquiring bank.
Payment Processor	A Payment Processor is a payment service provider appointed by the merchant (often as a third party) to process transactions from various channels via one or more acquiring banks.
Authorisation	An Authorisation (Auth) request is initiated by the merchant portal and sent to the Gateway in order to verify that sufficient funds are available and reserved for settling the payment transaction in due time. If the Authorisation is approved, the issuer bank returns an Authorisation code and the amount of funds authorised. Note that no actual funds are collected during an Authorisation request.

Term	Description
Capture	A Capture request instructs the issuer to transfer funds from the cardholder's bank account to the merchant's bank account. This transaction can only be performed after an Auth transaction.
Sale	A Sale request instructs the Gateway to perform both Authorisation and Capture transactions at the same time, i.e., to send an Authorisation request to the issuer and immediately capture the transaction upon its approval.
Void	A Void request is a merchant-initiated request that instructs the Gateway to cancel a transaction. In case of auth void the action also releases the reserved funds from the cardholder account.
Credit	There are two types of Credit requests: (1) Referral Credit, a request that instructs the Gateway to refund a previously captured transaction to the cardholder, and (2) Independent Credit, a request that initiates a stand-alone credit transaction. Full card number is needed.
CFT	A CFT (Credit Fund Transfer) request is a merchant-initiated request that instructs the Gateway to transfer funds to the cardholder's account. This transaction is allowed for specific Merchant Category Codes (MCCs).
AVS	The Address Verification System (AVS) is a security measure for verifying the address of a person claiming to own a credit card.
Token Transactions	Token Transactions (also known as Card-on-File transactions) store the cardholder's card data during the first purchase and reuse this data for subsequent purchases without requiring the cardholder to re-enter her/his card details.
ZIP+4	An expanded ZIP code system used by the U.S. Postal Service that uses the basic five-digit code plus four additional digits.

Term	Description
Billing Descriptor	A Billing Descriptor appears on the cardholder's statement and contains the name of the business (frequently referred to as "Doing Business As" or DBA) and the relevant transaction information (such as the merchant's location or product name). The Billing Descriptor allows the cardholder to identify the specific purchases associated with the transactions recorded on their statement. The *Shift4* system supports two types of Billing Descriptors: A Static Billing Descriptor defined once by the merchant and subsequently used for all transactions A Dynamic Billing Descriptor that allows the merchant to change the information included in each transaction. Note: Providing clear billing descriptors can help the cardholder to recognise the transaction and reduce chargebacks and disputes.

Useful Documents / References

The following documents may also be useful in understanding the Shift4 Payment Gateway API Specification:

- Shift4 Card-Present Specification – a supplement to the *Shift4 Gateway API Specification* that provides detailed information on the API's use of Card-Present data.
- *Shift4 Processors documentation* - select the specification for the processor you work with, can be found on the Shift4 Developers Portal.

Certification

All new implementations must complete a certification process before they can start sending production transactions, in order to ensure the quality of integration and integrity of merchant data.

Please note that only test-card data should be used for testing.

Additional certifications are required if the implementation makes use of new operation codes or features.

Please contact integration.europe@shift4.com for latest test card details and more information

API Version Control

The information provided in this document is accurate and reliable for standard processing as of its publication date. Any new implementations should thus avoid using earlier versions of the API specification.

The API version number is a sequence-based identifier. Changes in the first part indicate major specification updates, while changes in the second part indicate minor updates.

The revision number reflects smaller changes in the specification as well as the correction of typing errors or other corrections that do not affect the API protocol itself.

Publisher Information

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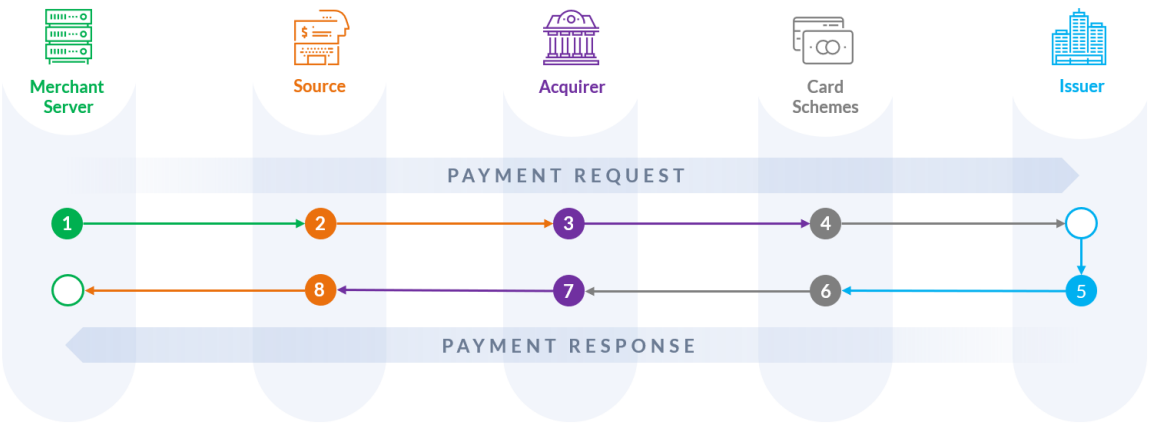
Gateway Interface

Introduction

Transaction requests are sent online and in real-time using the HTTPS (Hypertext Transfer Protocol - Secure) protocol. In addition, the Gateway protocol exposes multiple operation types.

Note that *Shift4* is connected to multiple Payment Processors that may differ in the way they support various operations and features. A payment flow is a synchronised request-response flow as described in the following diagram. However, there are cases in which more than one request-response flow is required, and cases that involve other entities such as the cardholder browser (for example, 3D secure flows described in Appendix I: 3D Secure).



Uniform Resource Locators (URLs)

Integration URL	https://xts-int.credorax.net/crax_gate/service/gateway
Production URL	https://xts.gate.credorax.net/crax_gate/service/gateway

IP Whitelisting

To ensure reliable communication with Shift4 services, we recommend that you add the IP address ranges used by our services to your system's allowlist. These IP ranges are used for both the Integration environment and Production, and we will notify you when they are updated from time to time.

HTTP Specification

- Protocol: HTTPS
- Supported charset: UTF-8

- Method: POST
- Content-Type: [application/www-form-urlencoded] or [application/x-www-form-urlencoded]

Example HTTP Request

POST /intenv/service/gateway HTTP/1.1

Host: intconsole.credorax.com

Content-Type: application/x-www-form-urlencoded

Content-Length: 176

M=8632876&K=9823ou1pwieufdp91873p98723rp987238r97p198r&O=1&a1=7894654&a4=1099&b1=45454545454054545&b2=1&b3=08&
b4=11&b5=003&c1=John+Smith&c3=johnsmith@yahoo.com&d1=111.222.0.101



Note:

- Please honor a TTL of at least 30 seconds for each single session per HTTPS request.
- Each processor may have a different TTL. Refer to the Shift4 Global Processors Specifications document for further information.

Security/Authentication

All HTTP requests must be sent through a secure channel and over SSL (Secure Sockets Layer). The Shift4 Payment Gateway employs a non-authenticated SSL session and does not authenticate the SSL session by examining a client certificate. Instead, the client is first authenticated by its source IP and by a secondary authentication check that employs a SHA256 message cipher sent in the request payload. This SHA256 message cipher, in turn, can be verified by the merchant before ending the transaction's processing. See Appendix A: Message Cipher for further details.

Health Checks

You can check the health of the *Shift4* Payment Gateway and Integration Environments by accessing the following URLs:

Integration URL	https://xts-int.credorax.net/brain/rest/health
Production URL	https://xts.gate.credorax.net/brain/rest/health

The service will then respond with a JavaScript Object Notation (JSON) message. One of the following responses will be provided:

- "health":OK
- "health":false

The following recommendations should be followed when using this service:

- A maximum of **one** health check is permitted every 10 seconds

If no response is received within 20 seconds the health check request should be considered timed-out

- Consider our processing service unavailable after 3 consecutive service failures of the health check

Please contact the Shift4 Support Team immediately in the event of any unexpected service interruption, at: support.europe@shift4.com

or at our 24/7 telephone numbers EU +356 2778 0876 | UK +44 20 3608 1288 | US +1 617 715 1977

Gateway Features

The Shift4 Payment Gateway API offers the following services and functionalities. Note that some services require prior registration.

Address Verification System (AVS)

The Address Verification System (AVS) is a security measure that compares the cardholder-provided Billing Address with the Cardholder Address recorded by the issuer bank.

This security measure may help in reducing fraud and chargebacks in card-not-present transactions.

It should be noted that the AVS check is carried out by the issuer bank (and not by *Shift4*) through an examination of the values transmitted in the c4, c5 and c10 parameters.



Note:

- AVS data is optional for all clients
- AVS is supported by issuers mainly in the United States, Canada and the UK.

Card-Present

Card-Present service allows you to accept payment using a variety of POS (point-of-sale) devices. For more information, please refer to the Shift4 Card-Present Specification document.

Card Validation

Card Validation, also known as Zero-Value Authorization, is an account status inquiry sent to the cardholder's issuer bank by using the a9 parameter.

Account Name Inquiry

The Account Name Inquiry (ANI) is a verification service that validates account with the card issuer to improve merchants' confidence in the validity of the. The verification is done by sending a card validation transaction (zero-value authorization) with the PAN credentials and get a response from the issuer to see if the Cardholder Name matches the name on the account. Refer to Appendix L – Account Name Inquiry (ANI) for more information.

CVV/CVV2/CVC2

CVV is the security number (3 or 4 digits) usually displayed on the back of the payment card. A valid CVV value is required for all card transactions apart from the following cases:

- Card-Present transactions (a2=6, 8, 10)
- Subsequent recurring transactions (a9=2)

- Mail Orders (a2=4)

CVV checks are operated as part of operation codes [1], [2], [23], [10], [28] and are transmitted by using the b5 parameter.

If you want to verify whether a CVV is required on your transactions, contact your account manager for further explanation.

Dynamic Descriptor

The Dynamic Descriptor functionality allows merchants to have a different descriptor displayed on the cardholder's card statement with every transaction. See more details in the description of the i2 parameter.



Note:

- Dynamic Descriptor requires approval. Contact your Shift4 Account Manager to request its activation.
- Dynamic descriptor is mandatory for dynamic terminals (POS devices) and must matche the device's physical location."

SmartGuard

SmartGuard is an anti-fraud protection service that protects your revenue by assessing fraud activity in real time. Powered by Machine Learning technology and fraud rule engine capabilities, the SmartGuard service accurately identifies fraudulent payments, so that you can accept more legitimate payments and reduce your false-positive rate. The SmartGuard service offers an automatic solution using Machine Learning technology, and the ability to control and manage your anti-fraud protection settings based on data-driven decisions.

For more information, please refer to the SmartGuard parameters.



Note:

The SmartGuard service requires prior registration. Contact your Shift4 account manager for more details.

Smart Routing

Smart Routing allows you to control and manage your transaction traffic to different Payment Processors using a flexible rule engine and ad-hoc routing capabilities. Routing your transactions to the most suitable Payment processor allows you to optimise your payments activity in various business parameters such as:

- Payments approval rate

- Payments costs
- Payments availability
- Risk management



Note:

The Smart Routing service requires prior registration. Contact your Shift4 account manager for more details.

Token Engine (Card-on-File)

The Token Engine protects sensitive card data by replacing the cardholder's Primary Account Number (PAN) with a series of randomly-generated numbers known as a *token*. Tokens can then be securely transferred via the internet or via wireless networks in order to process the cardholder's payment without exposing sensitive bank details. The bank account number itself, in turn, is placed in a secure token vault.

The Token Engine is operated with a dedicated set of operation codes that allow you to create new tokens, use existing tokens or block them from future use. Read more about this functionality in the Card-on-File section.

3D Secure

The 3D Secure service is an authentication protocol designed for creating an additional security layer for online transactions.

Shift4 Payment Gateway supports all versions of the 3D Secure protocol: 3D Secure 1.0, 2.0, 2.1.0 and 2.2.0.

The Shift4 Payment Gateway 3D secure functionality is integrated into the transaction flow. It supports different flow of 3DS:

- 3RI – for merchant initiated transactions
- Smart Advisor – a recommendation engine that routes transactions to 3D Secure based on various conditions (such as regulations, pre-defined rules, and more)
- 3D Secure Exemptions

Read about the different capabilities and technical implications in Appendix I: SCA and 3D Secure.

You can also choose to use an external MPI or 3D Secure service provider, and provide the 3D Secure data using the i8 parameter.



Note:

For more information of the Shift4 Payments Platform products and services, contact your Shift4 account manager.

Required Fields

The *Shift4* Payment Gateway provides 4 operation groups:

- Basic operations
- Referral operations
- Token operations (Card-on-File)
- Special operations

The following tables describe the available API parameters and specify whether the field is mandatory (m), conditional (c), optional (o), or not used (-).



Note:

- The number in square brackets is a unique operation code.
- Each processor may have different required fields. Refer to the Shift4 Global Processors Specification document for further information

Basic Operations

The basic group includes three operations, for transmitting basic Authorisations, Sales and Refunds:

Basic Operations	
[1]	Sale
[2]	Authorisation
[6]	Independent Credit

[1] – Sale

A Sale consists of an Authorisation and Capture request. If the Authorisation is successful, the transaction will be automatically captured and included in the next clearing file.

[2] – Authorisation

An Authorisation generates an online authorisation request.

[6] - Independent Credit

An Independent Credit operation initiates a refund request in the next clearing file.

Required Parameters

Name	Description	Type	Length (min,max)	Stand-Alone Operations [1] [2] [5] [6] [11] [12] [15] [23] [28]
M	Shift4 assigned gateway merchant ID	[A-Z0-9_]	3,8	m
K	Unique cipher used for authenticating requests Refer to Appendix A: Message Cipher for further details on how to generate the cipher.	[0-9A-Za-z]	1,32	m
O	Operation Code The operation code is used for determining the requested service. See the list in Basic Operations.	[0-9]	1,3	m
a1	Request ID A unique transaction reference number. It should be unique to each transaction and to each MID. May be used when corresponding with the payment processor or reconciling transactions. Note: No plaintext cardholder data should be provided in this field.	[A-Za-z0-9-]	1,32	m
a2	Payment source type Valid options are: 2 Online Order (default value) 3 Telephone Order 4 Mail Order 5 Virtual Terminal	[0-9]	1,2	o
a4	Requested billing amount The amount value should not include a decimal point. Amounts in currencies that have two, three or no exponents should be formatted according to their currency requirements. Refer to Appendix H: Transaction Currencies for further information. The minimum transaction value should be 0.01 EUR (or the equivalent or EUR 0.01 in another currency), otherwise the request is rejected.	[0-9]	1,12	m

Name	Description	Type	Length (min,max)	Stand-Alone Operations [1] [2] [5] [6] [11] [12] [15] [23] [28]
a5	Transaction currency Indicates the currency that should be used in the transaction (every currency used must be preconfigured on the Shift4 platform). Refer to ISO 4217-alpha-3 for further information.	[A-Z]	3,3	m
a6	Transaction date (local date of the transaction)	yyMMdd	6,6	o
a7	Transaction time (local time of the transaction)	HHmmss	6,6	o
a9	Transaction type. Valid values are: **Value** **Description** 1 First standing order 2 Subsequent standing order 5 Card-Only Validation 6 Straight Operation 8 Unscheduled Card-on-File transactions initiated by the merchant 9 Unscheduled Card-on-File transactions initiated by the cardholder 10 Card validations for an unscheduled Card-on-File 11 First Subscription 12 Subscription Note: By default, the transaction type is considered a straight operation unless specified otherwise.	[0-9]	1,2	c (m [1], [2] for Card on File)

Name	Description	Type	Length (min,max)	Stand-Alone Operations [1] [2] [5] [6] [11] [12] [15] [23] [28]
a10	Authorisation Type: 1 Final Authorisation (default value) 2 Pre-Authorisation 3 Deferred Authorisation Transactions referring to Pre-Authorisations must include an a4 parameter.	[1-3]	1,1	c - Mandatory for [1] and [2] only. For Sale transactions, only [3] is supported, and only when using a Deferred Authorisation solution
a11	Multiple Capture tag Indicates the number of expected Captures Only supported in Card-not-Present transactions Default value is 1 Max value is 98 Min value is 2	[0-9]	1,2	c (mandatory for [2] only)
a14	Partial Authorisation tag This request parameter indicates to the issuer whether you are willing to accept partial authorisation approval. Possible values: 0 – Full authorisation only (default) 1 – Partial authorisation also accepted	[0,1]	1,1	c (mandatory for [2] only)

Name	Description	Type	Length (min,max)	Stand-Alone Operations [1] [2] [5] [6] [11] [12] [15] [23] [28]
a19	Recurring payment frequency **Value** **Description** 1 Daily 2 Twice weekly 3 Weekly 4 Ten days 5 Fortnightly 6 Monthly 7 Every two months 8 Trimester 9 Quarterly 10 Twice yearly 11 Annually 12 Unscheduled (default value)	[0-9]	1,2	o
b1	PAN – Primary Account Number	[0-9]	8,19	m
b3	Card expiration month Two-digit number (*mm* format)	[0-9]	2,2	m
b4	Card expiration year Two-digit number (*yy* format)	[0-9]	2,2	m
b5	Card security code (CVV / CVC) as printed on the card	[0-9]	3,4	m (o for [6])

Name	Description	Type	Length (min,max)	Stand-Alone Operations [1] [2] [5] [6] [11] [12] [15] [23] [28]
b21	Passthrough wallet indicator Indicates whether the transaction originally issued from a passthrough wallet supported by Shift4. Possible values: applepay: for Apple Pay googlepay: for Google Pay samsungpay: for Samsung Pay vts_mdes_token: for VTS and MDES for Merchants) token-based transactions **Note**: To integrate with digital wallets, you must comply with their business requirements, which outlines requirements, guidelines, and industry restrictions. Please ensure full compliance before initiating transactions with a wallet.	[A-Za-z\ ]	8-14	c (m if transaction was originally Apple Pay, Google Pay, Samsung Pay or a VTS/M4M transaction) If b21 exist a9 is mandatory
c1	Cardholder's full name The minimum length of this field is five characters. If the cardholder provides a name that is less than five characters long, you must either add additional non-space characters to the name (e.g. Mr. Lu) or not transmit the field at all Refer to Mastercard's Enhanced Data Standards for Identity Check for information when you should send this value as part of 3D Secure authentication.	[\ a-zA-Z]	5,45	c recommended – when initiating 3D secure transaction m for Visa 3Ds transactions
c2	Cardholder's contact phone number Note: For Visa 3ds transactions cardholder's phone number or email are mandatory. Refer to Mastercard's Enhanced Data Standards for Identity Check for information when you should send this value as part of 3D Secure authentication.	[0-9\-\.]	5,32	c m for Visa 3ds transactions, o if c3 is sent. For 3DS transactions always include 3ds_homephonecountry.

Name	Description	Type	Length (min,max)	Stand-Alone Operations [1] [2] [5] [6] [11] [12] [15] [23] [28]
c3	Cardholder's email address This parameter should be transmitted as a valid email address such as joe@bloggs.com A default valid email address should always be transmitted in Card-Present transactions. Note: For Visa 3ds transactions cardholder's phone number or email are mandatory. Refer to Mastercard's Enhanced Data Standards for Identity Check for information when you should send this value as part of 3D Secure authentication.	email	7,64	c m – when initiating 3D secure transaction. o if c2 is sent.
c4	Cardholder Billing Address street number If the processor supports AVS then the transmission of this parameter will activate the AVS system. Note that the street number should be omitted from the c5 parameter if a c4 parameter is transmitted. Refer to Mastercard's Enhanced Data Standards for Identity Check for information when you should send this value as part of 3D Secure authentication.	[0-9]	1,16	o recommended – when initiating 3D secure transaction
c5	Cardholder Billing Address street name Note that the street number should not be included here if the c4 parameter is being transmitted. Refer to Mastercard's Enhanced Data Standards for Identity Check for information when you should send this value as part of 3D Secure authentication.	[a-zA-Z0-9\ \-]	4,50	o recommended – when initiating 3D secure transaction
c7	Cardholder Billing Address city name Refer to Mastercard's Enhanced Data Standards for Identity Check for information when you should send this value as part of 3D Secure authentication.	[a-zA-Z\ \-]	3,30	o recommended – when initiating 3D secure transaction

Name	Description	Type	Length (min,max)	Stand-Alone Operations [1] [2] [5] [6] [11] [12] [15] [23] [28]
c8	Cardholder Billing Address Territory Code, a level 2 country subdivision code according to ISO-3166-2. A reference list can be found at ISO 3166-1-alpha-2. Refer to Mastercard's Enhanced Data Standards for Identity Check for information when you should send this value as part of 3D Secure authentication.	[a-zA-Z0-9]	1,3	o recommended – when initiating 3D secure transaction
c9	Cardholder Billing Address Country Code Please refer to ISO 3166-1-alpha-2 for a list. Refer to Mastercard's Enhanced Data Standards for Identity Check for information when you should send this value as part of 3D Secure authentication.	[A-Z]	2,2	o recommended – when initiating 3D secure transaction
c10	Cardholder Billing Address Postal/ZIP Code If transmitted, this value is sent to the issuer and forms part of their AVS checks (not all payment processors support AVS checks. Please refer to the Shift4 Payment Gateway: Processors Specification for further details). Refer to Mastercard's Enhanced Data Standards for Identity Check for information when you should send this value as part of 3D Secure authentication.	[a-zA-Z0-9\ \-]	1,9	c recommended – when initiating 3D secure transaction
c22	Cardholder's first name	[A-Za-z]	1,50	c
c23	Cardholder's last name	[A-Za-z]	1,50	c
c24	Registered User Indicator. This field indicates if the cardholder is a registered user on a merchant's website. Possible values: Y -The cardholder is a registered user with an online profile and login credentials N - The cardholder is not a registered user, and may shop only as a guest Note: This field is required for Discover e-Commerce US transactions only.	String [A-Za-z]	1,1	c, should be sent in Discover (b2=12), e-commerce trx (a2=2) US transactions

Name	Description	Type	Length (min,max)	Stand-Alone Operations [1] [2] [5] [6] [11] [12] [15] [23] [28]
c25	Registered User Last Profile Update Change. This field defines the date when the cardholder last voluntarily changed his or her registered profile. Note: Relevant for Discover trx only.	Date DDMMYYYY	8,8	c (if c24 is sent with "Y")
d1	Cardholder IP Address The IP address of the server that is connecting to the Shift4 gateway should always be sent in Card-Present transactions. Refer to Mastercard's Enhanced Data Standards for Identity Check for information when you should send this value as part of 3D Secure authentication.	[0-9\.]	7,48	c, m for Visa 3ds transactions
d2	Echo parameter Any value up to 128 chars long transmitted with a request will be returned within the response to this parameter. Note: No plaintext cardholder data should be provided in this field.	[a-zA-Z0-9]	3,128	o
f21	Boolean field specifying whether the fraud protection service check should be bypassed. Value — Description 0 — Send for a fraud check. (default value) 1 — Do not send for a fraud check Only available to merchants using the Smart Guard fraud protection service	[0-1]	1,1	o(n/a for [6])
f22	Sets an ad-hoc threshold for the specific transaction. The threshold must be a value between 0 and 1000. Only available to merchants using the Smart Guard Plus fraud protection service.	[0-9]	0,4	o(n/a for [6])

Name	Description	Type	Length (min,max)	Stand-Alone Operations [1] [2] [5] [6] [11] [12] [15] [23] [28]
h3	Sub-Merchant ID The Merchant ID of a sub-merchant belonging to a Payment Facilitator Refer to Shift4 Payment Gateway: Processors Specification to learn which Payment Processors support Payment Facilitators.	[0-9]	1,15	c (Payment Facilitators)
h8	Sub-Merchant's telephone number	[0-9\-\.]	5,32	o
h9	Merchant Reference Number This optional field is a secondary Transaction Reference Number which can be transmitted alongside the Transaction Reference Number transmitted via the a1 parameter. Note: No plaintext cardholder data should be provided in this field.	Text AMEX: [a-zA-Z0-9]	1,32 AMEX: 1,30	o
h15	Seller Information This field contains seller information. When using this field, "Seller ID" is mandatory. The ID should be a unique identifier such as the seller name or an internal registration number. Populate these fields with the following information, delimited by "|". Note: This field is used by marketplaces. Additional marketplace requirements and reporting guidelines appear on the " Marketplace Guideline" guide in Shift4's developer's portal. **Field** / **Type** / **Length (min, max)** Seller ID / [a-zA-Z0-9\-] / 4,64 Seller country / [A-Z] / 3,3 Seller city / [a-zA-Z\-] / 3,30 Seller street / [a-zA-Z0-9\-] / 4,50 Seller postal code / [a-zA-Z0-9\-] / 1,9 Seller state / [a-zA-Z0-9] / 3,3	[a-zA-Z0-9\-\\|]	9,164	c ([1], only)

Name	Description	Type	Length (min,max)	Stand-Alone Operations [1] [2] [5] [6] [11] [12] [15] [23] [28]
h22	SIRET French establishment-level identifier that uniquely identifies the specific physical location where the transaction originates.	Text [1-9]	1,14	C, **Mandatory** for PF's and merchants processing domestic transactions in France, starting **30 October 2026.**
h23	Tax Identification Number Country specific tax identifier assigned to the merchant's legal entity responsible for the transaction.	Text [A-Z a-z 0-9]	4,32	C, **Mandatory** for PF's domestic transactions in Belgium and Luxembourg, starting **30 October 2026**.
i1	Transaction Free Text description	Text	5,64	o
i2	Dynamic Billing Descriptor The descriptor that appears on the cardholder's statement. The descriptor must follow this format: "Merchant DBA Name" + "*" + "City" 1. Map merchant name in positions 1-24. 2. Map "*" in positions 25. 3. Map the city in 26–38. Refer to *the Shift4 Global Processors API Specifications* to check if the Dynamic Descriptor feature is supported by your processor. Note: The i2 parameter will be ignored if the processor does not support dynamic descriptors. To use this feature, you must configure the service and add it to your account.	Text	1,39	o

Name	Description	Type	Length (min,max)	Stand-Alone Operations [1] [2] [5] [6] [11] [12] [15] [23] [28]
i8	3D Secure Data Composed of 3 different parameters delimited by a colon: 1. ECI 2. CAVV/AAV 3. XID Refer to Appendix J: How to Provide 3D Secure Data on the i8 Parameter Refer to Shift4 Payment Gateway: Processors Specification to learn whether the 3D secure service is supported and which Payment Processors support the transfer of 3DS information. A transmitted i8 will not be routed to Payment Processors that do not support this feature. Furthermore, the transaction will be rejected by the Shift4 Gateway if no optional Processor is found. Use this field when the 3D secure process is performed prior to payment initiation (for example with a third-party 3D Secure provider)	[a-zA-Z0-9\:\=\+]	10,128	o
3ds_version	Indicates the 3D Secure protocol version Possible values: 1.0 2.0 2.1.0 2.2.0	[0-9]	3,5	c (m if using i8)
3ds_dstrxid	3DS Directory server transaction ID. Must be sent if 3ds_version = 2.0 or higher and i8 is used. Refer to Appendix J: How to Provide 3D Secure Data on the i8 Parameter	[0-9A-Za-z,-]	36	c (m if 3ds_version = 2.0 or higher)
j1	Primary Account Recipient's date of birth	YYYYMMDD		c, m for 6012 UK merchant

Name	Description	Type	Length (min,max)	Stand-Alone Operations [1] [2] [5] [6] [11] [12] [15] [23] [28]
j2	Recipient PAN or account number (If sending PAN, note it cannot be the same PAN sent in b1).	[a-zA-Z0-9*]	4,34 (For 6012 merchants in UK – 4,10)	c, m for AFT, m for 6012 UK merchants
j3	Primary Account Recipient's Postal Code	[a-zA-Z0-9 /-/]	2,6	c, m for 6012 UK merchant
j4	Primary Account Recipient's partial surname	[a-zA-Z*]	2,6	c, m for 6012 UK merchant
j5	Funds Recipient's First name	[a-zA-Z0-9\ \-]	1,30	c, m for AFT
j6	Funds Recipient's Street Address	['"0-9A-Za-z]	1,50	c, m for AFT when recipient=sender. m for AFT in CA/US/COL/NIC
j7	Funds Recipient's City	[a-zA-Z0-9\ ]	1,25	c, m for AFT when recipient=sender. m for AFT in CA/US/COL/NIC
j8	Funds Recipient's State/Province Code	[0-9A-Za-z]	2,3	c, m for AFT for CA/US/COL/NIC
j9	Funds Recipient's Country Code	[A-Z]	3,3	c, m for AFT
j10	Funds Recipient's Phone Number	[0-9-]	1,20	o
j11	Funds Recipient's Date of Birth	MMDDYYYY	8,8	o
j12	Funds Recipient Postal Code	[a-zA-Z0-9 /-/]	1,10	c, m for AFT and CFT when j9 is US or Canada
j13	Funds Recipient Surname	[a-zA-Z0-9\ \-]	1,30	c, m for AFT
j14	The account holder's country of birth	[A-Z]	2	o for AFT/CFT/Purchase
s10	Sender first name	[a-zA-Z0-9]	1,30	c, m for AFT ([1] [2])
s11	Sender last name	[a-zA-Z0-9]	1,25	c, m for AFT ([1] [2])
s12	Sender street address	[a-zA-Z0-9]	1, 50	c, m for AFT ([1] [2])

Name	Description	Type	Length (min,max)	Stand-Alone Operations [1] [2] [5] [6] [11] [12] [15] [23] [28]
s13	Sender city	[a-zA-Z0-9]		c, m for AFT ([1] [2])
s14	Sender state code	[a-zA-Z0-9]	2,30	c, m for AFT in US and Canada
s15	Sender country code , in ISO 3-letter country code format.	[A-Z]	3,3	c, m for AFT ([1] [2])
s16	Sender Account Number (PAN)	[a-zA-Z0-9*]	1,34	o
s17	Sender reference number – a merchant's ID represents the sender entity	[a-zA-Z0-9]	1,16	c, m for AFT ([1] [2]) in South Africa related transactions
s18	Source of funds used to make the funds transfer. Possible values: 01 - credit card 02 - debit card 03 - prepaid card 04 - cash 05 - Debit/deposit account 06 - Credit account 25 - Mobile Money account	[0-9]	2,2	c for AFT ([1] [2]), m for AFT in the US (when j9=US)
s19	The Sender's Date of Birth, in MMDDYYYY format	[0-9]	8,8	c, m AFT [1] [2]
s20	Sender Postal Code	[a-zA-Z0-9 /-/]	1,10	C, M for AFT and CFT transactions when sender country code (s15) is USA or CAN
r1	Indicates the selected Processor for the specific transaction. The transaction is routed according to the transmitted value. See Appendix G for the list of possible values.	[a-zA-Z0-9]	0,9	o(n/a for [6])
r2	Indicates the Processor target MID for the specific transaction. The transaction is routed according to the transmitted value.	[a-zA-Z0-9]	0,32	o(n/a for [6])
r3	The routing sequence number.	[1-9]	1,2	o

Name	Description	Type	Length (min,max)	Stand-Alone Operations [1] [2] [5] [6] [11] [12] [15] [23] [28]
3ds_initiate	Indicates whether to initiate the Shift4 3D Secure Authentication process. Possible values are: 01: Initiate 3D Secure before completing the payment 02: Process payment without initiating 3D Secure 03: Initiate 3D Secure according to the 3DS Adviser result 04: Only initiate the 3DS Adviser service. Relevant only for op code 98. For additional information about the 3D Secure process, see Appendix I: 3D Secure. **Note**: If the transaction contains both the 3ds_initiate parameter and the i8 parameter, the transaction will be declined.	[0-3]	2,2	o (default value: 02)
token_eci	ECI value returned from the token decryption process	[0-9]	1,2	c (m if transaction is scheme token based and b21 is sent)
token_crypto	CAVV/AAV value returned from the token decryption process	[A-Za-z0-9]	0,40	c (m if transaction is scheme token based and b21 is sent)
mit_reason_code	Indicates the reason for the Merchant-Initiated Transaction (MIT). 1 - Delayed Charges 2 - No Show	[1-9]	1,1	c (m when sending with a9=8).

Name	Description	Type	Length (min,max)	Stand-Alone Operations [1] [2] [5] [6] [11] [12] [15] [23] [28]
crypto_currency_type	The type of cryptocurrency used in the transaction. Possible Values: **Value** **Description** 1 Central Bank Digital Currency (CBDC) 2 Stablecoin (fiat-backed) 3 Blockchain native token/coin 4 Non-Fungible Token (NFT) 7 Other Types	[0-9]	1,1	c, m for crypto transactions of MCCs 6051 / 6012 ([1], [2], [6]).

Referral Operations

The Referral group includes six operations for transmitting basic Captures, Refunds and Voids.

List of Referral Operations	
[3]	Capture
[4]	Authorisation Void
[5]	Referral Credit
[7]	Sale Void
[8]	Refund Void
[9]	Capture Void
[20]	Incremental Authorisation

[3] - Capture

A Capture refers to a previous Authorisation transaction and should be sent after a successful Authorisation. It also includes the transaction in the next clearing file.

Note: A Capture should only be sent after a successful Authorisation

[4] - Authorisation Void

An authorisation void initiates an online full or partial Authorisation reversal.

Condition: Can be sent if a previous [2] operation has been sent and if no [3] operation has already been sent

[5] - Referral Credit

A Referral Credit initiates a refund of a previously Captured transaction.

[7] - Sale Void

A Sale Void initiates an online Authorisation reversal. As a Sale includes both an Authorisation and a Capture, this operation also cancels the Capture operation.

[8] - Refund Void

A Refund Void cancels a previous Refund transaction (i.e., removes it from the clearing file). A Refund Void can be used for revoking operations [5] and [15].

[9] - Capture Void

A Capture Void voids a previously Captured transaction (i.e., removes it from the clearing file).



Note:

A void of sale/refund/capture operations can only be transmitted within 24 hours of the original transaction

[20] – Incremental Authorisation

An incremental authorisation initiates an online authorisation request to increase the amount of a previous authorisation transaction.

Required Parameters

Name	Description	Type	Length	Referral Operations [3] [4] [5] [7] [8] [9] [20]
M	*Shift4* assigned gateway merchant ID	[A-Z0-9_]	3,6	m
K	Unique cipher used for authenticating requests Refer to Appendix A: Message Cipher for further details on generating the cipher.	[0-9A-Za-z]	1,32	m
O	Operation Code The operation code is used for determining the requested service. See List of Referral Operations.	[0-9]	1,3	m

Name	Description	Type	Length	Referral Operations [3] [4] [5] [7] [8] [9] [20]
a1	Request ID A unique transaction Reference Number, which should be unique to each transaction and to each MID. May be used when corresponding with the Payment Processor or when reconciling transactions. Note: No plaintext cardholder data should be provided in this field.	[A-Za-z0-9-]	1,32	m
a2	Payment Source Type Valid options are: 2 Online Order (default value) 3 Telephone Order 4 Mail Order 5 Virtual Terminal	[0-9]	1,2	o
a4	Requested billing amount The amount value should not include a decimal point. Amounts in currencies that have two, three or no exponents should be formatted according to their currency requirements. Refer to Appendix H: Transaction Currencies for more information. The amount can be transmitted as part of a referral transaction in order to indicate a partial amount (in case of a partial void, a partial refund or a partial capture) or to indicate an additional amount (in case of incremental authorisation). In all other cases, a referral transaction defaults to the full amount transmitted in the original transaction's a4 parameter.	[0-9]	1,12	m

Name	Description	Type	Length	Referral Operations [3] [4] [5] [7] [8] [9] [20]
a5	Transaction Currency Indicates the currency that should be used in the transaction (every currency used must be preconfigured on the *Shift4* platform). Refer to ISO 4217-alpha-3 for further details	[A-Z]	3,3	m
a6	Transaction date (current local date of the transaction)	yyMMdd	6,6	o
a7	Transaction time (current local time of the transaction)	HHmmss	6,6	o
a9	Transaction type. Valid values are: **Value** **Description** 1 First standing order 2 Subsequent standing order 5 Card-Only Validation 6 Straight Operation 8 Unscheduled Card-on-File transactions initiated by the merchant. Use with [20] – Incremental authorisation 9 Unscheduled Card-on-File transactions initiated by the cardholder 10 Card validations for an unscheduled Card-on-File 11 First Subscription 12 Subscription By default, the transaction type is considered a straight operation unless specified otherwise.	[0-9]	1,2	o

Name	Description	Type	Length	Referral Operations [3] [4] [5] [7] [8] [9] [20]
a10	Authorization Type: Pre-Authorization Transactions referring to Pre-Authorizations include an a4 parameter.	2	1,1	c mandatory for use cases when the original transaction has been with a10=2
b3	Card expiration month Two-digit number (*mm* format)	[0-9]	2,2	c for [5]
b4	Card expiration year Two-digit number (yy format)	[0-9]	2,2	c for [5]
d1	Cardholder IP Address The IP address of the server that is connecting to the *Shift4* gateway should always be sent for Card-Present transactions. Refer to Mastercard's Enhanced Data Standards for Identity Check for information when you should send this value as part of 3D Secure authentication.	[0-9\.]	7,48	c, m for Visa 3ds transactions
d2	Echo parameter Any value up to 128 bytes long transmitted within a request will be returned within the response to this parameter. Note: No plaintext cardholder data should be provided in this field.	Text	3,128	o
g2	Response ID The z1 parameter from a corresponding past transaction.	[a-zA-Z0-9]	1,32	m
g3	Authorisation Code The z4 parameter from a corresponding past transaction.	[a-zA-Z0-9]	1,10	o

Name	Description	Type	Length	Referral Operations [3] [4] [5] [7] [8] [9] [20]
g4	Request ID The a1 parameter from a corresponding past transaction.	[0-9A-Za-z]	1,32	o
g6	Initial transaction ID The z50 parameter that was received in the original transaction response. Must be sent to ensure the transaction is considered an MIT transaction. **Note**: The card schemes require that each subsequent transaction includes a proper 'initial transaction id' on the g6 parameter. Generic values will no longer be accepted. This applies to transactions from all times. If you do not have this value, work with your customers to get a new original transaction authorised and authenticated.	[0-9A-Za-z]	13,15	o (m if a9=2/8/12)
g7	Mastercard's Transaction Link Identifier (TLID) Use this parameter to include the Mastercard identifier obtained in a cardholder-initiated authorized transaction with every subsequent merchant-initiated transaction (MIT). This value is provided in the z70 response parameter of the cardholder-initiated transaction.	[a-zA-Z0-9]	22,22	c (m if a9=2/8/12)
h9	Merchant reference number This optional field is a secondary transaction reference number which can be transmitted in addition to a1. Note: No plaintext cardholder data should be provided in this field.	Text AMEX: [a-zA-Z0-9]	1,32 AMEX: 1,30	o

<table>
<tr><th>Name</th><th>Description</th><th>Type</th><th>Length</th><th>Referral Operations
[3] [4] [5] [7] [8] [9] [20]</th></tr>
<tr><td>h15</td><td>Seller Information
This field contains seller information. When using this field, “Seller ID” is mandatory. The ID should be a unique identifier such as the seller name or an internal registration number.
Populate these fields with the following information, delimited by “|”.
Note: This field is used by marketplaces.
<table>
<tr><th>Field</th><th>Type</th><th>Length (min, max)</th></tr>
<tr><td>Seller ID</td><td>[a-zA-Z0-9\-]</td><td>4,64</td></tr>
<tr><td>Seller country</td><td>[A-Z]</td><td>3,3</td></tr>
<tr><td>Seller city</td><td>[a-zA-Z\-]</td><td>3,30</td></tr>
<tr><td>Seller street</td><td>[a-zA-Z0-9\-]</td><td>4,50</td></tr>
<tr><td>Seller postal code</td><td>[a-zA-Z0-9\-]</td><td>1,9</td></tr>
<tr><td>Seller state</td><td>[a-zA-Z0-9]</td><td>3,3</td></tr>
</table></td><td>[a-zA-Z0-9\-\|]</td><td>9,164</td><td>c
(mandatory for [3] only)</td></tr>
</table>

Name	Description	Type	Length	Referral Operations [3] [4] [5] [7] [8] [9] [20]
i2	Dynamic Billing Descriptor The descriptor that appears on the cardholder's statement. The descriptor must follow this format: "Merchant DBA Name" + "*" + "City" • Merchant DBA Name: Up to 22 characters; must not include any asterisks. • Asterisk (*): Serves as a separator. • Valid City Name: Must be a recognized city name. Refer to *the Shift4 Global Processors API Specifications* to check if the Dynamic Descriptor feature is supported by your processor. Note: The i2 parameter will be ignored if the processor does not support dynamic descriptors. To use this feature, you must configure the service and add it to your account.	Text	1,39	O
crypto_currency_type	The type of cryptocurrency used in the transaction. Possible Values: **Value** **Description** 1 Central Bank Digital Currency (CBDC) 2 Stablecoin (fiat-backed) 3 Blockchain native token/coin 4 Non-Fungible Token (NFT) 7 Other Types	[0-9]	1,1	c, m for crypto transactions of MCCs 6051 / 6012 ([5]).

COF Transactions and Tokenization

Our Token Solutions

Shift4 offers three distinct paths for tokenization:

Path	Description	Best For
Token Transactions	The primary COF solution. Merchants use Shift4 tokens for all COF transactions. Shift4 creates and maintains the Tokens automatically. The merchant need to use the Token op codes.	Standard COF, Subscriptions, and Recurring models.
Seamless Token	Shift4 handles provisioning automatically. Merchants keep their existing flow, but authorization benefits from Network Token. Currently requires minor integration changes (reach out to your SA/AM).	Specific use cases, consult with you SA/AM
Stand-Alone	Create and manage Network Tokens via API without Shift4 processing. Requires merchant PCI compliance. Standalone Specs.	Partners / 3rd party integrators who manage their own vaults.

Key Frameworks and Definitions

To ensure compliance and avoid non-compliant fines, merchants must understand these categories:

CIT vs. MIT

1. **CIT (Cardholder Initiated Transaction):** The cardholder is actively involved. The first transaction in any agreement must be a CIT and usually requires Strong Customer Authentication (SCA).
2. **MIT (Merchant Initiated Transaction):** Initiated by the merchant based on a prior agreement. No SCA is required after the initial CIT.

Using Shift4 Token Engine or a Third-party Engine

1. **Shift4 Engine):** The card is stored and managed within Shift4. Shift4 handles all Network Token data transmission to schemes.
2. **Third-Party:** The token is managed by the merchant or by a third-party provider. Merchants must provide full Network Token info in the request:

b1=Network Token
b3+b4= Network Token Expiry
token_crypto = token crypto
token_eci = token eci
b21=Network Token Type

COF Models

1. **Unscheduled COF:** Transactions where timing/amount are not fixed (e.g., "top-ups"). Credentials stored with consent for future use.
2. **Recurring / Standing Orders:** Regular schedule, fixed or variable amounts (e.g., utility bills).
3. **Subscriptions:** Predefined business model for service access (e.g., streaming).

Agreement Logic

1. **New Agreement:** A CIT initiating a new agreement. It does not matter if the card was used for other agreements in the past.
2. **Existing Agreement:** An MIT charging an established agreement.

Transaction Type: a9 Parameter

The a9 parameter is mandatory for Card On File (COF) indicating the type of transaction. Sending an incorrect value may result in non-compliant fines. Refer to the following table for the values you should send for a9 depending on the business case and who initiates the transaction:

Business Use Case	First Transaction (CIT)	Following Transactions (MIT)
Recurring (Standing Order)	a9=1 (First Recurring)	a9=2 (Recurring)
Subscriptions	a9=11 (First Subscription)	a9=12 (Subscription)
Unscheduled MIT	a9=6 (Straight)	a9=8 (Unscheduled MIT)
Unscheduled CIT	a9=6 (Straight)	a9=9 (Unscheduled CIT)
Card Validation (Initial Store)	a9=5 (Validation)	Any Regular / COF if the card has stored

Business Use Case	First Transaction (CIT)	Following Transactions (MIT)
Card Validation (Existing COF)	Any first storing use case	a9=10 (COF Validation)
Regular Operation	a9=6 (Straight)	N/A
Create Token operations	Default value a9=6	
Use Token operations	Default value a9=9	

If your business case is not listed, contact your Shift4 Solution Architect for a custom solution.

Original Transaction IDs

When processing merchant-initiated transactions you must include the ID(s) that were generated when originally storing the card details as part of the cardholder-initiated transaction. Depending on the card used for the transaction, and how it was originally obtained, there may be one or more additional parameters you have to include:

Required IDs

Parameter	Description
g6	Initial transaction ID Use this parameter to include the initial transaction ID obtained in a cardholder-initiated transaction with every subsequent merchant-initiated transaction. This value is provided on the z50 response parameter of the original transaction.
g7	Mastercard's Transaction Link Identifier (TLID) Use this parameter to include the Mastercard identifier obtained in a cardholder-initiated authorized transaction with every subsequent merchant-initiated transaction (MIT). This value is provided on the z70 response parameter of the original transaction, and is only used for Mastercard transactions.

How to implement the IDs depending on your token setup

- **If you use Shift4 token solutions**:
    - Token created with Shift4: if your agreement with the cardholder was obtained with a Shift4-processed transaction, both ID values are stored as part of the created token, and Shift4 automatically includes them as part of any subsequent transaction. You can choose to send them as part of the MIT transaction, or rely on our automated inclusion of the IDs.
    - Migrated tokens: If you start storing tokens with Shift4 mid-agreement, you must provide the ID(s) either once during the Create Token request, or on every Use Token request.

- **If you are using an external token solution**: you must provide the ID(s) for every subsequent transaction

Token (Card-on-file) Operations

This group of operations enables eCommerce 'quick checkout' and recurring transactions using the *Shift4* token engine.

Token (Card-on-file) Operations	
[10]	Create Token
[23]	Create Token with Sale
[28]	Create Token - Auth
[29]	Create Token – Capture
[11]	Use Token – Sale
[12]	Use Token – Auth
[13]	Use Token – Capture
[24]	Use Token – Recurring Sale
[32]	Use Token - Recurring Auth
[33]	Use Token – Recurring Capture
[14]	Token Auth Void
[15]	Token Referral Credit
[16]	Block Token

Create Token Operations

[10] Create Token

A Create Token operation initiates a card validation transaction and then, if successful, stores the card's details in the tokenization engine.

Note:

- This transaction performs card validation using the inimal transaction amount allowed by the selected payment processr, regardless of the amount transmitted in the request.
- A successful request returns a value of '0' (zero) in the z2 paramter and '85' "No Reason to Decline (Valid for all Zero-Amount Transactions)" in the z6 parameter

[23] Create Token with Sale

Creates a token together with an initiation of a Sale [1] transaction

[28] Create Token – Auth

Creates a token together with an initiation of an Authorisation [2] transaction

Name	Description	Type	Length	Create Token Operations [10] [23] [28]
M	*Shift4* assigned Gateway Merchant ID	[A-Z0-9_]	3,6	m
K	Unique cipher used for authenticating requests. Refer to Appendix A: Message Cipher for further details on generating the cipher.	[0-9A-Za-z]	1,32	m
O	Operation Code The operation code is used for determining the requested service. See the list in Create Token Operations.	[0-9]	1,3	m
a1	Request ID A unique transaction reference number that should be unique to each transaction and to each MID. May be used when corresponding with the payment processor or when reconciling transactions. Note: No plaintext cardholder data should be provided in this field.	[A-Za-z0-9-]	1,32	m
a2	Payment source Type Valid options are: 2 Online Order (default value) 3 Telephone Order 4 Mail Order 5 Virtual Terminal	[0-9]	1,2	o
a4	Requested Billing Amount The amount value should not include a decimal point. Amounts in currencies that have two, three or no exponents should be formatted according to their currency requirements. Refer to Appendix H: Transaction Currencies for more details	[0-9]	1,12	m

Name	Description	Type	Length	Create Token Operations [10] [23] [28]
	The minimum transaction value should be 0.01 EUR (or the equivalent or EUR 0.01 in another currency), otherwise the request is rejected.			
a5	Transaction Currency Indicates the currency that should be used in the transaction (every currency used must be preconfigured on the *Shift4* platform). Refer to ISO 4217-alpha-3 for further information.	[A-Z]	3,3	m
a6	Transaction date (local date of the transaction)	yyMMdd	6,6	o
a7	Transaction time (local time of the transaction)	HHmmss	6,6	o
a8	Merchant Invoice ID Only required for subscription transactions.	text	1,16	c (required for [23], [28])
a9	Transaction Type. Valid values are: **Value** **Description** 1 First standing order 2 Subsequent standing order 5 Card-Only Validation 6 Straight Operation 8 Unscheduled Card-on-File transactions initiated by the merchant 9 Unscheduled Card-on-File transactions initiated by the cardholder 10 Card validations for an unscheduled Card-on-File 11 First subscription 12 Subscription Note: By default, the transaction type is considered a straight operation unless specified otherwise. Transmitting a9 with a value of 5 for Operation Code 23 triggers a rejection response.	[0-9]	1,2	c (m [23], [28], [11], [12] for Card on File)

Name	Description	Type	Length	Create Token Operations [10] [23] [28]
	Transmitting a9 with a value of 2 for Operation Code 28 triggers a rejection response			
a10	Authorisation Type: **Value** **Description** 1 Final Authorisation (default value) 2 Pre-Authorisation 3 Deferred Authorisation Transactions referring to Pre-Authorisations must include an a4 parameter.	[1-2]	1,1	c (mandatory for [23], [28] only)
a11	Multiple Capture tag Indicates the number of expected Captures Only supported in Card-not-Present transactions Default value is 1 Max value is 98 Min value is 2	[0-9]	1,2	c (mandatory for [28] only)
a14	Partial Authorisation tag This request parameter indicates to the issuer whether you are willing to accept partial authorisation approval. Possible values: 0 – Full authorisation only (default) 1 – Partial authorisation also accepted	[0,1]	1,1	c (mandatory for [28] only)
b1	PAN – Primary Account Number	[0-9]	8,19	m
b3	Card expiration month Two-digit number (*mm* format)	[0-9]	2,2	m
b4	Card expiration year Two-digit number (*yy* format)	[0-9]	2,2	m
b5	Card Security Code (CVV / CVC) as printed on the card	[0-9]	3,3	m
c1	Cardholder's full name NOTE: the minimum length of this field is five characters. If the cardholder provides a name that is less than five characters long, you must either	[\ a-zA-Z]	5,45	c recommended – when initiating 3D secure transaction,

Name	Description	Type	Length	Create Token Operations [10] [23] [28]
	add additional non-space characters to the name (e.g. Mr. Lu) or not transmit the field Refer to Mastercard's Enhanced Data Standards for Identity Check for information when you should send this value as part of 3D Secure authentication.			m for Visa 3ds transactions
c2	Cardholder's contact phone number Note: For Visa 3ds transactions cardholder's phone number or email are mandatory. Refer to Mastercard's Enhanced Data Standards for Identity Check for information when you should send this value as part of 3D Secure authentication.	[0-9\-\.]	5,32	c m for Visa 3ds transactions, o if c3 is sent. For 3DS transactions always include 3ds_homephonecountry..
c3	Cardholder's email address This parameter should be transmitted as a valid email address such as *joe@bloggs.com* A default valid email address should always be transmitted in Card-Present transactions. Refer to Mastercard's Enhanced Data Standards for Identity Check for information when you should send this value as part of 3D Secure authentication.	email	7,64	m
c4	Cardholder Billing Address street number If the processor supports AVS then the transmission of this parameter will trigger the AVS system. Note that the street number should be omitted from the c5 parameter if this parameter is transmitted. Refer to Mastercard's Enhanced Data Standards for Identity Check for information when you should send this value as part of 3D Secure authentication.	[0-9]	1,16	o recommended – when initiating 3D secure transaction
c5	Cardholder Billing Address street name The street number should not be included here if the c4 parameter is transmitted.	[a-zA-Z0-9\ \-]	4,50	o recommended – when initiating 3D secure transaction

Name	Description	Type	Length	Create Token Operations [10] [23] [28]
	Refer to Mastercard's Enhanced Data Standards for Identity Check for information when you should send this value as part of 3D Secure authentication.			
c7	Cardholder Billing Address city name Refer to Mastercard's Enhanced Data Standards for Identity Check for information when you should send this value as part of 3D Secure authentication.	[a-zA-Z\ \-]	3,30	o recommended – when initiating 3D secure transaction
c8	Cardholder Billing Address Territory Code, a level 2 country subdivision code according to ISO-3166-2. A reference list can be found at ISO 3166-1-alpha-2. Refer to Mastercard's Enhanced Data Standards for Identity Check for information when you should send this value as part of 3D Secure authentication.	[a-zA-Z0-9]	1,3	o recommended – when initiating 3D secure transaction
c9	Cardholder Billing Address Country Code Refer to ISO 3166-1-alpha-2 for a reference list. Refer to Mastercard's Enhanced Data Standards for Identity Check for information when you should send this value as part of 3D Secure authentication.	[A-Z]	2,2	o recommended – when initiating 3D secure transaction
c10	Cardholder Billing Address Postal/ZIP Code If transmitted, this value is sent to the issuer and will be part of the issuer's AVS checks Note: not all Payment Processors support AVS checks). Please refer to *Shift4 Payment Gateway: Processors Specification* for further details. Refer to Mastercard's Enhanced Data Standards for Identity Check for information when you should send this value as part of 3D Secure authentication.	[a-zA-Z0-9\ \-]	1,9	c (required for [23], [28]) recommended – when initiating 3D secure transaction
d1	Cardholder IP Address The IP address of the server that is connecting to the *Shift4* gateway should always be transmitted in Card-Present transactions. Refer to Mastercard's Enhanced Data Standards for Identity Check for information when you should send this value as part of 3D Secure authentication.	[0-9\.]	7,48	m
d2	Echo parameter	Text	3,128	o

Name	Description	Type	Length	Create Token Operations [10] [23] [28]
	Any value up to 128 bytes long transmitted within a request will be returned within the response to this parameter. Note: No plaintext cardholder data should be provided in this field.			
f21	Boolean field specifying whether the fraud protection service check should be bypassed. **Value** **Description** 0 Send for a fraud check. (default value) 1 Do not send for a fraud check Only available to merchants using the Smart Guard fraud protection service	[0-1]	1,1	o
f22	Sets an ad-hoc threshold for the specific transaction. The threshold must be a value between 0 and 1000. Only available to merchants using the Smart Guard Plus fraud-protection service.	[0-9]	0,4	o
h3	Sub-Merchant ID The merchant ID of a sub-merchant belonging to a Payment Facilitator Refer to *Shift4 Payment Gateway: Processors Specification* to learn which Payment Facilitators are supported.	[0-9]	1,15	c (Payment Facilitators)
h9	Merchant Reference Number This optional field is a secondary transaction reference number which can be sent alongside a1. Note: No plaintext cardholder data should be provided in this field.	Text AMEX: [a-zA-Z0-9]	1,32 AMEX: 1,30	o
h15	Seller Information This field contains seller information. When using this field, “Seller ID” is mandatory. The ID should be a unique identifier such as the seller name or an internal registration number. Populate these fields with the following information, delimited by “|”.	[a-zA-Z0-9\-|]	9,164	c ([23]only)

Name	Description	Type	Length	Create Token Operations [10] [23] [28]
	Note: This field is used by marketplaces. **Field** / **Type** / **Length (min, max)** Seller ID — [a-zA-Z0-9\-] — 4,64 Seller country — [A-Z] — 3,3 Seller city — [a-zA-Z\-] — 3,30 Seller street — [a-zA-Z0-9\-] — 4,50 Seller postal code — [a-zA-Z0-9\-] — 1,9 Seller state — [a-zA-Z0-9] — 3,3			
i1	Transaction Free Text Description	Text	5,64	o
i2	Dynamic Billing Descriptor The descriptor that appears on the cardholder's statement. The descriptor must follow this format: "Merchant DBA Name" + "*" + "City" 1. Merchant DBA Name: Up to 22 characters; must not include any asterisks. 2. Asterisk (*): Serves as a separator. 3. Valid City Name: Must be a recognized city name. Refer to *the Shift4 Global Processors API Specifications* to check if the Dynamic Descriptor feature is supported by your processor. Note: The i2 parameter will be ignored if the processor does not support dynamic descriptors. To use this feature, you must configure the service and add it to your account.	Text	1,39	o
i8	3D Secure Data Compose of 3 different parameters delimited by a colon: ECI	[a-zA-Z0-9\:\=\+]	10,128	o

Name	Description	Type	Length	Create Token Operations [10] [23] [28]
	CAVV/AAV XID Refer to Appendix J: How to provide 3D Secure Data on the i8 Parameter for more details Refer to *Shift4 Payment Gateway: Processors Specification* to learn which Payment Processors support the transfer of 3DS information. A transmitted i8 will not be routed to Payment Processors that do not support this feature. Furthermore, the transaction will be rejected by the *Shift4* gateway if no optional Processor is found.			
3ds_version	Indicates the 3D Secure protocol version Possible values: 1.0 2.0 2.1.0 2.2.0	[0-9]	3,5	c (m if using i8)
3ds_dstrxid	3DS Directory server transaction ID. Must be sent if 3ds_version = 2.0 or higher and i8 is used. Refer to Appendix J: How to Provide 3D Secure Data on the i8 Parameter	[0-9A-Za-z,-]	36	c (m if 3ds_version = 2.0 or higher)
j1	Primary Account Recipient's date of birth	YYYYMMDD		c (6012 in UK)
j2	Recipient PAN or account number	[a-zA-Z0-9*]	4,34 (For 6012 merchants in UK – 4,10)	c (m for AFT, m for 6012 UK merchants)
j3	Primary Account Recipient's Postal Code	[a-zA-Z0-9 /-/]	2,6	c (6012 in UK)
j4	Primary Account Recipient's partial surname	[a-zA-Z*]	2,6	c (6012 in UK)
j5	Funds Recipient's First Name	[-''A-Za-z]	1,30	c (m for AFT)

Name	Description	Type	Length	Create Token Operations [10] [23] [28]
j6	Funds Recipient's Street Address	[‘”0-9A-Za-z]	1,50	c, m for AFT when recipient=sender. m for AFT in CA/US/COL/NIC
j7	Funds Recipient's City	[a-zA-Z0-9\ ]	1,25	c, m for AFT when recipient=sender. m for AFT in CA/US/COL/NIC
j8	Funds Recipient's State/Province Code	[0-9A-Za-z]	2,3	c, m for AFT for CA/US/COL/NIC
j9	Funds Recipient's Country Code	[A-Z]	3,3	c (m for AFT)
j10	Funds Recipient's Phone Number	[0-9-]	1,20	o
j11	Funds Recipient's Date of Birth	MMDDYYYY	8,8	o
j12	Funds Recipient's Postal Code	[a-zA-Z0-9-]	1,10	c, m for AFT and CFT when j9 is US or Canada
j13	Funds Recipient's Surname	[A-Za-z]	1,30	c (m for AFT)
j14	The account holder's country of birth	[A-Z]	2	o for AFT/CFT/Purchase
s10	Sender first name	[a-zA-Z0-9]	1,30	c, m for AFT
s11	Sender last name	[a-zA-Z0-9]	1,25	c, m for AFT
s12	Sender street address	[a-zA-Z0-9]	1, 30	c, m for AFT
s13	Sender city	[a-zA-Z0-9]		c, m for AFT
s14	Sender state code	[a-zA-Z0-9]	2,30	c, m for US and Canada
s15	Sender country code , in ISO 3-letter country code format.	[A-Z]	3,3	c, m for AFT

Name	Description	Type	Length	Create Token Operations [10] [23] [28]
s16	Sender Account Number (PAN)	[a-zA-Z0-9*]	1,34	o
s17	Sender reference number – a merchant's ID represents the sender entity	[a-zA-Z0-9]	1,16	c, m for AFT in South Africa related transactions
s18	Source of funds used to make the funds transfer. Possible values: 01 - credit card 02 - debit card 03 - prepaid card 04 - cash 05 - Debit/deposit account 06 - Credit account 25 - Mobile Money account	[0-9]	2,2	c for AFT, m for AFT in US (when j9=US)
s19	The Sender's Date of Birth, in MMDDYYYY format	[0-9]	8,8	c, m for AFT
s20	Sender Postal Code	[a-zA-Z0-9 /-/]	1,10	C, M for AFT and CFT transactions when sender country code (s15) is USA or CAN
r1	Chooses the Processor for the specific transaction. The transaction will then be routed according to the transmitted value. See Appendix G for the list of possible values.	[a-zA-Z0-9]	0,9	o
r2	Chooses the Processor MID for the specific transaction. The transaction will then be routed according to the transmitted value.	[a-zA-Z0-9]	0,32	o
r3	Routing sequence number	[1-9]	12	o
3ds_initiate	Indicates whether to initiate the Shift4 3D Secure Authentication process. Possible values are: 01: Initiate 3D Secure before completing the payment 02: Process payment without 3D Secure 03: Initiate 3D Secure according to the 3DS Adviser result	[0-3]	2,2	o (default value: 02)

Name	Description	Type	Length	Create Token Operations [10] [23] [28]
	04: Only initiate the 3DS Adviser service. Relevant only for op code 98. For additional information about the 3D secure process, see Appendix I: 3D Secure. Note: If the transaction contains both the 3ds_initiate parameter and the i8 parameter, the transaction will be declined.			
token_eci	ECI value returned from the token decryption process	[0-9]	1,2	c
token_crypto	CAVV/AAV value returned from the token decryption process	[A-Za-z0-9]	0,40	c
crypto_currency_type	The type of cryptocurrency used in the transaction. Possible Values: **Value** **Description** 1 Central Bank Digital Currency (CBDC) 2 Stablecoin (fiat-backed) 3 Blockchain native token/coin 4 Non-Fungible Token (NFT) 7 Other Types	[0-9]	1,1	c, m for crypto transactions of MCCs 6051 / 6012 ([23], [28]).

Use Token Operations

[11] Use Token – Sale

This operation uses stored card details to generate a Sale [1] transaction

[12] Use Token – Auth

This operation uses stored card details to generate an Authorisation [2] transaction

[24] Use Token – Recurring Sale

This operation uses a previously created token to generate a Recurring Sale [1] transaction

[32] Use Token - Recurring Auth

This operation uses a previously created token to generate a Recurring Authorisation [2] transaction

[16] Block Token

This operation makes a token unusable, so it cannot be used for Sales, Authorisations, Credits, etc. Blocked tokens are still allowed to process Refunds and Captures of any transactions authorised or processed prior to the Block Token operation.

Name	Description	Type	Length	Use Token Operations [11] [12] [16] [24] [32]
M	Shift4 assigned gateway Merchant ID	[A-Z0-9_]	3,6	m
K	Unique cipher used for authenticating requests Refer to Appendix A: Message Cipher for further details on generating the cipher.	[0-9A-Za-z]	1,32	m
O	Operation Code The operation code is used for determining the requested service. See the list in Use Token Operations	[0-9]	1,3	m
a1	Request ID A unique Transaction Reference Number, which should be unique to each transaction and to each MID. May be used when corresponding with the Payment Processor or when reconciling transactions. Note: No plaintext cardholder data should be provided in this field.	[\-0-9A-Za-z]	1,32	m
a2	Payment Source Type Valid options are: 2 Online Order (default value) 3 Telephone Order 4 Mail Order 5 Virtual Terminal	[0-9]	1,2	o
a4	Requested Billing Amount The amount value should not include a decimal point. Amounts in currencies that have two, three or no exponents should be formatted according to their currency requirements.	[0-9]	1,12	m (required for [11], [12], [24], [32]) Not required for [16]

Name	Description	Type	Length	Use Token Operations [11] [12] [16] [24] [32]
	The minimum transaction value should be 0.01 EUR (or the equivalent or EUR 0.01 in another currency), otherwise the request is rejected. Refer to Appendix H: Transaction Currencies for more details.			
a5	Transaction Currency Indicates the currency that should be used in the transaction (every currency used must be preconfigured on the Shift4 platform). Refer to ISO 4217-alpha-3 for further information.	[A-Z]	3,3	m
a6	Transaction date (local date of the transaction)	yyMMdd	6,6	o
a7	Transaction time (local time of the transaction)	HHmmss	6,6	o
a8	Merchant Invoice ID Only required for subscription transactions.	text	1,16	o
a9	Transaction Type. Valid values are: **Value** — **Description** 1 — First standing order 2 — Subsequent standing order 5 — Card-Only Validation 6 — Straight Operation 8 — Unscheduled Card-on-File transactions initiated by the merchant 9 — Unscheduled Card-on-File transactions initiated by the cardholder 10 — Card validations for an unscheduled Card-on-File 11 — First Subscription	[0-9]	1,2	c (mandatory for [24], [32] only)

Name	Description	Type	Length	Use Token Operations [11] [12] [16] [24] [32]
	12 Subscription Note: By default, the transaction type is considered a straight operation unless specified otherwise.			
a10	Authorisation Type: 1. Final Authorisation (default value) 2. Pre- Authorisation 3. Deferred Authorisation Transactions referring to Pre-Authorisations must include the a4 parameter.	[1-3]	1,1	o ([11],[12],[24] ,[32] only)
a11	Multiple Capture tag Indicates the number of expected Captures Only supported in Card-not-Present transactions Default value is 1 Max value is 98 Min value is 2	[0-9]	1,2	o ([12],[32] only)
a14	Partial Authorisation tag This request parameter indicates to the issuer whether you are willing to accept partial authorisation approval. Possible values: 0 – Full authorisation only (default) 1 – Partial authorisation also accepted	[0,1]	1,1	o ([12], [32] only)
d1	Cardholder's IP Address The IP address of the server that is connecting to the Shift4 Gateway should always be sent for Card-Present transactions.	[0-9\.]	7,48	c, m for Visa 3ds transactions

Name	Description	Type	Length	Use Token Operations [11] [12] [16] [24] [32]
	Refer to Mastercard's Enhanced Data Standards for Identity Check for information when you should send this value as part of 3D Secure authentication.			
d2	Echo parameter Any value up to 128 bytes long transmitted within a request will be returned within the response to this parameter. Note: No plaintext cardholder data should be provided in this field.	Text	3,128	o
g1	Token Shift4-generated Token that refers to a stored card profile.	[a-zA-Z0-9]	1,32	m
g6	Initial transaction ID The z50 parameter that was received in the original transaction response. Must be sent to ensure the transaction is considered an MIT transaction. Note: The schemes require that each subsequent transaction includes a proper 'initial transaction id' on the g6 parameter. Generic values will no longer be accepted. This applies to transactions from all times. If you do not have this value, work with your customers to get a new original transaction authorised and authenticated.	[0-9A-Za-z]	13,15	o (m if a9=2/8/12)
g7	Mastercard's Transaction Link Identifier (TLID) Use this parameter to include the Mastercard identifier obtained in a cardholder-initiated authorized transaction with every subsequent merchant-initiated transaction (MIT).	[a-zA-Z0-9]	22,22	c (m if a9=2/8/12)

<table>
<tr><th>Name</th><th>Description</th><th>Type</th><th>Length</th><th>Use Token Operations
[11] [12] [16] [24] [32]</th></tr>
<tr><td></td><td>This value is provided in the z70 response parameter of the cardholder-initiated transaction.</td><td></td><td></td><td></td></tr>
<tr><td>h9</td><td>Merchant Reference Number
This optional field is a secondary transaction reference number which can be transmitted alongside an a1 parameter.
Note: No plaintext cardholder data should be provided in this field.</td><td>Text
AMEX: [a-zA-Z0-9]</td><td>1,32
AMEX: 1,30</td><td>o</td></tr>
<tr><td>h15</td><td>Seller Information
This field contains seller information. When using this field, “Seller ID” is mandatory. The ID should be a unique identifier such as the seller name or an internal registration number.
Populate these fields with the following information, delimited by “|”.
Note: This field is used by marketplaces.
<table>
<tr><th>Field</th><th>Type</th><th>Length (min, max)</th></tr>
<tr><td>Seller ID</td><td>[a-zA-Z0-9\-]</td><td>4,64</td></tr>
<tr><td>Seller country</td><td>[A-Z]</td><td>3,3</td></tr>
<tr><td>Seller city</td><td>[a-zA-Z\-]</td><td>3,30</td></tr>
<tr><td>Seller street</td><td>[a-zA-Z0-9\-]</td><td>4,50</td></tr>
<tr><td>Seller postal code</td><td>[a-zA-Z0-9\-]</td><td>1,9</td></tr>
<tr><td>Seller state</td><td>[a-zA-Z0-9]</td><td>3,3</td></tr>
</table></td><td>[a-zA-Z0-9\-\|]</td><td>9,164</td><td>c ([11], , [24], only)</td></tr>
<tr><td>i2</td><td>Dynamic Billing Descriptor
The descriptor that appears on the cardholder's statement.
The descriptor must follow this format:
"Merchant DBA Name" + "*" + "City"</td><td>Text</td><td>1,39</td><td>o
(Not required for [16])</td></tr>
</table>

Name	Description	Type	Length	Use Token Operations [11] [12] [16] [24] [32]
	1. Merchant DBA Name: Up to 22 characters; must not include any asterisks. 2. Asterisk (*): Serves as a separator. 3. Valid City Name: Must be a recognized city name. Refer to *the Shift4 Global Processors API Specifications* to check if the Dynamic Descriptor feature is supported by your processor. Note: The i2 parameter will be ignored if the processor does not support dynamic descriptors. To use this feature, you must configure the service and add it to your account.			
j5	Funds Recipient's First name	[-''A-Za-z]	1,30	c (m for AFT)
j6	Funds Recipient's Street Address	['"0-9A-Za-z]	1,50	c, m for AFT when recipient=sender. m for AFT in CA/US/COL/NIC
j7	Funds Recipient's City	[a-zA-Z0-9\ ]	1,25	c, m for AFT when recipient=sender. m for AFT in CA/US/COL/NIC
j8	Funds Recipient's State/Province Code	[0-9A-Za-z]	2,3	c, m for AFT for CA/US/COL/NIC
j9	Funds Recipient's Country Code	[A-Z]	3,3	c (m for AFT)
j10	Funds Recipient's Phone Number	[0-9-]	1,20	o
j11	Funds Recipient's Date of Birth	MMDDYYYY	8,8	o
j12	Funds Recipient's Postal Code	[a-zA-Z0-9-]	1,10	c, m for AFT and CFT when j9 is US or Canada

Name	Description	Type	Length	Use Token Operations [11] [12] [16] [24] [32]
j13	Funds Recipient's Surname	[A-Za-z]	1,30	c (m for AFT)
j14	The account holder's country of birth	[A-Z]	2	o for AFT/CFT/Purchase
s10	Sender first name	[a-zA-Z0-9]	1,30	c, m for AFT
s11	Sender last name	[a-zA-Z0-9]	1,25	c, m for AFT
s12	Sender street address	[a-zA-Z0-9]	1, 50	c, m for AFT
s13	Sender city	[a-zA-Z0-9]		c, m for AFT
s14	Sender state code	[a-zA-Z0-9]	2,30	c, m for US and Canada
s15	Sender country code , in ISO 3-letter country code format.	[A-Z]	3,3	c, m for AFT
s16	Sender Account Number (PAN)	[a-zA-Z0-9*]	1,34	o
s17	Sender reference number – a merchant's ID represents the sender entity	[a-zA-Z0-9]	1,16	c, m for AFT in South Africa related transactions
s18	Source of funds used to make the funds transfer. Possible values: 01 - credit card 02 - debit card 03 - prepaid card 04 - cash 05 - Debit/deposit account 06 - Credit account 25 - Mobile Money account	[0-9]	2,2	c for AFT, m for AFT in US (when j9=US)
s19	The Sender's Date of Birth, in MMDDYYYY format	[0-9]	8,8	c, m for AFT
s20	Sender Postal Code	[a-zA-Z0-9 /-/]	1,10	C, M for AFT and CFT transactions when sender

Name	Description	Type	Length	Use Token Operations [11] [12] [16] [24] [32]
				country code (s15) is USA or CAN
3ds_initiate	Indicates whether to initiate the Shift4 3D Secure Authentication process. Possible values are: 01: Initiate 3D Secure before completing the payment 02: Process payment without 3D Secure 03: Initiate 3D Secure according to the 3DS Adviser result 04: Only initiate the 3DS Adviser service. Relevant only for op code 98. For additional information about the 3D Secure process, see Appendix I: 3D Secure Note: If the transaction contains both the 3ds_initiate parameter and the i8 parameter, the transaction will be declined.	[0-3]	2,2	o (default value: 02)
crypto_currency_type	The type of cryptocurrency used in the transaction. Possible Values: **Value** **Description** 1 Central Bank Digital Currency (CBDC) 2 Stablecoin (fiat-backed) 3 Blockchain native token/coin 4 Non-Fungible Token (NFT) 7 Other Types	[0-9]	1,1	c, m for crypto transactions of MCCs 6051 / 6012 ([11], [12], [24], [32]).

Referral Token Operations

[13] Use Token – Capture

This operation generates a Capture [3] that pertains to a previous operation [12] transaction. It can only be used if a previous [12] operation has already been transmitted.

[14] Token Auth Void

This operation initiates the online Authorisation reversal of a previous [12] operation. This transaction type can only be transmitted if a previous [12] operation has already been transmitted

[15] Token Referral Credit

This operation generates a refund that pertains to a previous [13] or [11] operation. This transaction type can only be transmitted if a previous [11] or [13] operation has already been transmitted.

[29] Create Token – Capture

A Capture operation that pertains to a previous [28] operation transaction. This does not trigger the creation of another token. This transaction type can only be transmitted if a previous [28] operation has already been transmitted.

[33] - Use Token – Recurring Capture

A Capture operation that pertains to a previous [32] operation transaction. This transaction type can only be transmitted if a previous [32] operation has already been transmitted.

Request Parameters

Name	Description	Type	Length	Referral Operations [13] [14] [15] [29] [33]
M	*Shift4* assigned Gateway Merchant ID	[A-Z0-9_]	3,6	m
K	Unique cipher for authenticating requests Refer to Appendix A: Message Cipher for further details on generating the cipher.	[0-9A-Za-z]	1,32	m
O	Operation Code The operation code is used for determining the requested service. See the list in Referral Token Operations.	[0-9]	1,3	m
a1	Request ID A unique Transaction Reference Number that should be unique to each transaction and to each MID. May be used when corresponding with the Payment Processor or when reconciling transactions. Note: No plaintext cardholder data should be provided in this field.	[\-0-9A-Za-z]	1,32	m
a2	Payment Source Type	[0-9]	1,2	o

Name	Description	Type	Length	Referral Operations [13] [14] [15] [29] [33]
	Valid options are: 2 Online Order (default value) 3 Telephone Order 4 Mail Order 5 Virtual Terminal			
a4	Requested Billing Amount The amount value should not include a decimal point. Amounts in currencies that have two, three or no exponents should be formatted according to their currency requirements. The minimum transaction value should be 0.01 EUR (or the equivalent or EUR 0.01 in another currency), otherwise the request is rejected. Refer to Appendix H: Transaction Currencies for more details	[0-9]	1,12	o
a5	Presentment Currency Indicates the presentment currency that should be used in the transaction (every currency used must be preconfigured on the *Shift4* platform). Refer to ISO 4217-alpha-3 for more details.	[A-Z]	3,3	o
a6	Transaction date (local date of the transaction)	yyMMdd	6,6	o
a7	Transaction time (local time of the transaction)	HHmmss	6,6	o
a9	Transaction Type. Valid values are: **Value** **Description** 1 First standing order 2 Subsequent standing order 5 Card-Only Validation 6 Straight Operation 8 Unscheduled Card-on-File transactions initiated by the merchant	[0-9]	1,2	o ([14], [29], [33] only)

Name	Description	Type	Length	Referral Operations [13] [14] [15] [29] [33]
	9 Unscheduled Card-on-File transactions initiated by the cardholder 10 Card validations for an unscheduled Card-on-File 11 First subscription 12 Subscription Note: By default, the transaction type is considered a straight operation unless specified otherwise. Sending a9 with the value 5 for operation codes 29/33 will trigger a rejection response. The Gateway will also reject the a9 parameter if it does not match the original operation code's a9 value.			
b3	Card expiration month Two-digit number (*mm* format)	[0-9]	2,2	o for [15] n/a for else
b4	Card expiration year Two-digit number (*yy* format)	[0-9]	2,2	o for [15] n/a for else
d1	Cardholder IP Address The IP Address of the server that is connecting to the *Shift4* gateway should always be sent in Card-Present transactions. Refer to Mastercard's Enhanced Data Standards for Identity Check for information when you should send this value as part of 3D Secure authentication.	[0-9\.]	7,48	c, m for Visa 3ds transactions
d2	Echo parameter Any value up to 128 bytes long transmitted within a request will be returned within the response to this parameter.	Text	3,128	o

Name	Description	Type	Length	Referral Operations [13] [14] [15] [29] [33]
	Note: No plaintext cardholder data should be provided in this field.			
g1	Token A *Shift4*-generated Token that references a stored card profile.	[a-zA-Z0-9]	1,32	o
g2	Response ID The z1 parameter from a corresponding past transaction.	[a-zA-Z0-9]	1,32	m
g3	Authorisation Code The z4 parameter from a corresponding past transaction.	[a-zA-Z0-9]	1,10	o
g4	Request ID The a1 parameter from a corresponding past transaction.	[0-9A-Za-z]	1,32	o
g6	Initial transaction ID The z50 parameter that was received in the original transaction response. Must be sent to ensure the transaction is considered an MIT transaction. **Note**: The schemes require that each subsequent transaction includes a proper 'initial transaction id' on the g6 parameter. Generic values will no longer be accepted. This applies to transactions from all times. If you do not have this value, work with your customers to get a new original transaction authorised and authenticated.	[0-9A-Za-z]	13,15	o (m if a9=2/8/12)
g7	Mastercard's Transaction Link Identifier (TLID) Use this parameter to include the Mastercard identifier obtained in a cardholder-initiated authorized transaction with every subsequent merchant-initiated transaction (MIT).	[a-zA-Z0-9]	22,22	c (m if a9=2/8/12)

<table>
<tr><th>Name</th><th>Description</th><th>Type</th><th>Length</th><th>Referral Operations
[13] [14] [15] [29] [33]</th></tr>
<tr><td></td><td>This value is provided in the z70 response parameter of the cardholder-initiated transaction.</td><td></td><td></td><td></td></tr>
<tr><td>h9</td><td>Merchant Reference Number
This optional field is a secondary transaction reference number which can be sent alongside a1.
Note: No plaintext cardholder data should be provided in this field.</td><td>Text
AMEX: [a-zA-Z0-9]</td><td>1,32
AMEX: 1,30</td><td>o</td></tr>
<tr><td>h15</td><td>Seller Information
This field contains seller information. When using this field, “Seller ID” is mandatory. The ID should be a unique identifier such as the seller name or an internal registration number.
Populate these fields with the following information, delimited by “|”.
Note: This field is used by marketplaces.
<table>
<tr><th>Field</th><th>Type</th><th>Length (min, max)</th></tr>
<tr><td>Seller ID</td><td>[a-zA-Z0-9\-]</td><td>4,64</td></tr>
<tr><td>Seller country</td><td>[A-Z]</td><td>3,3</td></tr>
<tr><td>Seller city</td><td>[a-zA-Z\-]</td><td>3,30</td></tr>
<tr><td>Seller street</td><td>[a-zA-Z0-9\-]</td><td>4,50</td></tr>
<tr><td>Seller postal code</td><td>[a-zA-Z0-9\-]</td><td>1,9</td></tr>
<tr><td>Seller state</td><td>[a-zA-Z0-9]</td><td>3,3</td></tr>
</table></td><td>[a-zA-Z0-9\-\|]</td><td>9,164</td><td>c ([13], [29], [33] only)</td></tr>
<tr><td>i1</td><td>Transaction Free Text Description</td><td>Text</td><td>5,64</td><td>O</td></tr>
<tr><td>crypto_currency_type</td><td>The type of cryptocurrency used in the transaction. Possible Values:
<table>
<tr><th>Value</th><th>Description</th></tr>
</table></td><td>[0-9]</td><td>1,1</td><td>c, m for crypto transactions of MCCs</td></tr>
</table>

Name	Description	Type	Length	Referral Operations [13] [14] [15] [29] [33]
	1 Central Bank Digital Currency (CBDC) 2 Stablecoin (fiat-backed) 3 Blockchain native token/coin 4 Non-Fungible Token (NFT) 7 Other Types			6051 / 6012 ([15]).

Special Operations

This group of operations includes special transaction types that are only required for specific business types or industries or in specific business scenarios.

Special Operations	
[34]	Referral CFT (Credit Fund Transfer)
[35]	Independent CFT (Credit Fund Transfer)
[37]	Create Independent CFT Token
[38]	Use Independent CFT Token
[98]	Authenticate Cardholder without payment (3D Secure)
[88]	Create Token and Authenticate Cardholder without payment (3D Secure)
[89]	Use Token and Authenticate Cardholder without payment (3D Secure)

[34] - Referral CFT (Credit Fund Transfer)

Referral CFT is used to credit funds to a cardholder, where the funds being credited refer to a previous original Sale or Capture transaction. The use of this operation code requires prior approval from Shift4; contact your account manager for more details.

This type of CFT is commonly used in gaming businesses (MCC 7994), gambling businesses (MCC 7995) and other industries such as Forex businesses (MCC 6211).



Note:

The original transaction that is referred to must be successfully authorized and captured in order to process a [34] – Referal CFT. Otherwise the referral CFT transaction will be declined.

[35] - Independent CFT (Credit Fund Transfer)

Independent CFT is used to credit funds to a cardholder when the funds being credited do **not** refer to a previous original Sale of Capture transaction. The use of this operation code requires prior approval from Shift4; contact your account manager for more details.

[37] – Create Independent CFT Token

Creates a token as part of the process of initiating an independent CFT transaction [35].

[38] – Use Independent CFT Token

Uses stored card details to initiate an Independent CFT token [35] transaction.



Note:

According to the card scheme's rules, the payout transactions are final and cannot be voided (except for Mastercard transaction processed with MCC 7995).

This means you should not send operation [8] – Refund Void for payout transactions initiated and of the following operation codes:

[34] – Referral CFT

[35] – Independent CFT

[37] – Create token – Independent CFT

[38] – Use token – Independent CFT

Attempting to void these transaction will result in a decline

[98] - Authenticate the cardholder with 3D secure without processing the payment

Use this operation code in cases you want to send a transaction to the Shift4 3D secure service without initiating a payment.

[88] Create Token and Authenticate Cardholder without payment (3D Secure)

Use this operation code in cases you want to create a token and send a transaction to the Shift4 3D Secure service without initiating a payment.

[89] Use Token and Authenticate Cardholder without payment (3D Secure)

Use this operation code in cases you want to use a token and send a transaction to the Shift4 3D Secure service without initiating a payment.

Required Parameters

Name	Description	Referral CFT [34]	Independent CFT [35], [37]	Use Token Independent CFT [38]	3D Only [98]	Create Token 3D Only [88]	Use Token 3D Only [89]
M	Merchant ID	m	m	m	m	m	m
K	Package Signature	m	m	m	m	m	m
O	Operation Code	m	m	m	m	m	m
a1	Request ID	m	m	m	m	m	m
a2	Source Type ID	o	o	o	o	-	-
a4	Billing Amount	m	m	m	m	m	m
a5	Billing Currency Code	m	m	m	m	m	m
a6	Transaction Date	o	o	o	o	o	o
a7	Transaction Time	o	o	o	o	o	o
a8	Merchant Order ID/Invoice	o	o	o	o	o	o
b1	Card Number	-	m	-	m	m	-
b3	Card Expiration Month (*mm*)	-	m	-	m	m	-
b4	Card Expiration Year (*yy*)	-	m	-	m	m	-
b21	Passthrough wallet indicator	-	c	-	-	c	-
c1	Billing Contact Name	-	-	-	m	c	c
c2	Billing Contact Phone Number	-	-	-	c	c	c

Name	Description	Referral CFT [34]	Independent CFT [35], [37]	Use Token Independent CFT [38]	3D Only [98]	Create Token 3D Only [88]	Use Token 3D Only [89]
c3	Billing Email Address	m	-	-	m	c	c
c4	Billing Street Number	-	-	-	o	o	o
c5	Billing Street Name	-	-	-	o	o	o
c7	Billing City Name	-	-	-	o	o	o
c8	Billing Territory ISO Code	-	-	-	o	o	o
c9	Billing Country ISO Code	-	-	-	o	o	o
c10	Billing Postal Code	-	-	-	o	o	o
d1	End User IP Address	o	m	m	m	c	co
d2	Echo	o	o	o	o	o	o
g1	Shift4 assigned Token id	-	-	m	o	-	m
g2	Previous Response ID	m	-	-	-	-	-
g3	Previous Authorisation Code	o	-	-	-	-	-
g4	Previous Request ID	o	-	-	-	-	-
g6	Initial transaction ID	C, M for CFT that was directly funded by a related AFT	C, M for CFT that was directly funded by a related AFT	C, M for CFT that was directly funded by a related AFT	-	-	-

Name	Description	Referral CFT [34]	Independent CFT [35], [37]	Use Token Independent CFT [38]	3D Only [98]	Create Token 3D Only [88]	Use Token 3D Only [89]
g7	Mastercard's Transaction Link Identifier(TLID)	-	-	-	o	o	o
h9	Merchant Reference Number	o	o	o	o	o	o
i1	Transaction Free Text Description	o	o	-	o	o	o
i2	Dynamic Billing Descriptor	-	-	-	o	o	o
j5	Funds Recipient's First Name	c (m if was not sent on the original transaction)	m	m	-	-	-
j6	Funds Recipient's Street Address	c, m when recipient=sender, m for CA/US/COL/NIC	c, m when recipient=sender, m for CA/US/COL/NIC	c, m when recipient=sender, m for CA/US/COL/NIC	-	-	-
j7	Funds Recipient's City	c, m when recipient=sender, m for CA/US/COL/NIC	c, m when recipient=sender, m for CA/US/COL/NIC	c, m when recipient=sender, m for CA/US/COL/NIC	-	-	-
j8	Funds Recipient's State/Province Code	c, m for CA/US/COL/NIC	c, m for CA/US/COL/NIC	c, m for CA/US/COL/NIC	-	-	-
j9	Funds Recipient's Country Code	c, m when sender= recipient, m for	c, m when sender= recipient, m for	c, m when sender= recipient, m for	-	-	-

Name	Description	Referral CFT [34]	Independent CFT [35], [37]	Use Token Independent CFT [38]	3D Only [98]	Create Token 3D Only [88]	Use Token 3D Only [89]
		CA/US/COL/NIC	CA/US/COL/NIC	CA/US/COL/NIC			
j10	Funds Recipient's Phone Number	o	o	o	-	-	-
j11	Funds Recipient's Date of Birth	o	o	o	-	-	-

j12	Funds Recipient's Postal Code	c, m for AFT and CFT when j9 is US or Canada	c, m for AFT and CFT when j9 is US or Canada	c, m for AFT and CFT when j9 is US or Canada	-	-	-
j13	Funds Recipient's Surname	c (m if was not sent on the original transactio n)	m	m	-	-	-
s10	Sender first name	c, m when sender ≠ recipient	c, m when sender ≠ recipient	c, m when sender ≠ recipient			
s11	Sender last name	c, m when sender ≠ recipient	c, m when sender ≠ recipient	c, m when sender ≠ recipient			
s12	Sender street address	c, m when sender ≠ recipient	c, m when sender ≠ recipient	c, m when sender ≠ recipient			
s13	Sender city	c, m when sender ≠ recipient	c, m when sender ≠ recipient	c, m when sender ≠ recipient			
s14	Sender state code	c, m for US and Canada	c, m for US and Canada	c, m for US and Canada			
s15	Sender country code , in ISO 3-letter country code format.	c, m when sender ≠ recipient	c, m when sender ≠ recipient	c, m when sender ≠ recipient			
s16	Sender Account Number (PAN)	m	m	m			

s17	Sender reference number – a merchant's ID represents the sender entity	c, m if sender account number (s16) is not available.	c, m if sender account number (s16) is not available.	c, m if sender account number (s16) is not available.			
s18	Source of funds used to make the funds transfer.	m	m	m			
s19	The sender's Date of Birth, in MMDDYYYY format	m, unless the sender is the merchant	m	m			
s20	The postal code of the sender's address.	C, M when s15 is USA or CAN	C, M when s15 is USA or CAN	C, M when s15 is USA or CAN			
3ds_initiate	Indicates whether to initiate the Shift4 3D Secure Authentication process. Possible values are: 01: Initiate 3D Secure before completi	-	o	o	o	m	m

	ng the payment 02: Process payment without 3D Secure 03: Initiate 3D Secure according to the 3DS Adviser result 04: Only initiate the 3DS Adviser service. Relevant only for op code 98. For additional information about the 3D Secure process, see Appendix I: 3D Secure Note: If the transaction contains						

	both the 3ds_initiate parameter and the i8 parameter, the transaction will be declined.						
crypto_currency_type	The type of cryptocurrency used in the transaction. Possible Values: 1 - Central Bank Digital Currency (CBDC) 2 - Stablecoin (fiat-backed) 3 - Blockchain native token/coin 4 - Non-Fungible Token (NFT) 7 - Other Types	c, m for crypto transactions of MCCs 6051 / 6012	c, m for crypto transactions of MCCs 6051 / 6012	c, m for crypto transactions of MCCs 6051 / 6012			

Note Processing CFT transactions in which the sender of the funds is not the recipient requires further registration, consult with your Solution Architect to add this ability to your account.

Data Retrieval Operations

This group of operations includes data retrieval transaction types that are only required for specific business types or industries or in specific business scenarios.

[101] - Past Transaction Retrieval

Passes back the data pertaining to a previous transaction as currently available in the Shift4 payment gateway system.
*Parameters that were retrieved from the referred to transaction should be sent to a prefix of _.

[103] - Get Fraud Scoring

This operation allows you to send a transaction to the SmartGuard service in order to obtain a risk score. This operation is only available to merchants registered to *Shift4's* SmartGuard service.

[104] – Get Fast Funds Indicator

This operation enables you to send an independent query request for a specific card number (b1) in order to obtain information whether this card's issuer supports fast funds transfer. The response is provided in the z51 parameter.

[105] – Use Token Get Fast Funds Indicator

Enables you to send a query request for a specific Shift4 token (g1) in order to obtain information whether the referenced card's issuer supports fast funds transfer. The response is provided in the z51 parameter.

Name	Description	Retrieval Operation [101]	Get Fraud Scoring [103]	Get Fast Funds Indicator [104]	Use Token Get Fast Funds Indicator [105]
M	Merchant ID	m	m	m	m
K	Package Signature	m	m	m	m
O	Operation Code	m	m	m	m
a1	Request ID	m	m	m	m
a2	Source Type ID	-	o	-	-
a4	Billing Amount	-	m	-	-
a5	Billing Currency Code	o	m	-	-
a6	Transaction Date	-	o	-	-
a7	Transaction Time	-	o	-	-

Name	Description	Retrieval Operation [101]	Get Fraud Scoring [103]	Get Fast Funds Indicator [104]	Use Token Get Fast Funds Indicator [105]
a8	Merchant Order ID/Invoice	-	-	-	-
b1	Card Number	-	m	m	-
b3	Card Expiration Month (mm)	-	m	-	-
b4	Card Expiration Year (yy)	-	o	-	-
c1	Billing Contact Name	-	m	-	-
c2	Billing Contact Phone Number	-	m	-	-
c3	Billing Email Address	-	m	-	-
c4	Billing Street Number	-	c	-	-
c5	Billing Street Name	-	o	-	-
c7	Billing City Name	-	o	-	-
c8	Billing Territory ISO Code	-	o	-	-
c9	Billing Country ISO Code	-	o	-	-
c10	Billing Postal Code	-	o	-	-
d1	End User IP Address	-	o	-	-
d2	Echo	o	o	-	-
g1	Shift4 assigned Token id	-	-	-	m
g2	Previous Response ID	-	c	-	-

Name	Description	Retrieval Operation [101]	Get Fraud Scoring [103]	Get Fast Funds Indicator [104]	Use Token Get Fast Funds Indicator [105]
g3	Previous Authorisation Code	-	m	-	-
g4	Previous Request ID	m	o	-	-
g6	Initial transaction ID	-	-	-	-
g7	Mastercard's Transaction Link Identifier(TLID)	-	-	-	-
h3	Sub merchant id	-	-	o	o
h9	Merchant Reference Number	o	-	-	-
i1	Transaction Free Text Description	-	-	-	-
i2	Dynamic Billing Descriptor	-	-	-	-
j5	Funds Recipient's First Name	-	-	-	-
j6	Funds Recipient's Street Address	-	-	-	-
j7	Funds Recipient's City	-	-	-	-
j8	Funds Recipient's State/Province Code	-	-	-	-
j9	Funds Recipient's Country Code	-	-	-	-

Name	Description	Retrieval Operation [101]	Get Fraud Scoring [103]	Get Fast Funds Indicator [104]	Use Token Get Fast Funds Indicator [105]
j10	Funds Recipient's Phone Number	-	-	-	-
j11	Funds Recipient's Date of Birth	-	-	-	-
j12	Funds Recipient's Postal Code	-	-	-	-
j13	Funds Recipient's Surname	-	-	-	-
3ds_initiate	Indicates whether to initiate the Shift4 3D Secure Authentication process. Possible values are: 01: Initiate 3D Secure before completing the payment 02: Process payment without 3D Secure 03: Initiate 3D Secure according to the 3DS Adviser result 04: Only initiate the 3DS Adviser service. Relevant only	-	-	-	-

Name	Description	Retrieval Operation [101]	Get Fraud Scoring [103]	Get Fast Funds Indicator [104]	Use Token Get Fast Funds Indicator [105]
	for op code 98. For additional information about the 3D Secure process, see Appendix I: 3D Secure Note: If the transaction contains both the 3ds_initiate parameter and the i8 parameter, the transaction will be declined.				

Response Fields

The following API parameters are returned in the transaction response.

Note:

- Echo parameters are only returned in the transaction response if the respective parameters were sent in the request
- New response parameters may be added in the future without prior notice. Make sure your implementation can support that

Name	Description	Type	Length
M	Shift4-assigned Gateway Merchant ID	[A-Z0-9_]	3,6
T	Transaction processing timestamp formatted as MM/dd/yyyy HH:mm:ss	timestamp	1,32
a1	Request ID as sent in the request	[\-0-9A-Za-z]	1,32
a2	Payment Source Type as sent in the request	[0-9]	1,2
a4	Requested Billing Amount as sent in the request	[0-9]	1,12
a6	Transaction date (local date of the transaction) as sent in the request	yyMMdd	6,6
a7	Transaction time (local time of the transaction) as sent in the request	HHmmss	6,6
a9	Transaction Type as sent in the request	[0,9]	1,2
b1	PAN – Primary Account Number. Masked as: ######****####	[0-9]	8,19
b2	Card type. Valid options are: Code Card Scheme 0 Unknown 1 Visa 2 Mastercard 3 American Express 4 Isracard 9 Maestro 10 JCB 12 Discover 13 Diners	[0-9]	1,2

Name	Description	Type	Length
	14 Cartes Bancaires		
b3	Card expiration month as sent in the request	[0-9]	2,2
b4	Card expiration year as sent in the request	[0-9]	2,2
b20	Payment Account Reference (PAR)	[a-zA-Z0-9]	29,29
c1	Cardholder's full name as sent in the request	[\ a-zA-Z]	5,45
d2	Echo parameter as sent in the request	Text	3,128
g1	Token *Shift4*-generated Token that refers to a stored card profile.	[a-zA-Z0-9]	1,32
g2	Response ID as sent in the request	[a-zA-Z0-9]	1,32
h3	Sub-Merchant ID as sent in the request	0-9	1,15
h9	Merchant Reference Number as sent in the request	Text AMEX: [a-zA-Z0-9]	1,32 AMEX: 1,30
i1	Transaction Free Text Description as sent in the request	Text	5,64
j1	Primary Account Recipient’s date of birth as sent in the request	YYYYMMDD	8,8
j2	Recipient PAN or account number	[a-zA-Z0-9*]	4,34
j3	Primary Account Recipient’s Postal Code as sent in the request	[a-zA-Z0-9 /-/]	2,6
j4	Primary Account Recipient’s partial surname as sent in the request	[a-zA-Z*]	2,6
z1	Shift4 Gateway Transaction ID The Transaction ID that uniquely identifies this transaction in the Shift4 gateway.	[a-zA-Z0-9]	1,32
z2	Gateway Response Code. A value of 05 means that the transactions were rejected by the processor. Refer to z6 to see the original response code Refer to Appendix B: Operation Result Codes for more information	[0-9-]	1,3
z3	Description of the operation’s result	text	5,256
z4	Authorisation Code	[a-zA-Z0-9]	1,10

Name	Description	Type	Length
z5	Risk Score The fraud protection service's response. The transaction will be rejected if the value of z5 is greater than or equal to the threshold defined in the merchant setup but will continue its flow if the value of z5 is lower than the merchant defined threshold. Refer to SmartGuard for more information.	[ABC0-9]	1,6
z6	Processing Response Reason Code. The original Processor response is provided in parameter z41. For more information, refer to Appendix D: Processing Response Reason Codes.	[A-Z0-9]	1,3
z9	AVS response The Address Verification Service (AVS) Authorisation response provided by the acquirer at the time of Authorisation. For more information, refer to Appendix C: AVS Response Codes.	[A-Z0-9]	1,2
z13	RRN The transaction Retrieval Reference Number (RRN) may be provided by the processor as an additional identifier of the transaction.	[a-zA-Z0-9]	1,32
z14	CVV2 response code Valid values are: 'M' - CVV2/CVC2 Matches 'N' – CVV2/CVC2 does not Match 'P' – Not processed 'S' – The CVV2 should be on the card but the merchant indicates it is not. 'U' – CVV2/CVC2 Unavailable – issuer does not support this parameter 'Y' – CVC1 Incorrect '1' - CVV2/CVC2 Unavailable – processor / card type does not support this parameter '2' - An unrecognised result code was returned by the processor '3' - No result code was returned by the processor.	[A-Z]	1,1

Name	Description	Type	Length
z15	Approved Billing Amount If the issuer approved a partial amount, the approved amount is indicated in this response parameter. The amount is provided in the same exponent and currency as the requested amount.	[0-9]	1,10
z16	Balance Response. For Card-Present transactions carried out with debit or prepaid cards, the issuer may choose to return the current balance of the associated account. The value of this balance will be returned in this field if provided by the issuer.	[0-9]	1,10
z17	Balance Response Currency. If a balance response is provided (see notes relating to field z16 above), its currency will be returned in this parameter.	[A-Z0-9]	3,3
z21	Indicates the result of the transaction's transmission to the fraud-protection service. See Appendix E: z21 Possible Values for the list of all possible z21 result codes.	[0-9-]	1,3
z25	Indicates the updated amount of the transaction. Populated only in cases of changed amount such as authorisation void and incremental authorisation.	[0-9-]	1.12
z26	Full name verification result (ANI). Possible Values: 'A' - Match 'B' - Partial Match 'C' - No Match 'U' - Unverified 'N' - Not Supported Refer to Appendix L – Account Name Inquiry	[A-Z]	1,1
z27	First Name Verification Result (ANI) Possible Values: 'A' - Match 'B' - Partial Match 'C' - No Match 'U' - Unverified 'N' - Not Supported Refer to Appendix L – Account Name Inquiry	[A-Z]	1,1

Name	Description	Type	Length
z28	Last Name Verification Result (ANI). Possible Values: 'A' - Match 'B' - Partial Match 'C' - No Match 'U' - Unverified 'N' - Not Supported Refer to Appendix L – Account Name Inquiry	[A-Z]	1,1
z30	Indicates the Processor Routing Method used for the transaction. Optional values are: 1 Routing parameter (r1 or r2) 2 Routing rules 3 Processor priority	[0-9]	1,1
z31	The Processor Routing Rule ID that was responsible for the routing decision. Only populated in cases where z30=2.	[0-9]	0,4
z33	The Payment Processor processed the transaction.	[A-Z]	1,255
z34	The Payment Processor MID.	[a-zA-Z0-9]	1,255
z35	Indicates whether Smart Routing reroute is applied to this transaction.	Boolean	4,5
z36	The first Payment Processor to which the transaction was routed. Only populated in cases where all the following is true: Smart Routing is enabled The transaction was rerouted to a second processor r1 was not sent on the request The response did not contain certain z6 values	[A-Z]	1,255
z37	The original Response Code as transmitted by the first Payment Processor to which the transaction was routed (i.e., the z41 of the first Payment Processor to which the transaction was routed). Only populated in cases where all the following is true: Smart Routing is enabled	[a-zA-Z0-9]	1,255

Name	Description	Type	Length
	The transaction was rerouted to a second processor r1 was not sent on the request The response did not contain certain z6 values.		
z39	The Payment Processor Transaction ID. Used when corresponding with the Payment Processor or when reconciling transactions.	[a-zA-Z0-9]	1,255
z40	Fraud Explanation Array. Indicates the risk score and provides the list of rules that were triggered with respect to the transaction in question.	[a-zA-Z0-9]	5,4192
z41	The original Response Code as transmitted by the Processor. For more information, refer to Appendix D: Processing Response Reason Codes.	[a-zA-Z0-9]	1,255
z43	Indicates whether the transaction was handled by the Shift4 stand-in service as well as the transaction status. Possible values are: 1 Transaction pending Shift4 stand-in service 2 Shift4 stand-in service final response 3 Transaction does not meet Shift4 stand-in max aggregated transaction amount threshold 4 Transaction does not meet Shift4 stand-in max transaction amount threshold 5 Unable to get final answer from the connector / processor. Shift4 stand-in service terminated for this transaction	[0-9]	1
z44	Merchant Advice Code (MAC) Indicates whether an attempt to retry the transaction is advised. Possible values: 01: Updated or additional information needed 02: Wait at least 24 hours before retrying again 03: Do not try again. **Note: This indicates a final decline** 04: Token requirements not fulfilled for this token type 21: Payment cancelation **Note: This indicates a final decline**	[0-9]	2

Name	Description	Type	Length
	22: Merchant does not qualify for product code 24: Retry after 1 hour 25: Retry after 24 hours 26: Retry after 2 days 27: Retry after 4 days 28: Retry after 6 days 29: Retry after 8 days 30: Retry after 10 days 40: Non-reloadable prepaid card 41: Consumer single-use virtual card number 43: Consumer Multi-use virtual card number		
z50	Initial transaction ID. Received as part of the initial transaction response parameters. Must be sent for every subsequent 'merchant initiated transaction' in parameter g6.	[a-zA-Z0-9]	13,15
z51	Fast funds indicator. Indicates whether the issuer supports fast funds functionality. Y - Supports fast funds for domestic and cross-border payments C - Supports fast funds for cross-border payments D - Supports fast funds for domestic payments N - No result	[A-Z]	1,1
z55	Payment ID. A unique transaction identifier that accompanies all transactions related to the same purchase.	[a-zA-Z0-9]	32,32
z70	Transaction Link Identifier (TLID). A unique identifier assigned to each transaction to link related events throughout the transaction lifecycle. Include this value in any subsequent MIT transaction using the g7 patameter	[a-zA-Z0-9]	22,22
3ds_eci	The ECI assigned to the authentication	[0-9]	1,2
3ds_cavv	The authentication value received from the issuer	[a-zA-Z0-9]	0,64
3ds_trxid	The assigned 3D transaction ID	[a-zA-Z0-9]	36,36
3ds_xid	XID generated as part of the authentication. Relevant only for 3D Secure version 1.0.2	[a-zA-Z0-9]	28,28

Name	Description	Type	Length
3ds_status	The result of the authentication process. Possible values: A – Attempts Processing Performed; Not Authenticated/Verified, but a proof of attempted authentication/verification is provided Y – Authentication/ Account Verification Successful N – Not Authenticated /Account Not Verified; Transaction denied C - Challenge Required; Additional authentication is required R - Authentication/ Account Verification Rejected; Issuer is rejecting authentication/verification and requests that authorisation not be attempted. U - Authentication/ Account Verification Could Not Be Performed, Technical or other problem I - Informational Only; Merchant challenge preference acknowledged. D- Challenge Required; Decoupled Authentication confirmed	[A-Z]	1,1
3ds_valid_payment	Shift4 recommendation whether to initiate payment following the authentication results. Possible values: y – yes n - no	Boolean	1,1
3ds_version	Indicates the 3D Secure protocol version Possible values: 1.0 2.0 2.1.0 2.2.0	[0-9]	3,5
3ds_acsurl	The received issuer URL for the authentication process	[a-zA-Z0-9]	0,2048
3ds_pareq	Relevant only for 3D secure 1.0 flows. Used when accessing the 3ds_acsurl	[a-zA-Z0-9]	0,2048

Name	Description	Type	Length
3ds_acstrxid	Unique transaction identifier assigned by the ACS to identify a single 3D secure transaction.	[a-zA-Z0-9\-]	36,36
funding	This field has a value of "true" if the transaction is AFT. Otherwise, the field does not appear in the response.	True|False	4,5

Appendix A: Message Cipher

In order to ensure data transfer authenticity, every request contains a package signature sent as parameter K. This signature contains the SHA256 hash of all the request values and the merchant's unique signature key.

Calculating the Signature

The signature is calculated as follows:

1. Sort the parameters in the following order M,O,...,c1,c11,c2, h8, h9, i10, i4,... :
   a. Numbers
   b. Capital letters
   c. Small letters



Note:

For fields with multi-digit numbers, each digit is treated as a single character. For example, '10' is not treated as 'ten', it is treated as '1' and '0' separately.

   Example: 3ds_initiate,3ds_version,M,O,...,c1,c11,c2, h8, h9, i10, i4,...
2. Replace the special characters < > " ' ( ) \ with spaces in each parameter value.
3. Remove any leading and trailing spaces in each parameter value.
4. Line up all parameter values in the same order.
5. Append the merchant's unique signature key (provided in the connectivity details) to the value list.
6. Calculate the SHA256 hash of the sorted value set.
7. Include the resulting 64-character string as the request's K parameter.

Signature Calculation Example

The following is an example of signature calculation that employs the following original request parameters:

```
M=8632876&O=1&a1=7894654&a4=1099&b1=4545454545454545&b2=1&
b3=08&b4=11&b5=003&c1=John
Smith&c3=johnsmith@yahoo.com&c10=AB12DE&d1=111.222.0.101
```

1. Sort the parameters:

   M,O,a1,a4,b1,b2,b3,b4,b5,c1,c10,c3,d1
2. Replace any special characters < > " ' ( ) \ with spaces in each parameter value.
3. Remove any leading and trailing spaces in each parameter value.

4. Line up the values:

   8632876178946541099454545454545454510811003John SmithAB1 2DEjohnsmith@yahoo.com111.222.0.101

5. Append the signature key exactly as it appears in your connectivity details:

   8632876178946541099454545454545454510811003John SmithAB1 2DEjohnsmith@yahoo.com111.222.0.101SIGNKEY1

6. Calculate the SHA256 hash of the sorted value set:

   8f03b86acd09da945e367e9f73151252cfc59a3c27ad8402bdd6e543c948232f

   Include the signature into the request query string:

7. K=8f03b86acd09da945e367e9f73151252cfc59a3c27ad8402bdd6e543c948232f&M=8632876&O=1&a1=7894654&a4=1099&b1=4545454545454545&b2=1&b3=08&b4=11&b5=003&c1=John Smith&c10=AB1 2DE&c3=johnsmith@yahoo.com&d1=111.222.0.101



Note:

All API request strings should be URL encoded before being sent to the gateway as part of the HTTPS POST methods

Response Signature

If a request results in a successful transaction, the Shift4 Gateway will generate a response signature that can be validated in order to ensure the response's authenticity. In order to do so, apply the steps listed above to the response data and append your signature key (but remove the returned signature). We recommend that you check that both the generated signature and the response signature match.

Appendix B: Operation Result Codes

Here's a list of the possible result codes that may be returned in the z2 code:

Code	Description
-69	Transaction has been declined. Invalid 3ds_version parameter.
-68	Authentication process timed out. Please try again.
-66	Invalid combination of 3ds_initiate and exemption_action values
-65	Gateway MID is not allowed for this exemption
-64	TRA exemption is not allowed for this transaction amount
-63	The requested gateway mid is not enrolled to 3D-secure service.
-50	An error occurred during the 3D secure process
-39	You need to be registered with the 3D Adviser service to complete the request
-38	The transaction has been denied by the Gateway because 3D secure Authentication failed. Reason: {} **Note: The "Reason" part is optional and may appear according to detected reason.**
-37	Transaction has been denied. Malformed or missing {} parameter. Originating component: {}
-36	The selected Processor does not support some of the transaction's parameters.
-35	The selected MID is not registered to your account.
-33	You need to be registered with the routing service to complete the routing request.
-32	You are not registered with the selected Processor.
-30	Transaction Failed due to error in 3D secure process
-20	Processor authentication error. Please contact Shift4 support.
-17	Fraud-protection service is unavailable
-16	Rejected. Overriding the fraud threshold is not allowed
-15	Rejected. Bypassing the fraud service is not allowed.
-13	The requested gateway mid is not enrolled in the 3D Secure Adviser service.
-12	Transaction has been declined due to security restrictions.
-11	Rejected. Format Error
-10	Internal server error. Please contact *Shift4* support.
-9	The parameter is malformed.
-8	The Package Signature is malformed.

Code	Description
-7	Incorrect Gateway Response. Connection is broken.
0	The transaction has been executed successfully.
1	The transaction has been denied by the Gateway.
2	The transaction has been denied by the Gateway due to its high fraud risk.
03	The transaction has been denied by the Gateway due to its high AVS risk.
04	The transaction has been denied by the Gateway due to an interchange timeout.
05	The transaction has been declined.
06	Transaction pending cardholder authentication.
07	The transaction was declined by the gateway and will not be processed due to retry optimization policy.
9	The transaction has been denied by the Gateway due to a LUHN check failure
10	The transaction has been partially approved.
11	The queried transaction is currently being processed. Please try again.
13	Rejected. The fraud-protection service is unavailable.
15	Rejected. Risk score is above limit.

Appendix C: AVS Response Codes

AVS Authorisation responses provided by the issuer at the time of Authorisation.

In the case of 2-character response codes, the AVS verification response code is the second character of the value returned by the z9 field.

A response code of "-", "E", "S", "U" or "I" indicates the AVS service is not available for the particular card. The response code "R" indicates that the issuer was not available and that the operation should be retried later.

Code	Description
A	Partial Match - Address match; ZIP/Postal Code does not match
B	Partial Match - Address match; ZIP/Postal Code not supplied or not checked
C	No Match – Address and ZIP/Postal Code not verified
D	Full Match - Address and ZIP/Postal Code match
E	Invalid: AVS data is invalid or AVS is not allowed for this card type.
F	Full Match - Address and ZIP/Postal Code match (UK Only)
G	No Match - Address not verified
H	Partial match: Cardholder's Name does not match, but Street Address and Postal Code do. Only returned for the American Express card type.
I	Address not verified
K	Partial match: Cardholder's Name matches, but Billing Address and Billing Postal Code do not match. Returned only for the American Express card type.
L	Partial match: Cardholder's Name and Billing Postal Code match, but Billing Address does not match. Returned only for the American Express card type.
M	Full Match - Address and ZIP/Postal Code match
N	No Match - Address and ZIP/Postal Code do not match
O	Partial match: Cardholder's Name and Billing Address match, but Billing Postal Code does not match. Returned only for the American Express card type.
P	Partial Match - ZIP/Postal Code matches but Address does not
R	Issuer system unavailable or timeout. Retry.
S	AVS not supported by issuer
T	Partial match: Cardholder's Name does not match, but Street Address does. Returned only for the American Express card type.
U	Address information unavailable

Code	Description
V	Match: Cardholder's Name, Billing Address, and Billing Postal Code match. Returned only for the American Express card type.
W	For US addresses: Partial Match - Nine-digit ZIP Code matches, but Address does not match. For addresses outside the US: Partial Match - Postal Code matches but Address does not
X	For US addresses: Full Match - Nine-digit ZIP Code and Address match
Y	Full Match - Five-digit ZIP Code and Address match
Z	Partial Match – Five-digit ZIP Code matches, but Address does not

The following table provides another view of the possible Response Codes grouped by Postal/ZIP Code/Area Type: U.S. 5-digit ZIP code, International address, U.S. ZIP+4 , no ZIP code, and no address.

Table 2:

Type	Full match	Partial match	No match
U.S. 5-digit ZIP Code	F, Y	A	N
International address	M	P	G
U.S. ZIP+4	X	W	N/A
No ZIP code	N/A	B	D
No address	N/A	Z	C

Appendix D: Processing Response Reason Codes

The following table lists the possible response codes returned in the z6 parameter. Note that this value is not generated by the Shift4 payment gateway. Your system should support receiving other values than the ones listed below.

Code	Description
00	Approved or completed successfully
01	Refer to card issuer
02	Refer to card issuer - special condition
03	Invalid merchant
04	Pick up card
05	Do not honour
06	Error
07	Pick up card - special condition
08	Honour with
10	Partial amount approved
12	Invalid transaction
13	Invalid amount
14	Invalid card number
15	No such issuer
19	Re-enter transaction
21	No action taken
30	Format error
34	Implausible card data
39	No credit account
41	Lost card, pick up
42	No universal account
43	Pick up, stolen card
44	No investment account
46	Closed account
50	Do not renew
51	Insufficient funds

Code	Description
52	No checking account
53	No savings account
54	Expired card
55	Incorrect PIN
57	Transaction not allowed for cardholder
58	Transaction not permitted to terminal
59	Suspected fraud
61	Exceeds withdrawal limit
62	Restricted card
63	Security violation
64	Wrong original amount
65	Activity count limit exceeded
68	Response received too late
70	PIN data required
71	Decline, PIN not changed
72	Account Not Yet Activated
75	PIN tries exceeded
76	Wrong PIN, number of PIN tries exceeded
77	Wrong Reference Number
78	Blocked, first used/ Record not found
79	Declined due to lifecycle event
80	Network error
81	PIN cryptographic error
82	Bad CVV/ Declined due to policy event
83	Transaction Declined (Security / Fraud Risk)
84	Pre-authorization timed out
85	No reason to decline
86	Cannot verify PIN
87	Purchase amount only, no cashback allowed
88	Cryptographic failure

Code	Description
89	Authentication Failure
91	Issuer not available
92	Unable to route at acquirer module
93	Transaction cannot be completed, violation of law
94	Duplicate transmission
95	Reconcile error / Auth not found
96	System malfunction
97	Transaction has been declined by the processor
N3	Cash service not available
N4	Cash request exceeds issuer or approved limit
N7	CVV2 failure
R0	Stop Payment Order
R1	Revocation of Authorisation Order
R3	Revocation of all Authorisation Orders
1A	Strong Customer Authentication required
6P	Verification data failed

Appendix E: z21 Possible Values

A list of possible result codes returned in the z21 code:

Code	Description
-98	Rejected according to service unavailable predefined requirement
-97	Rejected. Risk score is above limit or blocked by a rule
-95	The transaction was not sent to the fraud-protection service due to parameter f21.
-93	Rejected. Risk score is above the limit based on the f22 value.
-92	Fraud-protection service is unavailable for operation code 103.
2	Approved and within the low-risk score range.
3	Approved and within the high-risk score range. Please review manually (recommended).
4	Approved according to the pre-defined threshold applied when the fraud-protection service is unavailable.
5	Approved and within the low risk score range based on the f22 value.
6	Approved and within the high-risk score range based on the f22 value. Please review manually (recommended).
7	Fraud-protection service was activated for operation code 103.

Appendix F: Additional Request Parameters

The following parameters can be used to support specific business scenarios, according to your preferences or the industry you operate in.

User Device Information

Name	Type	Min	Max	Description
d5	[a-zA-Z0-9\:\=\+]	5	255	The browser's user agent header
d6	As defined in IETF BCP47	2	16	Accept-Language header, comma-separated set of locales
d8	[a-zA-Z0-9]	1	64	Browser version
d9	[a-zA-Z0-9]	1	64	Device type (mobile, tablet, iPad, desktop, etc.)
d10	[a-zA-Z0-9]	1	64	Device Operating System name
d11	[a-zA-Z0-9]	1	64	Device Operating System version

Retail

Name	Type	Min	Max	Description
re1	[0-9]	1	10	Number of items purchased
re2	[a-zA-Z0-9]	1	64	Purchase Invoice Number
re3	[a-zA-Z0-9]	1	64	Shipping Class (Regular, VIP, Express, etc.)
re4	DATE	1	10	Expected Delivery Date (YYYYMMDD)
re5	[a-zA-Z0-9]	1	64	Purchase Discount Code

Gaming

Name	Type	Min	Max	Description
ga1	[0-9]	1	16	Account Balance
ga2	[a-zA-Z0-9]	1	64	Game ID
ga3	[a-zA-Z0-9]	1	64	Game Name
ga4	[a-zA-Z0-9]	1	64	Time in Game (in seconds)

Name	Type	Min	Max	Description
fo1	[a-zA-Z0-9]	1	9	Traded Currencies (XXX, YYY) Format
st1	[a-zA-Z0-9]	1	64	Movie Name or Series Name
st2	[a-zA-Z0-9]	1	64	Movie or Series ID

Forex

Name	Type	Min	Max	Description
fo1	[a-zA-Z0-9]	1	9	Traded currencies (XXX, YYY) format

Streaming

Name	Type	Min	Max	Description
st1	[a-zA-Z0-9]	1	64	Movie name or series name
st2	[a-zA-Z0-9]	1	64	Movie or series ID

Amount Components

Name	Type	Min	Max	Description
a41	[0-9]	1	12	Subtotal amount
a42	[0-9]	1	12	VAT amount
a44	[0-9]	1	12	Shipping amount
a46	[0-9]	1	12	Tip amount

Furniture

Name	Type	Min	Max	Description
fu1	[a-zA-Z0-9]	1	50	The furniture supplier name

Car, Plane and Boat Rentals

Name	Type	Min	Max	Description
cr1	[a-zA-Z0-9]	1	50	The supplier/contractor name

Event Management

Name	Type	Min	Max	Description
ev1	YYYYMMDD	10	10	Event start date
ev2	YYYYMMDD	10	10	Event end date
ev3	[a-zA-Z0-9]	1	50	Event organizer ID
ev4	[a-zA-Z0-9]	1	50	Event ID

Travel

The Travel parameters enable the merchant to provide more ticket information on the transaction itself, enabling cardholders to properly identify non-ticket related passenger transport service charges, leading to reduced transaction disputes and chargebacks.

Travel parameters are relevant only for Travel Agency and Airlines MCCs.

Name	Type	Min	Max	Description
ota1	[a-zA-Z0-9]	1	64	Ticket number. If multiple tickets are purchased with one transaction, the primary ticket number is provided.
ota2	[a-zA-Z0-9]	1	64	Travel agency code
ota3	[a-zA-Z0-9]	1	64	Passenger name
ota5	[a-zA-Z0-9]	1	64	Travel agency
ota6	[a-zA-Z0-9]	3	128	E-ticket email address
ota7	[a-zA-Z0-9]	1	64	Airline name
ota12	[a-zA-Z0-9]	1	64	Frequent Flier Number
ota14	[a-zA-Z0-9]	1	1	Restricted Ticket Indicator. Indicates whether this ticket is non-refundable. Possible values: 0 - No restriction 1 – Restricted

Name	Type	Min	Max	Description
ota15	[a-zA-Z0-9]	1	4	Computer Reservation System. Indicates the computerised reservation system used to make the reservation and purchase the ticket.
ota16	[a-zA-Z0-9]	1	1	Refund Reason Indicator. Indicates the reason for a cardholder refund. Possible values: A – Passenger Transport Ancillary Purchase Cancellation B – Airline Ticket and Passenger Transport Ancillary Purchase Cancellation O – Other
ota17	[a-zA-Z0-9]	1	1	Ticket Change Indicator. Indicates why a ticket was changed. Values are: C - Change to existing ticket N - New ticket
ota18	[a-zA-Z0-9]	1	13	Issued in Connection with Ticket Number. If this purchase has a connection to or a relationship with another purchase, such as a baggage fee for a passenger transport ticket, this field should contain the ticket document number for the other purchase. For a stand-alone purchase where this field is mandatory, the field must contain the same value as the value in the Ancillary Ticket Document Number field.
ota19	[a-zA-Z0-9]	1	15	Ancillary Ticket Document Number. Contains the form number assigned by the carrier for the transaction.
ota20	[a-zA-Z0-9]	1	4	Issuing Carrier Code
ota21	[a-zA-Z0-9]	1	50	The contractor name
ota22	[a-zA-Z0-9]	1	255	ATOL certificate number
fl1	[a-zA-Z0-9\:\-]	9	48	First flight information. This field contains the following flight information, delimited by ":": **Field** / **Type** / **min** / **max** Travel Date / YYYY-MM-DD / 0 / 10 Carrier Code / [a-zA-Z0-9] / 0 / 2 Service Class Code / [a-zA-Z0-9] / 0 / 1 City of Origin / [a-zA-Z0-9] / 0 / 3

Name	Type	Min	Max	Description
				Destination City [a-zA-Z0-9] 0 3 Stopover Indicator [a-zA-Z0-9] 0 1 Fare Basis Code [a-zA-Z0-9] 0 6 Flight Number [a-zA-Z0-9] 0 5 Originating Airport Code [a-zA-Z0-9] 0 5 Flight's Fare [a-zA-Z0-9] 0 12
fl2	[a-zA-Z0-9\:]	9	48	Second flight information. Same format as fl1
fl3	[a-zA-Z0-9\:]	9	48	Third flight information. Same format as fl1
fl4	[a-zA-Z0-9\:]	9	48	Fourth flight information. Same format as fl1
fl5	YYYYMMDD	8	8	Flight departure date
fl6	YYYYMMDD	8	8	Flight arrival date
an1	[a-zA-Z0-9\:\-]	8	38	First ancillary information. This field contains the following ancillary information delimited by ":" (refer to Appendix K: Ancillary Fee Codes for more information). **Field** **Type** **min** **max** Ancillary Fee Code [a-zA-Z0-9] 0 4 Ancillary Fee Amount [a-zA-Z0-9] 0 12 Ancillary Fee Code Sub-Category [a-zA-Z0-9] 0 4
an2	[a-zA-Z0-9\:]	8	38	Second ancillary information. Same format as an1. Refer to Appendix K: Ancillary Fee Codes for more information.
an3	[a-zA-Z0-9\:]	8	38	Third ancillary information. Same format as an1. Refer to Appendix K: Ancillary Fee Codes for more information.
an4	[a-zA-Z0-9\:]	8	38	Fourth ancillary information. Same format as an1. Refer to Appendix K: Ancillary Fee Codes for more information.

Customer Identity

Name	Type	Min	Max	Description
c12	[a-zA-Z0-9]	1	32	Customer Level (VIP, Basic)

Name	Type	Min	Max	Description
c13	[a-zA-Z0-9]	1	32	Customer ID (Shopper or Player ID)
c14	DATE	8	8	Customer Creation Date (YYYYMMDD)
c15	DATE	8	8	Customer Date of Birth (YYYYMMDD)
c16	[a-zA-Z0-9]	1	32	Customer Username
c17	[a-zA-Z0-9]	3	255	Customer User Email
c18	[a-zA-Z0-9]	1	32	ID / Passport number

Appendix G: r1 Possible Values

A list of possible values for the r1 request parameter:

#	Value
1	CREDORAX
2	Nuvei
3	ISRACARD
4	MAX
5	CAL
6	NBK
7	AMEX
8	Raiffeisen
9	BNP
10	Worldpay

Appendix H: Transaction Currencies

The following table contains a list of currencies that are currently supported by the *Shift4* Payment Gateway. These values should be transmitted via the a5 parameter and indicate the transaction currency that should be used for the transaction.



Note:

- For currencies with two exponents the two right most digits are considered the exponents (for example, if you want to process a transaction of GBP 10.00 you should send the amount value as a4=1000
- For currencies with three exponents
  - the three right most digits of the amount are considered the exponents. For example, to process a transaction of KWD 10.000 you should send the amount value as a4=10000
  - For Visa transactions, the last digit of the amount in a 3-exponent currency must be zero (0). Transmitting a 3-exponents transaction in any other format may result in a decline.
- For currencies with zero exponents you should send the exact amount values. For example, to process a transaction of JPY 10 you should send the amount value as a4=10
- Some processors may decline a transaction in a currency that was not authorized for your account. Refer to the Shift4 Global Processors Specifications to learn more about the currencies supported by each processor

Country	Currency	Currency Code	Exponent
United Arab Emirates	United Arab Emirates Dirham	AED	2
Afghanistan	Afghani	AFN	2
Albania	Lek	ALL	2
Armenia	Armenian Dram	AMD	2
Netherlands Antilles	Netherlands Antillean Guilder	ANG	2
Angola	Kwanza	AOA	2
Argentina	Argentine Peso	ARS	2
Australia	Australian Dollar	AUD	2
Aruba	Aruban Guilder	AWG	2
Azerbaijan	Azerbaijanian Manat	AZN	2

Country	Currency	Currency Code	Exponent
Bosnia Herzegovina	Convertible Marks	BAM	2
Barbados	Barbados Dollar	BBD	2
Bangladesh	Bangladeshi Taka	BDT	2
Bahrain	Bahraini Dinar	BHD	3
Burundi	Burundian Franc	BIF	0
Bermuda	Bermuda	BMD	2
Brunei Darussalam	Brunei Dollar	BND	2
Bolivia	Boliviano	BOB	2
Brazil	Brazilian Real	BRL	2
Bahamas	Bahamian Dollar	BSD	2
Bhutan	Ngultrum	BTN	2
Botswana	Pula	BWP	2
Belarus	New Belarusian Ruble	BYN	2
Belize	Belize Dollar	BZD	2
Canada	Canadian Dollar	CAD	2
Congo, The Democratic Republic of	Franc Congolais	CDF	2
Switzerland	Swiss Franc	CHF	2
Chile	Chilean Peso	CLP	0
China	Chinese Yuan	CNY	2
Colombia	Colombian Peso	COP	2
Costa Rica	Costa Rican Colon	CRC	2
Cape Verde	Cape Verde Escudo	CVE	2
Czech Republic	Czech Koruna	CZK	2
Djibouti	Djibouti Franc	DJF	0
Denmark	Danish Krone	DKK	2
Dominican Republic	Dominican Peso	DOP	2
Algeria	Algerian Dinar	DZD	2
Egypt	Egyptian Pound	EGP	2
Eritrea	Nakfa	ERN	2

Country	Currency	Currency Code	Exponent
Ethiopia	Ethiopian Birr	ETB	2
20 European Union Countries (EMU)	Euro	EUR	2
Fiji	Fiji Dollar	FJD	2
Falkland Islands (Malvinas)	Falkland Islands Pound	FKP	2
United Kingdom	Pounds Sterling	GBP	2
Georgia	Lari	GEL	2
Ghana	Cedi	GHS	2
Gibraltar	Gibraltar Pound	GIP	2
Gambia	Dalasi	GMD	2
Guinea	Guinea Franc	GNF	0
Guatemala	Quetzal	GTQ	2
Guyana	Guyana Dollar	GYD	2
Hong Kong	Hong Kong Dollars	HKD	2
Honduras	Lempira	HNL	2
Haiti	Haitian Gourde	HTG	2
Hungary	Forint	HUF	2
Indonesia	Rupiah	IDR	2
Israel	Israeli New Sheqel	ILS	2
India	Indian Rupee	INR	2
Iraq	Iraqi Dinar	IQD	3
Iceland	Iceland Krona	ISK	0
Jamaica	Jamaican Dollar	JMD	2
Jordan	Jordanian Dinar	JOD	3
Japan	Japanese Yen	JPY	0
Kenya	Kenyan Shilling	KES	2
Kyrgyzstan	Som	KGS	2
Cambodia	Riel	KHR	2
Comoros	Comoro Franc	KMF	0
Korea, Republic of	South Korean Won	KRW	0

Country	Currency	Currency Code	Exponent
Kuwait	Kuwaiti Dinar	KWD	3
Cayman Islands	Cayman Islands Dollar	KYD	2
Kazakhstan	Tenge	KZT	2
Lao People's Democratic Republic	Kip	LAK	2
Lebanon	Lebanese Pound	LBP	2
Sri Lanka	Sri Lanka Rupee	LKR	2
Liberia	Liberian Dollar	LRD	2
Lesotho	Lesotho Loti	LSL	2
Libyan Arab Jamahiriya	Libyan Dinar	LYD	3
Morocco	Moroccan Dirham	MAD	2
Moldova, Republic of	Moldovan Leu	MDL	2
Madagascar	Malagasy Ariary	MGA	2
Macedonia	Denar	MKD	2
Myanmar	Kyat	MMK	2
Mongolia	Tugrik	MNT	2
Macao	Pataca	MOP	2
Mauritania	Mauritania	MRU	2
Mauritius	Mauritius Rupee	MUR	2
Maldives	Rufiyaa	MVR	2
Malawi	Kwacha	MWK	2
Mexico	Mexican Peso	MXN	2
Malaysia	Malaysian Ringgit	MYR	2
Mozambique	Metical	MZN	2
Namibia	Namibian Dollar	NAD	2
Nigeria	Naira	NGN	2
Nicaragua	Cordoba Oro	NIO	2
Norway	Norwegian Krone	NOK	2
Nepal	Nepalese Rupee	NPR	2
New Zealand	New Zealand Dollar	NZD	2

Country	Currency	Currency Code	Exponent
Oman	Omani Rial	OMR	3
Panama	Balboa	PAB	2
Peru	Nuevo Sol	PEN	2
Independent State of Papua New Guinea	Kina	PGK	2
Philippines	Philippine Peso	PHP	2
Pakistan	Pakistani Rupee	PKR	2
Poland	Zloty	PLN	2
Paraguay	Guarani	PYG	0
Qatar	Qatari Rial	QAR	2
Romania	Romanian New Leu	RON	2
Serbia	Serbian Dinar	RSD	2
Rwanda	Rwanda Franc	RWF	0
Saudi Arabia	Saudi Riyal	SAR	2
Solomon Islands	Solomon Islands Dollar	SBD	2
Seychelles	Seychelles Rupees	SCR	2
Sweden	Swedish Krona/Kronor	SEK	2
Singapore	Singapore Dollar	SGD	2
Saint Helena, Ascension and Tristan Da Cunha	Saint Helena Pound	SHP	2
Sierra Leone	Leone	SLE	2
Somalia, Federal Republic of	Somali Shilling	SOS	2
Suriname	Surinam Dollar	SRD	2
South Sudan	South Sudanese Pound	SSP	2
Sao Tome and Principe	Sao Tome Principe	STN	2
El Salvador	El Salvador Colon	SVC	2
Syrian Arab Republic	Syrian Pound	SYP	2
Swaziland	Lilangeni	SZL	2
Thailand	Baht	THB	2
Tajikistan	Somoni	TJS	2

Country	Currency	Currency Code	Exponent
Turkmenistan	Manat	TMT	2
Tunisia	Tunisian Dinar	TND	3
Tonga	Paanga	TOP	2
Turkey	Turkish Lira	TRY	2
Trinidad And Tobago	Trinidad and Tobago Dollar	TTD	2
Taiwan Province of China	New Taiwan Dollar	TWD	2
Tanzania, United Republic of	Tanzanian Shilling	TZS	2
Ukraine	Hryvnia	UAH	2
Uganda	Uganda Shilling	UGX	2
United States	US Dollar	USD	2
Uruguay	Peso Uruguayo	UYU	2
Uzbekistan	Uzbekistan Som	UZS	2
Venezuela	Venezuelan Bolívar Fuerte	VES	2
Vietnam	Vietnamese Dông	VND	0
Vanuatu	Vatu	VUV	0
Samoa	Samoan Tala	WST	2
Central African Republic	CFA Franc BEAC	XAF	0
Eastern Caribbean States	East Caribbean Dollar	XCD	2
Communauté Financière Africaine	CFA Franc BCEAO	XOF	0
French Polynesia	CFP Franc	XPF	0
Yemen	Yemeni Rial	YER	2
South Africa	South African Rand	ZAR	2
Zambia	Kwacha	ZMW	2
Zimbabwe	Fourth Zimbabwe Dollar	ZWL	2

Appendix I: SCA and 3D Secure

This section describes the specifications for using the Shift4 Payment Gateway 3D Secure service. If you are using a third-party 3D Secure service, prior to sending the transaction to Shift4 Payment Gateway, please refer to Appendix J: How to provide 3D secure information on i8 parameter.

3D Secure (3-Domain Secure) is an advanced method of performing Strong Customer Authentication (SCA) in card-not-present transactions. Using 3D-secure successfully may protect you from fraud chargeback disputes raised by cardholders and issuers.

Shift4 Payment Gateway offers two modules of 3D Secure:

- Standard 3D Secure
- 3DS Adviser – a decision engine incorporated in the 3D Secure flow that determines whether to initiate the 3D Secure authentication process, based on risk, regulations and impact on approval rate.



Note:

- Shift4 3D Secure service supports all version of the 3D Secure protocol: 3D Secure 1.0, 2.0, 2.1.0 and 2.2.0
- To use Shift4's 3D Secure service, you must be registered to the service and have it activated on your account.

Contact your Shift4 account manager for more information

3D Secure and Customer Experience: Frictionless Experience vs. Cardholder Challenge

With the introduction of the 3D Secure 2.0 protocol, issuers can better asses the authenticity of a transaction based on information included in the transaction itself. This ensures cardholders enjoy a frictionless shopping and payment experience. Cardholders are not exposed to the risk checks done by the issuer in the background and are not required to provide any password or other information as they used to in the past.

In some cases, the issuer may still want to perform more extensive checks and require the cardholder to respond to a 'challenge'. The challenge can be one or more of the following: entering a one-time-password or other credentials, answering a secret question and/or identifying yourself using a biometric based device (fingerprints, face recognition, etc.). Issuers that are still using the old 3D Secure 1.0 protocol require the cardholder to respond to a challenge for every 3D secure transaction. The Shift4 Payment Gateway 3D Secure service automatically selects the correct 3D Secure flow based on the 3D secure protocol supported by the Issuer.

3D Secure Transaction Flow

The Shift4 Payment Gateway 3D Secure service is fully incorporated into the transaction flow of the payment request and supports both frictionless workflows as well as challenge flows.

Note:

- The 3D Secure transaction flow may require more steps to complete the transaction.
- For the challenge flow, consider implementing the notification mechanism to automatically retrieve updates on the transaction processing progress without having to initiate another API call to the gateway. Contact you Shift4 account manager for more details on how to enroll to this service.

Initiating the 3D Secure process

To initiate the 3D secure process, send the '3ds_initiate' parameter as part of the payment request (applicable for operations: Sale, Authorisation of all types).

The '3ds_initiate' parameter can have one of the following values:

Value	Description
01	Initiate 3D Secure before completing the payment
02	Process payment without 3D Secure
03	Initiate 3D Secure according to the 3DS Adviser result (see 3DS Adviser)
04	Only initiate the 3DS Adviser service. Relevant only for op code 98

Note:

- The transaction will only be processed if the 3D secure process is completed successfully, whether in a frictionless flow or a challenge flow.
- When initiating the 3DS Adviser, if the decision engine determines the transaction should go through 3D Secure, it can go through any of the standard 3D Secure flows.
- You can also choose to only go through the 3D Secure authentication process without actually processing the transaction. To do so, use operation code [98]. Refer to the Special Operations section for more details

Standard 3D Secure Workflow

When the 3D Secure workflow is initiated in a transaction the process can go through one of 4 possible sub-workflows:

- No challenge (frictionless experience)
- Device fingerprint assessment only (frictionless experience)
- Cardholder challenge only (without device fingerprint)

- Full authentication (both device fingerprint assessment and cardholder challenge)

The entities participating in the 3D secure process are:

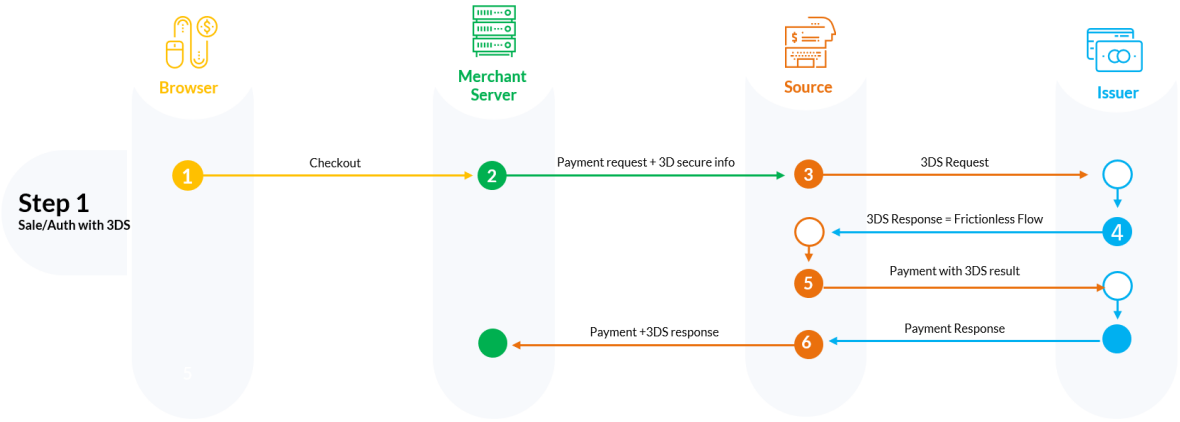
Entity	Description
Browser	The cardholder's browser from which the process was initiated
Merchant Server	The merchant's server side
Shift4	Shift4 Payment Gateway
Issuer	The issuer of the card used in the transaction

Flow A: No challenge (frictionless experience) flow

In this flow the cardholder is authenticated based on the information provided on the transaction itself, without any additional authentication (such as device fingerprint or other challenge method).

Note:

The more user information you provide on the initial transaction, the more likely it is that the cardholder will not have to go through additional authentication steps. See the full list of additional recommended parameters.



Step 1: Cardholder goes through the checkout process on the Merchant's website.

Step 2: Merchant sends a payment request with the required 3D secure parameters to the Shift4 Payment Gateway.

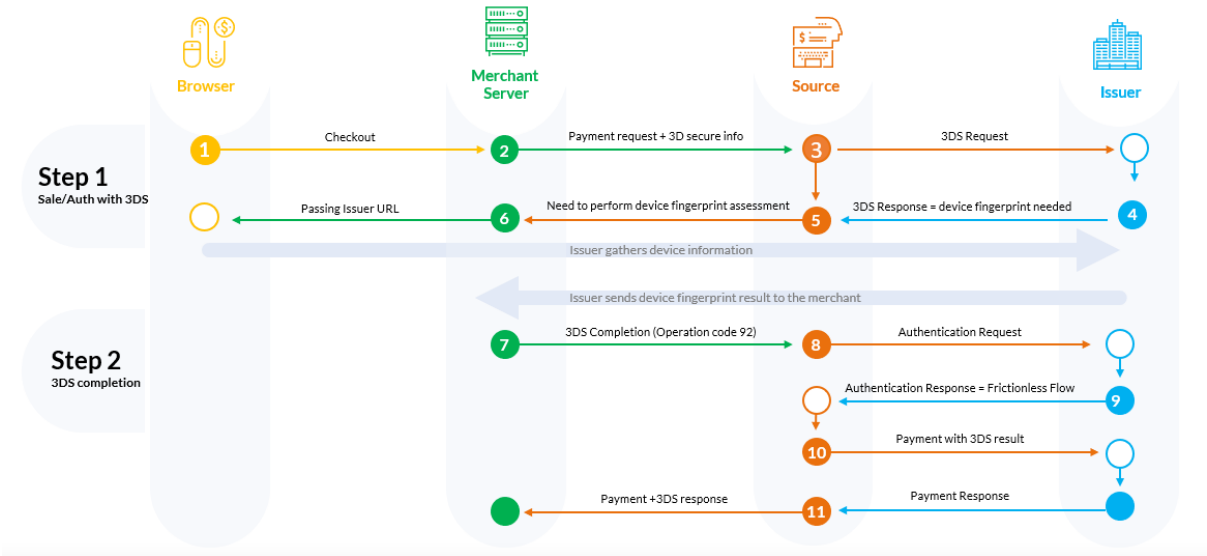
Steps 3-4: Shift4 initiates the 3D secure authentication process and receives a response from the issuer that no further authentication is required

Step 5: Shift4 instructs the issuer to perform the payment and receives the issuer response for the transaction

Step 6: Shift4 sends the transaction response with the result of the payment and the 3D secure process.

Flow B: 3D secure process requires device fingerprint assessment

In this scenario the issuer requests more information about the device that initiated the transaction (depending on the issuer this can be the cardholder's browser or other information used for risk analysis). The information is transferred electronically without the cardholder experiencing any change in the flow (frictionless experience).



Step 1: Cardholder goes through the checkout process on the Merchant's website.

Step 2: Merchant sends a payment request with the required 3D secure parameters to Shift4 Payment Gateway.

Steps 3-5: Shift4 initiates the 3D Secure process and receives from the issuer the request for device fingerprint information.

Steps 6-7: Merchant initiates the device fingerprint process. Refer to the Device fingerprint information retrieval flow for more details

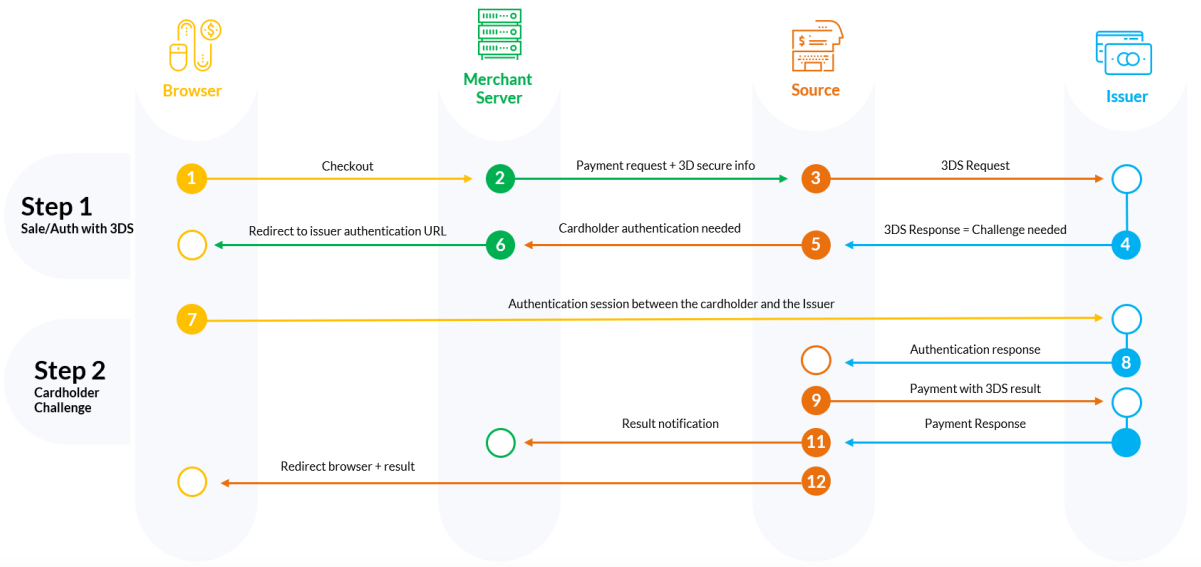
Steps 8-9: Shift4 re-initiates the 3D secure authentication process with the input received through operation code [92], and receives the authentication result from the issuer

Step 10: Shift4 initiates the payment

Step 11: Shift4 sends back to the merchant a response to the transaction initiated by operation [92] with the result of the payment and the 3D secure process.

Flow C: 3D secure requires a user challenge flow (redirection to issuer)

In this scenario the issuer requires a user challenge flow where the cardholder is prompted with an authentication screen.



Step 1: Cardholder goes through the checkout process on the merchant's website.

Step 2: Merchant sends payment request with 3D secure to Shift4 Payment Gateway

Steps 3-4: Shift4 Payment Gateway initiates the 3D secure authentication process. Cardholder authentication is needed.

Step 5: Shift4 responds to the merchant with the URL for the authentication process. In the response the transaction status is listed as 'pending'.

Steps 6-7: Merchant initiates the authentication process in the cardholder's browser. See Cardholder Challenge flow for more details.

Steps 8-9: Shift4 receives the authentication results from the Issuer.

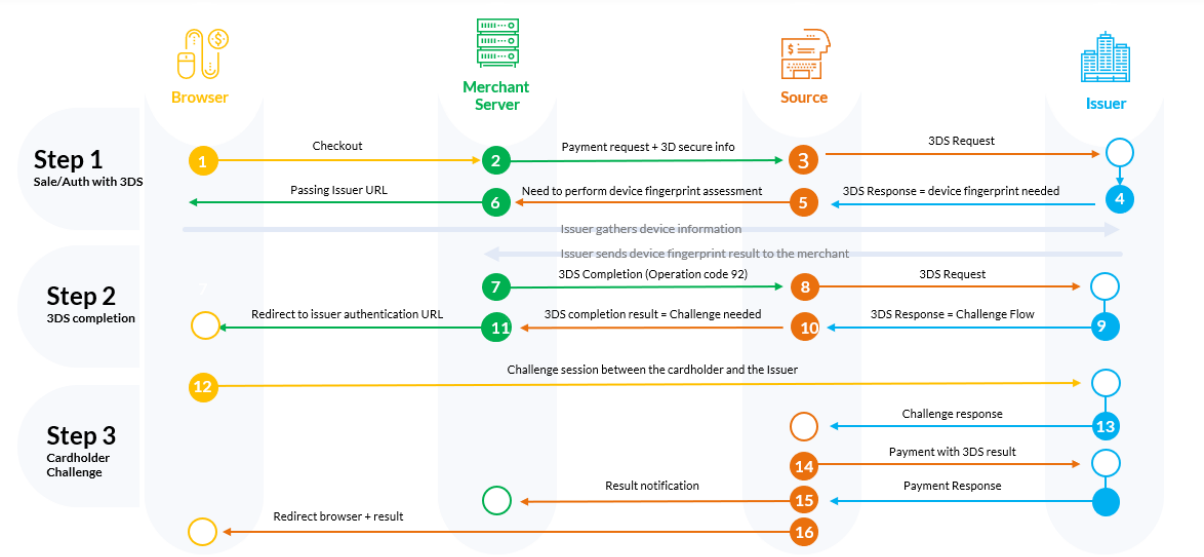
Step 10: Shift4 initiates the payment

Step 11: Shift4 sends notification to the merchant with all payment and authentication results.

Step 12: Shift4 redirects the browser to the merchant site.

Flow D: 3D secure flow requires fingerprint authentication and user challenge

This scenario requires full authentication of the cardholder with both fingerprint flow and cardholder challenge.



Step 1: Cardholder goes through the checkout process on the Merchant's website.

Step 2: Merchant sends a payment request with the required 3D secure parameters to the Shift4 Payment Gateway.

Step 3-5: Shift4 initiates the 3D Secure process and receives from the issuer the request for device fingerprint information.

Step 6-7: Merchant initiates the device fingerprint process. Refer to device fingerprint information retrieval flow for more details.

Step 8-9: Shift4 re-initiates the 3D secure authentication process with the input received through operation code [92], and receives the authentication result from the issuer.

Step 10: Shift4 responds to the merchant with the URL for the authentication process. In the response the transaction status is listed as 'pending'.

Step 11-12: Merchant initiates the authentication process in the cardholder's browser. See Cardholder challenge flow for more details.

Step 13: Shift4 receives the authentication results from the Issuer.

Step 14: Shift4 Payment Gateway initiates the payment

Step 15: Shift4 sends notification to the merchant with all payment and authentication results.

Step 16: Shift4 redirects the browser to the merchant site.

Device fingerprint information retrieval flow

When device fingerprint assessment is required by the issuer, Shift4 responds with the following parameters:

Name	Type	Description
3ds_method	URL	The issuer's URL that should be used to trigger the collection of the device fingerprint by the issuer
3ds_trxid	[a-zA-Z0-9, -]	Universally unique transaction identifier to identify a single 3DS transaction.

1. Upon receiving the above parameters, create a JSON object with the 3DS Method Data elements:

```
threeDSMethodNotificationURL = <the URL to which the issuer will send his approval>
threeDSServerTransID = <3ds_trxid>
```

2. Encode the JSON object in Base64 URL encoding.
3. Render a hidden HTML iframe in the Cardholder's browser and send a form with a field named threeDSMethodData containing the URL friendly Base64url JSON Object via HTTP POST to the 3DS_Method URL you received from Shift4.
4. At this stage you should get a response about the completion of the fingerprint collection process. The information is a POST response to the notification URL you provided in the threeDSMethodNotificationURL parameter in step 1. It contain a single encoded parameter called threeDSMethodData.

   Note: If the notification is received within 10 seconds, then when executing step , set 3ds_compind= Y; otherwise, set 3ds_compind = N.
5. Use the information from the response to send a completion call to Shift4. This is done by sending operation code [92] in the following structure:

Name	Description	Type	Length	Completion Operation [92]
M	Shift4 assigned gateway Merchant ID	[A-Z0-9_]	3,6	m
K	Unique cipher used for authenticating requests Refer to Appendix A: Message Cipher for further details on generating the cipher.	[0-9A-Za-z]	1,32	m
O	Operation Code The operation code is used to determine the requested service.	[0-9]	1,3	m

Name	Description	Type	Length	Completion Operation [92]
a1	Request ID A unique transaction reference number. It should be unique to each transaction and to each MID. May be used when corresponding with the payment processor or reconciling transactions. Note: No plaintext cardholder data should be provided in this field.	[A-Za-z0-9-]	1,32	m
g5	Referred transaction ID. Populate this field with the received z1 of the original transaction.	[0-9]		m
3ds_trxid	Universally unique transaction identifier to identify a single 3DS transaction.	[a-zA-Z0-9, -]	36,36	m
3ds_compind	Received from the issuer. Indicates whether the device fingerprint collection completed successfully.	[Y, N]	1,1	m

Cardholder challenge flow

Whenever a cardholder challenge is required, you have to redirect the browser to the Issuer's side in order to allow the authentication process between the issuer the cardholder.

You will receive a 3ds_acsurl parameter as part of the original payment request or as the response to operation code [92] (depending on the 3D secure flow of the transaction). In order to reach the issuer's side, open a dynamic iFrame on the browser side, and refer to the address received in the 3ds_acsurl parameter. However, for a 3DS 1.0 protocol, it is recommended to redirect to the address received in the 3ds_acsurl parameter instead of using an iFrame since not all issuers support this functionality.

3RI

3DS Requestor Initiated (3RI) is a dedicated 3D Secure flow that allows you to authenticate Merchant Initiated Transactions (MITs) directly with the issuer—without requiring cardholder involvement. It's designed for scenarios where the cardholder isn't present at the time of the transaction, such as recurring payments, subscriptions, partial shipments, and other MIT use cases.



Note:

3RI transactions are authentication requests that must be initiated using the parameter 3ds_initiate.

3RI Flow

Step 1: Cardholder completes a checkout and initiates a payment on the Merchant's website (Cardholder Initiated Transaction - CIT).
Step 2: Merchant sends the payment request with the required 3D Secure parameters to the Shift4 Payment Gateway.
Steps 3-6: Shift4 initiates the 3D secure authentication process and response as described in the Standard 3D Secure workflows chapter .
Step 7: For each subsequent Merchant Initiated Transaction (MIT), the Merchant sends a payment request to the Shift4 Gateway, including the 3RI parameters (listed below) and relevant transaction identifiers.
Step 8: Shift4 processes the request and forwards it to the issuer, leveraging the 3RI authentication method.
Step 9: Shift4 receives the issuer's response and sends back the result of the MIT to the Merchant.

- Steps 1–6 above cover the initial Cardholder-Initiated Transaction (CIT). The 3RI authentication flow for subsequent Merchant-Initiated Transactions (MITs) begins at Step 7.
- Payment processing/authorisation of the MIT proceeds **only after** the 3RI authentication is successfully approved by the issuer. If the 3RI authentication request is declined, the transaction will not move forward to payment authorisation.
- The initial cardholder-initiated transaction (CIT) that a 3RI authentication references must be a genuine payment authentication performed with the cardholder in session and with the appropriate recurring indicators. A zero-amount card-validation authentication (a non-payment authentication) cannot serve as the anchor for a 3RI transaction. Referencing such a transaction will cause the 3RI authentication to be declined by the issuer.

3RI Parameters

To use the 3RI flow, you must send the 3RI indicator in the 3ds_channel parameter.

Name	Description	Type	min	max	m/o/c
3ds_channel	Indicates the type of channel interface being used to initiate the transaction. The accepted values are: 01 - App-based (APP) 02 - Browser (BRW) 03 - 3DS Requestor Initiated (3RI)	[0-3]	2	2	m for 3RI (03)
3ds_reqpriordstransid	The DS (Directory Server) Transaction ID of the prior authenticated cardholder-initiated transaction (CIT) that this 3RI transaction references.	[a-zA-Z0-9-]	36	36	m for 3RI
3ds_reqpriorref	The Issuer transaction ID of the prior authenticated cardholder-initiated transaction that the 3RI transaction references. This value is returned in the response of the original transaction in the 3ds_acstrxid field.	[a-zA-Z0-9]	36	36	m for 3RI
3ds_reqpriorauthmethod	Mechanism used by the Cardholder to previously authenticate to the merchant. Accepted values for this field are: 01- Frictionless authentication occurred by issuer 02 - Cardholder challenge occurred by issuer 03 - AVS verified 04 - Other issuer methods	[0-4]	2	2	m for 3RI
3ds_reqpriorauthtimestamp	Date and time in UTC of the prior authentication. Accepted date format is YYYYMMDDHHMM.	[0-9]	12	12	m for 3RI
3ds_reqpriorauthdata	The CAVV/AVV of the prior authenticated cardholder-	[a-zA-Z0-9]	0	255	m for 3RI

Name	Description	Type	min	max	m/o/c
	initiated transaction (CIT) that this 3RI transaction references.				

In addition to the 3RI-specific parameters above, all standard 3DS request parameters are required for a valid 3RI flow, including:

- 3ds_initiate=01
- 3ds_purchasedate
- 3ds_recurringexpiry
- 3ds_recurringfrequency
- 3ds_transtype

For a complete list and field specifications of general 3DS request parameters, refer to the Request parameters section in Appendix I: SCA and 3D Secure.

3DS Adviser

The 3DS Adviser module offers a smart recommendation engine that routes the transaction through the 3DSecure process only when it is necessary based on regulatory, business-impact and risk aspects. You can control the 3DS Adviser functionality with the following parameters:

Name	Type	Min	Max	Description
f23	[0-9]	1	3	Assigns an ad-hoc threshold that extends the regular fraud threshold, for authorised 3D secure transactions only.

Additional Response parameters for the 3DS Adviser Module

When using the 3DS Adviser module, additional response parameters are included in the transaction response format:

Name	Type	Min	Max	Description
smart_3ds_result	[0-4]	2	2	Describes the 3DS Adviser module recommendation: 01: Do 3D secure 02: Skip 3D secure 03: Request an exemption as part of the 3D Secure request 04: Request an exemption as part of the payment request
smart_3ds_result_reason	[a-zA-Z0-9]	0	128	Includes the rule id which was executed as part of the Smart 3D rule engine

Strong Customer Authentication (SCA)

As a rule, SCA is mandatory for any electronic payment when both acquirer and issuer are in the EU.

However, some business cases do not require SCA, and in some cases you can request to exempt a specific transaction depending on the business model and the transaction's characteristics.

SCA is not required in the following business cases:

- MOTO (mail order/ telephone order) transactions
- Card is an anonymous prepaid card
- Some cases of merchant-initiated transactions (MIT)
- Transactions where either the issuer or the acquirer is based outside the EU

Exemption management

In some cases you can request a specific transaction to be exempt from the SCA process, based on the transaction characteristics.

Name	Type	o/m	Min, Max	Description
exemption_action	[0-9]	o	2,2	Indicates the merchant preference regarding SCA exemption. Possible values are: 01: Do not request exemption. This is the default behavior for the Shift4 Gateway. If the field is absent from the transaction request, no exemption will be applied. 02: Request an exemption as part of the payment request.

Name	Type	o/m	Min, Max	Description
				03: Request an exemption as part of the 3D Secure request 04: Request exemption by default. Shift4 will apply for exemption as part of the 3D Secure request if possible. Note: If no value is provided, and you are using the 3DS Adviser module, the Shift4 Payment Gateway requests an exemption (if applicable) as part of the 3D secure process.
exemption_reason	[0-9]	o	2,2	This field is required when exemption_action = 02 or 03. Possible values: 01: Low value transaction (below 30 EUR or equivalent) 02: Low risk transaction (TRA)1 03:Request Trusted Beneficiary Indicator (Whitelisting)2 04: Secure Corporate Cards 3 05: Delegated Authentication 4 06: MIT – Recurring same amount 07: MIT – other 5 08: Trusted Beneficiary Indicator (Whitelisting) – Done6 1 Requires real-time fraud monitoring solutions 2 Use this value to indicate to the ACS to obtain confirmation from the cardholder to whitelist the merchant for future purchases 3 This is not a standard exemption you can request. If you know the card used for the transaction is a secure corporate card, use this value to indicate so to Shift4. This will help the 3DS Adviser determine the optimal 3D Secure employment. 4 This exemption option can be used if you implemented an alternative SCA solution as part of your checkout process. This requires your solution be pre-approved and registered with the card schemes. 5 Any MIT transaction must be sent with this flag to make sure the transaction will not require SCA. 6 This is not a standard exemption you can request. If you receive an indication you were whitelisted by a

Name	Type	o/m	Min, Max	Description
				cardholder, use this value on any subsequent transaction by that cardholder to indicate back to the Shift4 gateway that this is a potential whitelisting card. This will help the 3DS Adviser determine the optimal 3D Secure employment.
tra_score	[0-9,A-Za-z]	c	1,8	Indicates the transaction risk analysis result calculated by a third party provider as a basis for exemption_reason=02

Managing SCA for Merchant initiated transaction

Merchant initiated transactions can occur in two business cases:

- Recurring transaction, where the first original transaction was initiated by the cardholder (for example, initiating a subscription to a product or service). In this case the initial transaction is subject to SCA, but any subsequent transaction can be exempted from SCA.
- Periodic charges, always initiated by the merchant, based on card details provided by the cardholder not as part of a specific transaction (for example, the cardholder provided their card details to pay utility bills). In this case all subsequent payments will be out of scope except for the initial transaction which is subjected to SCA. In order to properly identify merchant-initiated transactions we added two new parameters you should be prepared to send and receive.

Exemption – Response Parameters

Name	Type	m/o	Min,Max	Description
whitelist_status	[A-Z]	o	1,1	Y: Merchant is whitelisted by cardholder N: Merchant is not whitelisted by cardholder E: Not eligible as determined by issuer P: Pending confirmation by cardholder R: Cardholder rejected U: Whitelist status unknown, unavailable, or does not apply

3D Secure Authentication-Only Flow

You may choose to use the Shift4 Payment Gateway 3D Secure Service without completing the transaction processing through the Shift4 Payment Gateway. To do so, use operation [98]. Alternatively, use either operation [88] which first creates a token, or operation [89] which uses a token, and then initiate a 3D Secure authentication-only flow.

Parameters for Improved 3D Secure Performance

The 3D Secure process is based on data transferred to the issuer as part of the transaction details. The more information provided at an early stage, the higher probability for a frictionless experience for the cardholder.

Recommended Parameters

To increase the probability for a frictionless flow, the card schemes **recommend** that each request contain the maximum accurate data from the following list of parameters:

Requested Data	Shift4 Parameters	Description
Brower IP address	d1	IP address of the browser as returned by the HTTP headers. In either ipv4 or ipv6 format
Buyer email address	c3	Cardholder's email address in valid email address format, such as *joe@bloggs.com*
Billing Information	c4	Cardholder Billing Address street number
	c5	Cardholder Billing Address street name
	c7	Cardholder Billing Address city name
	c8	Cardholder Billing Address Territory Code, a level 2 country subdivision code according to ISO-3166-2. A reference list can be found at ISO 3166-1-alpha-2.
	c9	Cardholder Billing Address Country Code. Please refer to ISO 3166-1-alpha-2 for a list
	c10	Cardholder Billing Address Postal/ZIP Code
Shipping information	3ds_shipaddrcity	City of the shipping address requested by the Cardholder
	3ds_shipaddrcountry	Country of the shipping address requested by the Cardholder. Please refer to ISO 3166-1-alpha-2 for a list

Requested Data	Shift4 Parameters	Description
	3ds_shipaddrline1	First line of the street address or equivalent local portion of the shipping address associated with the card used for this purchase
	3ds_shipaddrline2	Second line of the street address or equivalent local portion of the shipping address associated with the card used for this purchase
	3ds_shipaddrpostcode	ZIP or other postal code of the shipping address associated with the card used for this purchase
	3ds_shipaddrstate	The state or province of the shipping address associated with the card used for this purchase. The value should be the country subdivision code defined in ISO 3166-2.
Do Shipping and Billing addresses match?	3ds_addrmatch	Indicates whether the Cardholder Shipping Address and Cardholder Billing Address are identical.

Request parameters

We recommend you add the following parameters to your transaction request when you use the 3D Secure functionality (3ds_initate=01 or 03):

Name	Description	Type	min	max	m/o/c
3ds_channel	Indicates the type of channel interface being used to initiate the transaction. The accepted values are: 01 - App-based (APP) 02 - Browser (BRW) 03 - 3DS Requestor Initiated (3RI)	[0-3]	2	2	o
3ds_redirect_url	Contains the merchant URL to which the browser should be redirected after the challenge session	[a-zA-Z0-9]	0	2048	m

Name	Description	Type	min	max	m/o/c
3ds_category	Identifies the category of the message for a specific use case. The accepted values are: 01 - PA (Payment authentication) 02 - NPA (NON-payment authentication) 80 – Data only (Mastercard only, valid only for 3ds_channel = 01 or 02)	[0-3]	2	2	o
3ds_compind	Relevant only if 3ds_channel = 02. Received as part of the op code 92 flow.	[Y,N,U]	1	1	c m when 3ds_channel= 02)
3ds_sdkinterface	Specifies the SDK Interface types that the device supports for displaying specific challenge user interfaces within the SDK. Accepted values are: 01 - Native 02 - HTML 03 - Both	[0-3]	2	2	c m only when 3ds_channel=01 (APP).
3ds_sdkuitype	Contains a list of all UI types that the device supports for displaying specific challenge user interfaces within the SDK. Accepted values for each UI type are: 01 - Text 02 - Single select 03 - Multi select 04 - OOB 05 - Html Other (valid only for HTML UI) For Native UI SDK Interface accepted values are 01-04 and for HTML UI accepted values are 01-05.	Comma separated list	2	14	c m only when 3ds_channel=01 (APP).

Name	Description	Type	min	max	m/o/c
3ds_reqauthmethod	Information about how the cardholder was authenticated before or during the transaction. The mechanism used by the Cardholder to authenticate to the merchant. Accepted values are: 01 - No authentication occurred (i.e., cardholder "logged in" as guest) 02 - Login to the cardholder account at the merchant system using merchant's own credentials 03 - Login to the cardholder account at the merchant system using federated ID 04 - Login to the cardholder account at the merchant system using issuer credentials 05 - Login to the cardholder account at the merchant system using third-party authentication 06 - Login to the cardholder account at the merchant system using FIDO Authenticator 07 - Login to the cardholder account at the merchant system using FIDO Authenticator (applicable for 3DS version 2.2 and above) 08 - SRC Assurance Data. (applicable for 3DS version 2.2 and above)	[0-6]	2	2	o
3ds_reqauthtimestamp	Date and time in UTC of the cardholder authentication. Field is limited to 12 characters and the accepted format is YYYYMMDDHHMM	[0-9]	12	12	o
3ds_reqauthdata	Data that documents and supports a specific authentication process. The intention is that for each	[a-zA-Z0-9]	0	255	o

Name	Description	Type	min	max	m/o/c
	merchant Authentication Method, this field contains data that the issuer can use to verify the authentication process.				
3ds_reqchallengeind	Indicates whether a challenge is requested for this transaction. For example: For 3ds_category 01-PA, a merchant may have concerns about the transaction, and request a challenge. For 3ds_category 02-NPA, a challenge may be necessary when adding a new card to a wallet. 01 - No preference 02 - No challenge requested 03 - Challenge requested by merchant 04 - Challenge requested: Mandate 05 - No Challenge Requested, transactional risk analysis is already performed 06 - No Challenge Requested, Data share only 07 - No Challenge Requested, SCA is already performed 08 - No challenge requested (utilise whitelist exemption if no challenge required) 09 - Challenge requested (whitelist prompt requested if challenge required)	[0-4]	2	2	o
3ds_reqpriorref	This data element provides additional information to the issuer to determine the best approach for handling a request. The element contains the issuer's Transaction ID for a prior authenticated transaction (for example, the first recurring	[a-zA-Z0-9]	36	36	o

Name	Description	Type	min	max	m/o/c
	transaction that was authenticated with the cardholder).				
3ds_reqpriorauthmethod	Mechanism used by the Cardholder to previously authenticate to the merchant. Accepted values for this field are: 01- Frictionless authentication occurred by issuer 02 - Cardholder challenge occurred by issuer 03 - AVS verified 04 - Other issuer methods	[0-4]	2	2	o
3ds_reqpriorauthtimestamp	Date and time in UTC of the prior authentication. Accepted date format is YYYYMMDDHHMM.	[0-9]	12	12	0
3ds_reqpriorauthdata	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 merchant Authentication Method, this field carry data that the issuer can use to verify the authentication process. In future versions of the application, these details are expected to be included. Field is limited to a maximum of 2048 characters.	[a-zA-Z0-9]	0	255	o
3ds_reqdecreqind	Indicates whether the merchant requests the ACS to utilise Decoupled Authentication and agrees to utilise Decoupled Authentication if the ACS confirms its use. Accepted values are: Y - Decoupled Authentication is supported and preferred if challenge is necessary	[Y,N]	1	1	o

Name	Description	Type	min	max	m/o/c
	N - Do not use Decoupled Authentication.				
3ds_reqdecmaxtime	Indicates the maximum amount of time (in minutes) that the merchant will wait for an ACS to provide the results of a Decoupled Authentication transaction. Valid values are between 1 and 10080.	[0-9]	1	5	o
3ds_chaccdate	Date that the cardholder opened the account with the merchant. Date format = YYYYMMDD.	[0-9]	8	8	o
3ds_chaccchangeind	Length of time since the cardholder's account information with the merchant was last changed. Includes Billing or Shipping address, new payment account, or new user(s) added. Accepted values are: 01 - Changed during this transaction 02 - Less than 30 days 03 - 30 - 60 days 04 - More than 60 days	[0-4]	2	2	o
3ds_chaccchange	Date that the cardholder's account with the merchant was last changed. Includes Billing or Shipping address, new payment account, or new user(s) added. Date format = YYYYMMDD.	[0-9]	8	8	o
3ds_chaccpwchangeind	Length of time since the cardholder's account with the merchant had a password change or account reset. The accepted values are: 01 - No change 02 - Changed during this transaction 03 - Less than 30 days 04 - 30 - 60 days	[0-5]	2	2	o

Name	Description	Type	min	max	m/o/c
	05 - More than 60 days				
3ds_chaccpwchange	Date that cardholder's account with the merchant had a password change or account reset. Date format must be YYYYMMDD.	[0-9]	8	8	o
3ds_shipaddressusageind	Indicates when the shipping address used for this transaction was first used with the merchant. Accepted values are: 01 - This transaction 02 - Less than 30 days 03 - 30 - 60 days 04 - More than 60 days	[0-4]	2	2	o
3ds_shipaddressusage	Date when the shipping address used for this transaction was first used. Date format must be YYYYMMDD.	[0-9]	8	8	o
3ds_txnactivityday	Number of transactions (successful and abandoned) for this cardholder account with the merchant across all payment accounts in the previous 24 hours.	[0-9]	0	10	o
3ds_txnactivityyear	Number of transactions (successful and abandoned) for this cardholder account with the merchant across all payment accounts in the previous year.	[0-9]	0	10	o
3ds_provisionattemptsday	Number of Add Card attempts in the last 24 hours.	[0-9]	0	10	o
3ds_nbpurchaseaccount	Number of purchases with this cardholder account during the previous six months.	[0-9]	0	10	o
3ds_suspiciousaccactivity	Indicates whether the merchant has experienced suspicious activity (including previous fraud) on the cardholder account. Accepted values are:	[0-2]	2	2	o

Name	Description	Type	min	max	m/o/c
	01 - No suspicious activity has been observed 02 - Suspicious activity has been observed				
3ds_shipnameindicator	Indicates whether the Cardholder Name on the account is identical to the shipping Name used for this transaction. Accepted values are: 01 - Account Name identical to shipping Name 02 - Account Name different from shipping Name	[0-2]	2	2	o
3ds_paymentaccind	Indicates the length of time that the payment account was enrolled in the cardholder's account with the merchant. Accepted values are: 01 - No account (guest check-out) 02 - During this transaction 03 - Less than 30 days 04 - 30 - 60 days 05 - More than 60 days	[0-5]	2	2	o
3ds_paymentaccage	Date that the payment account was enrolled in the cardholder's account with the merchant. Date format must be YYYYMMDD.	[0-9]	8	8	o
3ds_accid	Additional information about the account optionally provided by the merchant.	[a-zA-Z0-9]	0	64	o
3ds_whiteliststatus	Sets the whitelisting status of the merchant. Accepted values are: – true -Merchant is whitelisted by cardholder – false - Merchant is not whitelisted by cardholder	[] [a-z]	4	5	o

Name	Description	Type	min	max	m/o/c
3ds_paytokenind	This field has a value of "true" if the transaction was de-tokenised prior to being received by Shift4.	[a-z]	4	5	o
3ds_addrmatch	Indicates whether the Cardholder Shipping Address and Cardholder Billing Address are identical. Accepted values: True - Shipping Address matches Billing Address False - Shipping Address does not match Billing Address Note: the default value of this field is 'false'	[a-z]	4	5	o
3ds_homephonecountry	Country Code of the home phone.	[0-9]	1	3	o (m if c2 exists)
3ds_chmobilephone	The mobile phone provided by the Cardholder, without the country code	[0-9]	0	18	o
3ds_mobilephonecountry	Country Code of the mobile phone.	[0-9]	1	3	o (m if 3ds_chmobilephone exists)
3ds_chworkphone	The work phone provided by the Cardholder, without the country code	[0-9]	0	18	o
3ds_workphonecountry	Country Code of the work phone.	[0-9]	1	3	o (m if 3ds_chworkphone exists)
3ds_shipaddrcity	City of the shipping address requested by the Cardholder. Refer to Mastercard's Enhanced Data Standards for Identity Check for information when you should send this value as part of 3D Secure authentication.	[a-zA-Z]	3	32	o
3ds_shipaddrcountry	Country of the shipping address requested by the Cardholder. Please refer to ISO 3166-1-alpha-2 for a list.	[A-Z]	2	2	c m – if 3ds_shipaddrstate exists or if

Name	Description	Type	min	max	m/o/c
	Refer to Mastercard's Enhanced Data Standards for Identity Check for information when you should send this value as part of 3D Secure authentication.				shipping information is not the same as billing information
3ds_shipaddrline1	First line of the street address or equivalent local portion of the shipping address associated with the card used for this purchase. Refer to Mastercard's Enhanced Data Standards for Identity Check for information when you should send this value as part of 3D Secure authentication.	[a-zA-Z]	0	50	o m – when 3ds_addrmatch = false
3ds_shipaddrline2	Second line of the street address or equivalent local portion of the shipping address associated with the card used for this purchase. Refer to Mastercard's Enhanced Data Standards for Identity Check for information when you should send this value as part of 3D Secure authentication.	[a-zA-Z]	0	50	o m – when 3ds_addrmatch = false
3ds_shipaddrpostcode	ZIP or other postal code of the shipping address associated with the card used for this purchase.	[a-z0-9]	0	16	o m – when 3ds_addrmatch = false
3ds_shipaddrstate	The state or province of the shipping address associated with the card used for this purchase. The value should be the country subdivision code defined in ISO 3166-2. Refer to Mastercard's Enhanced Data Standards for Identity Check for information when you should	[0-9]	1	3	o m – when 3ds_addrmatch = false

Name	Description	Type	min	max	m/o/c
	send this value as part of 3D Secure authentication.				
3ds_shipindicator	Indicates shipping method chosen for the transaction. Merchants must choose the Shipping Indicator code that most accurately describes the cardholder's specific transaction. 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 code that describes the most expensive item. Accepted values are: 01 - Ship to cardholder's billing address 02 - Ship to another verified address on file with merchant. In this case, shipping information is required even though 3ds_addrmatch = true. 03 - Ship to address that is different from the cardholder's billing address. In this case, shipping information is required even though 3ds_addrmatch = true. 04 - "Ship to Store" / Pick-up at local store (store address is populated in the shipping address fields). In this case, shipping information is required even though 3ds_addrmatch = true. 05 - Digital goods (includes online services, electronic gift cards and redemption codes) 06 - Travel and Event tickets, not shipped	[0-7]	2	2	o

Name	Description	Type	min	max	m/o/c
	07 - Other (for example, Gaming, digital services not shipped, emedia subscriptions, etc.)				
3ds_deliverytimeframe	Indicates the merchandise delivery timeframe. Accepted values are: 01 - Electronic Delivery 02 - Same day shipping 03 - Overnight shipping 04 - Two-day or more shipping	[0-4]	2	2	o
3ds_deliveryemailaddress	For electronic delivery, the email address to which the merchandise was delivered.	email	7	64	o
3ds_reorderitemsind	Indicates whether the cardholder is reordering previously purchased merchandise. Accepted values are: 01 - First time ordered 02 - Reordered	[0-2]	2	2	o
3ds_preorderpurchseind	Indicates whether the cardholder is placing an order for merchandise with a future availability or release date. Accepted values are: 01 - Merchandise available 02 - Future availability	[0-2]	2	2	o
3ds_preorderdate	For a pre-ordered purchase, the expected date that the merchandise will be available. Date format must be YYYYMMDD.	[0-9]	8	8	o
3ds_giftcardamount	For a prepaid or gift card purchase, the purchase amount total of the prepaid or gift card(s) in major units (for example, USD 123.45 is 123).	[0-9]	1	12	o
3ds_giftcardcurr	For a prepaid or gift card purchase, the currency code of the card as	[0-9]	3	3	o

Name	Description	Type	min	max	m/o/c
	defined in ISO 4217-alpha-3 except for 955 - 964 and 999.				
3ds_giftcardcount	For a prepaid or gift card purchase, the total count of the individual prepaid or gift cards/codes purchased. Field is limited to 2 characters.	[0-9]	0	2	o
3ds_purchasedate	Date and time of the purchase expressed in UTC. The field is limited to 14 characters, formatted as YYYYMMDDHHMMSS.	[0-9]	14	14	m
3ds_recurringexpiry	Date after which no further authorisations shall be performed. This field is limited to 8 characters, and the accepted format is YYYYMMDD. This field is required if a9= 1,2,11,12	[0-9]	8	8	c
3ds_recurringfrequency	Indicates the minimum number of days between authorisations for a recurring or instalment transaction. The field is limited to 4 characters.	[0-9]	1	9999	c
3ds_transtype	Identifies the type of transaction being authenticated. The values are derived from ISO 8583. Accepted values are: 01 - Goods / Service purchase 03 - Check Acceptance 10 - Account Funding 11 - Quasi-Cash Transaction 28 - Prepaid activation and Loan	[0-9]	2	2	m
3ds_merchantname	Assigned merchant name (with a prefix of “http://” or “https://”)	[a-zA-Z0-9]	1	25	o
3ds_browseracceptheader	Exact content of the HTTP accept headers.	[a-zA-Z0-9]	0	2048	o m if 3ds_channel=02

Name	Description	Type	min	max	m/o/c
d1	IP address of the browser as returned by the HTTP headers. Supports both ipv4 and ipv6 formats. Refer to Mastercard's Enhanced Data Standards for Identity Check for information when you should send this value as part of 3D Secure authentication.	ip	7	48	c m if 3ds_channel=02 m for Visa 3ds transactions
3ds_browserjavaenabled	Boolean (true/false) that represents the ability of the cardholder browser to execute Java. This field is required for requests where 3ds_channel = 02 (Browser).	[a-z]	4	5	o m if 3ds_channel=02
3ds_browserjavascriptenabled	Boolean that represents the ability of the cardholder browser to execute JavaScript. Accepted values are true / false	[a-z]	4	5	o m if 3ds_channel=02
d6	Value representing the browser language as defined in IETF BCP47. For example: en-GB	As defined in IETF BCP47	2	16	o m if 3ds_channel=02
3ds_browsercolordepth	Value representing the bit depth of the colour palette for displaying images, in bits per pixel. Accepted values are: 1 - 1 bit 4 - 4 bits 8 - 8 bits 15 - 15 bits 16 - 16 bits 24 - 24 bits 32 - 32 bits 48 - 48 bits	[0-9]	1	2	o m if 3ds_channel=02
3ds_browserscreenheight	Total height of the Cardholder's screen in pixels.	[0-9]	1	6	c m if 3ds_channel=02

Name	Description	Type	min	max	m/o/c
3ds_browserscreenwidth	Total width of the Cardholder's screen in pixels.	[0-9]	1	6	c, m if 3ds_channel=02
3ds_browsertz	Time difference between UTC time and the Cardholder browser local time, in minutes.	[0-9,-]	1	5	o m if 3ds_channel=02
d5	Exact content of the HTTP user-agent header. Refer to Mastercard's Enhanced Data Standards for Identity Check for information when you should send this value as part of 3D Secure authentication.	[a-zA-Z0-9]	5	255	o m if 3ds_channel=02
3ds_challengewindowsize	Dimensions of the challenge window that will be displayed to the cardholder. The issuer replies with content that is formatted to appropriately render in this window to provide the best possible user experience. Preconfigured window sizes are given in "width x height" in pixels. Accepted values are: 01 - 250 x 400 02 - 390 x 400 03 - 500 x 600 04 - 600 x 400 05 - Full screen	[0-5]	2	2	o m if 3ds_channel=02
3ds_sdkappid	Universally unique ID created upon all installations and updates of the merchant App on a customer device. This is newly generated and stored by the 3DS SDK for each installation or update. The field must have a canonical form as defined in IETF RFC 4122.	[0-9a-zA-Z]	0	36	o m if 3ds_channel=01
3ds_sdkencdata	JWE object, as a string containing data encrypted by the SDK for the DS to decrypt. The field is sent from the SDK. The data will be	[0-9a-zA-Z]	0	64k	o m if 3ds_channel=01

Name	Description	Type	min	max	m/o/c
	present when sending to DS, but not present from DS to ACS.				
3ds_sdkephempubkey	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.	[0-9a-zA-Z]	0	255	o m if 3ds_channel=01
3ds_sdkmaxtimeout	The maximum amount of time (in minutes) for all exchanges. The value must be greater than or equal to 05.	[0-9]	2	2	o m if 3ds_channel=01
3ds_sdkreferencenumber	Identifies the vendor and version of the 3DS SDK that is integrated in a merchant app, assigned by EMVCo when the 3DS SDK is approved.	[0-9a-z]	0	32	o m if 3ds_channel=01
3ds_sdktransid	Universally unique transaction identifier assigned by the 3DS SDK to identify a single transaction. The field must have a canonical form as defined in IETF RFC 4122.	[0-9]	0	36	o m if 3ds_channel=01

Response parameters

Name	Description	Type	min	max	m/o/c
3ds_whiteliststatussource	Is populated by the Whitelist Status system setting. Possible values: 01 = 3DS Server 02 = DS 03 = ACS 04-79 = Reserved for EMVCo future use (values invalid until defined by EMVCo) 80-99 = Reserved for DS use Note: This is a response parameter only	[0-9]	2	2	o

Name	Description	Type	min	max	m/o/c
3ds_whiteliststatus	Indicates on the merchant's whitelisting status as confirmed by the ACS. Possible values: true – Merchant is whitelisted by cardholder false – Merchant is not whitelisted by cardholder	[a-z]	4	5	o

Mastercard's Enhanced Data Standards for Identity Check

To strengthen multi-factor authentication and improve the quality of the data used to verify cardholders, Mastercard requires richer authentication data to be provided on every 3D Secure authentication request. Every 3D Secure authentication request must include **at least one** value from each of the three data categories below:

Identifier Category	Identifiers and Their Matching Shift4 API Fields
Cardholder identifier	• Name: c1 • Phone number: c2 • Email address: c3
Address identifier	• Billing address fields: c4, c5, c7, c8, c9, c10 • Shipping address fields: 3ds_shipaddrline1, 3ds_shipaddrline2, 3ds_shipaddrcity, 3ds_shipaddrstate, 3ds_shipaddrcountry
Technical identifier	• Cardholder IP address: d1 • Device information: d5

Providing at least one complete and accurate value in each category ensures your authentication requests meet Mastercard's requirements and supports successful cardholder authentication

Smart 3D Secure Standalone Services

The Shift4 Gateway enables technical and business entities to use the Shift4 Smart 3D Secure service as a standalone service. The specifications below guide you on how to use Shift4 Smart 3D Secure services if you are connected to the Shift4 gateway and process transactions with other acquirers. The specifications also apply if you are connected to the Shift4 gateway for our 3D Secure services only and are interested in authentication in order to process the transactions using other gateways. Following initial setup of standalone 3D Secure to enable technical connectivity, there is no need to setup each and every business entity (merchant) that uses the service. Instead, you can send the relevant information as part of the transaction and the Shift4 gateway will successfully process the authentication request.

Initial Setup

If Shift4 is not the acquirer, then in order to process non-Shift4 acquirer BINs you must set up those BINs in the Shift4 systems prior to processing 3DS standalone transactions.

Please contact your Solution Architect for initial setup of standalone 3D Secure.

Smart 3D Secure Standalone – Required Fields

In Smart 3D Secure standalone scenarios: For every transaction that participates in the 3D Secure flow, you must send the following fields in addition to the 3D Secure parameters (operation [98]):

Field name	Type	M/O	Description
3ds_merchant_name	String (4,40)	M	Th 3DS merchant name as assigned by the acquirer
3ds_acquirer_bin	Numeric (6,12)	M	The acquirer BIN number
3ds_acquirer_password	String (8,32)	O	The 3D Secure authentication password as assigned by the acquirer
3ds_acquirer_mid	String (4,32)	M	The 3D Secure merchant ID as assigned by the acquirer
3ds_merchant_url	String (4,256)	M	The merchant URL (website)
3ds_merchant_country	Numeric (3,3)	M	The merchant country
3ds_merchant_mcc	Numeric (4,4)	M	The merchant category code (MCC) as assigned by the acquirer
3ds_requestorid	Alphanumeric (35 max)	M (relevant only for 3DS v2)	The unique 3D Secure requestor id. Depends on whether you are: Providing 3DS Standalone to Multiple Merchants Using 3DS Standalone as a Single Merchant
3ds_requestorname	Alphanumeric (40 max)	M (relevant only for 3DS v2)	The unique 3D Secure requestor name. Depends on whether you are: Providing 3DS Standalone to Multiple Merchants Using 3DS Standalone as a Single Merchant

Providing 3DS Standalone to Multiple Merchants

If you are providing 3DS standalone to multiple merchants, then:

- **3DS_requestorname** must be a unique merchant name assigned by the partner

- **3DS_requestorid** must be in the following format:
  - For Visa: 10067907*[partner prefix][merchant unique ID]

    For Mastercard: CRE51138[partner prefix][merchant unique ID] where:
    - **[Partner prefix]** is the 4-character prefix assigned by Shift4 to the partner upon onboarding **[Merchant unique ID]** is a 21-character ID generated by the partner, unique for each merchant
  - For Discover: CREDORAX_[merchant unique ID] where:
    - **[Merchant unique ID]** is a max 26-character ID generated by the partner, unique for each merchant

Using 3DS Standalone as a Single Merchant

If you are a merchant using 3DS standalone yourself, and not providing it to others, then during the initial setup Shift4 will provide you with the following details:

- 3DS_requestorname
- 3DS_requestorid

Appendix J: How to Provide 3D Secure Data on the i8 Parameter

This section describes the specifications of the i8 parameter, used when running 3D secure with a third-party provider. If you are using the Shift4 Payment Gateway 3D Secure service, please refer to Appendix I: 3D secure.

3D secure data is transmitted via the [i8] parameter.

The [i8] field consists of the following 3 subfields, delimited by a colon:

- ECI (Electronic Commerce Indicator)
- CAVV/AAV
- XID



Note:

- If you have more than one payment processor configured with your Shift4 Gateway account, you must send the r1 parameter as part of the transaction. The value of the parameter should indicate the processor used for 3D Secure authentication. A mismatch between the 3DS processor and the transaction processing processor may result in a decline.
- If you only have one processor, you do not have to provide the r1 parameter, but there should still be a match between the processor indicated in the 3DS authentication and the processor of the transaction

ECI (Electronic Commerce Indicator)

Valid ECI values are:

ECI	Description
00	Mastercard/Maestro authentication is unsuccessful
01	Mastercard/Maestro authentication attempted
02	Mastercard/Maestro fully authenticated
05	Visa/JCB/American Express/Diners/Discover fully authenticated
06	Visa/JCB/American Express/Diners/Discover authentication attempted MasterCard/ Maestro successful authentication (see comment)
07	Visa/JCB/American Express/Diners/Discover authentication is unsuccessful or unattempted, or successfully authenticated (see comment) Mastercard/Maestro Recurring Payment fully authenticated

Note:

Mastercard/Maestro ECI 06 and Visa ECI 07 with the presence of CAVV value, implies that an exemption request was submitted by the acquirer as part of the 3D Secure request, and was approved by the issuer.

CAVV/AAV and XID

Mastercard AAV (UCAF)

Mastercard SecureCode transactions must include an Accountholder Authentication Value (AAV). This means that the AAV tag must be included as part of the 3D Secure [i8] parameter for every Mastercard SecureCode transaction that is transmitted to the *Shift4* Payment API.

Transactions without an AAV will be automatically downgraded to a regular eCommerce transaction and will not benefit from the liability shift and other advantages of an attempted SecureCode transaction.

Encoding - Visa/JCB/American Express/Diners/Discover

The Cardholder Authentication Verification Value (CAVV) and XID should be base-64 decoded (assuming the Merchant Plug-In (MPI) passes back a base-64 encoded value, which is usually the case). After base-64 decoding, the value should be hex-encoded and transmitted in subfield 2 of the [i8] parameter (see Hex-encoding for Visa). If a CAVV value is not available, use "none" as a placeholder.

The XID is mandatory. If an XID value is not available from the MPI, a 40-byte numeric value (ASCII) should be generated and then hex-encoded.

Visa example:

```
i8=05:0700100908808809000013529880881058cb3a65:3030303030303030303030303030303030353030

i8=06:0000010316617700000003030161770000000000:3030303030303030303030303030303030353030

i8=06:none:20202020202020202020313531333833303034
```

Encoding – Mastercard / Maestro

The AAV (UCAF) should be transmitted in subfield 2 of the [i8] parameter with base-64 encoding. This should mean simply passing the value received from the MPI, assuming the MPI passes back a base-64 encoded value. If a CAVV/AAV value is unavailable, use "none" as a placeholder.

Note:

- For Mastercard, the AAV is required for MCCs 7995 and 6012.
- For Maestro, the AAV is required for all transactions

The XID field is optional for Mastercard / Maestro transactions with an ECI of 01, but should either be populated with a 20-byte alphanumeric transaction identifier or with 'none'.

Mastercard example:

```
i8=02:jJ81HADVRtXfCBATEp01CJUAAAA=:00000000000000000501
i8=01:jJ81HADVRtXfCBATEp01CJUAAAA=:00000000000000000501
```

Note:

- Attempted Mastercard and Maestro authenticated transaction may not exceed 10% of the total number of Secure Code transactions
- Shift4 does not participate in the Mastercard/Maestro Advanced Registration and Maestro Recurring Payments programs, and as such doesn not support static AAV. The gateway will thus reject Secure Code transaction where the UCAF transmitted via the i8 parameter is not unique to each received transaction request

Hex-encoding for Visa

As mentioned above, we require that Visa 3D secure data be hex-encoded before transmission. Assuming the value is base-64 encoded, the hex-encoding process is carried out as follows:

1. Apply Base-64 decoding to the original value.
2. Hex-encode the resulting value
3. Transmit the result via the appropriate subfield.

Visa CAVV example:

```
Base-64 encoded CAVV: AAABAxZhdwAAAAMDAWF3AAAAAAA=
Base-64 decoding (step 1) results in value:
❓❓ aw❓❓❓
aw❓❓❓❓❓
Hex-encoding (step 2) results in value: 00000103166177000000030301617700000000000
```

Guidelines for 3D secure 2.0 and higher

When authentication is done using 3-DSecure 2.0 or higher:

- The XID sub-field is not required as part of the i8 parameter. Instead send “none”.
- In addition, send the following parameters as part of the request:

Parameter name	Description	Format	Min,Max
3ds_version	Indicates the 3D Secure protocol version Possible values: 1.0 2.0 2.1.0 2.2.0	[0-9]	3,5
3ds_dstrxid	3DS Directory server transaction ID. Must be sent if 3ds_version = 2.0 or higher and i8 is used.	[0-9A-Za-z,-]	36

Appendix K: Ancillary Fee Codes

Ancillary fee codes are used by travel agencies and airlines. The following table lists the possible ancillary fee codes that can be sent with parameters **an1** - **an4**.

Code	Description
BF	Bundled Service
BG	Baggage Fee
CF	Change Fee
CG	Cargo
CO	Carbon Offset
FF	Frequent Flier
GF	Gift Card
GT	Ground Transport
IE	In-Flight Entertainment
LG	Lounge
MD	Medical
MK	Meal/Beverage
OT	Other
PA	Passenger Assist Fee
PT	Pets
SA	Seat Fee
SB	Standby
SF	Service Fee
ST	Store
TS	Travel Service
UN	Unaccompanied Travel
UP	Upgrades
WI	Wi-Fi

Appendix L: Account Name Inquiry (ANI)

Account Name Inquiry (ANI) is a validation service that verifies the cardholder identity with their Issuer. The service allows merchants to make sure that the name provided by the cardholder matches the name held by the issuer by sending an account verification request before submitting an authorization. In the inquiry, the merchant sends the cardholder's name along with the PAN or network token credentials, and the issuer then returns a response indicating whether the provided name matches their records.**To use this feature you have to add it to your Shift4 account. Contact your Account Manager for more details.**

Transaction Flow

1. The merchant sends a card validation transaction (zero-amount authorization) with the additional ANI request parameters.
2. The merchant gets a response stating if the name sent matches that name registered with the issuer.
3. The merchant proceeds with the processing based on the response.



Note:

- A response will be returned only if the issuer supports the ANI feature
- The service is supported for Visa and Mastercard
- ANI works for card validation authorization requests only

Required Parameters

Request Parameters

Name	Description	ANI requirement
a9	Transaction type. To indicate this is a card validation transaction send a9=5/10	M
c22	Cardholder first name	M
c23	Cardholder last name	M

Response Parameters

z26	Full name verification result	Possible Values: 'A' - Match 'B' - Partial Match 'C' - No Match 'U' – Unverified 'N' - Not Supported
z27	First Name verification result	Possible Values: 'A' - Match 'B' - Partial Match 'C' - No Match 'U' - Unverified 'N' - Not Supported
z28	Last Name verification result	Possible Values: 'A' - Match 'B' - Partial Match 'C' - No Match 'U' - Unverified 'N' - Not Supported

Refer to Basic Operation required fields and to Response fields to see the full parameters specifications.

Change History

Version	Subject/Date	Description

1.11	November 2026	• Updated the 3RI chapter in the SCA and 3D Secure appendix
		  • Added new parameter: **3ds_reqpriordstransid**
		  • Updated requirement indicator for all 3RI parameters to mandatory
		  • Updated field descriptions and explanations to clarify 3RI requirements
		• Added Mastercard's enhanced data standard for identity check guidelines, which require at least one complete value of each identity-related category (cardholder identifier, address identifier, technical identifier)

1.10	September 2026	• Added the mit_reason_code parameter to the Basic Operations Required Parameters. • Added g7 parameter to all transaction types: Use this parameter to include the Mastercard identifier obtained in a cardholder-initiated authorized transaction with every subsequent merchant-initiated transaction (MIT).
1.9 rev 26	August 2026	• Updated the Dynamic Descriptor note to remove the card-not-present restriction and include the Mastercard requirement for using dynamic descriptors with dynamic terminals (POS devices). • Updated the Account Name Inquiry (ANI) description in Appendix L to accurately reflect the service's data flow. • Corrected the PAN parameter reference in the j2 request parameter description (replaced b2 with b1). • Updating presence requirements for h22 + h23 parameters • Adding the presence of the h22, h23 parameters for the following op codes: 23, 28, 11, 12, 15, 5

Version	Subject/Date	Description
1.9 rev 25	May 2026	• Adding Card On File Transactions and Tokenization requirements • Update to ANI (Account Name Inquiry) – supported for Mastercard • Update the decline response reason for z6=83 • Amend wording in regards to parameter a10 • Update CFT and AFT postal code requirements • Updates of requirements for Crypto Currency Type • Update D1 parameter character length • Fix i2 parameter format • Update description of 3ds_recurringfrequency • Update format and length of d6
1.9 rev 23	April 2026	• Altering description of j2 required parameter • Update to j7 parameter allowed characters • Update to b21 requirements - cannot be sent on Create Token Ops [10,23,28]
1.9 rev 22	March 2026	• Required parameters were added to the Basic Operation section: Siret, Tax Identification Number.
1.9 rev 21	January 2026	• New parameter was added to AFT and CFT transactions – s20 – sender postal code • Fields updates for Sender Account Number (character, type)
1.9 rev 20	December 2025	• a9 parameter requirement became mandatory for Card on File transactions • 3ds_recurringexpiry parameter was adjusted: If a9=1,2,11,12 • New rule was added to *basic operations* and *Token operations* in b21 parameter: If b21 exist a9 is mandatory • Updating values for service class (fl1) • Update in CFT s19 parameter - sender date of birth • Removing Bulgarian currency from the supported currency list • Change in sender state requirement for CFT + AFT trx • New integration environment address was updated • New health check URL was updated • New fields were added to Required Parameters for sale, auth and refund requests – c24, c25 • New possible response code was added to z6 value – “6P”

Version	Subject/Date	Description
1.9 rev 19	November 2025	• a10 parameter was added to incremental authorization section
1.9 rev 18	October 2025	• Correcting the min/max length value – 'c8' • New parameter- the account holder's country of birth was added for CFT/AFT transactions – j14 • Removing supported currency - RUB
1.9 rev 17	September 2025	• Updating values for ota20 parameter: o Description = Issuing Carrier Code o Max length = 4
1.9 rev 16	August 2025	• New response parameter: z70 – Transaction Link Identifier (TLID) • Added a value to crypto_currency_type: 4 - Non-Fungible Token (NFT)
1.9 rev 15	June 2025	• Added 3RI information and requirements • Updated MAC: 02 value to: Wait at least 24 hours before retrying again • Updated token_eci and token_crypto parameters lengths.
1.9 rev 14	April 2025	• Updated retry response codes: 46,72 – removed 5C, 9G • Updated s12 and j6 max length to 50 • Updated ticket number description • Updated b21 description • Updated j2 length for 6012 merchants in UK • Added IP Whitelisting section
1.9 rev 13	March 2025	• Removed the value 4 - NFT from crypto_currency_type parameter.
1.9 rev 12	March 2025	• Addition of s19 parameter and requirements • Addition crypto_currency_type parameter and requirements • Adjustment to parameter i2 to include DBA +Valid city name only • Addition of new response code (z6): 5C, 9G • Limitation on h9 for AMEX
1.9 rev 11	December 2024	• Removal of j14 • Change of j2 from masked account number to account number • Change of requirements for j2 (m for AFT)
1.9 rev 10	December 2024	• New value: j14 • Change in sender and recipient information fields requirements

Version	Subject/Date	Description
1.9 rev 9	November 2024	• Editing of sender information and recipient information fields requirements • Addition of ANI capability: o Appendix L – Account Name Inquiry o New response parameters: z26, z27, z28 • Updated g6 requirements (m when a9=12)
1.9 rev 8	October 2024	Editing of the sender information fields requirement.
1.9 rev 7	August 2024	Change of requirement to the following parameters, not mandatory for Visa 3ds transactions: o 3ds_browserscreenheight o 3ds_browserscreenwidth New Sender Information fields were added to enable new AFT and CFT features. See s10-s18 in Basic Operations, Create and Use Token operations, and Special Operations Updated b21 in Special Operations parameters
1.9 rev 6	May 2024	Changed the requirement of the following parameters from o to c (m for Visa 3ds transactions): o c1 o c2 o c3 o d1 o 3ds_browserscreenheight o 3ds_browserscreenwidth Added Response field for AFT transaction 'funding'. Updated supported currencies: HRK was removed, ZWR was removed, SLL changed to SLE.
1.9 rev 5	March 2024	Update parameters j5, j6, j7, j8, j9, j13 as mandatory for AFT (Account Funding Transactions) Update MAC values in parameter z44 Update a9 values – value names of 01, 02, added 11, 12 Update available currencies in Appendix H – Transaction Currencies: Remove EEK, LTL, MRO, STD. Fixed a19 values – 11= Annually
1.9 rev 4	November 2023	Rebranded to Shift4

Version	Subject/Date	Description
1.9 rev 3	April 2023	Update request parameter 3ds_whiteliststatus validations, add 3ds_whiteliststatus as a response parameter Add a new value for a10 parameter: 3 = Deffered Authorisation Allowed to be sent also Sale and Authorisation op codes. Fixed length of parameter b21, added a possible value in b21, deleted opcode [23] from a4 parameter in Use Token Operations, added note to a9 parameter in Create Token Operation about rejection response from transmitting value 2 for [28], deleted note of a9 parameter in Use Token Operation about rejection response from transmitting value 5 for [23], deleted a13 parameter, updated the max length of 3ds_dstrxid parameter Fixed request parameter h15 requirements
1.9 rev 2	January 2022	Updated CFT void note added response parameter 3ds_acstrxid added and updated processing response reason codes: 46, 59, 74, 78, 82, N3, N4 updated z21 values -97, -98 descriptions clarified description of 3ds_merchantname added Discover section to "3DS Standalone to Multiple Merchant" updated ECI values - 00, 06, 07
1.9 rev 1	November 2021	Updated Visa requirements for sending all merchant-initiated-transactions with a proper 'initial transaction id' (and not a generic value) using the g6 parameter.
1.9	November 2021	New functionality: Incremental Authorisation: New operation code [20] Updated functionality of request parameters a4 and a9 when used with incremental authorisation New response parameter z25 – updated amount
1.8 rev 12	September 2021	Edited the description of the SmartGuard service
1.8 rev 11	September 2021	Added a possible value in b21 Changed the ISK currency exponent Added parameter z44, response code 79 and result value 07 Edited the description of special operations 34, 35
1.8 rev 10	July 2021	Added clarification regarding the a10 parameter
1.8 rev 9	July 2021	Added response parameters z35, z36, z37 Changed max length of c1

Version	Subject/Date	Description
1.8 rev 8	June 2021	Changed token_cavv parameter name to be token_crypto
1.8 rev 7	June 2021	Changed optional/mandatory requirements for j6, j7, j8, j9 parameters in CFT transactions. Changed j8 minimum length. Fixed the format of b20, Added N7 to Processing Response Reason Codes Addition of additional value of “Cartes Bancaires “ for b2 Changed max length of c1, minimum length of 3ds_shipaddrstate, j11 format, max length of 3ds_acquirer_bin Change single and double quotation marks in Message Cipher Added values to smart_3ds_result Addition of optional reason for z2=-38 description (z3)
1.8 rev 6	May 2021	Added Seller Information parameter h15 Changed optional/mandatory requirements for c1, c3 parameters in CFT transactions
1.8 rev 5	May 2021	Added Credorax stand-in service parameter z43
1.8 rev 4	April 2021	Changed optional/mandatory requirements for c4, c5, c7, c8, c9, j5, j13 parameters in CFT transactions
1.8 rev 3	March 2021	Updated ota3 description, content of fl1, fl2, fl3, fl4 Removed 3ds fields which are not in use
1.8 rev 2	February 2021	Changed fl5 and fl6 min and max length Changed value of exemption_reason in tra_score description Changed explanation of 3ds_recurringexpiry and 3ds_recurringfrequency Changed type of d6 and added an example
1.8 rev 1	January 2021	Changed the length of the 3ds_version parameter Added g6 to the Use Token Operations table Added recommendation for 3DS v1.0 cardholder challenge flow
1.8	December 2020	Addition of 3DS v2.2-related Decoupled Authentication, Whitelisting and Authentication fields and settings as well as several other small changes and additions.
1.7 rev 1	November 2020	Addition of Smart 3D Secure standalone services
1.7	October 2020	Added information how to send transactions that were originally processed by Apple Pay or Google Pay wallets Removed the following currencies: CUP, IRR, KPW, SDG Added clarification when to send g6

Version	Subject/Date	Description
1.6 rev 2	September 2020	Added new opcodes [88] and [89] allowing to create a token and use a token for 3D Secure authentication-only flow
1.6 rev 1	August 2020	Changed Optional/Mandatory requirements of Funds Recipient parameters
1.6	August 2020	Added parameter a1 to opcode [92] mandatory parameters table Added new parameter a14: partial authorisation tag
1.5 rev 2	August 2020	Added new response parameter b20 - Payment Account Reference (PAR)
1.5 rev 1	July 2020	Introduced partial authorisation void Changed Optional/Mandatory requirements of Funds Recipient parameters Added MCCs relevant for the Referral CFT operation Modified 3D Secure workflow diagrams Added new parameter a13 Added new Request parameters: Amount Components, Furniture, Car, Plane and Boat Rentals, Event Management, some Travel parameters
1.5	May 2020	Removed the 3ds_smartplan parameter Addition of new processing response reason codes
1.4 rev 4	April 2020	Operation codes clarifications
1.4 rev 3	April 2020	Minor bug fixes
1.4 rev 2	March 2020	Addition of new operation result codes
1.4 rev 1	March 2020	Addition of new Ancillary Fee Codes appendix
1.4	February 2020	Addition of new travel parameters Addition of new parameter h8 Addition of new response parameter z55
1.3	November 2019	Addition of op codes 104,105 and z51 Addition of "04" value for 3ds_initiate, and decommission of 3ds_smarttype parameter Changed 3ds_transtype from being Optional to being Mandatory Minor text and formatting corrections
1.2 rev 4	October 2019	Minor format corrections
1.2 rev 3	September 2019	Minor format corrections Changed the values of Low value exemption and Low Risk Exemption
1.2 rev 2	July 2019	Clarification on the Hashing algorithm logic Additional Value “C” for the 3ds_status field Added required parameter “g1” for op code [38]

Version	Subject/Date	Description
1.2	July 2019	Addition of exemption management section Addition of two new response values in z6 parameter (70, 1A) Addition of three new response codes in z2 parameter (-64, -65, -66) Addition of new g6 referral operation parameter Addition of new z50 response-field parameter
1.1	May 2019	Addition of 3DS Adviser fields – exemption management Clarification regarding using 3D Secure with a third party provider
1.0 rev 4	March 2019	Changes to mandatory parameters due to 3D secure
1.0 rev 3	March 2019	Clarification of z13 parameter description
1.0 rev 2	March 2019	Clarification about required/optional parameters Clarification about how to send the i8 for 3D secure version 2.0 Two new response codes related to the 3D secure flow (-37, -13)
1.0 rev 1	March 2019	Guidelines for 3D Secure 2.0 for using third party 3D Secure providers
1.0	February 2019	First release

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