

AUTHORISATION AND SETTLEMENT TECHNICAL SPECIFICATIONS

VERSION 1.4
OCTOBER 2017

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Amendment History

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1. INTRODUCTION

This document details the settlement and authorisation message formats supported by Global Payments.

For settlement, all file formats are for a 640 byte variable file length. For backward compatibility, we also support both 90 byte and 380 byte files but, these formats are outside the scope of this document and are not permitted for new file submission certifications.

Both the authorisation and settlement formats contained within this document are derived from the UK Cards Association Standard 70 and should be used to define the exact requirements for populating authorisation and settlement messages into the Global Payments host systems. This document should be read in conjunction with the UK Cards Association Standard 70, which can be obtained from them using the details below:

UK Payments Administration
2 Thomas Moore Square
London
E1W 1YN

Tel: 020 3217 8200
Fax: 020 7488 6959
Email: enquiries@ukpayments.org

Message formats and fields contained within Standard 70 but not defined within this document should be assumed as being unsupported by Global Payments.

Revised versions of this document will be issued when new functionality is released onto our host systems.

If you use a Payment Service Provider, bureau, or any other kind of third party to assist in the processing of your card transactions, they will act, at all times, as your agent and you will be responsible for any acts or omissions on their part. You must ensure that they comply, at all times, with the terms of our Card Processing Agreement and ensure you promptly pass on to them all communications or information we provide to you that will have an impact on the processing services they provide to you.

Furthermore, you agree to indemnify us against any losses, damages or liability that we may suffer as a result of acting on your agent's instructions or any other action or omission of theirs. Whilst we may provide details of third party processors to you, you are responsible for making a selection appropriate to your requirements and negotiating contractual terms directly with the third party in question. You remain fully responsible for paying any fees charged by your agent and in no circumstances will we collect these for your agent or remit them to your agent before making payment to you.

2. NORMATIVE REFERENCES

The following documents are referenced within this document and are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest version of the referenced document (including any amendments) applies.

UK Cards Association Standard 70	Card acceptor to acquirer interface standards www.ukpayments.org .
EMV	Integrated circuit card specification for payment systems www.emvco.com .
Global Payments	For the purposes of this document, all references to Global Payments, refers to GPUK LLP trading as Global Payments
ISO 3166 (all parts)	Codes for representation of countries and their subdivisions.
ISO 4217	Codes for representation of currencies and funds.
PCI DSS	Payment Card Industry Data Security Standards; maintained by PCI SSC.
PCI SSC	Payment Card Industry Security Standards Council www.pcisecuritystandards.org .

3. ABBREVIATIONS

3.1 FIELD TYPES

Abbreviation	Meaning
A	Alphanumeric: Alphanumeric fields are to be left justified and padded with spaces unless specifically defined as otherwise in this specification.
N	Numeric: Numeric fields are to be right justified and padded with leading zeros unless specifically defined as otherwise in this specification.
AB	8 bit binary data converted into printable hexadecimal. Note: All alpha characters must be upper case.

3.2 TABLE HEADINGS

Abbreviation	Meaning
POS	Position
Type	The type of data to be submitted in the field (see 3.1 for full details)
Len	Field Length
F/V	Fixed or Variable
M/O/C	Mandatory, Optional or Conditional

4. GLOSSARY OF TERMS

Acquirer	The entity processing the card transaction (Global Payments)
Alternate Card Number	A different card number to the one used for completion of the transaction that relates to the same actual card account.
Card Acceptor	The person accepting the card payments – for example the merchant
Card Issuer	The organisation issuing the card product
DCC	Dynamic Currency Conversion
Form Factor	A Contactless device can take on many forms, for example, physical cards, NFC mobile phones, watches. The Form Factor is a code that enables the Card Schemes to identify the type of Contactless device that was used for a particular transaction.
Funding PAN	The actual card number for applying debits/credits to, which may have been replaced by a tokenised PAN during the transaction for security.
IC	Integrated Circuit
NUA	Network User Address
ICC	Integrated Chip Card
PAN	Primary Account Number
POI	Point Of Interaction
PWCB	Purchase With Cashback
SRD	Scheme Reference Data
Tokenised PAN	A card number that has been replaced by a different number for the undertaking of the transaction for security purposes. Tokens are typically linked to merchants or payment channels and cannot be used outside of these environments.
VGIS	Visa Global Invoicing Service

5. SETTLEMENT

5.1 FILE STRUCTURE

Each file shall comprise of file header and trailer records encapsulating data records. The format of all these records shall be as defined within this document.

Only record formats defined in this document may be included in a file.

Any additional records or variations to these records contained within the UK Cards Association Standard 70, Book 3, are not supported by Global Payments and must not be included in a file.

The contents of the file shall show structural and, where appropriate, financial integrity to be deemed as a valid file.

Variable Format File

Although Global Payments supports fixed length files for backwards compatibility, new functionality will not be added to fixed length file formats and all new customers must submit variable length files.

A variable length file is described as:

- Variable length financial records to be delivered from the merchant (or their agent) to the acquirer.
- Variable length financial data records to be delivered within one single batch of transactions i.e. financial records of different lengths can be presented in one file.
- Sub-records will be used to augment the financial data for example, Scheme Reference Data.
- Only segments and sub-records defined within this document are supported by Global Payments.
- 380 byte 'K' records are supported within a variable format file, 380 byte 'J' records are only supported within the Fixed Format File.
- Net Summary and Net Claim records shall utilise the 'E' format (90 bytes in length).

5.1.1 RECORD TYPES

Non-Financial Data Records

Non-financial data records consist of a single segment of 30 or 90 bytes. As a file may not contain data records of different lengths non-financial and financial data can only be sent together when financial data records are only 90 bytes long. Where financial data records are longer than 90 bytes, non-financial data records shall be sent in a separate file.

The purpose of non-financial data records is indicated in the Transaction Code data element.

Financial Data Records

Financial Data Records are built up of between one and four segments, as follows:

- Segment 1 shall always be present.
- Segment 2 will always be present. If there is no appropriate Segment 2 for the transaction type (i.e. the transaction is not PWCB, DCC or VGIS), Segment 2 Type 50 shall be used to facilitate the transmission of sub-records.
- Segment 3 is not supported by Global Payments.
- Segment 4 may or may not be present.
- Segment 4 must always be present for all chip transactions.
- Segments are presented in the order 1 – 2 – 4 on a single record.

The combination of segments required determines the length of the record and, on a Variable Length File, the presence of sub-records. The following table shows the combinations of segments and sub-records allowed for a Variable Length File and, for each file format, the transaction code and record length (note record lengths do not include any associated sub-records).

5.1.2 TRANSACTION CODES

The following table shows the permitted values for Digit 1 of the Transaction Code and which segments should be present:

Transaction Code Digit 1	Record Length	Segments Required			Sub-Records Required
		1	2	4	
E	90	X			
L	173	X	X		X
N	346	X		X	
R	429	X	X	X	X

Note: A Transaction Code Digit 1 of E shall only be used in Summary Records and Claim Records. All Transaction Records shall use a Transaction Code Digit 1 value of either L or R depending on the card data capture method of the transaction (i.e. R for all IC read transactions and L for all swiped or key entered transactions) – see individual record layouts for full details.

The following table shows the permitted values for Digit 2 of the Transaction Code:

Transaction Code Digit 2	Description
1	Sale
2	Refund
3	Cash Advance
D	Instalment Transaction

Within a single file, transactions should be batched in the following way:

VOL1	Volume Header Record
HDR1	Header 1
HDR2	Header 2
UHL1	User Header Label
n1	Sale
n2	Refund
E4/5/6	Summary Record
E7/8	Claim Record
n3*	Cash Advance*
E6*	Summary Record*
E8*	Claim Record*
n2	Refund
n1	Sale
E4/5/6	Summary Record
E7/8	Claim Record
EOF1	End Of File 1
EOF2	End Of File 2
UTL1	User Trailer Label

***Cash Advances:** A batch containing Cash Advance transactions must not contain any Sales or Refunds.

Note: The Cash Advance transaction type is only to be used by Financial Institutions and therefore, prior written approval from Global Payments is required before submitting this transaction type.

File Submission Rules

- Although 90 byte file structures are supported for existing customers, new customers must submit files in 640 byte variable format.
- Empty files or zero value files must not be submitted (for example, files containing headers and trailers but, no transactions).
- E4 records – All fields should be set to zero except for the Record Count, which should be set to '1'.
- E8 records – All fields should be set to zero except for the Debit Item Count, which should be set to '1' and, the Record Count which should be set to '2'.
- UTL records – All fields should be set to zero except for the Debit Item Count, which should be set to '1' and the Record Count which should be set to '2'.
- Files must be written in ASCII – The United Kingdom 7-bit data code.
- Settlement files must be batched by merchant outlet.
- Each transaction must have the 8 digit Global Payments Merchant Number.
- There is no batch limit (number of batches or number of transactions) for an incoming file to Global Payments, except for merchants submitting VGIS Data.

For merchants submitting VGIS Data, the following limits apply:

- 99,999 transactions per batch.
- 9,999 batches per file.
- 999 VGIS Line Items per invoice (There is a limit of 2320 XML records per invoice).

5.1.3 FILE INTEGRITY CHECKING

There are two levels of integrity checking when you submit a file into us:

- A check for financial integrity.
- A check for logical integrity.

If either of these integrity checks fails, the entire file will be invalidated and rejected.

Financial Integrity Checking

Financial integrity is achieved by a hierarchical structure.

Transaction Records from a single source are netted by both number and value onto a single summary record using either transaction code E4, E5 or E6:

- E4 is used when sales equal or exceed refunds.
- E5 is used when refunds exceed sales.
- E6 is used for cash advances, which shall not be intermixed with other transaction types that will always appear in a different summary (E4 or E5).

Summary Records from one or more sources are then netted in both number and value into a single Claim Record using either transaction code E7 or E8:

- E7 is used when refund summaries (E5) exceed sales summaries (E4) and cash advance summaries (E6).
- E8 is used when sales summaries (E4) and cash advance summaries (E6) equal or exceed refund summaries (E5).

Claim Records are netted together both in number and value into the audit fields of User Trailer Label.

All Transaction Records must be included in a Summary Record, all Summary Records must be included in a Claim Record and all Claim Records must be included in the User Trailer Record.

If any of the levels of totalling do not reconcile, there is an integrity failure and the whole file will be invalidated.

Logical Integrity Checking

Logical Integrity is achieved by the numbering of the records within the file starting at 0000001 and incrementing in single units with each subsequent record.

The audit fields on the User Trailer Label must contain the total record count, which must be equal to the highest sequence number used.

Any break in the numbering sequence or, failure to record the correct number of records on the file shall cause an integrity failure and the whole file will be invalidated.

5.1.4 TESTING

We strongly recommended that when making any changes to the format or content of your settlement file you submit a test file to us to ensure errors have not been introduced into the file, which in turn could cause your file to reject.

Testing can be arranged by contacting your Relationship Manager or, if you do not have a Relationship Manager, by emailing Jane Sellwood at: Jane.Sellwood@globalpay.com.

5.2 HEADER LABEL FORMATS

5.2.1 VOLUME HEADER LABEL FORMAT (VOL1)

Num	Name	POS	Type	Len	Value
1	Label Identifier	0	A	3	VOL
2	Label Number	+3	A	1	1
3	Volume Serial Number	+4	A	6	Zero Fill
4	Volume Accessibility	+10	A	1	Space Fill
5	Reserved	+11	A	26	Space Fill
6.1	Merchant Number	+37	A	10	Global Payments Merchant Number, right justified with leading zeros
6.2	File Currency Indicator	+47	A	1	'0'
6.3	Reserved For future Use	+48	A	3	Space Fill
7	Reserved For Future Use	+51	A	28	Space Fill
8	Label Standards Version	+79	A	1	'3'

5.2.2 FIRST FILE HEADER LABEL FORMAT (HDR1)

Num	Name	POS	Type	Len	Value
1	Label Identifier	0	A	3	'HDR'
2	Label Number	+3	A	1	'1'
3.1	Source ID or Originator	+4	A	10	As advised by Global Payments
3.2	Record Type Identifier	+14	A	1	'Z'
3.3	Version Number Of Standard	+15	A	2	Space Fill
3.4	File Currency Indicator	+17	A	1	'0'
3.5	Reserved For Future Use	+18	A	3	Space Fill
4	File Set Identification	+21	A	6	Zero Fill
5	File Section Number	+27	A	4	'0001'
6	File Sequence Number	+31	A	4	'0001'
7	Generation Number	+35	A	4	'0001'
8	Generation Version Number	+39	A	2	'00'
9	Creation Date	+41	A	6	bYYDDD: Where b is blank, YY is the last 2 digits of the year and DDD (001 – 366) is the day in the year. This field must be equal to the processing date of the User Header Label (UHL) Record
10	Expiration Date	+47	A	6	bYYDDD: Calculated as 14 calendar days greater than the creation date. Where b is blank, YY is the last 2 digits of the year and DDD (001 – 366) is the day in the year
11	File Accessibility	+53	A	1	Space Fill
12	Block Count	+54	N	6	Zero Fill
13	System code	+60	A	13	Space Fill If Not Used
14	Reserved	+73	A	7	Space Fill

5.2.3 SECOND FILE HEADER LABEL FORMAT (HDR2)

Num	Name	POS	Type	Len	Value
1	Label Identifier	0	A	3	'HDR'
2	Label Number	+3	A	1	'2'
3	Record Format	+4	A	1	'D'
4	Block Length	+5	N	5	'00640'
5	Record Length	+10	N	5	'00640'
6	Reserved	+15	A	35	Space Fill
7	Offset Length	+50	N	2	Zero Fill
8	Reserved	+52	A	28	Space Fill

5.2.4 USER HEADER LABEL FORMAT (HDR1)

Num	Name	POS	Type	Len	Value
1	Label Identifier	0	A	3	'UHL'
2	Label Number	+3	A	1	'1'
3	Processing Date	+4	A	6	bYYDDD: Where b is blank, YY is the last 2 digits of the year and DDD (001 – 366) is the day in the year
4.1	Identifying Number Of Receiving Party	+10	A	4	Zero Fill
4.2	Destination Code	+14	A	4	'3457'
4.3	Reserved	+18	A	2	Zero Fill
5	Currency Code	+20	A	3	Spaces or ISO 4217 alpha currency code (see Appendix 1 for a full list of supported currencies)
6	File Currency Indicator	+23	N	1	Zero Fill
7	Reserved	+24	N	4	Zero Fill
8	Work Code	+28	A	9	Space Fill
9	File Generation Number	+37	N	3	Starts at 001 and incremented by 1 for every file sent up to a total of 999 when it restarts from 001
10	Reserved	+40	A	14	Space Fill
11	Reserved	+54	A	26	Space Fill

5.3 TRANSACTIONAL RECORD FORMATS

5.3.1 SEGMENT 1

Num	Name	POS	Type	Len	Value
1	Cardholder Number	0	N	19	The Cardholder PAN, right justified and padded with leading zeros
2	Transaction Code	+19	A	2	n0 = Unique Sale Transaction n1 = Sale n2 = Refund n3 = Cash Advance nD = Instalment Transaction Where <i>n</i> is the Record Type as defined on page 5 Transaction Codes
3	Source Number	+21	N	11	As provided by Global Payments. Right justified and padded with leading zeros
4	Card Expiration Date	+32	N	4	MMYY
5	Amount	+36	N	11	Unsigned amount of the transaction in the currency minor denomination
6.1	Transaction Date	+47	A	6	bYYDDD – Where b is blank, YY is the last 2 digits of the year and DDD (001 – 366) is the day in the year. This must be the same date as appears on the terminal receipt of other notification given to the cardholder
6.2	Transaction Time	+53	N	6	The 24hr transaction time in the format HHMMSS. If not used, must be zero filled
6.3.1	Authorisation Method	+59	N	1	0 = Transaction authorised locally by terminal, no authorisation code generated 1 = Real time authorisation by acquirer 2 = Voice authorised by acquirer 3 = Voice authorisation on call failure 4 = Local authorisation on call failure 6 = Local authorisation on call failure, real time authorisation was attempted 7 = Transaction authorised locally by terminal, authorisation code was generated
6.3.2	Reserved For Future Use	+60	A	1	Space Fill
6.3.3	Authorisation Code	+61	A	6	Authorisation code, right justified and padded with leading spaces. Space fill if not used
6.4	Originators Transaction Reference	+67	A	12	Reference number allocated by the card acceptor to enable details of the transaction to be recovered in the event of a dispute
6.5	Reserved For Future Use	+79	A	1	Space Fill
6.6	Terminal Type/Currency Indicator	+80	A	1	0 = Unspecified Terminal Capabilities 1 = ICC Reader Only

Num	Name	POS	Type	Len	Value
					2 = Magnetic Stripe Reader Only 3 = ICC and Magnetic Stripe 4 = No Card Reader If the Currency Code is indicated elsewhere on the file (for example, the E4 or E5 Summary Records) these values will refer to the declared currency, otherwise these values refer to sterling
6.7	Reserved For Future Use	+81	A	1	Space Fill
6.8	Customer Instruction Value	+82	A	1	0 = Signed voucher 1 = Mail/Telephone Order 2 = Continuous Authority 3 = PIN verified online 4 = Signed voucher – ICC read 5 = Signed voucher – Mag stripe read 6 = Signed voucher – Keyed at POS 7 = Unattended device without PIN verification 8 = PIN verified (card) transaction recovered after sale 9 = Signed voucher recovered after sale A = Unattended device with PIN verified locally D = Downgraded ICC (track 2 only) transaction F = ICC fallback to mag stripe read G = Ecommerce – Secure transaction with cardholder certificate H = Ecommerce – Non authenticated transaction with card acceptor certificate J = Ecommerce – Non authenticated transaction without card acceptor certificate using channel encryption (for example, TLS) L = Ecommerce – Non authenticated transaction with card acceptor certificate using channel encryption (for example, TLS) M = ICC Contactless – Proximity transaction with full EMV data N = MSR Contactless – Proximity transaction with only track 2 mag stripe (or equivalent data) available
7	Sequence Number	+83	N	7	Sequence Number of this record within the file

5.3.2 SEGMENT 2 FORMATS

5.3.2.1 SEGMENT 2 – TYPE 20: PURCHASE WITH CASHBACK

Num	Name	POS	Type	Len	Value
8	Method Of Authorisation	+90	N	1	0 = By Terminal 1 = Online To Acquirer 2 = Voice To Acquirer 5 = Method Of Authorisation Not Known
9	Type Of Transaction	+91	N	1	1 = Purchase With Cashback
10	Cash Amount	+92	N	6	Cashback amount in the minor denomination of the transaction currency.
11	Filler	+98	A	69	Space Fill
12	Sub-Record Count	+167	N	4	Total number of sub-records within the transaction (minimum = 0001)
13	Format Type	+171	N	2	'20'

5.3.2.2 SEGMENT 2 – TYPE 50: REFERENCE NUMBER OR XML LAYOUT

Num	Name	POS	Type	Len	Value
8	Establishment Name	+90	A	26	The name of the establishment (see Note 2)
9	Establishment Address	+116	A	26	The address of the establishment (see Note 2)
10	Reference Number	+142	A	25	A unique reference number assigned by the merchant to this transaction. This number must be unique throughout the file. The reference number used in Segment 2 must match the Card Acceptor Reference Number in the associated Format 25 Sub-Record, but must be unique for each complete transaction set (i.e. segment 2 and sub-record format 25) (see Note 2)
11	Sub-Record Count	+167	N	4	Total number of sub-records within the transaction (minimum = 0001)
12	Format Type	+171	N	2	'50'

Note 1: Segment 2 Type 50 must be used for transactions that do not naturally have a segment 2 (i.e. transactions other than PWCB, Reference Number/XML/VGIS and DCC) as a segment 2 must be present to allow the addition of sub-records.

Note 2: Where Segment 2 Type 50 is used purely to allow for the inclusion of sub-records (i.e. transactions other than PWCB, Reference Number/XML/VGIS and DCC), fields 8, 9 and 10 should be space filled.

5.3.2.3 SEGMENT 2 – Type 80: Dynamic Currency Conversion (DCC)

Num	Name	POS	Type	Len	Value
8	Sub-Record Flag	+90	A	1	'D'
9	Reserved For Future Use	+91	A	51	Space fill
10	Card Acceptor Reference Number	+142	A	25	A unique reference number assigned by the processor to this transaction. This number must be unique throughout the file
12	Sub-Record Count	+167	N	4	Total number of sub-records within the transaction (minimum = 0001)
13	Format Type	+171	N	2	'80'

5.3.3 SEGMENT 4 – ICC DATA RECORD

Note: The column POS 1 gives the positions for data in Segment 4 when Segment 2 is not present. POS 2 column gives the positions for the data in Segment 4 when Segment 2 is present.

Num	Name	POS 1	POS 2	Type	Len	Value	EMV Tag
1	Application PAN Sequence Number	0	+173	A	2	Populate with the value of Tag 5F32 from the card. If Tag 9F34 is not present, zero fill	5F34
2	Authorisation Response Code (ARC)	+2	+175	A	2	The response code sent back by the acquirer in the authorisation response or the code generated locally by the terminal for transactions completed locally, when real time authorisation could not be achieved. For locally generated ARCs the following values shall be used: Y1 = Offline Approved Z1 = Offline Declined Y2 = Approval after card initiated referral Z2 = Decline after card initiated referral Y3 = Unable to go online, offline approved Z3 = Unable to go online, offline declined	8A
3	Cryptogram Transaction Amount	+4	+177	N	11	The authorised amount of the transaction excluding adjustments	9F02
4	Cryptogram Transaction Type	+15	+188	N	2	Cryptogram transaction type	9C
5	Terminal Transaction Date	+17	+190	N	6	The date supplied to the card during the creation of the cryptogram in YYMMDD format	9A

Num	Name	POS 1	POS 2	Type	Len	Value	EMV Tag
6	Transaction Currency	+23	+196	N	3	The ISO 4217 numeric currency code of the transaction (see Appendix 1 for a full list of currencies supported)	5F2A
7	Terminal Country Code	+26	+199	N	3	826 (the ISO 3166 numeric country code for the United Kingdom)	9F1A
8	Transaction Cryptogram	+29	+202	AB	16	The transaction cryptogram being submitted to settle the transaction. This may be a TC, an ARQC or an AAC	9F26
9	Application Interchange Profile	+45	+218	AB	4	The Application Interchange Profile taken from Tag 82 of the card	82
10	Application Transaction Counter	+49	+222	AB	4	The Application Transaction Counter taken from Tag 9F36 of the card	9F36
11	Unpredictable Number	+53	+226	AB	8	The Unpredictable Number generated by the terminal to ensure the generation of a unique application cryptogram	9F37
12	Terminal Verification Results	+61	+234	AB	10	The Terminal Verification Results generated by the terminal for the transaction	95
13	Issuer Application Data	+71	+244	AB	64	Undefined data sent by the card issuer to enable authentication of the card. The data returned by the issuer may be shorter than the total 32 bytes that is allowed, in which case, it should be right justified and padded with leading FF (Hex)	9F10
14	Application Usage control	+135	+308	AB	4	The Application Usage Control taken from Tag 9F07 on the card.	9F07
15	Cryptogram Information Data	+139	+312	AB	2	00 = AAC 40 = TC 80 = ARQC	9F27
16	Cardholder Verification Method Results	+141	+314	AB	6	The results of cardholder verification as sent from the terminal in Tag 9F34	9F34
17	Application Identifier	+147	+320	AB	32	The Application Identifier from card, the application provider and the business function or the DF name if it is longer. Right justified and padded with leading FF (Hex)	4F
18	Application Version Number	+179	+352	AB	4	The version of the card application from Tag 9F08	9F08
19	Transaction Status Information	+183	+356	AB	4	The transaction status information generated by the terminal in Tag 9B	9B
20	Terminal Type	+187	+360	AB	2	22 = Attended Terminal 25 = Unattended Terminal	9F35

Num	Name	POS 1	POS 2	Type	Len	Value	EMV Tag
21	Terminal Capabilities	+189	+362	AB	6	The Terminal Capabilities defined in the terminal using EMV tag 9F33	9F33
22	POS Entry Mode	+195	+368	A	2	A two digit code identifying how a transaction was completed and, what cardholder verification was used; Digit 1: Card Transaction Information; 1 = Swiped 2 = Keyed 3 = ICC 4 = Recovered data, keyed 5 = Recovered data, electronic 6 = Reserved for future use 7 = Downgraded ICC transaction 8 = Swipe, ICC fallback 9 = Proximity Digit 2: Cardholder Verification, if any; 1 = Customer present, signature 2 = Customer present, PIN 3 = Reserved for future use 4 = Customer present, UPT, no CVM 5 = Customer Present, UPT, PIN 6 = reserved for future use 7 = Customer not present 8 = No cardholder verification 9 = Reserved for future use	
23	Filler	+197	+370	A	59	Space Filled	

5.4 SUB-RECORD FORMATS

Sub-records provide a means of sending additional data for a transaction, some of which may be required for settlement (for example, Scheme Reference Data), whilst some is required for other purposes such as MI production (for example, DCC).

- In order to submit sub-records, the file must contain a segment 2 record regardless of whether, or not, there is an appropriate sub-record for the transaction type (for example, PWCB and DCC).
- Where there is no matching segment 2 for a transaction type (i.e. for a straight forward sale transaction) Segment 2 Type 50 (Reference Number or XML Layout) should be used.
- When using Segment 2 Type 50 for a non XML/Reference transaction, all fields should be space filled except the sub-record counter and, the Format Type.
- Sub-Record Type 01 is mandatory for mPoS devices and optional for all other devices unless, data in the POI Capabilities or Payment Attributes fields are being used.
- Sub-Record Type 26 is mandatory for all online transactions as this carries the Scheme Reference Data that is used to link the settlement record to the corresponding authorisation record.
- Sub-records must be sent in ascending transaction code order and failure to do so will result in the file being rejected.

- The Transaction Code in Segment 1 must reflect the requirement for Segment 2 and Sub-records to be included. For example:
 - An offline IC transaction would have a Transaction Code of 'N' and would contain only Segment 1 and Segment 4.
 - An online IC transaction would have a Transaction Code of 'R' and would contain Segment 1, Segment 2, Segment 4 and at least 1 sub-record (Sub-Record Type 26, Scheme Reference Data is mandatory for an online transaction).

5.4.1 SUB-RECORD FORMAT TYPE 01: GENERAL SUB RECORD

Num	Name	POS	Type	Len	Value
1	Sub-Record Counter	0	N	4	The sequence of the sub-record in relation to all sub-records submitted for this transaction starting at '0001' and up to the value sent in the 'Sub-Record Count' field sent in Segment 2
2	Reserved For Future Use	+4	A	15	Space Filled
3	Transaction Code	+19	N	2	'01'
4	Reserved For Future Use	+21	A	4	Space Filled
5	POI Capabilities	+25	A	24	See Table 11
6	Payment Attributes	+49	A	24	See Table 12
7	Reserved for future use	+73	A	10	Space Filled
8	Record Sequence Number	+83	N	7	The sequence number of this record within the file.
90 Byte Record.					

5.4.2 SUB-RECORD FORMAT TYPE 02: TOKENISATION SUB-RECORD

Num	Name	POS	Type	Len	Value
1	Sub-Record Counter	0	N	4	The sequence of the sub-record in relation to all sub-records submitted for this transaction starting at '0001' and up to the value sent in the 'Sub-Record Count' field sent in Segment 2
2	Reserved For Future Use	+4	A	15	Space Filled
3	Transaction Code	+19	N	2	'02'
4	Token Assurance Level	+21	N	2	
5	Token Requester ID	+23	N	11	
6	Reserved For Future Use	+34	A	49	Space Filled
7	Record Sequence Number	+83	N	7	The sequence number of this record within the file.
90 Byte Record					

5.4.3 SUB-RECORD FORMAT TYPE 25: REFERENCE NUMBER/XML/VGIS

Num	Name	POS	Type	Len	Value
1	Sub-Record Counter	0	N	4	The sequence of the sub-record in relation to all sub-records submitted for this transaction starting at '0001' and up to the value sent in the 'Sub-Record Count' sent in Segment 2
2	Reserved For Future Use	+4	A	15	Space Filled
3	Transaction Code	+19	N	2	'25'
4	Sub-Record Length	+21	N	3	Minimum 90 bytes, maximum 636 bytes
5	Card Acceptor Reference Number	+24	A	25	Unique Reference Number assigned by the merchant for this transaction. Note: This reference number must match the one sent in field 10 of the associated Segment 2 record.
6	Reserved for future use	+49	A	34	Space Filled
7	Record Sequence Number	+83	N	7	The sequence number of this record within the file.
8	XML Data	+90	A	0 – 546	Variable length XML data
This is a flexible length Sub-record with a valid length of 90 to 636 bytes depending on the amount of XML data sent.					

5.4.4 SUB-RECORD FORMAT TYPE 26: AUTHORISATION NETWORK REFERENCE DATA

Num	Name	POS	Type	Len	Value
1	Sub-Record Counter	0	N	4	The sequence of the sub-record in relation to all sub-records submitted for this transaction starting at '0001' and up to the value sent in the 'Sub-Record Count' sent in Segment 2
2	Reserved For Future Use	+4	A	12	Space Filled
3	Authorisation Reference Type	+16	N	3	'002' = Scheme Reference Data
4	Transaction Code	+19	N	2	'26'
5	Authorisation Network Reference Date	+21	N	6	The date of the transaction authorisation in YYMMDD format
6	Authorisation Network Data	+27	A	56	Unique reference number returned by the authorisation network in the authorisation response message. Data must be left justified and padded with trailing spaces. Mastercard/American Express Trace ID Format 15 Characters, data should be sent as; +27 Trace ID Visa Transaction ID 15 Character Transaction ID plus a 4 character validation code, data should be sent as; +27 Transaction ID +42 Validation Code
7	Record Sequence Number	+83	N	7	The sequence number of this record within the file.
90 Byte Record					

Note: Submission of Scheme Reference Data is mandatory for all transactions that were authorised online. Global Payments will not accept responsibility for any Card Scheme fees or charges resulting from Scheme Reference Data not being submitted with the settlement data for any transactions that received Scheme Reference Data back as part of the authorisation process.

5.4.5 SUB-RECORD FORMAT TYPE 27: DYNAMIC CURRENCY CONVERSION (DCC) DATA

Num	Name	POS	Type	Len	Value
1	Sub-Record Counter	0	N	4	The sequence of the sub-record in relation to all sub-records submitted for this transaction starting at '0001' and up to the value sent in the 'Sub-Record Count' field sent in Segment 2
2	Reserved For Future Use	+4	A	15	Space Filled
3	Transaction Code	+19	N	2	'27'
4	DCC Card Acceptor Currency Amount	+21	N	11	Transaction value prior to conversion in the lowest denomination of the Card Acceptor currency
5	DCC Card Acceptor Currency Code	+32	N	3	The ISO 4217 numeric currency code of the transaction prior to conversion – normally set to 826 for United Kingdom
6	DCC Commission Fee	+35	N	11	Commission Fee on the DCC transaction in the lowest denomination of the currency after conversion
7	DCC Conversion Rate Applied	+46	N	11	Conversion Rate used in the DCC transaction, as printed on the DCC receipt minus the decimal point (see Note 1)
8	DCC Mark Up Fee	+57	N	11	The mark up percentage applied to the DCC transaction to 2 decimal places
9	Reserved	+68	A	15	Space Filled
10	Record Sequence Number	+83	N	7	Sequence number of this record within the file
90 Byte Record					

Note 1: The format of the DCC conversion rate applied shall be as follow: xnnnnnnnnnn, where x is the number of decimal places to be used. For example, 60001234567 indicates an exchange rate of 1.234567.

5.4.6 SUB-RECORD FORMAT TYPE 30: MASTERPASS ONLINE

Num	Name	POS	Type	Len	Value
1	Sub-Record Counter	0	N	4	The sequence of the sub-record in relation to all sub-records submitted for this transaction starting at '0001' and up to the value sent in the 'Sub-Record Count' field sent in Segment 2
2	Reserved For Future Use	+4	A	15	Space Filled
3	Transaction Code	+19	N	2	'30'
4	Wallet Transaction Origin	+21	N	3	
5	Reserved	+24	A	59	Space Filled
6	Record Sequence Number	+83	N	7	Sequence number of this record within the file
90 Byte Record					

5.4.7 SUB-RECORD FORMAT TYPE 31: MULTIPLE SHIPMENTS

Num	Name	POS	Type	Len	Value
1	Sub-Record Counter	0	N	4	The sequence of the sub-record in relation to all sub-records submitted for this transaction starting at '0001' and up to the value sent in the 'Sub-Record Count' field sent in Segment 2
2	Reserved For Future Use	+4	A	15	Space Filled
3	Transaction Code	+19	N	2	'31'
4	Settlement Instance Number	+21	N	2	
5	Total Settlement Count	+23	N	2	
6	Reserved	+25	A	58	Space Filled
7	Record Sequence Number	+83	N	7	Sequence number of this record within the file
90 Byte Record					

5.4.8 SUB-RECORD FORMAT TYPE 39: CONTACTLESS SUB-RECORD

Num	Name	POS	Type	Len	Value
1	Sub-Record Counter	0	N	4	The sequence of the sub-record in relation to all sub-records submitted for this transaction starting at '0001' and up to the value sent in the 'Sub-Record Count' sent in Segment 2
2	Reserved For Future Use	+4	A	15	Space Filled
3	Transaction Code	+19	N	2	'39'
4	Reserved For Future Use	+21	A	62	Space Filled
5	Record Sequence Number	+83	N	7	Sequence number of this record within the file
6	Contactless Form Factor	+90	AB	70	
7	Contactless Discretionary Data	+160	AB	70	
8	Reserved For Future Use	+230	A	70	Space Filled
300 Byte Record					

Contactless Form Factor

The contents of this data element will vary by Card Scheme; for Mastercard and Visa it is Tag 9F6E, for American Express it is Tag 9F67. The definition of these data elements can be found in the appropriate Card Scheme's Contactless specifications.

The card acceptor will provide the whole data element in BER-TLV format as described in EMV as the Tag will vary from Card Scheme to Card Scheme. When the data is converted to hexadecimal, the value of the length component shall still represent the length of the binary data.

For example TTTTLLdddddd would be interpreted as:

- TTTT is the EMV Tag
- LL is the length of the data
- ddddddd is the Contactless Form Factor – with the length as defined by LL

Data should be left justified and space filled.

Contactless Discretionary Data

The contents of this data will vary by Card Scheme and will be as agreed by interchange parties. For Visa the discretionary data will be the content of Tag 9F7C. The definitions for these data elements can be found in the appropriate Card Scheme's Contactless specifications.

The card acceptor will provide the whole data element in BER-TLV format as described in EMV as the Tag will vary from Card Scheme to Card Scheme. When the data is converted to hexadecimal, the value of the length component shall still represent the length of the binary data.

5.5 NET SUMMARY RECORD

Num	Name	POS	Type	Len	Value
1	Reserved For Future Use	0	N	19	Zero Filled
2	Transaction Code	+19	A	2	E4, E5 or E6 as required
3	Source Number	+21	N	11	As advised by Global Payments, right justified and padded with leading zeros
4.1	Net Summary Currency Code	+32	A	3	<p>The ISO 4217 Numeric Currency Code if applicable (please see Appendix 1 for list of available currencies).</p> <p>If a valid ISO 42717 Numeric Currency Code is provided in this field, all transactions in the batch will be processed in the currency defined on the summary record.</p> <p>Zero fill if currency is as defined within transactions.</p> <p>Note: Currency processing is not available to all customers, please contact Global Payments before submitting currency transactions</p>
4.2	Reserved For Future Use	+35	A	1	Space Filled
5	Net Amount	+36	N	11	Net amount of fields 6.1 and 6.2 in the lowest denomination (unsigned) of the currency being used (or, the currency specified in field 4.1)
6	Totals				
6.1	Value Of Debit Items	+47	N	11	Value of all preceding debit items since the last net summary record or net claim record
6.2	Value of Credit Items	+58	N	11	Value of all preceding credit items since the last net summary record or net claim record
6.3	Count Of Debit Items	+69	N	7	Count of all preceding debit items since last net summary record or net claim record
6.4	Count Of Credit Items	+76	N	7	Count of all preceding credit items since last net summary record or net claim record
7	Record Sequence Number	+83	N	7	Sequence number of this record within the file

5.6 NET CLAIM RECORD

Num	Name	POS	Type	Len	Value
1	Reserved For Future Use	0	A	19	Zero Filled
2	Transaction Code	+19	A	2	E7 – Payment by merchant (refunds exceeds sales – total of E5 records greater than total of E4 records plus E6 records) E8 – Claim by merchant (sales exceeds refunds- total of E4 records plus E6 records is greater than or equal to the number of E5 records)
3	Reserved For Future Use	+21	N	11	Zero Fill
4.1	Net Claim Currency Code	+32	A	3	Zero Fill for GBP The ISO 4217 numeric Currency Code if applicable (please see Appendix 1 for list of available currencies). If a valid ISO Currency Code is provided in this field, all transactions in the batch will be processed in the currency defined on the summary/claim record. Note: Currency processing is not available to all customers, please contact Global Payments before submitting currency transactions
4.2	Reserved For Future Use	+35	A	1	Space Filled
5	Net Claim Amount	+36	N	11	Net value of the claim in the lowest denomination (unsigned) of the currency being used or, of the currency specified in 4.1
6	Totals				
6.1	Value Of Debit Items	+47	N	11	Value of all debit summary items (E4 records and/or E6 records) since the last Net Claim Record in the lowest denomination (unsigned) of the currency being used or, of the currency specified in 4.1
6.2	Value Of Credit Items	+58	N	11	Value of all credit summary items (E5 records) since the last Net Claim Record in the lowest denomination (unsigned) of the currency being used or, of the currency specified in 4.1
6.3	Count Of Debit Items	+69	N	7	Count of all debit summary items (E4 records) since last net claim record
6.4	Count Of Credit Items	+79	N	7	Count of all credit items (E5 records) since last net claim record

Num	Name	POS	Type	Len	Value
7	Record Sequence Number	+83	N	7	Sequence number of this record within the file.

5.7 FILE TRAILER LABELS

5.7.1 FIRST FILE TRAILER LABEL: EOF 1

Num	Name	POS	Type	Len	Value
1	Label Identifier	0	A	3	'EOF'
2	Label Number	+3	A	1	'1'
3.1	Source Identifier Or Originator	+4	A	10	Global Payments Merchant Number, right justified and padded with leading zeros. Note: The value of this field must match the value of the Merchant Number field in the VOL1 record
3.2	Record Type Identifier	+14	A	1	'Z'
3.3	Reserved For Future Use	+15	A	2	Space Filled
3.4	File Currency Indicator	+17	A	1	'0'
3.5	Reserved For Future Use	+18	A	3	Space Filled
4	File Set Identification	+21	A	6	Zero Filled
5	File Section Number	+27	A	4	'0001'
6	File Sequence Number	+31	A	4	'0001'
7	Generation Number	+35	A	4	'0001'
8	Generation Version Number	+39	A	2	'00'
9	Creation Date	+41	N	6	Date that the file was produced in the format bYYDDD where b is blank, YY is the last 2 digits of the year and DDD (001 – 366) is the number of the day within the year. Note: This field must be equal to the Processing Date in the UHL Label record.
U10	Expiration Date	+47	N	6	Earliest date at which the file may be overwritten in the format bYYDDD calculated as 14 days from the Creation Date
11	Accessibility	+53	A	1	Space Fill
12	Block Count	+54	N	6	Zero Filled

Num	Name	POS	Type	Len	Value
13	System Code	+60	A	13	Space Filled
14	Reserved For Future Use	+73	N	7	Space Filled

5.7.2 SECOND FILE TRAILER LABEL: EOF 2

Num	Name	POS	Type	Len	Value
1	Label Identifier	0	A	3	'EOF'
2	Label Number	+3	A	1	'2'
3	Record Format	+4	A	1	'D'
4	Block Length	+5	N	5	'02048'
5	Record Length	+10	N	5	'00640'
6	Reserved For Future Use	+15	A	35	Space Filled
7	Offset Length	50	N	2	Zero Filled
8	Reserved For Future Use	+52	A	28	Space Filled

5.7.3 USER TRAILER LABEL: UTL1

Num	Name	POS	Type	Len	Value
1	Label Identifier	0	A	3	'UTL'
2	Label Number	+3	A	1	'1'
3.1	Value Of Debit Items	+4	N	13	Monetary total of all debit Net Claim Records (E8 records) since the preceding HDR Label Group. This is a hash total
3.2	Value of Credit Items	+17	N	13	Monetary total of all credit Net Claim Records (E7 records) since the preceding HDR Label Group. This is a hash total
3.3	Count Of Debits	+30	N	7	Count of all debit Net Claim Records (E8 records) since the preceding HDR Label Group
3.4	Count Of Credits	+37	N	7	Count of all credit Net Claim Records (E7 records) since the preceding HDR Label Group Count of all debit (net claim
3.5	Record Count	+44	N	10	Total number of records since preceding HDR Label Group
3.6	Filler	+54	A	26	Space Filled

6. AUTHORISATION

6.1 AUTHORISATION MESSAGES

The information in this section is valid for all transactions sent to the Global Payments authorisation host individually.

6.1.1 AUTHORISATION REQUEST MESSAGE

An authorisation request message is a standard message sent to Global Payments by a merchant when a transaction amount is above the merchant's floor limit or, the transaction has been forced online either by a velocity check being exceeded in the merchant's POI (Point of Interaction) terminal or, on a cardholder's IC (Integrated Chip) card.

Authorisation request messages must have a transaction value of greater than zero except for when using the Account Verification message type, in which case the transaction amount must always be set to zero.

6.1.2 REVERSALS

In order to reverse a transaction, the reversal message **must** be sent on the same day as the original transaction authorisation message. This is to prevent transactions, where the authorisation has been reversed, being inadvertently settled.

When an authorisation has been reversed, it is essential to ensure that any settlement transactions relating to the original authorisation are not included in any settlement files.

Whilst the reversal messages do not need to follow immediately after the original sales transaction, the Scheme Reference Data and the Acquirer Reference Data from the original authorisation response **must** be provided in the Reversal Request Message.

Failure to include the Scheme and Acquirer Reference Data may result in the reversal request being rejected by the Global Payments Authorisation System.

Where there is a need to reverse a transaction after the original transaction has been included in a settlement file, a refund should be performed.

Global Payments will not accept responsibility for any Card Scheme fees or charges resulting from authorisation messages being reversed after they have been settled or, where the necessary Scheme or Acquirer Reference Data was not provided on the Reversal Request Message.

6.1.3 PARTIAL REVERSALS

For a reversal, the transaction amount in the reversal should contain the amount to be reversed. For a partial reversal, this must be less than the amount originally authorised.

The Global Payments authorisation host does not require the originally authorised amount to be sent in the Auxiliary Data Record Type 09 Partial/Alternative Amount Approval when submitting a Partial Reversal Request.

6.2 CONDITION CODES USED IN AUTHORISATION MESSAGES (M/O/C)

Code	Meaning
M	Mandatory
O	Optional
C₁	Mandatory if subsequent fields are present. If subsequent fields are present, the delimiter (FS,GS,US etc.) for an omitted field must be present
C₂	Mandatory for Purchase With Cash Back Transactions (including reversals) prohibited for other transaction types
C₃	Mandatory for ICC transaction, optional for non ICC transactions
C₄	Mandatory if subsequent sub fields within the field are present
C₅	Mandatory for ICC transaction, prohibited for non ICC transactions
C₆	Mandatory if returned by issuer
C₇	Mandatory for tokenization request messages otherwise optional

6.3 MESSAGE FORMATS

6.3.1 AUTHORISATION REQUEST

Num	Name	F/V	Type	Len	M/O/C	Value
1	Dial Indicator	F	N	1	M	This number is incremented for each dial attempt 1 = 1 st dial 2 = 2 nd dial 3 = 3 rd dial (using 2 nd NUA if available) 4 = not a dial connection (for example, IP)
2	Terminal Identity	F	N	8	M	Terminal ID of the terminal making the authorisation request
3	Message Number	F	N	4	M	This number is allocated by the terminal. Message numbers should not be reset at the start of end of the day for a given Terminal ID
4	Terminal Type / Capabilities	F	AB	4	M	Code indicating the terminal's capabilities. See Table 1 – Terminal Type/Capabilities
5	Message Type	F	A	2	M	Code indicating the transaction type and category. See Table 2 – Message Types
6	Merchant Number	V	N	15	M	Global Payments Merchant Number
7	Filed Separator	F	FS	1	M	1C (HEX)
8	Card Details	V	A	40	M	The content and format of this field vary with the mode of transaction entry. See Table 3 – Card Details
9	Field Separator	F	FS	1	M	1C (HEX)
10	Transaction Amount	V	N	11	M	The amount of the transaction in the currency minor denomination. Minimum acceptable value is 01.

Num	Name	F/V	Type	Len	M/O/C	Value
11	Field Separator	F	FS	1	M	1C (HEX)
12	Descriptive Data	V	A	16	O	Additional data specific to the transaction. For example, CSC and/address data. See Table 4 – Descriptive Data
13	Field Separator	F	FS	1	C ₁	1C (HEX)
14	Field Separator	F	FS	1	C ₁	1C (HEX)
15	Authorisation Status	F	A	1	C	Only required for Mastercard transactions A = Actual Amount Authorisation E = Estimated Amount Authorisation
16	Field Separator	F	FS	1	C ₁	1C (HEX)
17	Cash Back Amount	V	N	11	C ₂	Cash amount in minor denomination of currency. Minimum value 100
18	Field Separator	F	FS	1	C ₁	1C (HEX)
19	Transaction Date And Time	F	N	10	C ₃	The date and time that the transaction was generated in the format YYMMDDhhmm.
20	Field Separator	F	FS	1	C ₁	1C (HEX)
21	EMV Terminal Type	F	N	2	C ₃	Mandatory for chip transactions (including fallback to mag stripe), optional for non-chip transactions. 22 = Attended Terminal 25 = Unattended Terminal
22	Field Separator	F	FS	1	C ₁	1C (HEX)
23	Terminal Country Code	F	N	3	M	'826' (The ISO 3166 Numeric Country Code for the United Kingdom)
24	Field Separator	F	FS	1	C ₁	1C (HEX)
25	Transaction Currency Code	F	N	3	M	The ISO 4217 Numeric Currency Code for the transaction
26	Field Separator	F	FS	1	C ₁	1C (HEX)
27	Reason Online Code	F	N	2	C ₃	Code indicating why transaction was processed online or, why transaction was processed off-line. See Table 5 – Reason Online Codes
28	Field Separator	F	FS	1	C ₁	1C (HEX)
29	ICC Request Data					Mandatory for chip transactions, prohibited for non-chip transactions
29.1	Authorisation Request Cryptogram (ARQC)	F	AB	16	C ₃	The cryptogram generated by the card requesting online authorisation

Num	Name	F/V	Type	Len	M/O/C	Value
29.2	Application Interchange Profile (AIP)	F	AB	4	C ₃	Code specifying the functions that are supported by the application on the card
29.3	Application Transaction Counter (ATC)	F	AB	4	C ₃	Count of transaction performed taken from the application on the card
29.4	Terminal Random Number (TRN)	F	AB	8	C ₃	Random number generated by the terminal and used during cryptogram calculation
29.5	Terminal Verification Results (TVR)	F	AB	10	C ₃	Coded values recording the results of the EMV terminal Action Analysis process
29.6	Cryptogram Transaction Type	F	N	2	C ₃	00 = Sale 20 = Refund 09 = Purchase With Cashback 01 = Cash Advance
29.7	Issuer Application Data (IAD)	V	AB	64	C ₃	Additional, undefined data sent by the card in Tag 9F10 to enable the issuer to authenticate the card
29.8	Unit Separator	F	US	1	C ₃	1F (HEX)
29.9	Application Identification Data (AID)	V	AB	32	C ₃	The Application ID of the application on the card used to complete the transaction
29.10	Unit Separator	F	US	1	C ₄	1F (HEX)
29.11	Application Version Number (AVN)	F	AB	4	C ₃	The version of the application on the card used to complete the transaction
29.12	Unit Separator	F	US	1	C ₄	1F (HEX)
29.13	Cryptogram Information Data (CID)	F	AB	2	C ₃	80 = ARQC 00 = AAC 40 = TC
29.14	Unit Separator	F	US	1	C ₄	1F (HEX)
29.15	Card Verification Method Results (CVMR)	F	AB	6	C ₃	Results of the cardholder verification from the terminal
30	Field Separator	F	FS	1	C ₁	1C (HEX)
31	Auxiliary Data Records	V	480	A	C ₅	Auxiliary data records to provide additional data required in the authorisation request message.
32	Field Separator	F	AB	1	C ₁	1C (HEX)

6.3.2 AUTHORISATION RESPONSE

Num	Name	F/V	Type	Len	M/O/C	Value
1	Dial Indicator	F	N	1	M	Taken from Authorisation Request

Num	Name	F/V	Type	Len	M/O/C	Value
2	Terminal Identity	F	N	8	M	Taken from Authorisation Request
3	Message Number	F	N	4	M	Taken from Authorisation Request
4	Message Type	F	N	2	M	'12'
5	Acquirer Response Code	F	N	2	M	A code sent back by the acquirer to indicate the specific action to be taken by the terminal. See Table 6 – Authorisation Response Codes And Message Text
6	Confirmation Request	F	N	1	M	'0'
7	Field Separator	F	FS	1	M	1C (HEX)
8	Field Separator	F	FS	1	M	1C (HEX)
9	Message Text	V	A	80	M	The message to be displayed and printed by the terminal. See Table 6 – Authorisation Response Codes And Message Text
10	Field Separator	F	FS	1	M	1C (HEX)
11	Voice Referral Number	V	N, US	16	O	Telephone number to call in the event of a voice referral. See Table 7 – Voice Referral Number
12	Field Separator	F	FS	1	O	1C (HEX)
13	Floor Limit	V	N	11	O	Revised floor limit to be applied by terminal
14	Field Separator	F	FS	1	O	1C (HEX)
15	Date	F	N	4	O	YYMM
16	Field Separator	F	FS	1	O	1C (HEX)
17	ICC Response Data	V	A	289	O	ICC response data returned from host
18	Field Separator	F	FS	1	O	1C (HEX). Mandatory where field 19 is present
19	Response Additional Data	F	AB	6	O	Returned when the terminal has indicated that it is capable of processing response additional data and, when CV2 and AVS data was supplied in the Authorisation Request message. See Table 8 – Response Additional Data Codes
20	Field Separator	F	FS	1	O	1C (HEX) Mandatory if CVC and AVS data were provided in the Authorisation Request message.
21	Auxiliary Data	V	A	480	O	Auxiliary data as required. See 6.4: Auxiliary Data Records
22	Field Separator	F	FS	1	O	

6.4 AUXILIARY DATA RECORDS

6.4.1 AUXILIARY DATA RECORDS: EXAMPLE CONSTRUCTION

Format 1: To Be Used In Authorisation Request Messages

Num	Name	F/V	Type	Len	M/O/C	Value
31.1	Field Separator	F	FS	1	M	1C (HEX)
31.2	Auxiliary data message terminal capabilities	F	N	1	M	'1'
31.3	Auxiliary data message size limit	F	N	4	M	480
31.n.n	Auxiliary data record 1st	V			O	Variable length based on Auxiliary Data message size limit
31.n.n	Auxiliary data record 2nd (if applicable)	V			O	Variable length based on Auxiliary Data message size limit
31.n.n	Auxiliary data record 3rd (if applicable)	V			O	Variable length based on Auxiliary Data message size limit
31.n.n	Auxiliary data record 4th (if applicable)	V			O	Variable length based on Auxiliary Data message size limit
31.n.n	Field Separator	F	FS	1	M	1C (HEX)

Format 2: To Be Used In Authorisation Response Messages

Num	Name	F/V	Type	Len	M/O/C	Value
21.1	Field Separator	F	FS	1	M	1C (HEX)
21.2	Residual Auxiliary Message Count	F	N	2	M	'00'
21.n.n	1st Auxiliary Data Record	V			O	Variable length based on Auxiliary Data message size limit
21.n.n	2nd Auxiliary Data Record	V			O	Variable length based on Auxiliary Data message size limit
21.n.n	3rd Auxiliary Data Record	V			O	Variable length based on Auxiliary Data message size limit
21.n.n	4th Auxiliary Data Record	V			O	Variable length based on Auxiliary Data message size limit
21.n.n	nth Auxiliary Data Record	V			O	Variable length based on Auxiliary Data message size limit
21.n.n	Field Separator	F	FS	1	M	

6.5 AUXILIARY DATA RECORD FORMATS

6.5.1 AUXILIARY DATA RECORD TYPE 01: ECOMMERCE

Sub-Type 01: Standard Ecommerce

For valid combinations of Cardholder Authentication Value (Field 31.3.7), Electronic Commerce Indicator (Field 31.3.17), Additional Transaction Security Data (Field 31.3.5) and Customer Instruction (see Field 6.8 on page 11), please see Table 14.

Failure to use the correct combinations of values in these fields may result in transactions being rejected.

Num	Name	F/V	Type	Len	M/O/C	Value
31.3	Auxiliary Data Record					
31.3.1	Record Separator	F	RS	1	M	1E (HEX)
31.3.2	Auxiliary Data Record Type	F	A	2	M	'01'
31.3.3	Auxiliary Data Record Sub-Type	F	N	2	M	'01'
31.3.4	Group Separator	F	GS	1	M	1D (HEX)
31.3.5	Additional Transaction Security Data	F	AB	6	M	See Table 9: Additional Transaction Security Data (ATSD)
31.3.6	Group Separator	F	GS	1	C ₁	1D (HEX)
31.3.7	Cardholder Authentication Value	V	AB	32	O	Up to 32 characters supplied by the merchant. Mastercard: UCAF is 32 characters long, Visa: CAVV is 28 characters long
31.3.8	Group Separator	F	GS	1	C ₁	1D (HEX)
31.3.9	Cardholder Certificate Serial Number	V	AB	24	O	Cardholder Certificate Serial Number (Secure Ecommerce Transactions only)
31.3.10	Group Separator	F	GS	1	C ₁	1D (HEX)
31.3.11	Merchant Certificate Serial Number	V	AB	24	O	Merchant Certificate Serial Number (Secure Ecommerce Transactions only)
31.3.12	Group Separator	F	GS	1	C ₁	1D (HEX)
31.3.13	Transaction ID/CAVV	F	AB	28	O	28 character transaction ID issued as part of the authentication process
31.3.14	Group Separator	F	GS	1	C ₁	1D (HEX)
31.3.15	TranStain	F	AB	28	O	The TranStain (Secure Ecommerce Transactions Only)
31.3.16	Group Separator	F	GS	1	C ₁	1D (HEX)

Num	Name	F/V	Type	Len	M/O/C	Value
31.3.17	Electronic Commerce Indicator (ECI)	F	N	2	O	This field must be only populated if the ECI is provided by the merchant. It is provided directly by the authentication or verification system or as per the respective scheme guidelines. Otherwise, it is omitted The ECI value takes precedent over any ecommerce setting of the EMV Terminal Type
31.3.18	Group Separator	F	GS	1	C ₁	1D (HEX)

Sub-Type 02: Application Initiated Ecommerce

Ecommerce auxiliary data record Sub-Type 02 should be used for any application initiated purchases (for example, Apple Pay or Android Pay).

It should be noted that these transactions always use an Electronic Commerce Indicator of '07', indicating that these transactions have not been verified using the 3D Secure process.

Num	Name	F/V	Type	Len	M/O/C	Value
31.3	Auxiliary Data Record					
31.3.1	Record Separator	F	RS	1	M	1E (HEX)
31.3.2	Auxiliary Data Record Type	F	A	2	M	'01'
31.3.3	Auxiliary Data Record Sub-Type	F	N	2	M	'02'
31.3.4	Group Separator	F	GS	1	M	1D (HEX)
31.3.5	Payment Network Indicator	F	N	2	M	
31.3.6	Group Separator	F	GS	1	C ₁	1D (HEX)
31.3.7	Cardholder Authentication Value	V	AB	32	O	Up to 32 characters supplied by the merchant. Mastercard: UCAF is 32 characters long and is the only data supported for this field
31.3.8	Group Separator	F	GS	1	C ₁	1D (HEX)
31.3.9	Reserved For UK Cards Association	V	AB	24	O	
31.3.10	Group Separator	F	GS	1	C ₁	1D (HEX)

Num	Name	F/V	Type	Len	M/O/C	Value
31.3.11	Reserved For UK Cards Association	V	AB	24	O	
31.3.12	Group Separator	F	GS	1	C ₁	1D (HEX)
31.3.13	Transaction ID	F	AB	28	O	28 character transaction ID issued as part of the authentication process
31.3.14	Group Separator	F	GS	1	C ₁	1D (HEX)
31.3.15	Reserved For UK Cards Association	F	AB	28	O	
31.3.16	Group Separator	F	GS	1	C ₁	1D (HEX)
31.3.17	Electronic Commerce Indicator (ECI)	F	N	2	O	'07'
31.3.18	Group Separator	F	GS	1	C ₁	1D (HEX)

6.5.2 AUXILIARY DATA RECORD TYPE 03: DYNAMIC CURRENCY CONVERSION (DCC)

Num	Name	F/V	Type	Len	M/O/C	Comment
31.3	Auxiliary Data Record					
31.3.1	Record Separator	F	RS	1	M	1E (HEX)
31.3.2	Auxiliary Data Record Type	F	A	2	M	'03'
31.3.3	Auxiliary Data Record Sub-Type	F	N	2	M	'03'
31.3.4	Group Separator	F	GS	1	M	1D (HEX)
31.3.5	Currency Amount	V	N	12	M	Transaction amount prior to currency conversion in the card acceptor currency minor denomination
31.3.6	Group Separator	F	GS	1	M	1D (HEX)
31.3.7	Currency Code	F	N	3	M	The Card Acceptors ISO 4217 Numeric Currency Code – normally 826 for United Kingdom Sterling
31.3.8	Conversion Rate	F	N	24	M	Conversion rate used in the DCC transaction as printed on the transaction receipt. See Note 1
31.3.9	Group Separator	F	GS	1	M	1D (HEX)
31.3.10	Commission Fee	F	N	11	O	Commission fee on the DCC transaction in the cardholder currency, minor denomination
31.3.11	Group Separator	F	GS	1	M	1D (HEX)

Num	Name	F/V	Type	Len	M/O/C	Comment
31.3.12	Mark up Fee	V	N	11	M	The mark up percentage applied to the transaction to 4 decimal places
31.3.13	Group Separator	F	GS	1	C ₁	1D (HEX)
31.3.14	Opt Out Marker	F	N	1	O	Marker to indicate whether, or not, the cardholder was offered DCC but, chose to pay in the card acceptor's currency 1 = DCC offered but not accepted 0 = DCC offered and accepted

Note 1: The conversion rate should be formatted in the following way:- DCC Exponent<US>Conversion Rate (shown without decimal places) The DCC Exponent should contain up to 2 numeric characters and denote the number of positions the decimal point should be moved from the right in the Conversion Rate, which may contain up to 21 numeric characters. For example, a value of 6<US> 9977522 specifies a Conversion Rate of 9.977522.

6.5.3 AUXILIARY DATA RECORD TYPE 06: TERMINAL CAPABILITIES AND TERMINAL ATTRIBUTES

Num	Name	F/V	Type	Len	M/O/C	Value
31.3	Auxiliary Data Record					
31.3.1	Record Separator	F	RS	1	M	1E (HEX)
31.3.2	Auxiliary Data Record Type	F	A	2	M	'06'
31.3.3	Auxiliary Data Record Sub-Type	F	N	2	M	'01'
31.3.4	Group Separator	F	GS	1	M	1D (HEX)
31.3.5	Terminal Attributes	F	AB	6	M	Code indicating the terminal attributes. See Table 10: Terminal Attribute Codes
31.3.6	Group Separator	F	GS	1	M	1D (HEX)
31.3.7	Terminal Attributes Used	F	AB	6	M	Code indicating the terminal attributes used for this transaction
31.3.8	Group Separator	F	GS	1	M	1D (HEX)
31.3.9	EMV Terminal Capabilities	F	AB	6	M	Terminal capabilities as defined in EMV Tag 9F33
31.3.10	Group Separator	F	GS	1	C ₁	1D (HEX)
31.3.11	EMV Terminal Capabilities Used	F	AB	6	O	The terminal capabilities used values are mapped to the EMV terminal capabilities and

Num	Name	F/V	Type	Len	M/O/C	Value
						indicate which capabilities were used for this transaction

6.5.4 AUXILIARY DATA RECORD TYPE 09: PARTIAL/ALTERNATIVE AMOUNT APPROVAL

The Partial/Alternative Amount Approval auxiliary record is returned in the authorisation response message and is used when an issuer approves an amount that is different to the amount requested in the authorisation request message.

In order to indicate that a terminal can support the use of this Auxiliary Data Record, the terminal must also submit the Terminal Capabilities and Terminal Attributes Auxiliary Data Record (see table above) and, must set bit 1 of position 2 of the Terminal Attributes Code (see **Table 10**) to indicate that Partial/Alternative Amount Approvals are supported.

When a card issuer returns a Partial/Alternative Amount Approval, the acquirer shall set the Authorisation Response Code to a value of 10 to differentiate between a normal approval (i.e. the full transaction amount was approved) and a Partial/Alternative Amount Approval.

Num	Name	F/V	Type	Len	M/O/C	Value
1	Record Separator	F	RS	1	M	
2	Data Record Type – Partial/Alternative Amount Approval Auxiliary Data Record – Type 09	F	N	2	M	
3	Data Record Sub-Type = 01	F	N	2	M	
4	Group Separator	F	GS	1	M	
5	Approval Amount	V	N	11	M	
6	Group Separator	F	GS	1	M	
7	Approval Amount Type	F	N	2	M	01 = Amount is the partial amount 02 = Amount is the alternative amount 03 – 99 = Reserved for future use

Considerations For The Usage Of Partial/Alternative Amount Approvals

Partial/Alternative Amount Approvals are typically used for pre-paid cards and are used to prevent transactions being declined if there are insufficient funds on the pre-paid card to complete the transaction.

Upon receipt of a Partial/Alternative Amount Approval, the terminal will need to prompt the merchant to either, complete the remaining amount of the transaction by an alternative method or, cancel the transaction and reverse the amount that was authorised.

Although theoretically, the transaction could be completed using a second card transaction, this could then prevent the merchant from being able to reverse the original transaction should the second transaction be declined or only partially approved.

Only allowing completion of the transaction using cash will retain the ability to reverse the initial authorisation, if the overall transaction cannot be completed.

6.5.5 AUXILIARY DATA RECORD TYPE 10: AUTHORISATION NETWORK REFERENCE DATA

Sub-Type 01: Scheme Reference Data

This data is sent and received in the Auxiliary Data Field in the Authorisation Request/Response messages. This data is passed to the Global Payments authorising host by the Card Scheme and forwarded by the Global Payments authorising host if the terminal has indicated that it is capable of processing transaction identifiers. It should be captured and submitted as part of the Clearing Data (see **Sub-Record Format 26**) for the original authorisation and any associated consequent authorisations, for example, on incremental authorisations or recurring transaction.

Num	Name	F/V	Type	Len	M/O/C	Value
31.3	Auxiliary Data Record					
31.3.1	Record Separator	F	RS	1	M	1E (HEX)
31.3.2	Auxiliary Data Record Type	F	A	2	M	'10'
31.3.3	Auxiliary Data Record Sub-Type	F	N	2	M	'01' = Scheme Reference Data
31.3.4	Group Separator	F	GS	1	M	1D (HEX)
31.3.5	Scheme Reference Data	V	A	56	M	Comprising of a string of up to 56 characters, Mastercard: Trace ID is 15 characters long, Visa: Transaction ID is 15 characters long Validation ID is 4 characters long

Sub-Type 02: Acquirer Reference Data

This data is sent and received in the Auxiliary Data Field in the Authorisation Request/Response messages. This data is generated by the Global Payments authorising host if the terminal indicates that it can support transaction identifiers (in Position 2 of the Terminal Attribute Codes in Auxiliary Data Record 6) and passed to the Point of Sale in the Authorisation Response message. The data must be included on any consequent reversal; otherwise the Global Payments authorising host will not send the reversal online to the card issuer.

Num	Name	F/V	Type	Len	M/O/C	Value
31.3	Auxiliary Data Record					
31.3.1	Record Separator	F	RS	1	M	1E (HEX)
31.3.2	Auxiliary Data Record Type	F	A	2	M	'10'
31.3.3	Auxiliary Data Record Sub-Type	F	N	2	M	'02' = Acquirer Reference Data
31.3.4	Group Separator	F	GS	1	M	1D (HEX)
31.3.5	Acquirer Reference Data	V	A	56	M	Comprising of a string of up to 56 characters; Note: Global Payments will return 16 characters in this field

6.5.6 AUXILIARY DATA RECORD TYPE 12: ALTERNATE CARD NUMBER

With the advent of NFC mobile phone payment technology (for example, Apple Pay) that use tokenised PANs for security, it has become necessary to be able to return the last four digits of the Cardholder's Funding PAN to the POS to allow both the merchant and the cardholder to identify which card the tokenised PAN relates to. This is particularly useful for identifying the card that was used for the original purchase when performing a refund.

This is achieved through the use of Auxiliary Data Record Type 12: Alternate Card Number.

In order for a terminal to receive the Alternate Card Number in the Authorisation Response it must indicate that Alternate Card Number is supported by (a) sending the Terminal Capabilities and Terminal Attributes Auxiliary Data record in the Authorisation Request and (b) setting a value of 4 position 2 of the Terminal Attributes Codes.

Note: It is likely that other values will also be set in position 2 of the Terminal Attributes Codes, which means that the actual value sent must equal the total for all functions supported.

Num	Name	F/V	Type	Len	M/O/C	Value
31.3	Auxiliary Data Record					
31.3.1	Record Separator	F	RS	1	M	1E (HEX)
31.3.2	Auxiliary Data Record Type	F	A	2	M	'12'
31.3.3	Auxiliary Data Record Sub-Type	F	N	2	M	'01'

Num	Name	F/V	Type	Len	M/O/C	Value
31.3.4	Group Separator	F	GS	1	M	1D (HEX)
31.3.5	Alternate Card Number (ACN)	F	N	19	M	
31.3.6	Group Separator	F	GS	1	C ₁	1D (HEX)
31.3.7	CAN Expiry Date	F	N	4	O	

6.5.7 AUXILIARY DATA RECORD TYPE 13: SCHEME DIGITAL WALLET

Sub-Type 10 – MasterPass Online

Num	Name	F/V	Type	Len	M/O/C	Value
31.3	Auxiliary Data Record					
31.3.1	Record Separator	F	RS	1	M	1E (HEX)
31.3.2	Auxiliary Data Record Type	F	A	2	M	'13'
31.3.3	Auxiliary Data Record Sub-Type	F	N	2	M	'10'
31.3.4	Group Separator	F	GS	1	M	1D (HEX)
31.3.5	Wallet Transaction Origin	F	A	3	M	

6.5.8 AUXILIARY DATA RECORD TYPE 15: CONTACTLESS DEVICE INFORMATION DATA

Num	Name	F/V	Type	Len	M/O/C	Comment
31.3	Auxiliary Data Record					
31.3.1	Record Separator	F	RS	1	M	1E (HEX)
31.3.2	Auxiliary Data Record Type	F	A	2	M	'15'
31.3.3	Auxiliary Data Record Sub-Type	F	N	2	M	'01'
31.3.4	Group Separator	F	GS	1	M	1D (HEX)
31.3.5	Contactless Form Factor	V	AB	70	M	
31.3.6	Group Separator	F	GS	1	C ₁	1D (HEX)
31.3.7	Contactless Discretionary Data	V	AB	70	O	

Contactless Form Factor

The contents of this data element will vary by Card Scheme; for Mastercard and Visa it is Tag 9F6E, for American Express it is Tag 9F67. The definition of these data elements can be found in the appropriate Card Scheme’s Contactless specifications.

The card acceptor will provide the whole data element in BER-TLV format as described in EMV as the Tag will vary from Card Scheme to Card Scheme. When the data is converted to hexadecimal, the value of the length component shall still represent the length of the binary data.

For example TTTTLLdddddd would be interpreted as:

- TTTT is the EMV Tag
- LL is the length of the data
- ddddddd is the Contactless Form Factor – with the length as defined by LL

Data should be left justified and space filled.

Contactless Discretionary Data

The contents of this data will vary by Card Scheme and will be as agreed by interchange parties. For Visa the discretionary data will be the content of Tag 9F7C. The definitions for these data elements can be found in the appropriate Card Scheme’s Contactless specifications.

The card acceptor will provide the whole data element in BER-TLV format as described in EMV as the Tag will vary from Card Scheme to Card Scheme. When the data is converted to hexadecimal, the value of the length component shall still represent the length of the binary data.

6.5.9 AUXILIARY DATA RECORD TYPE 18: PAYMENT ATTRIBUTES

Num	Name	F/V	Type	Len	M/O/C	Comment
31.3	Auxiliary Data Record					
31.3.1	Record Separator	F	RS	1	M	1E (HEX)
31.3.2	Auxiliary Data Record Type	F	A	2	M	'18'
31.3.3	Auxiliary Data Record Sub-Type	F	N	2	M	'01'
31.3.4	Group Separator	F	GS	1	M	1D (HEX)
31.3.5	Payment Attributes	F	AB	24	M	

6.5.10 AUXILIARY DATA RECORD TYPE 22: TOKENISATION RESPONSE DATA

When a scheme issued token is used to perform a transaction, Auxiliary Data Record Type 22 can be used to return details of the token (if/when returned by the card issuer) to the terminal.

Receipt of this record is controlled by the setting Position 5 of the Terminal Attribute Codes (see **Table 10**).

Num	Name	F/V	Type	Len	M/O/C	Comment
31.3	Auxiliary Data Record					
31.3.1	Record Separator	F	RS	1	M	1E (HEX)
31.3.2	Auxiliary Data Record Type	F	A	2	M	'22'
31.3.3	Auxiliary Data Record Sub-Type	F	N	2	M	'02'
31.3.4	Group Separator	F	GS	1	M	1D (HEX)
31.3.5	Token Usage Result Code	F	N	2	O	
31.3.6	Group Separator	F	GS	1	C ₁	1D (HEX)
31.3.7	Funding PAN	V	N	19	O	
31.3.8	Group Separator	F	GS	1	C ₁	1D (HEX)
31.3.9	Funding PAN Expiry Date	F	N	4	O	
31.3.10	Group Separator	F	GS	1	C ₁	1D (HEX)
31.3.11	Token Assurance Level	F	N	2	C ₇	
31.3.12	Group Separator	F	GS	1	C ₁	1D (HEX)
31.3.13	Token PAN	V	N	19	C ₆	
31.3.14	Group Separator	F	GS	1	C ₁	1D (HEX)
31.3.15	Token PAN Expiry Date	F	N	4	C ₆	
31.3.16	Group Separator	F	GS	1	C ₁	1D (HEX)
31.3.17	Token Requester ID	F	A	11	O	
31.3.18	Group Separator	F	GS	1	C ₁	1D (HEX)
31.3.19	Token Status	F	A	2	O	
31.3.20	Group Separator	F	GS	1	C ₁	1D (HEX)
31.3.21	Reserved For Future Use				O	
31.3.22	Group Separator	F	GS	1	C ₁	1D (HEX)

Num	Name	F/V	Type	Len	M/O/C	Comment
31.3.23	Reserved For Future Use				O	
31.3.24	Group Separator	F	GS	1	C ₁	1D (HEX)
31.3.25	Reserved For Future Use				O	
31.3.26	Group Separator	F	GS	1	C ₁	1D (HEX)
31.3.27	Reserved For Future Use				O	

6.5.11 AUXILIARY DATA RECORD TYPE 23: PAYMENT ACCOUT REFERENCE (PAR)

Num	Name	F/V	Type	Len	M/O/C	Value
31.3	Auxiliary Data Record					
31.3.1	Record Separator	F	RS	1	M	1E (HEX)
31.3.2	Auxiliary Data Record Type	F	A	2	M	'23'
31.3.3	Auxiliary Data Record Sub-Type	F	N	2	M	'01'
31.3.4	Group Separator	F	GS	1	M	1D (HEX)
31.3.5	Payment Account Reference	V	A	56	M	

6.6 FIELD REFERENCE TABLES

Table 1: Terminal Type/Capabilities

It is essential that the following data is as accurate as possible. If the terminal's true capabilities are not accurately described by this data, then the Global Payments authorising host or the card issuer may not approve the transaction. For example, Mastercard have strict rules concerning the acceptance of cards at Unattended/Cardholder Activated Terminals that are triggered if the fourth position indicates 'Unattended Device' support.

	Feature	8	4	2	1
First Position: Terminal Capabilities	ICC Reader				X
	Magnetic Stripe Reader (MSR)			X	
	Manual Card Reader		X		
	Extended Terminal Capabilities (see Note 1)	X			
Second Position: Number of 16 lines that can be displayed or printed. (0) indicates display or printer not available	Lines of display available	X	X	X	X

	Feature	8	4	2	1
Third Position: Response Message Capabilities	Down line loading of referral telephone number supported				X
	Hold capability			X	
	Down line loading of floor limits/data supported		X		
	Response additional data support	X			
Fourth Position: Additional Features and Capabilities. (0) indicates no additional capabilities supported	Unattended device				X
	PINPAD available			X	
	Terminal or operator able to capture cards		X		
	Cardholders device (for example, may be a PC, mobile phone, PDA, digital TV or similar device for E or M commerce)	X			

Note 1: If this bit is set then the data supplied is the extended terminal capabilities and attributes auxiliary data messages takes priority. See **Table 10**.

Table 2: Message Types

Type	Description	Message Class	Direction	Category		Notes
03	Purchase With Cashback	Authorisation	Request	Card	1st try	Swipe
04	Purchase With Cashback	Authorisation	Request	Keyed	1st try	
05	Purchase With Cashback	Authorisation	Request	Card	Re-try	Swipe
06	Purchase With Cashback	Authorisation	Request	Keyed	Re-try	
09	Purchase Cardholder Not Present	Authorisation	Request	No cardholder	1st try	Keyed
10	Purchase	Authorisation	Request	Card	1st try	Swipe
16	Purchase	Authorisation	Request	Card	Re-try	Swipe
20	Purchase	Authorisation	Request	Keyed	1st try	Customer Present
25	Debit Reversal	Authorisation	Request		1st try	Cancel at signature
26	Purchase	Authorisation	Request	Keyed	Re-try	Customer Present
28	Debit Reversal	Authorisation	Request		Re-try	
30	Cash	Authorisation	Request	Card	1st try	Swipe
31	Cash	Authorisation	Request	Keyed	1st try	
36	Cash	Authorisation	Request	Card	Re-try	Swipe

Type	Description	Message Class	Direction	Category		Notes
37	Cash	Authorisation	Request	Keyed	Re-try	
45	Purchase Cardholder Not Present	Authorisation	Request	No cardholder	Re-try	Keyed
47	Refund Cardholder Not Present	Authorisation	Request	No cardholder	1st try	
49	Refund Cardholder Not Present	Authorisation	Request	No cardholder	Re-try	
58	Refund	Authorisation	Request	Card	1st try	Swipe
61	Refund	Authorisation	Request	Keyed	1st try	
63	Refund	Authorisation	Request	Card	Re-try	
67	Refund	Authorisation	Request	Keyed	Re-try	
A0	Purchase – Continuous Authority	Authorisation	Request	No cardholder	1st try	
A1	Purchase – Continuous Authority	Authorisation	Request	No cardholder	Re-try	
A8	Purchase - Electronic Commerce	Authorisation	Request	Card	1st try	
A9	Purchase - Electronic Commerce	Authorisation	Request	Card	Re-try	
AA	Refund - Electronic Commerce	Authorisation	Request	Card	1st try	
AB	Refund - Electronic Commerce	Authorisation	Request	Card	Re-try	
B2	Purchase Electronic – Commerce	Authorisation	Request	Keyed	1st try	
B3	Purchase Electronic - Commerce	Authorisation	Request	Keyed	Re-try	
B4	Refund - Electronic Commerce	Authorisation	Request	Keyed	1st try	
B5	Refund - Electronic Commerce	Authorisation	Request	Keyed	Re-try	
E6	Account Verification	Authorisation	Request	Card	1st Try	See Note 1
E7	Account Verification	Authorisation	Request	Card	2nd Try	See Note 1
E8	Account Verification	Authorisation	Request	Keyed	1st Try	See Note 1
E9	Account Verification	Authorisation	Request	Keyed	2nd Try	See Note 1
EA	Account Verification	Authorisation	Request	CNP	1st Try	See Note 1
EB	Account Verification	Authorisation	Request	CNP	2nd Try	See Note 1
EC	Ecommerce / Account Verification	Authorisation	Request	Keyed	1st Try	See Note 1
ED	Ecommerce / Account Verification	Authorisation	Request	Keyed	2nd Try	See Note 1

Note 1: For Account Verification, the transaction amount must always be zero and is applicable to Mastercard and Visa transactions.

Table 3: Card Details

Magnetic Stripe Read (MSR) - Track 2 Data					
No	Size	F/V	M/O/C	Type	Note
A	40	V	M	A	Unaltered contents of Magnetic Stripe Read track 2 including the Star Sentinel, End Sentinel and Longitudinal Redundancy Check (LRC)
Manual Key Entered (PKE)					
No	Size	F/V	M/O/C	Type	Note
a	1	F	M	US	Unit Separator
b	25	V	M	N	PAN
c	1	F	O	US	Unit Separator
d	4	F	O	N	Expiry date (entered as MMY Y but sent as YYMM)
ICC Supplied Equivalent Track 2 Data – See Note 2					
No	Size	F/V	M/O/C	Type	Note
a	37	V	M	A	ICC track 2 data (TAG '57')
b	1	F	M	US	Unit Separator
c	2	F	O	N	ICC Application PAN sequence number ICC (Tag '5F34')
IC Constructed Track 2 Equivalent Data Field –See Note 3					
No	Size	F/V	M/O/C	Type	Note
a	19	V	M	N	ICC PAN (tag '5A')
b	1	F	M	US	Unit Separator
c	4	F	M	N	Leftmost 4 characters (YYMM) of ICC expiry date (ICC (Tag '5F24'))
d	1	F	O	US	Unit Separator
e	2	F	O	N	ICC PAN sequence number (ICC (Tag '5F34'))

Note 1: When a Start Date has been entered as part of the key entered transaction, the Start Date must not be transmitted with the Authorisation Request message.

Note 2: Each 4 bit nibble of data in sub-field 'a' will be prefixed with binary '011' with even parity inserted on bit 8.

If rightmost (least significant) 4 bit nibble of data element 'a' is hex value 'F' this should be discarded.

Sub field 'c' is missing if the 'Application PAN sequence number' data object Tag '5F34' is not present on the card. Sub field 'b' is mandatory if sub field 'c' is present.

Note 3: Sub field 'd' and 'e' are missing if 'Application PAN sequence number' data object Tag 5F34' is not present on the card. Sub field 'e' is mandatory is sub field 'e' is present.

The terminal shall always check for the presence of 'Track 2 Equivalent Data object Tag '57' and, if it is present, use this in the authorisation message from the terminal.

Table 4: Descriptive Data

Field	Data
1	The 3 (4 in the case of Amex) digit CSC data
2	US – Unit Separator
3	The first 5 numeric from the Postcode (In the UK this will be 2 or 3 digits only)
4	US – Unit Separator
5	Numerics from address, truncated if required (these are the leading numerics from each line of the address up to maximum 5 digits)

Note 1: The validation of the CSC depends on the correct Expiry Date being submitted in addition to the CSC value. All address data shall relate to the customer's statement/billing address.

Note 2: If this format is used, the two US characters are mandatory even if one or more of the sub elements are not populated.

Table 5: Reason Online Codes

More than one value from the table below may be applicable to any one given transaction.

The codes are listed in priority order so that in the event of more than one code applying to a transaction, the first code encountered in the list will apply. For example, a transaction could have fallen back from chip to mag stripe – Reason Online Code 04, and also be above the merchant's floor limit – Reason Online Code 10. In this example, the Reason Online Code sent in the Authorisation Request message would be 04.

Value	Description	Example Conditions
04	Terminal not able to process IC	Fallback for IC
05	Real-time forced by IC	IC forced real-time, no bits set in TVR
06	Real-time forced by card acceptor	Card used twice Max times per day One in 'n' authorisation PAN key entry authorisation Transaction type authorisation Exclusion band checks Pre-valid card
09	Real-time forced by card issuer	Expired card New card Service code

Value	Description	Example Conditions
		Hot card
11	Card acceptor suspicious	Force authorisation (NO at signature check) Card returns an inappropriate cryptogram
03	Terminal random selection	'Transaction selected randomly for real-time processing' bit set in TVR (i.e. byte 4, bit 5)
10	Over floor limit	Above floor limit
08	Real-time forced by terminal	TVR indicates real-time required
00	IC application common data file unable to process	Only used by IC/MSR terminals where the terminal has possession of the card and when this condition can be accurately identified
01	IC application, application data file unable to process	Only used by integrated IC/MSR terminals where the terminal has possession of the card and when this condition can be accurately identified
02	IC random selection	Not Used
07	Real-time forced by terminal	Not used
25	IC processed	IC authorised
26	Under floor limit	Amount less than the pre-communications floor limit in a non IC transaction
27	Stand-in processing at the acquirer's option	Advice of a sale that has already been authorised by means of one or more previously -authorised transactions, completed real-time to the acquirer.

Table 6: Authorisation Response Codes And Message Text

The following table details the response codes that may be returned to a terminal along with the message text that will be returned for the terminal to display and/or print.

Response Code	Message Text	Reason
00	AUTH CODE: NNNNNN	Approve
00	ACCOUNT VALID	Approval For Account Verification Transactions
00	REVERSAL ACCPTD	Reversal Accepted
02	CALL AUTH CENTRE	Referral
03	INVALID MERCHANT	Merchant Unknown / Merchant Number has not been set up on authorisation system
04	DECLINE & PICKUP	Issuer Requires Card To Be Retained
05	DECLINE	Decline (N/A reversals)

Response Code	Message Text	Reason
05	CANNOT AUTHORISE	Terminal ID is unrecognised
05	CONSENT REVOKED	Cardholder Has Ended A Recurring Transaction / Instalment
05	INVALID TRAN	Transaction Not Allowed At Terminal
05	CARD EXPIRED	Expired Card
05	NOT AUTHORISED	Allowable Number Of PIN Tries Exceeded
05	ACCOUNT INVALID	Decline For Account Verification Transactions
10	AUTH CODE: NNNNNN	Partial/Alternative Amount Approval
13	INVALID AMOUNT	Invalid Amount
14	INVALID CARD NO	Invalid Account Number
21	TERM DEACTIVATED	Invalid Terminal ID
30	BAD FORMAT	Format Error In Authorisation Request
30	BAD AMOUNT	Format Error In Authorisation Request
30	BAD EXPIRY DATE	Format Error In Authorisation Request
30	INVALID TRACK 2	Format Error In Authorisation Request
30	BAD ACCOUNT	Format Error In Authorisation Request
30	BAD DESCR	Format Error In Authorisation Request
55	PIN Error	Incorrect PIN

Table 7: Voice Referral Number Format

The Referral telephone number data element is a variable length data element up to 16 characters. The Referral telephone number is a structured number returned to a terminal to assist the terminal in dialling the acquirer should voice contact be necessary. The number is in 3 parts;

- A. is the code required to access an exchange line on a PABX (exchange line),
- B. is the code which identifies the distant exchange national number group (dial code),
- C. is the exchange number.

By sub-dividing the Referral telephone number it is possible for the acquirer to change all or part of the number previously stored in the terminal.

If the acquirer wishes to change all elements stored in the terminal then the number in the Referral telephone number data element shall contain no US character. If the acquirer wishes the terminal to dial the number as defined in the terminal then it shall send a single US character.

Sending the appropriate combination of numbers and US character can change any other parts of the stored referral number. The table below lists the structures that may be sent:

Referral Telephone Number Contents	Terminal Response
None	No voice referral. Disconnect and display Text message immediately.
Numbers	Dial contents of A (if any) followed by numbers.
US (numbers)	Dial contents of A and B (if any) followed by numbers.
US	Dial contents of A, B and C.
US US	Do not dial anything but switch to voice on the line already established.

Note: Any other combination is invalid.

Table 8: Response Additional Data Codes

	Feature	8	4	2	1
First Position: CSC	Not Checked				X
	Matched			X	
	Not Matched		X		
	Reserved For APACS	X			
Second Position: Post Code	Not Checked				X
	Matched			X	
	Not Matched		X		
	Partial Match	X			
Third Position: Address Numeric	Not Checked				X
	Matched			X	
	Not Matched		X		
	Partial Match	X			
Fourth Position: Authorising Entity	Issuer				X
	Acquirer			X	
	Not Used by GP		X		
	Not Used by GP	X			
Fifth Position: Reserved For Future Use	Reserved				X
	Reserved			X	

	Feature	8	4	2	1
	Reserved		X		
	Reserved	X			
Sixth Position: Reserved For Future Use	Reserved				X
	Reserved			X	
	Reserved		X		
	Reserved	X			

Table 9: Additional Transaction Security Data (ATSD)

	Feature	8	4	2	1
First Position: Security Capability	Mastercard SecureCode				X
	Reserved			X	
	Verified by Visa		X		
	Channel Encryption (TLS)	X			
Second Position: Certificates	Reserved				X
	Reserved			X	
	Reserved		X		
	Reserved	X			
Third Position: Security Attempted	Mastercard SecureCode				X
	Reserved			X	
	Verified by Visa		X		
	Channel Encryption (TLS)	X			
Fourth Position: Security Results	Authentication Successful				X
	Evidence Of Attempted Authentication			X	
	System Unable To Verify		X		
	Previous Authentication Successful	X			
Fifth Position: Reserved For Future Use	V.Me By Visa				X
	Mastercard PayPass Online			X	

	Feature	8	4	2	1
	Reserved		X		
	Reserved	X			
Sixth Position: Reserved For Future Use	Reserved				X
	Reserved			X	
	Reserved		X		
	Reserved	X			

The values of the first second and third positions are each cumulative in that they record all the features available or that are used in a transaction. Value settings for position 4 are mutually exclusive.

Table 10: Terminal Attributes

The terminal codes in the table below list the values used for both the Terminal Attributes Data Element and the Terminal Attributes Used Data Element. The Terminal Attributes Data Element identifies the features supported by the terminal and the Terminal Attributes Used Data Element identifies which of those features were used in the transaction being processed. For any terminal that supports these data elements, the Terminal Attributes Data Element shall be included in all authorisation and financial presentment messages regardless of the terminal attributes used for the transaction being processed.

Terminal Attribute Codes

	Feature	8	4	2	1
Position 1: Read Capabilities	Contactless Reader Mag Stripe Format				X
	Contactless Reader EMV Format			X	
	Reserved For The UK Cards Association		X		
	Reserved For The UK Cards Association	X			
Position 2: Response Message Capabilities	Partial/Alternative Amount Approval Responses Supported				X
	Transaction Identifiers Supported			X	
	Alternate Card Number Supported		X		
	Reserved For The UK Cards Association	X			
Position 3: Contactless CVM	Contactless Signature				X
	Contactless CDCVM			X	
	Reserved For The UK Cards Association		X		
	Reserved For The UK Cards Association	X			

	Feature	8	4	2	1
Position 4: Mobile Point of Sale (MPoS)	MPoS With Integrated Card Reader				X
	MPoS With Separate Card Reader			X	
	Reserved For The UK Cards Association		X		
	Reserved For The UK Cards Association	X			
Position 5: Response Message capabilities	Token Data Supported				X
	Pay-By-Instalment Offer Data Supported			X	
	Additional Receipt Data Supported		X		
	Reserved For The UK Cards Association	X			
Position 6	Reserved For The UK Cards Association				X
	Reserved For The UK Cards Association			X	
	Reserved For The UK Cards Association		X		
	Reserved For The UK Cards Association	X			

Table 11: Point Of Interaction (POI) Capabilities

The POI Capabilities is a set of 24 single character indicators that indicate the capabilities of the POI device accepting the transactions.

Note: Global Payments does not currently support the full range of values shown in UK Cards Association Standard 70, only the values indicated below should be submitted in settlement files.

POS	Capability	Value	Meaning
1	Value not supported		
2	Value not supported		
3	Value not supported		
4	Value not supported		
5	Swipe	M	Mag stripe read capable
		N	No mag stripe read capability
6	Contact ICC	C	Contact IC device
		N	No contact ICC
7	Contactless ICC	F	Full Contactless capabilities

POS	Capability	Value	Meaning
		M	Mag stripe Contactless only
		E	EMV Contactless only
		N	No Contactless capability
8	Value not supported		
9	Value not supported		
10	Value not supported		
11	Keyed	K	Keying Possible
		N	Keying Not Possible
12	Value not supported		
13	Value not supported		
14	Value not supported		
15	MPoS	I	MPOS device with integrated card reader
		N	Not an MPOS device
		S	MPOS device with separate card reader
16	Reserved For UK Cards Association		
17	Reserved For UK Cards Association		
18	Reserved For UK Cards Association		
19	Reserved For UK Cards Association		
20	Reserved For UK Cards Association		
21	Reserved For UK Cards Association		
22	Reserved For UK Cards Association		
23	Reserved For UK Cards Association		
24	Reserved For UK Cards Association		

Table 12 – Payment Attributes – For Use With General Sub Record Type 01

Posn.	Attribute	Value	Meaning
1	Card Acceptor/Cardholder Agreement (see Note 1)	A	Re Authorisation
		C	Unscheduled Payment
		D	Delayed Charges
		I	Instalment
		L	Incremental
		N	Not Applicable
		R	Recurring Payment
		S	Re Submission
		X	No show
2	Cardholder Not Present Condition (see Note 2)	C	Cardholder Not Present (unspecified)
		M	Mail Order
		N	Not Applicable (i.e. cardholder present)
		T	Telephone Order
		E	Electronic Commerce
		A	Application initiated electronic commerce
3	Reserved For The UK Cards Association		
4	Stored Payment Details Indicator	F	Payment Details Stored for First Time
		N	Not Applicable
		S	Using Previously Stored Payment Details
5	Reserved For The UK Cards Association		
6	Reserved For The UK Cards Association		
7	Reserved For The UK Cards Association		
8	Reserved For The UK Cards Association		
9	Reserved For The UK Cards Association		
10	Reserved For The UK Cards Association		
11	Reserved For The UK Cards Association		
12	Reserved For The UK Cards Association		
13	Reserved For The UK Cards Association		
14	Reserved For The UK Cards Association		
15	Reserved For The UK Cards Association		
16	Reserved For The UK Cards Association		

Posn.	Attribute	Value	Meaning
17	Reserved For The UK Cards Association		
18	Reserved For The UK Cards Association		
19	Reserved For The UK Cards Association		
20	Reserved For The UK Cards Association		
21	Reserved For The UK Cards Association		
22	Reserved For The UK Cards Association		
23	Reserved For The UK Cards Association		
24	Reserved For The UK Cards Association		

Note 1: Values other than N only to be used with cardholder present, cardholder not present, continuous authority or electronic commerce sale message types.

Note 2: Values other than N only to be used with cardholder not present or electronic commerce message types

Table 13 – Payment Attributes – For Use With Auxiliary Data Record Type 18

Posn.	Attribute	Value	Meaning
1	Card Acceptor/Cardholder Agreement (see Note 1)	A	Re Authorisation
		C	Unscheduled Payment
		D	Delayed Charges
		I	Instalment
		L	Incremental
		N	Not Applicable
		R	Recurring Payment
		S	Re Submission
		X	No show
2	Cardholder Not Present Condition (see Note 2)	C	Cardholder Not Present (unspecified)
		M	Mail Order
		N	Not Applicable (i.e. cardholder present)
		T	Telephone Order
		E	Electronic Commerce
3	Reserved For The UK Cards Association		
4	Stored Payment Details Indicator	F	Payment Details Stored for First Time
		N	Not Applicable

Posn.	Attribute	Value	Meaning
		S	Using Previously Stored Payment Details
5	Reserved For The UK Cards Association		
6	Reserved For The UK Cards Association		
7	Reserved For The UK Cards Association		
8	Reserved For The UK Cards Association		
9	Reserved For The UK Cards Association		
10	Reserved For The UK Cards Association		
11	Reserved For The UK Cards Association		
12	Reserved For The UK Cards Association		
13	Reserved For The UK Cards Association		
14	Reserved For The UK Cards Association		
15	Reserved For The UK Cards Association		
16	Reserved For The UK Cards Association		
17	Reserved For The UK Cards Association		
18	Reserved For The UK Cards Association		
19	Reserved For The UK Cards Association		
20	Reserved For The UK Cards Association		
21	Reserved For The UK Cards Association		
22	Reserved For The UK Cards Association		
23	Reserved For The UK Cards Association		
24	Reserved For The UK Cards Association		

Note 1: Values other than N only to be used with cardholder present, cardholder not present, continuous authority or electronic commerce sale message types.

Note 2: Values other than N only to be used with cardholder not present or electronic commerce message types

Table 14 – Supported Combinations Of Values For Ecommerce Transactions

Mastercard

Description	Data To Be Sent In Ecommerce Auxiliary Data Record Type 0101	Customer Instruction Value To Be Used
Cardholder was successfully authenticated.	ECI = 02 ATSD = D091 CAV = UCAF value that starts with a 'j'	G
Authentication could not be completed but a proof of authentication attempt was provided.	ECI = 01 ATSD = D092 CAV = UCAF value that starts with an 'h'	H

Description	Data To Be Sent In Ecommerce Auxiliary Data Record Type 0101	Customer Instruction Value To Be Used
Authentication could not be completed because of technical or other problems or SecureCode processing was not performed.	ECI = not present ATSD = D080 CAV = not present	J

Visa

Description	Data To Be Sent In Ecommerce Auxiliary Data Record Type 0101	Customer Instruction Value To Be Used
Secure electronic commerce transaction.	ECI = 05 ATSD = D0C1 CAV = CAVV	G
Non-authenticated security transaction at a 3D Secure-capable merchant, and merchant attempted to authenticate the cardholder using 3D Secure.	ECI = 06 ATSD = D0C2 CAV = CAVV	H
Authentication could not be completed because of technical or other problems.	ECI = 07 ATSD = D0C4 CAV = not present	J
Verified By Visa processing was not performed.	ECI = 07 ATSD = D080 CAV = not present	J

APPENDIX 1: CURRENCIES SUPPORTED

Currency	ISO Currency Code (Alpha)	ISO Currency Code (Numeric)
Australian Dollar	AUD	036
Bahraini Dinar	BHD	048
Brazilian Real	BRL	986
Canadian Dollar	CAD	124
Danish Krone	DKK	208
Egyptian Pound	EGP	818
Euro	EUR	978
GB Pound Sterling	GBP	826
Hong Kong Dollar	HKD	344
Indian Rupee	INR	356
Japanese Yen	JPY	392
South Korean Won	KRW	410
Kuwait Dinar	KWD	414
Lebanese Pound	LBP	422
Malaysian Ringgit	MYR	458
New Israeli Shekel	ILS	376
New Turkish Lira	TRY	949
New Zealand Dollar	NZD	554
Nigerian Naira	NGN	566
Norwegian Krone	NOK	578
Polish Zloty	PLN	985
Qatari Rial	QAR	634
Russian Rubble	RUB	643
Saudi Riyal	SAR	682
Singapore Dollar	SGD	702
South African Rand	ZAR	710
Swedish Krona	SEK	752
Swiss Franc	CHF	756
Thai Baht	THB	764
Ukrainian Hryvnia	UAH	980
United Arab Emirates Dirham	AED	784
United States Dollar	USD	840
Yuan Renminbi (Chinese)	CNY	156

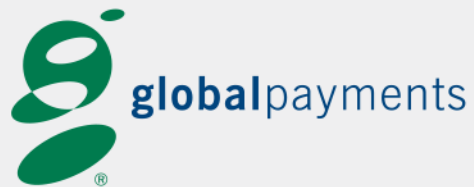
APPENDIX 2: SUPPLEMENTARY GUIDES

This section of the Authorisation And Settlement Technical Specifications provides details of the supplementary guides that are available from us. These guides provide additional details to allow the support of functionality for niche markets. They are not standalone documents and must be read in conjunction with this guide.

You must seek our agreement prior to implementing the functionality detailed in these guides.

Current Supplementary Guides

- Automated Fuel Dispensers (AFD)
- Mastercard Point Of Interaction (POI) Instalment Payments
- Enhanced Authorisation Data Service – Merchant Implementation Guide
- Stored Credential – Technical Implementation Guide



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