

**POS**

# Introduction

## Introduction

This specification document covers the interface specifications that must be supported by POS Terminals or other Payment Channels to integrate with Central Terminal Management System (CTMS). It contains definitions for all messages and the data elements (or fields) transmitted between the POS Terminals or other Payment Channels and CTMS.

### Acronyms and Abbreviations

NCS	Nigeria Central Switch
ATM	Automated Teller Machine.
POS	Point of Sale Machine
CMS	Card Management System
CTMS	Central Terminal Management System

# External Message Type

## External Message types

### Protocol

The interface to CTMS will be over TCP/IP. The application data will be prefixed by a 2- byte length header field (Binary) indicating the length of the application data to follow.

### Bitmap

CTMS supports ASCII ISO bitmap representations. ASCII ISO bitmap representation is either 16 or 32 byte representation of the bitmap in Hex.

### Supported Message Type

Message type codes are used to identify the general function of messages, and one Message type code is required in each message. CTMS supports the message types shown in the following table for both inbound and outbound messages. The message types in the table are divided according to the ISO standard message classes.

Message Class	Type	Description
Authorization	0100 & 0110	Authorization Request & Authorization Response
Financial Transaction	0200 & 0210	Financial Transaction Request & Financial Transaction Response
Reversal	0420 ,0421 & 0430	Reversal Advice , Reversal Advice Repeat & Reversal Advice Response
Network Management	0800 & 0810	Network Management Request & Network Management Request Response

# External Message Type Layouts

## External Message Type Layouts

CTMS uses the following codes to denote whether a data element should be present in its external message.

**Conditional:** The element is mandatory under certain conditions.

**Echo:** In response messages, this code indicates that the response message sender must include the same value it received in the data element in the associated request message. In other words, the responder must echo back the data element if it is present in the request message.

**Mandatory:** The element is required in the message.

Optional: The element is not always required in the message.

### Authorization Request/Repeat (0100)

Bit Data	Element Name	Presence Indicator
2	Primary account number	Mandatory
3	Processing code	Mandatory
4	Amount, transaction	Mandatory
7	Transmission date and time	Mandatory
11	Systems trace audit number	Mandatory
12	Time, local transaction	Mandatory
13	Date, local transaction	Mandatory
14	Date, expiration	Mandatory
18	Merchant's type	Mandatory
22	POS entry mode	Mandatory

23	Card sequence number	Conditional
25	POS condition code	Mandatory
26	POS PIN capture code	Conditional
28	Amount, transaction fee	Mandatory
32	Acquiring institution id code	Mandatory
35	Track 2 data	Conditional
37	Retrieval reference number	Mandatory
40	Service restriction code	Optional
41	Card acceptor terminal id	Mandatory
42	Card acceptor id code	Mandatory
43	Card acceptor name/location	Mandatory
49	Currency code, transaction	Mandatory
52	PIN data	Conditional
53	Security related control information	Conditional
54	Additional amounts	Conditional
55	Integrated Circuit Card System Related Data	Conditional
56	Message reason code	Optional
59	Transport (echo) data	Optional
60	Payment Information	Conditional
62	Private Field, Management Data 1	Conditional
102	Account identification 1	Optional
103	Account identification 2	Optional



123	POS data code	Mandatory
124	Near Field Communication Data	Conditional
128	Secondary Message Hash Value	Mandatory

## Authorization Request Response (0110)

Bit Data	Element Name	Presence Indicator
2	Primary account number	Mandatory
3	Processing code	Mandatory
4	Amount, transaction	Mandatory
7	Transmission Date and Time	Conditional
11	Systems trace audit number	Conditional
12	Time, local transaction	Mandatory
13	Date, local transaction	Conditional
14	Date, expiration	Conditional
15	Date, Settlement	Conditional
18	Merchant's type	Mandatory
22	POS entry mode	Mandatory
23	Card sequence number	Conditional
25	POS condition code	Mandatory
28	Amount, transaction fee	Conditional
30	Amount, transaction processing fee	Conditional
32	Acquiring institution id code	Mandatory

33	Forwarding institution id code	Conditional
35	Track 2 data	Conditional
37	Retrieval reference number	Mandatory
38	Authorization id response	Conditional
39	Response code	Mandatory
40	Service restriction code	Conditional
41	Card acceptor terminal id	Optional
42	Card acceptor id code	Conditional
43	Card acceptor name/location	Conditional
49	Currency code, transaction	Mandatory
54	Additional amounts	Conditional
55	Integrated Circuit Card System Related Data	Conditional
59	Transport (echo) data	Conditional
60	Payment Information	Conditional
102	Account identification 1	Optional
103	Account identification 2	Optional
133	POS data code	Mandatory
124	Near Field Communication Data	Conditional
128	Secondary Message Hash Value	Mandatory

## Authorization Advice/Repeat (0120/0121)

Bit Data	Element Name	Presence Indicator
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2	Primary account number	Conditional
3	Processing code	Mandatory
4	Amount, transaction	Mandatory
5	Amount, settlement	Conditional
7	Transmission date and time	Mandatory
9	Conversion rate, settlement	Conditional
11	Systems trace audit number	Mandatory
12	Time, local transaction	Mandatory
13	Date, local transaction	Mandatory
14	Date, expiration	Conditional
15	Date, settlement	Conditional
16	Date, conversion	Conditional
18	Merchant's type	Conditional
22	POS entry mode	Mandatory
23	Card sequence number	Conditional
25	POS condition code	Mandatory
28	Amount, transaction fee	Optional
29	Amount, settlement fee	Conditional
30	Amount, transaction processing fee	Optional
31	Amount, settle processing fee	Conditional
32	Acquiring institution id code	Conditional
33	Forwarding institution id code	Optional



35	Track 2 data	Conditional
37	Retrieval reference number	Optional
40	Service restriction code	Optional
41	Card acceptor terminal id	Mandatory
42	Card acceptor id code	Mandatory
43	Card acceptor name/location	Mandatory
45	Track 1 data	Optional
49	Currency code, transaction	Mandatory
50	Currency code, settlement	Conditional
54	Additional amounts	Conditional
55	Integrated Circuit Card System Related Data	Conditional
56	Message reason code	Optional
58	Authorizing agent id code	Conditional
59	Transport (echo) data	Optional
67	Extended payment code	Conditional
90	Original data elements	Conditional
95	Replacement amounts	Conditional
98	Payee	Conditional
100	Receiving institution id code	Conditional
102	Account identification 1	Conditional
103	Account identification 2	Conditional
123	POS data code	Mandatory



124	Near Field Communication Data	Conditional
128	Secondary Message Hash Value	Mandatory

## Authorization Advice Response (0130)

Bit Data	Element Name	Presence Indicator
2	Primary account number	Conditional
3	Processing code	Optional
4	Amount, transaction	Optional
5	Amount, settlement	Conditional
7	Transmission date and time	Mandatory
9	Conversion rate, settlement	Conditional
11	Systems trace audit number	Mandatory
12	Time, local transaction	Mandatory
13	Date, local transaction	Mandatory
14	Date, expiration	Optional
15	Date, settlement	Conditional
16	Date, conversion	Conditional
18	Merchant's type	Conditional
22	POS entry mode	Mandatory
23	Card sequence number	Optional
25	POS condition code	Mandatory
28	Amount, transaction fee	Optional

29	Amount, settlement fee	Conditional
30	Amount, transaction processing fee	Optional
31	Amount, settle processing fee	Conditional
32	Acquiring institution id code	Optional
33	Forwarding institution id code	Conditional
35	Track 2 data	Conditional
37	Retrieval reference number	Optional
38	Authorization id response	Conditional
39	Response code	Mandatory
40	Service restriction code	Conditional
41	Card acceptor terminal id	Mandatory
42	Card acceptor id code	Mandatory
43	Card acceptor name/location	Mandatory
44	Additional response data	Optional
48	Additional data	Conditional
49	Currency code, transaction	Mandatory
50	Currency code, settlement	Conditional
54	Additional amount	Mandatory
55	Integrated Circuit Card System Related Data	Conditional
58	Authorizing agent id code	Conditional
59	Transport (echo) data	Conditional
90	Original data elements	Conditional



102	Account identification 1	Optional
103	Account identification 2	Optional
123	POS data code	Mandatory
124	Near Field Communication Data	Conditional
128	Secondary Message Hash Value	Mandatory

## Financial Request/Repeat (0200)

Bit Data	Element Name	Presence Indicator
2	Primary account number	Mandatory
3	Processing codeMandatory	Mandatory
4	Amount, transaction	Mandatory
7	Transmission date and time	Mandatory
11	Systems trace audit number	Mandatory
12	Time, local transaction	Mandatory
13	Date, local transaction	Mandatory
14	Date, expiration	Mandatory
15	Date, settlement	Mandatory
16	Date, conversion	Mandatory
18	Merchant's type	Mandatory
22	POS entry mode	Mandatory
23	Card sequence number	Conditional
25	POS condition code	Mandatory

26	POS PIN capture code	Conditional
28	Amount, transaction fee	Mandatory
29	Amount, settlement fee	Conditional
30	Amount, transaction processing fee	Optional
32	Acquiring institution id code	Mandatory
35	Track 2 data	Conditional
37	Retrieval reference number	Mandatory
40	Service restriction code	Optional
41	Card acceptor terminal id	Mandatory
42	Card acceptor id code	Mandatory
43	Card acceptor name/location	Mandatory
49	Currency code, transaction	Mandatory
52	PIN data	Conditional
53	Security related control information	Conditional
54	Additional amount	Conditional
55	Integrated Circuit Card System Related Data	Conditional
56	Message reason code	Optional
59	Transport (echo) data	Optional
60	Payment Information	Conditional
62	Private Field, Management Data 1	Conditional
102	Account identification 1	Optional
103	Account identification 2	Optional



123	POS data code	Mandatory
124	Near Field Communication Data	Conditional
128	Secondary Message Hash Value	Mandatory

## Financial Request Response (0210)

Bit Data	Element Name	Presence Indicator
2	Primary account number	Mandatory
3	Processing codeMandatory	Mandatory
4	Amount, transaction	Mandatory
7	Transmission date and time	Conditional
11	Systems trace audit number	Conditional
12	Time, local transaction	Mandatory
13	Date, local transaction	Conditional
14	Date, expiration	Conditional
15	Date, settlement	Conditional
16	Date, conversion	Mandatory
18	Merchant's type	Mandatory
22	POS entry mode	Conditional
23	Card sequence number	Conditional
25	POS condition code	Mandatory
26	POS PIN capture code	Conditional

28	Amount, transaction fee	Conditional
32	Acquiring institution id code	Mandatory
33	Forwarding institution id code	Conditional
35	Track 2 data	Conditional
37	Retrieval reference number	Mandatory
40	Service restriction code	Conditional
41	Card acceptor terminal id	Optional
42	Card acceptor id code	Conditional
43	Card acceptor name/location	Conditional
49	Currency code, transaction	Mandatory
54	Additional amount	Conditional
55	Integrated Circuit Card System Related Data	Conditional
56	Message reason code	Optional
59	Transport (echo) data	Conditional
60	Payment Information	Conditional
62	Private Field, Management Data 1	Conditional
102	Account identification 1	Optional
103	Account identification 2	Optional
123	POS data code	Mandatory
124	Near Field Communication Data	Conditional
128	Secondary Message Hash Value	Mandatory

## Financial Advice/Repeat (Repeat) (0220/0221)

Bit Data	Element Name	Presence Indicator
2	Primary account number	Conditional
3	Processing codeMandatory	Mandatory
4	Amount, transaction	Mandatory
5	Amount, settlement	Conditional
7	Transmission date and time	Mandatory
9	Conversion rate, settlement	Conditional
11	Systems trace audit number	Mandatory
12	Time, local transaction	Mandatory
13	Date, local transaction	Mandatory
14	Date, expiration	Conditional
15	Date, settlement	Conditional
16	Date, conversion	Conditional
18	Merchant's type	Conditional
22	POS entry mode	Mandatory
23	Card sequence number	Conditional
25	POS condition code	Mandatory
26	POS PIN capture code	Conditional
28	Amount, transaction fee	Optional
29	Amount, settlement fee	Conditional
30	Amount, transaction processing fee	Optional



31	Amount, settle processing fee	Conditional
32	Acquiring institution id code	Conditional
33	Forwarding institution id code	Optional
35	Track 2 data	Conditional
37	Retrieval reference number	Optional
40	Service restriction code	Optional
41	Card acceptor terminal id	Mandatory
42	Card acceptor id code	Mandatory
43	Card acceptor name/location	Mandatory
45	Track 1 data	Optional
49	Currency code, transaction	Mandatory
50	Currency code, settlement	Conditional
54	Additional amount	Conditional
55	Integrated Circuit Card System Related Data	Conditional
56	Message reason code	Optional
58	Authorizing agent id code	Conditional
59	Transport (echo) data	Optional
67	Extended payment code	Conditional
90	Original data elements	Conditional
95	Replacement amounts	Conditional
98	Payee	Conditional
100	Receiving Institution ID Code	Optional

102	Account identification 1	Optional
103	Account identification 2	Optional
123	POS data code	Mandatory
124	Near Field Communication Data	Conditional
128	Secondary Message Hash Value	Mandatory

## Financial Advice Response (0230)

Bit Data	Element Name	Presence Indicator
2	Primary account number	Mandatory
3	Processing codeMandatory	Mandatory
4	Amount, transaction	Mandatory
7	Transmission date and time	Conditional
9	Conversion rate, settlement	Conditional
11	Systems trace audit number	Conditional
12	Time, local transaction	Mandatory
13	Date, local transaction	Conditional
14	Date, expiration	Conditional
15	Date, settlement	Conditional
16	Date, conversion	Conditional
18	Merchant's type	Mandatory
22	POS entry mode	Mandatory

23	Card sequence number	Conditional
25	POS condition code	Mandatory
26	POS PIN capture code	Conditional
28	Amount, transaction fee	Conditional
30	Amount, transaction processing fee	Conditional
31	Amount, settle processing fee	Conditional
32	Acquiring institution id code	Mandatory
33	Forwarding institution id code	Conditional
35	Track 2 data	Conditional
37	Retrieval reference number	Mandatory
38	Authorization id response	Conditional
40	Service restriction code	Conditional
41	Card acceptor terminal id	Optional
42	Card acceptor id code	Conditional
43	Card acceptor name/location	Conditional
44	Additional response data	Optional
48	Additional data	Conditional
49	Currency code, transaction	Mandatory
50	Currency code, settlement	Conditional
54	Additional amount	Conditional
55	Integrated Circuit Card System Related Data	Conditional
56	Message reason code	Optional



59	Transport (echo) data	Conditional
60	Payment Information	Conditional
102	Account identification 1	Optional
103	Account identification 2	Optional
123	POS data code	Mandatory
124	Near Field Communication Data	Conditional
128	Secondary Message Hash Value	Mandatory

## Reversal Advice (Repeat) (0420/0421)

Bit Data	Element Name	Presence Indicator
2	Primary account number	Mandatory
3	Processing codeMandatory	Mandatory
4	Amount, transaction	Mandatory
7	Transmission date and time	Mandatory
11	Systems trace audit number	Mandatory
12	Time, local transaction	Mandatory
13	Date, local transaction	Mandatory
14	Date, expiration	Mandatory
15	Date, settlement	Mandatory
16	Date, conversion	Mandatory
18	Merchant's type	Mandatory

22	POS entry mode	Mandatory
23	Card sequence number	Conditional
25	POS condition code	Mandatory
26	POS PIN capture code	Conditional
28	Amount, transaction fee	Conditional
30	Amount, transaction processing fee	Conditional
32	Acquiring institution id code	Mandatory
35	Track 2 data	Conditional
37	Retrieval reference number	Mandatory
40	Service restriction code	Optional
41	Card acceptor terminal id	Mandatory
42	Card acceptor id code	Mandatory
43	Card acceptor name/location	Mandatory
49	Currency code, transaction	Mandatory
52	PIN data	Conditional
54	Additional amount	Conditional
56	Message reason code	Mandatory
59	Transport (echo) data	Optional
60	Payment Information	Conditional
90	Original data elements	Mandatory
95	Replacement Amounts	Mandatory
123	POS data code	Mandatory



124	Near Field Communication Data	Conditional
128	Secondary Message Hash Value	Mandatory

## Reversal Advice Response (0430)

Bit Data	Element Name	Presence Indicator
2	Primary account number	Mandatory
3	Processing codeMandatory	Mandatory
4	Amount, transaction	Mandatory
7	Transmission date and time	Conditional
11	Systems trace audit number	Conditional
12	Time, local transaction	Mandatory
13	Date, local transaction	Conditional
14	Date, expiration	Conditional
15	Date, settlement	Conditional
18	Merchant's type	Mandatory
22	POS entry mode	Mandatory
23	Card sequence number	Optional
25	POS condition code	Mandatory
28	Amount, transaction fee	Conditional
30	Amount, transaction processing fee	Conditional
31	Amount, settle processing fee	Conditional

32	Acquiring institution id code	Mandatory
33	Forwarding institution id code	Conditional
35	Track 2 data	Conditional
37	Retrieval reference number	Mandatory
38	Authorization id response	Conditional
39	Response code	Mandatory
40	Service restriction code	Conditional
41	Card acceptor terminal id	Optional
42	Card acceptor id code	Conditional
43	Card acceptor name/location	Conditional
49	Currency code, transaction	Mandatory
54	Additional amount	Conditional
59	Transport (echo) data	Conditional
90	Original data elements	Mandatory
95	Replacement amount	Mandatory
102	Account identification 1	Optional
103	Account identification 2	Optional
123	POS data code	Mandatory
124	Near Field Communication Data	Conditional
128	Secondary Message Hash Value	Mandatory

## Network Management (Repeat) (0800)

Bit Data	Element Name	Presence Indicator
3	Processing code	Mandatory
7	Transmission date and time	Mandatory
11	Systems trace audit number	Mandatory
12	Time, local transaction	Mandatory
13	Date, local transaction	Mandatory
41	Card acceptor terminal id	Mandatory
62	Private, management data 1	Conditional
63	Private, management data 2	Conditional
64	Primary Message Hash Value	Conditional

## Network Management (0810)

Bit Data	Element Name	Presence Indicator
7	Transmission date and time	Mandatory
11	Systems trace audit number	Mandatory
12	Time, local transaction	Mandatory
13	Date, local transaction	Mandatory
39	Response code	Mandatory
41	Card acceptor terminal id	Mandatory
53	Security related control information	Conditional
62	Private, management data 1	Conditional



63	Private, management data 2	Conditional
64	Primary Message Hash Value	Conditional

# Field Definition DE2 - DE9

The following ISO Data Elements are supported by the Interface.

## Field 2 – Primary Account Number

Field No	Format	Attr
2	LLVAR	n ..19

A number identifying the cardholder and the card issuer. Typically, this number is embossed on the front of the card and encoded on Track 2 of the magnetic stripe.

## Field #3 - Processing Code

Field No	Format	Attr
3		an 6

The customer transaction type and the account types, if any, affected by the transaction. This is a fixed length field consisting of 3 data elements:

- Transaction type (positions 1 - 2)
- Account type affected for debits and inquiries and the "from" account for transfers (positions 3 - 4)
- Account type affected for credits and the "to" account for transfers (positions 5 - 6)

*Transaction Type*



Code	Description	Message Type Identifier (MTI)
00	Purchase	0200
01	Cash Advance	0200
20	Refund/Return	0200
21	Deposit	0200
09	Purchase with Cash back	0200
31	Balance Inquiry	0100
30	Link Account Inquiry	0100
38	Mini – Statement	0100
40	Fund Transfer	0200
48	Bill Payments	0200
4A	Prepaid	0200
4B	Biller List Download	0800
4C	Product List Download	0800
4D	Biller Subscription Information Download	0800
4E	Payment Validation	0800
4F	Purchase with Additional Data	0200
60	POS Pre – Authorization	0100
61	POS Pre – Authorization Completion	0220
90	PIN Change	0100
9A	Terminal Master Key	0800
9B	Terminal Session Key	0800

9G	Terminal PIN Key	0800
9I	Initial PIN Encryption Key Download – Track2 Data	0800
9J	Initial PIN Encryption Key Download – EMV	0800
9C	Terminal Parameter Download	0800
9D	Call – home	0800
9E	CA Public Key Download	0800
9F	EMV Application AID Download	0800
9H	Daily Transaction Report Download	0800
9K	Dynamic Currency Conversion	0800

#### Account Type Codes

Code	Description
00	Default – unspecified
10	Savings
20	Current
30	Credit
40	Universal Account
50	Investment Account

#### Field #4 - Amount, Transaction

Field No	Format	Attr
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4	n 12
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This field contains the transaction amount in the transaction currency. This amount is expressed in lowest denominations.

#### **Field #5 - Amount, Settlement**

Field No	Format	Attr
5		n 12

The funds to be transferred between the acquirer and card issuer equal to the amount, transaction as expressed in the settlement currency.

#### **Field #7 - Transmission Date and Time**

Field No	Format	Attr
7	MMDDhhmmss	n 10

The date and time, expressed in Coordinated Universal Time (UTC), when this message is sent by the message initiator.

#### **Field #9 - Conversion Rate, Settlement**

Field No	Format	Attr
9		n 8

This field contains the factor used in conversion from the transaction currency amount to the local currency amount. The left most digit indicates the number of decimal places from the right.

# Field Definition DE11 - DE25

## Field #11 - System Trace Audit Number

Field No	Format	Attr
11		n 6

A number assigned by a transaction originator to assist in identifying a transaction uniquely. The systems trace audit number remains unchanged for all messages within a transaction.

## Field #12 - Time, Local Transaction

Field No	Format	Attr
12	Hhmmss	n 6

The local time at which the transaction takes place at the card acceptor location in authorization and financial messages.

For all other transactions, this field indicates the local time set by the initiator of the first message of the transaction.

## Field #13 - Date, Local Transaction

Field No	Format	Attr
13	MMDD	n 4

The local date at which the transaction takes place at the card acceptor location in authorization and financial messages.

For all other transactions, this field indicates the local date set by the initiator of the first message of the transaction.

#### Field #14 - Date, Expiration

Field No	Format	Attr
14	YYMM	n 4

The year and month after which the card expires.

#### Field #15 - Date, Settlement

Field No	Format	Attr
15	MMDD	n 4

The month and day for which financial totals are reconciled between the acquirer and the issuer.

#### Field #16- Date, Conversion

Field No	Format	Attr
16	MMDD	n 4

The month and day on which the currency for the transaction was converted.

#### Field #18 –Merchant Type

Field No	Format	Attr
18		n 4

The classification of the merchant's type of business product or service. Codes to be developed within each country.

#### Field #22 –POS Entry Mode



Field No	Format	Attr
<b>22</b>		<b>N3</b>

A series of codes that identify the actual method used to capture the account number and expiry date when a terminal is used, and the PIN capture capability of the terminal. This is a fixed length field consisting of 2 data elements:

- PAN entry mode (positions 1 - 2)

00 – Unknown

01 – Manual (i.e keypad)

02 – Magnetic Stripe (possibly constructed manually, CVV may be checked)

03 – Barcode

04 – OCR

05 – ICC (CVV may be checked)

07 – Auto - entry via contactless ICC

90 – Magnetic strip as read from track 2

91 – Auto - entry via contactless magnetic stripe

95 – ICC (CVV may not be checked)

- PIN entry capability (position 3)

0 – Unknown

1 – Terminal can accept PIN

2 – Terminal cannot accept PIN



### Field #23 – Card Sequence number

Field No	Format	Attr
23		n3

A number distinguishing between separate cards with the same primary account number or primary account number extended.

### Field #25 –POS Condition Code

Field No	Format	Attr
25		n2

A code that describes the condition under which the transaction takes place at the Point-Of-Service.

00	Normal presentment
01	Customer not present
02	Unattended terminal - card can be retained
03	Merchant suspicious
04	Electronic Cash Register interface
05	Customer present, card not present
06	Pre-authorized request
07	Telephone device required
08	Mail/telephone order
09	POS security alert
10	Customer identity verified

11	Suspected fraud
12	Security reasons
13	Representation of item
14	Public utility terminal
15	Customer's terminal
16	Administrative terminal
17	Returned item
18	No check in envelope – return
19	Deposit out of balance – return
20	Payment out of balance – return
21	Manual reversal
22	Terminal error – counted
23	Terminal error - not counted
24	Deposit out of balance – apply
25	Payment out of balance – apply
26	Withdrawal error – reversed
27	Unattended terminal - card cannot be retained

Additional codes can be defined for private use.

# Field Definition DE26 - DE38

## Field #26 – POS PIN Capture Code

Field No	Format	Attr
26		n2

The maximum number of PIN characters that can be accepted by the Point-of-Service device.

Valid values are "04" to "12" ("00" to "03" are reserved by ISO) and if the POS device does not accept PINs or it is unknown whether the device does, this value should be set to "12".

## Field #28 - Amount, Transaction Fee

Field No	Format	Attr
28		x + n 8

A fee charged, by the acquirer to the issuer, for transaction activity, in the currency of the amount, transaction. X can have a value of either "C" or "D".

## Field #29 - Amount, Settlement Fee

Field No	Format	Attr
29		x + n 8

A fee charged, by the acquirer to the issuer, for transaction activity, in the currency of the amount, settlement. X can have a value of either "C" or "D".

## Field #30 - Amount, Transaction Processing Fee

Field No	Format	Attr
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A fee charged by the network for the handling and routing of messages, in the currency of amount, transaction. This field is usually inserted by the network into the applicable messages. X can have a value of either "C" or "D".

#### Field #31 - Amount, Settlement Processing Fee

Field No	Format	Attr
31		x + n 8

A fee charged by the network for the handling and routing of messages, in the currency of amount, settlement. This field is usually inserted by the network into the applicable messages.

#### Field #32 - Acquiring Institution Identification Code

Field No	Format	Attr
32	LLVAR	an.. 11

A code identifying the financial institution acting as the acquirer of this customer transaction. The acquirer is the member or system user that signed the merchant, installed the ATM or dispensed cash. This field usually contains the BIN (see PAN) of the acquirer, but could be any other number assigned to it by the relevant authorities.

When a processing center operates for multiple acquirers, this is the code for the individual member or system user, not a code for the processing center.

#### Field #33 - Forwarding Institution Identification Code

Field No	Format	Attr
33	LLVAR	n.. 11

A code identifying the institution that forwards the transaction in an interchange system en route to the card issuer. For example, assume that an acquirer routes a transaction via a third-party EFT switch to the card issuer. In the request from the acquirer to the EFT switch, this field contains the code of the acquirer. When the request is forwarded by the EFT switch to the card issuer, this field contains the code assigned to the EFT switch.

#### **Field #35 – Track 2 Data**

Field No	Format	Attr
<b>35</b>	<b>LLVAR</b>	<b>z..37</b>

The information encoded on Track 2 of the magnetic stripe as defined in ISO 7813, including field separators but excluding the begin sentinel, end sentinel and longitudinal redundancy check characters. The field separator (FS) can be either a "=" or a "D" character. The layout of this field is as follows:

Field	Length
Primary account number	up to 19 digits
Field separator	1 digit
Expiry date (YYMM)	4 digits (or a field separator if not present)
Service restriction code	3 digits (or a field separator if not present)
Discretionary data	balance of available digits

The primary account number, expiry date and service restriction code fields are described in further detail under fields 2, 14 and 40 in this document.

#### **Field #37 – Retrieval Reference Number**

Field No	Format	Attr
<b>37</b>		<b>an 12</b>

A reference number supplied by the system retaining the original source information and used to assist in locating that information or a copy thereof.

**Field #38 – Authorization code**

Field No	Format	Attr
38		n 6

A code assigned by the authorizing institution indicating approval.

# Field Definition DE39 - DE48

## Field #39 - Response Code

Field No	Format	Attr
39		an 2

A code that defines the disposition of a transaction.

00	Approved or completed successfully
01	Refer to card issuer
02	Refer to card issuer, special condition
03	Invalid merchant
04	Pick-up card
05	Do not honor
06	Error
07	Pick-up card, special condition
08	Honor with identification
09	Request in progress
10	Approved, partial
11	Approved, VIP
12	Invalid transaction
13	Invalid amount
14	Invalid card number
15	No such issuer

16	Approved, update track 3
17	Customer cancellation
18	Customer dispute
19	Re-enter transaction
20	Invalid response
21	No action taken
22	Suspected malfunction
23	Unacceptable transaction fee
24	File update not supported
25	Unable to locate record
26	Duplicate record
27	File update edit error
28	File update file locked
29	File update failed
30	Format error
31	Bank not supported
32	Completed partially
33	Expired card, pick-up
34	Suspected fraud, pick-up
35	Contact acquirer, pick-up
36	Restricted card, pick-up
37	Call acquirer security, pick-up





38	PIN tries exceeded, pick-up
39	No credit account
40	Function not supported
41	Lost card
42	No universal account
43	Stolen card
44	No investment account
51	Not sufficient funds
52	No check account
53	No savings account
54	Expired card
55	Incorrect PIN
56	No card record
57	Transaction not permitted to cardholder
58	Transaction not permitted on terminal
59	Suspected fraud
60	Contact acquirer
61	Exceeds withdrawal limit
62	Restricted card
63	Security violation
64	Original amount incorrect
65	Exceeds withdrawal frequency



66	Call acquirer security
67	Hard capture
68	Response received too late
75	PIN tries exceeded
77	Intervene, bank approval required
78	Intervene, bank approval required for partial amount
90	Cut-off in progress
91	Issuer or switch inoperative
92	Routing error
93	Violation of law
94	Duplicate transaction
95	Reconcile error
96	System malfunction
98	Exceeds cash limit

#### Field #40 - Service Restriction Code

Field No	Format	Attr
<b>40</b>		<b>N3</b>

An identification of geographic/service availability. Contains:

- The area of usage and whether the card has additional read facilities

#### 1 International card



2	International card - integrated circuit facilities
5	National use only
6	National use only - integrated circuit facilities
9	Test card - online authorization mandatory

- The authorization processing requirements for this card

0	Normal authorization
2	Online authorization mandatory
4	Online authorization mandatory

- The range of services available and PIN requirements

0	PIN required
1	No restrictions - normal cardholder verification
2	Goods and services only
3	PIN required, ATM only
5	PIN required, goods and services only at POS, cash at ATM
6	PIN required if PIN pad present
7	PIN required if PIN pad present, goods and services only at POS, cash at ATM

#### Field #41 - Card Acceptor Terminal Identification

Field No	Format	Attr
41		ans 8

A unique code identifying a terminal at the card acceptor location.

#### **Field #42 - Card Acceptor Identification Code**

Field No	Format	Attr
42		ans 15

A code identifying the card acceptor (typically a merchant).

#### **Field #43 - Card Acceptor Name / Location**

Field No	Format	Attr
43		ans 40

The name and location of the card acceptor (such as a merchant or an ATM). This is a fixed length field consisting of 4 data elements:

- The location information (positions 1 - 23), exclusive of city, state and country
- The city (positions 24 - 36) in which the Point-of-Service is located
- The state (positions 37 - 38) in which the Point-of-Service is located
- The country (positions 39 - 40) in which the Point-of-Service is located

#### **Field #44 - Additional Response Data**

Field No	Format	Attr
48	LLVAR	ans..25

Used to provide other supplemental data (such as a telephone number for referrals) that may be required in response to an authorization or other type of transaction request.

After a **PIN Change** request has been processed, this field contains the PIN offset (or PVV) in a 0610 message to the Source Node, as well as in a 0620 message to the Sink Node. If set in a 0610 message from the Sink Node, this field again indicates the PIN offset (or PVV).

For **Visa Cash** load transactions, this field is used to carry signature information. In load responses, it contains the Visa Cash Service Identifier ("SV:") followed by the load response signature (S2). This is a fixed length field consisting of 2 data elements:

- The Visa cash service identifier (positions 1 - 3), a constant value of "SV:"
- The load authorization signature (positions 4 - 19) for this load operation

In load settlement advices, it contains the Visa Cash Service Identifier ("SV:") followed by the load completion signature (S3). This is a fixed length field consisting of 2 data elements:

- The Visa cash service identifier (positions 1 - 3), a constant value of "SV:"
- The load completion signature (positions 4 - 19) for this load operation

**Field #45 - Track 1 Data**

Field No	Format	Attr
48	LLVAR	ans..76

The information encoded on Track 1 of the magnetic stripe as defined in ISO 7813, including field separators but excluding the begin sentinel, end sentinel and longitudinal redundancy check characters.

Note that two structures are defined by ISO 7813, namely Structure A and Structure B. Structure A is reserved for proprietary use by card issuers, while Structure B is defined as follows:

Field	Length

Format Code	B (ASCII 66)
Primary account number	up to 19 digits
Field separator	1 character (ASCII 61 or 94)
Country Code	3 digits (or a field separator if not present)
Name	2 to 26 characters (this field is further described below)
Field separator	1 character (ASCII 61 or 94)
Expiry date (YYMM)	4 digits (or a field separator if not present)
Service restriction code	3 digits (or a field separator if not present)
Discretionary data	balance of available digits

The primary account number, expiry date and service restriction code fields are described in further detail under fields 2, 14 and 40 in this document.

The structure of the **Name** field is defined in the following table. Sub-fields are separated by means of a space character (ASCII 32). The minimum encoded data allowed is a single character followed by the surname separator.

Field	Notes
Surname	
Surname separator	ASCII 47
First Name or Initial	
Space	When required
Middle Name or Initial	
Period	When followed by Title; ASCII 46
Title	When used

The space character (ASCII 32) is required to separate the sub-fields of the **Name** field other than the surname. The separator terminating the surname should be encoded following the last sub-field of the **Name**field. If only the surname is encoded, it will follow the surname separator.

**Field #48 - Additional Data**

Field No	Format	Attr
48	LLVAR	ans...999

Used to provide linked account or mini-statement information for a linked account inquiry or a mini-statement inquiry.

**Mini – statement Information**

The format for field 48 when mini-statement data is to be sent downstream is as follows:

- 1. A mini-statement heading line, containing tags to identify the format of the mini-statement data lines that follows, e.g.

```
DATE_TIME|SEQ_NR|TRAN_TYPE|TRAN_AMOUNT~
```

The different fields of the mini-statement heading line are separated by bar characters ("|") and the line is terminated by a tilde character ("~").

- 2. One or more mini-statement data lines, each similar to the identifying string above in structure, but containing the actual transaction data to be printed per line, e.g.

```
19971201123123|001234|01|0000000005000~
```

Below is a list of tags supported.



Field	Tag name	Format
Sequence number	SEQ_NR	n6
Date and time	DATE_TIME	n14, CCYYMMDDhhmmss
Terminal ID	TERM_ID	n8
Transaction type	TRAN_TYPE	n2
From account	FROM_ACC	n2
To account	TO_ACC	n2
Transaction amount	TRAN_AMOUNT	n12
Account ID 1	ACC_ID1	ans28
Account ID 2	ACC_ID2	ans28
Authorization ID	AUTH_ID	n6
Currency code	CURR_CODE	n3 (Currency code of the Transaction Amount field)
Surcharge	SURCHARGE	n8

### Linked Account Inquiry

In the case of a linked account inquiry, this field contains information relating to the accounts linked to the card that initiated the transaction. The information for up to 20 accounts can be returned. Note that when "00" is specified as an account type in the original request, a list of all accounts linked to the card is retrieved, and not only the linked accounts of the default account type. The format of the information associated with each account is as follows:

Field	Length	Description



Account ID	28	The identifier uniquely identifying the account, left justified, space-filled.
Account type	2	The ISO 8583 account type of the account.
Currency code	3	The ISO numeric currency code of the account.
Ledger balance	13	The ledger balance of the account. The first character contains the sign. A "D" indicates a debit (negative) balance and a "C" indicates a credit (positive) balance.

# Field Definition DE49 - DE58

## Field #49 - Currency Code, Transaction

Field No	Format	Attr
49		n 3

The local currency of the acquirer or source location of the transaction. This is the currency code used for the following amount fields:

- amount, transaction
- amount, transaction fee
- amount, transaction processing fee

## Field #50 - Currency Code, Settlement

Field No	Format	Attr
50		n 3

A code identifying the currency of settlement. If this field is not present for a transaction, it is assumed that this field is the same as the currency code, transaction field. This is the currency code used for the following amount fields:

- amount, settlement
- amount, settlement fee
- amount, settlement processing fee
- amount, net settlement

## Field #52 – PIN Data

Field No	Format	Attr
52		Hex16

The PIN data field contains the PIN (a number assigned to a cardholder intended to uniquely identify that cardholder) of the cardholder formatted into a 64-bit block and encrypted with a DES key.

#### Field #53 – Security Related Control Information

Field No	Format	Attr
53		Hex96

Identifies security management information used in the current transaction or specifies security management information to be used in future transactions.

In **PIN change** transactions, the first byte indicates the PIN to change:

- binary 0 – insecure PIN (e.g. telephone PIN)
- binary 1 – secure PIN (e.g. ATM PIN)

The following 8 bytes of this field contains the new PIN formatted into a 64-bit block and encrypted with a DES key.

In **key change** transactions, this field contains the encrypted key in the first 8-24 bytes (8 for single, 16 for double, 24 for triple length), followed by a 3-byte key check value (i.e. the first 3 bytes of a clear value of all zeroes encrypted with the key).

#### Field #54 – Additional Amounts

Field No	Format	Attr

<b>54</b>	<b>LLLVAR</b>	<b>an...120</b>
-----------	---------------	-----------------

Information on up to 6 amounts and related account data for which specific data elements have not been defined. Each amount is a fixed length field consisting of 5 data elements:

- Account type (positions 1 - 2)
- Amount type (positions 3 - 4)
- Currency code (positions 5 - 7)
- Amount sign (position 8) - "C" or "D"
- Amount (position 9 - 20)

When this field is sent by the entity that performed currency conversion this field should contain amounts in the transaction and settlement currencies if they differ.

In a response message from the NCS, this field will always contain the approved amounts and cash amounts, if applicable.

#### **Field #55 – Integrated Circuit Card System Related Data**

<b>Field No</b>	<b>Format</b>	<b>Attr</b>
<b>55</b>	<b>LLLVAR</b>	<b>ANS..510</b>

This data element contains EMV data. This EMV data in this data element is structured in the following manner:

<2-or-4-character Tag><2-character length field><variable length data>

The 2-byte or 4-byte tag is an EMV tag (in hexadecimal format) that uniquely identifies the data content of the P-55 fields, and the 2-digit length field defines the length of the variable-length data that follows it. The length specifies the number of hexadecimal values represented in the data part, the actual string is twice as long as the length specifies. The format of the length field is binary converted to a hexadecimal string, e.g., 0x1F would be represented as "1F". A tag identifying the type of data, followed immediately by a two-digit length (LL) identifying the length of the data, followed immediately by the data itself.

The variable length data for a tag cannot exceed the maximum specified length specified for the data. When the variable length data is longer than the defined maximum length for the tag value, it is truncated. The following table describes each of the EMV tags that can be carried in the P-55 data element, the maximum length for each tag value, the transaction data elements (TDEs) to which each tag is mapped, and flags indicating whether the tag data is required (Y), optional (N), or not applicable (N/A) for requests and responses.

EMV Tag	Description	Max Length	TDE	Required	
Request	Response				
9F26	Authorization Request	H8	EMV Request	Y	N/A
9F27	Cryptogram Information Data	H1	EMV Request	Y	N/A
9F10	Issuer Application Discretionary data	32	EMV	Y	N/A
9F37	Unpredictable Number	H4	EMV Request	Y	N/A
9F36	Application Transaction Counter	H2	EMV Request	Y	N/A
95	Terminal Verification Result	H5	EMV Request	Y	N/A
9A	Transaction Date	H3	EMV Request	Y	N/A
9C	Transaction Type	H1	EMV Request	Y	N/A
9F02	Transaction Amount	H6	EMV Request	Y	N/A
5F2A	Transaction Currency Code	H2	EMV Request	Y	N/A
82	Application Interchange Profile	H2	EMV Request	Y	N/A
9F1A	Terminal Country Code	H2	EMV Request	Y	N/A

9F34	Cardholder Verification Method Results	H4	EMV Discretionary Data	N	N/A
9F33	Terminal Capabilities	H3	EMV Discretionary Data	N	N/A
9F35	Terminal Type	H1	EMV Request	N	N/A
9F1E	Interface Device Serial Number	H8	EMV Discretionary Data	N	N/A
84	Dedicated File Name	H16	EMV Discretionary Data	N	N/A
9F09	Application Version Number	H2	EMV Discretionary Data	N	N/A
9F03	Amount, other	H6	EMV Request	N	N/A
5F34	Application PAN Sequence Number	H1	EMV Status	N	N
91	Issuer Authentication Data	H32	EMV Response	N/A	N
71	Issuer Script	H128	EMV Script	N/A	N
72	Issuer Script	H128	EMV Script	N/A	N
9F6E	Form Factor Indicator (FFI)	H4	EMV Request	N	N

#### Field #56 – Message Reason Code

Field No	Format	Attr
56	LLLVAR	n..4

A code that provides the receiver of a request, advice or notification message with the reason, or purpose of that message.

For original authorizations and financial transactions, it identifies why the type of message was sent (e.g. why an advice versus a request); for other messages, it states why this action was taken.

1003	Card issuer unavailable
1006	Under floor limit
1376	PIN verification failure
1377	Change dispensed
1378	IOU receipt printed
1510	Over floor limit
1800	Negative card
4000	Customer cancellation
4001	Unspecified, no action taken
4004	Completed partially
4021	Timeout waiting for response

For place hold on card transactions, in Issuer File Update Advice (0322) or Administration (0600/0620) messages, it states why a card should be put on the hotcard list:

3000	Lost card
3001	Stolen card
3002	Undelivered card
3003	Counterfeit card
3700	Lost PIN

If a hold response code has not been specified in these transactions, the message reason code field will be used to determine which hold response code to use for the transaction. A message reason code of "3001-Stolen card" will result in a hold response code of "43-Stolen card", otherwise "41-Lost card" will be used.

In the case of a message to bank transaction, the message reason code specifies the type of message the cardholder wants to forward to the issuer. Note that in this case, the message reason code field is treated as a free-format field that the user can use for any user specific code.

Message reason codes are defined in the ISO 8583 (1993) specification, and this specification has been used as basis for the codes defined here.

#### **Field #58 – Authorizing Agent Code**

Field No	Format	Attr
58	LLVAR	n...11

A code identifying the authorizing agent institution.



# Field Definition DE59 - DE67

## Field #59 – Echo Data

Field No	Format	Attr
59	LLLVAR	ans...255

Contains data from the originator of the message that shall be returned unaltered in the response message

## Field #60 – Payment Information

Field No	Format	Attr
60	LLLVAR	ans...999

This data element contains information relating to bills payments and token (recharge cards, tickets etc) purchases. This data element carries tagged data items. The tags defined for this data element are as listed in the table below:

Transaction Type	Tag	Description	Length	Presence Indicator	Request/Response
Payment for Bills	*41	Bill Identification Code	015	Mandatory	Request
	45	Product Identification Code		Conditional	



	**50	Customer Subscription Information		Mandatory	
	**50	Customer Subscription Information		Optional	Response
Purchase of Token (Recharge Card, ticket etc)	*41	Billers Identification Code	015	Mandatory	Request
	45	Product Identification Code		Conditional	
	**50	Customer Subscription Information (or products)		Optional	
	****51	Token (e.g. PIN or Voucher)		Conditional	Response
	**50	Customer Subscription Information		Optional	

## Field #62 – Private Field, Management Data 1

Field No	Format	Attr
----------	--------	------

62	LLLVAR	ans...999
----	--------	-----------

This data element carries tagged data items. The tags defined for this data element are listed in the table below. Tagged data items are structured in the following manner: a tag identifying the type of data, followed immediately by a three-digit length (LLL) identifying the length of the data, followed immediately by the data itself.

Tag + LLL + data.

#### Field #62 – Private Field, Management Data 1

Transaction Type	Tag	Description	Length	Request/Response
Terminal Parameter Download	01	POS/Payment Channel Serial Number		Request
	02	CTMS Date and Time	014	Response
	03	Card Acceptor Identification Code	015	
	04	Timeout (maximum time interval to wait for response – in seconds)	002	
	05	Currency Code	003	
	06	Country Code	003	
	07	Call home time (maximum time interval idleness for which a call – home must be done – in hours)	002	
	52	Merchant Name and Location	040	

	08	Merchant Category Code	004	
Call – Home	01	POS/Payment Channel Serial Number		Request
	09	POS/Payment Channel Application Version	003	
	10	POS Terminal/Payment Channel Model	020	
	11	Call – Home Merchant Information/Complaint/Comments		
	12	Communications Service Provider		
Biller List Download	01	POS/Payment Channel Serial Number		Request
	*41	Biller Identification Code	015	Response
	42	Biller Name		
Biller Subscription Information Download	01	POS/Payment Channel Serial Number		Request
	*41	Biller Identification Code	015	
	43	Required Information Name		Response
	44	Default Value		
Product List Download	01	POS/Payment Channel Serial Number		Request
	*41	Biller Identification Code	015	
	45	Product Identification Code		Response
	46	Product Name		

	47	Product Amount	012	
Payment Validation	01	POS/Payment Channel Serial Number		Request
	*41	Biller Identification Code	015	
	***48	Payment Code		
	***49	Payment Validated Information		Response
Base Derivation Key (BDK) Request	01	POS/Payment Channel Serial Number		Request
	57	Key Serial Number	020	
Dynamic Currency Conversion	01	POS/Payment Channel Serial Number		Request
	58	Cardholder Preferred Currency	003	
	59	Local Country Currency	003	
	60	DCC Identification Code	015	
	58	Cardholder Preferred Currency	003	Response
	60	DCC Identification Code	015	
	61	Rate		

Note:

\*Tag 41: Biller Identification Code is in the format below:

1st position – transaction type the biller is setup for:

4 – Token (e.g. Recharge Card) Sales

## 5 – Bill Payments

2nd – 4th position – VAS Provider Code

5th – 8th position – Merchant Category Code

9th – 15th position – Unique Number identifying the Biller

**\*\*Tag 50:** Customer Subscription Information, if more than one, it should be separated by '|' e.g. name=Halima Eze Ajayi|customerid=00001|prod1=3|prod2=4

From the example, name and customerid are values downloaded during Biller Subscription Information Downloadrequest and the values the customer entered are after the equals signs. prod1 and prod2 are products while values 3 and 4 after the equals signs are the quantities.

**\*\*\*Tag 48:** Payment Code and **\*\*\*Tag 49:** Payment Validated Information can be used interchangeably. Format is same as tag 50.

Note: For receipt printing of mCash Transactions on POS, send the Customer Information in the format of Tag 50 as above. For example:

SellerCode=0731170253|Phone=07069302232|RefNo=10012344546567|Amount=1000.23

**\*\*\*\*51:** Token, if more than one, should be separated by comma ','

### Field #63 – Private Field, Management Data 2

Field No	Format	Attr
63	LLLLVAR	ans...9999

This data element carries tagged data items. The tags defined for this data element are listed in the table below. Tagged data items are structured in the following manner: a tag identifying the type of data, followed immediately by a three-digit length (LLL) identifying

the length of the data, followed immediately by the data itself. Each block of data is separated by “~”.

Tag + LLL + data.

Transaction Type	Tag	Description	Length	Request/Response
EMV Application AID Download	01	POS/Payment Channel Serial Number		Request
13	AID Index		Response	
14	Application Internal Reference Number			
15	Application Identification Number (EMV AID)			
16	Match	001		
17	EMV Application Name			
18	EMV Application Version			
19	EMV Application Selection Priority			
20	EMV DDOL			
21	EMV TDOL			
22	EMV TFL Domestic			

23	EMV TFL International		
24	EMV Offline Threshold Domestic		
25	EMV Max Target Domestic		
26	EMV Max Target International		
27	EMV Target Percentage Domestic		
28	EMV Target Percentage International		
29	Default EMV TAC Value		
30	EMV TAC Denial		
31	EMV TAC Online		
CA Public Key Download	01	POS/Payment Channel Serial Number	Request
32	Certificate Authority (CA) Key Index		Response
33	CA Key Internal Reference Number		



34	CA Key Name		
35	EMV RID		
36	Hash Algorithm		
37	EMV CA PK Modulus		
38	EMV CA PK Exponent		
39	EMV CA PK Hash		
40	Public Key Algorithm		
Daily Transaction Report Download	01	POS/Payment Channel Serial Number	Request
53	Transaction Date and Time		Response
54	Response Code		
55	Amount		
56	Transaction Type		

#### Field #64 – Primary Message Hash Value

Field No	Format	Attr
64	AN	64

This data element carries the hash value for the messages subject to no secondary data elements (DE65 through DE128) are included in the message. The algorithm is SHA-256.

If the message contains secondary data elements, data element DE128 is used to carry the hash value. If the hash value is carried in data element DE128, data element DE64 is not included in the message.

**Field #67 – Extended Payment Code**

Field No	Format	Attr
67		n 2

The number of months that the cardholder prefers to pay for this item if permitted by the card issuer.

# Field Definition DE90 - DE128

## Field #90 – Original Data Elements

Field No	Format	Attr
90		n 42

The data elements contained in the original message intended for transaction matching (e.g. to identify a transaction for correction or reversal). It is a fixed length field consisting of 5 data elements:

- Original message type (positions 1 - 4) - the message type identifier of the original message of the transaction being reversed.
- Original systems trace audit number (positions 5 - 10) – the system trace audit number of the original message.
- Original transmission date and time (positions 11 - 20) – the transmission date and time of the original message
- Original acquirer institution ID code (position 21 - 31) – the acquirer institution ID code of the original message (right justified with leading zeroes).
- Original forwarding institution ID code (position 32 - 42) – the forwarding institution ID code of the original message (right justified with leading zeroes).

## Field #95 – Replacement Amounts

Field No	Format	Attr
95		n 42

The corrected amounts of a transaction in a partial or full reversal (or the final amounts for the transaction). It is a fixed length field consisting of 4 data elements:

- Actual amount, transaction (positions 1 - 12) - the corrected, actual amount of the customer's transaction, in the currency of the transaction.
- Actual amount, settlement (positions 13 - 24) - the corrected, actual amount of the customer's transaction, in the settlement currency.
- Actual amount, transaction fee (positions 25 - 33) - the corrected, actual amount of the fee (in format x + n8) for this customer transaction, in the currency of the transaction.
- Actual amount, settlement fee (positions 34 - 42) - the corrected, actual amount of the fee (in format x + n8) for this customer transaction, in the settlement currency.

#### **Field #98 – Payee**

Field No	Format	Attr
<b>98</b>		<b>ans25</b>

A code or ID identifying the payee (recipient) of a payment transaction. This field is used in a payment transaction when the payee is an Institution defined payee. Customer defined payees do not have a payee ID.

When using this field with the NCS Payments Engine, however, it contains the ID of the payee as maintained in the payee list for a cardholder. Because the Payments Engine assigns an ID to both institution and customer defined payees, this field can be used to refer to either type of payee.

#### **Field #100 – Receiving Institution ID Code**

Field No	Format	Attr
<b>100</b>	<b>LLVAR</b>	<b>n...11</b>

A code identifying the financial institution that should receive a request or advice. This identification code is used when it is not possible to route a message using the account number field in the message, e.g. in a check verification message. When this field is

included in a request or advice, it takes precedence over all account number fields for routing.

#### **Field #102 – Account Identification 1**

Field No	Format	Attr
102	LLVAR	n..28

A series of digits and/or characters used to identify a specific account held by the cardholder at the card issuer and if present, shall remain unchanged for the life of the transaction. This field usually contains the description of the "from" account.

#### **Field #103 – Account Identification 2**

Field No	Format	Attr
103	LLVAR	n..28

A series of digits and/or characters used to identify a specific account held by the cardholder at the card issuer and if present, shall remain unchanged for the life of the transaction. This field usually contains the description of the "to" account.

When used in payment transactions, this field specifies the bank account number of the payee.

#### **Field #123 – POS Data Code**

Field No	Format	Attr
123	LLLVAR	an15

The field is used to identify terminal capability, terminal environment and presentation security data. It is used to indicate specific conditions that were present at the time a transaction took place at the Point-of-Service. This field consists of the following sub-fields:

- The card data input capability (position 1) of the terminal.

Possible values are:

0 – Unknown

1 – Manual, no terminal

2 – Magnetic Stripe

3 – Barcode

4 – OCR

5 – Magnetic Stripe, Key Entry and ICC

6 – Key Entry

7 – Magnetic Stripe and Key Entry

8 – Magnetic Stripe and ICC

9 – ICC

A – Contactless ICC

B – Contactless Magnetic Strip

- The cardholder authentication capability (position 2) of the terminal.

Possible values are:

0 – No electronic authentication

1 – PIN

2 – Electronic signature analysis

3 – Biometric

4 – Biographic

5 – Electronic authentication inoperative

6 – others

- The card capture capability (position 3) of the terminal.

Possible values are:

0 – None

1 - Capture

- The operating environment (position 4) of the terminal.

Possible values are:

0 – No terminal use

1 – On premise of card acceptor, attended

2 – On premise of card acceptor, unattended

3 – Off premise of card acceptor, attended

4 – Off premise of card acceptor, unattended

5 – On premise of cardholder, unattended

- Indicates whether the cardholder is present (position 5).

Possible values are:

0 – Cardholder present

1 – Cardholder not present, unspecified

2 – Cardholder not present, mail order

3 – Cardholder not present, telephone

4 – Cardholder not present, standing authorization/recurring transaction

5 – Cardholder not present, electronic order

· Indicates whether the card is present (position 6)

Possible values are:

0 – Card not present

1 – Card present

· The actual card data input mode (position 7) of the transaction

Possible values are:

0 – Unknown

1 – Manual, no terminal

2 – Magnetic Stripe

3 – Barcode

4 – OCR

5 – ICC

6 – Key Entry

7 – Contactless, ICC



8 – Contactless, magnetic stripe

- The actual cardholder authentication method (position 8) of the transaction.

Possible values are:

0 – no electronic authentication

1 – PIN

2 – Electronic signature analysis

3 – Biometric

4 – Biographic

5 – Manual

6 – Others

- The cardholder authentication entity (position 9) of the transaction

Possible values are:

0 – not authenticated

1 – ICC

2 – Terminal

3 – Authorizing agent

4 – Merchant

5 – Others

- The card data output capability (position 10) of the terminal.

Possible values are:

0 – Unknown

1 – None

2 – Magnetic Stripe write

3 – ICC

· The terminal output capability (position 11) of the terminal.

Possible values are:

0 – Unknown

1 – None

2 – Printing

3 – Display

4 – Printing and display

· The PIN capture capability (position 12) of the terminal.

0 – No PIN capture capability

1 – Device PIN capture capability unknown

4 – Four characters

5 – Five characters

6 – Six characters

7 – Seven characters

8 – Eight characters

9 – Nine characters

A – Ten characters

B – Eleven characters

C – Twelve characters

- The terminal operator (position 13).

- Possible values are:

- 0 – Customer operated

- 1 – Card acceptor operated

- Terminal Type (position 14 and 15)

00 – Administrative Terminal

01 – POS

02 – ATM

03 – Home Terminal

90 – E – commerce – no encryption (no authentication)

91 – E – commerce – FET/3D Secure Encryption: cardholder certificate not used (non authentication)

92 – E – commerce – FET/3D Secure Encryption: cardholder certificate used (authentication)

93 – E – commerce – FET/3D Secure Encryption: Chip Cryptography used: cardholder certificate not used

94 – E – commerce – FET/3D Secure Encryption: cardholder certificate used

95 – E – commerce – FET/3D Secure Encryption: channel encryption (SSL): cardholder certificate not used (non – authentication)

96 – E – commerce – FET/3D Secure Encryption: Chip cryptography used: cardholder certificate not used

21 – Smart Phone

16 – Vending

15 – Public Utility

13 – Franchise Teller

09 – Coupon Machine

07 – Fuel Machine

---

Field No	Format	Attr
124	LLLLVAR	ans...9999

---

This data element carries NFC Data. This would be transmitted to the processing system as received from POS Terminal.

**Field #128 – Secondary Message Hash Value**

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Field No	Format	Attr
128	AN	64

---

This data element carries the message hash value for the message, subject to at least one other secondary data element (DE65 through DE128) being included in the message. The algorithm is SHA-256.

If the message does not contain at least one other secondary data element, the hash value is placed in data element DE64.

# Key Management

This section discusses how keys are managed between POS Terminals or other Payment Channels. The system has support for Master Key Session and Derived Unique Key Per Transaction (DUKPT).

For Master Key session, the following are the keys to be exchanged:

- 1. Clear Terminal Master Key (CTMK):** This key is transmitted in clear form and injected into the POS Terminal or other Payment Channels. This can be generated for a group of POS Terminals. A group could be a logical grouping by Payment Terminal Service Provider (PTSP) or Merchant Acquirers.
- 2. Encrypted Terminal Master Key (TMK):** This key is transmitted in encrypted form to the POS Terminal or other Payment Channels. This is not injected into terminal manually. This is requested for online by the POS Terminal when it is being setup or if it is suspected that the key has been compromised. TMK is encrypted with CTMK.
- 3. Encrypted Terminal PIN Key (TPK):** This key is usually transmitted in encrypted form to the POS Terminal or other Payment Channels. This is not injected into the terminal manually. POS terminal requests online for this key at predefined time from the CTMS. TPK is encrypted with the TMK. At transaction, this key is used to encrypt the PIN block if it is sent in the message.
- 4. Encrypted Terminal Session Key (TSK):** This key is usually transmitted in encrypted form to the POS Terminal or other Payment Channels. This is not injected into terminal manually. POS Terminal requests online for this key at predefined time from the CTMS. TSK is encrypted with TMK. At transaction, this key is used for seeding the algorithm for generating hash value in DE64 or DE128.

For DUKPT, the following are the keys to be exchanged:

- 1. Clear Terminal Master Key (CTMK):** This key is transmitted in clear form and injected into the POS Terminal or other Payment Channels. This can be generated for a group of POS Terminals. A group could be a logical grouping by Payment Terminal Service Provider (PTSP) or Merchant Acquirers.

- 2. Encrypted Terminal Master Key (TMK):** This key is transmitted in encrypted form to the POS Terminal or other Payment Channels. This is not injected into terminal manually. This is requested for online by the POS Terminal when it is being setup or if it is suspected that the key has been compromised. TMK is encrypted with CTMK.
- 3. Base Derivation Key (BDK):** This key is NOT transmitted to the POS Terminal. In clear form it is injected into the POS Terminal or other Payment Channels in two components manually. This can be generated for a group of POS Terminals.
- 4. Encrypted Terminal Session Key (TSK):** This key is usually transmitted in encrypted form to the POS Terminal or other Payment Channels. This is not injected into terminal manually. POS Terminal requests online for this key at predefined time from the CTMS. TSK is encrypted with TMK. At transaction, this key is used for seeding the algorithm for generating hash value in DE64 or DE128.
- 5. Encrypted Initial PIN Encryption Key (IPEK) for Track 2 Data:** This key is usually transmitted in encrypted form to the POS Terminal or other Payment Channels. This is not injected into terminal manually. POS Terminal requests online for this key at predefined time from the CTMS. IPEK is encrypted with TMK.
- 6. Encrypted Initial PIN Encryption Key (IPEK) for EMV:** This key is usually transmitted in encrypted form to the POS Terminal or other Payment Channels. This is not injected into terminal manually. POS Terminal requests online for this key at predefined time from the CTMS. IPEK is encrypted with TMK.

# **Nigeria Central Switch Interface Specifications**



# Introduction

This specification document covers the interface specifications that must be supported by any third party (Issuer or Acquirer) to integrate with NCS. It contains definitions for all messages and the data elements (or fields) transmitted between the NCS and a third party application

## Acronyms and Abbreviations

NCS	Nigeria Central Switch
ATM	Automated Teller Machine.
POS	Point of Sale Machine
Acquirer	The institution, which accepts the card for performing the transaction.
Issuer	The institution which has issued the card and to which the account belongs.
CMS	Card Management System (Credit Card)

# External Message types

## 2.1 Protocol

The interface to NCS will be over TCP/IP. The application data will be prefixed by a 2-byte length header field (Binary) indicating the length of the application data to follow.

## 2.2 Bitmap

NCS supports ASCII ISO bitmap representations. ASCII ISO bitmap representation is either 16 or 32 byte representation of the bitmap in Hex.

## 2.3 Supported Message Type

Message type codes are used to identify the general function of messages, and one

Message type code is required in each message. NCS supports the message types shown in the following table for both inbound and outbound messages. The message types in the table are divided according to the ISO standard message classes.

Message Class	Type	Description
Authorization	0100	Authorization Request
	0110	Authorization Response
	0120	Authorization Advice
	0130	Authorization Advice Response
Financial Transaction	0200	Financial Transaction Request
	0202	Financial Transaction Completion
	0210	Financial Transaction Response
	0212	Financial Transaction Completion Response

	0220	Financial Transaction Advice
	0230	Financial Transaction Advice Response
Reversal	0420	Reversal Advice
	0421	Reversal Advice Repeat
	0430	Reversal Advice Response
Network Management	0800	Network Management Request
	0810	Network Management Request Response

# External Message Type Layouts

NCS System uses the following codes to denote whether a data element should be present in its external message.

**Conditional:** The element is mandatory under certain conditions.

**Echo:** In response messages, this code indicates that the response message sender must include the same value it received in the data element in the associated request message. In other words, the responder must echo back the data element if it is present in the request message.

**Mandatory:** The element is required in the message.

## 3.2 Authorization Request/Repeat (0100/0101)

Bit Data	Element Name	Presence Indicator
2	Primary account number	Conditional
3	Processing code	Mandatory
4	Amount, transaction	Mandatory
5	Amount, settlement	Conditional
7	Transmission date and time	Mandatory
9	Conversion rate, settlement	Conditional
11	Systems trace audit number	Mandatory
12	Time, local transaction	Mandatory
13	Date, local transaction	Mandatory
14	Date, expiration	Conditional

15	Date, settlement	Conditional
16	Date, conversion	Conditional
18	Merchant's type	Conditional
22	POS entry mode	Mandatory
23	Card sequence number	Conditional
25	POS condition code	Mandatory
26	POS PIN capture code	Conditional
27	Authorization id response length	Conditional
28	Amount, transaction fee	Optional
29	Amount, settlement fee	Conditional
30	Amount, transaction processing fee	Optional
31	Amount, settle processing fee	Conditional
32	Acquiring institution id code	Conditional
33	Forwarding institution id code	Optional
35	Track 2 data	Conditional
37	Retrieval reference number	Optional
40	Service restriction code	Optional
41	Card acceptor terminal id	Mandatory
42	Card acceptor id code	Mandatory
43	Card acceptor name/location	Mandatory
45	Track 1 data	Optional
49	Currency code, transaction	Mandatory



50	Currency code, settlement	Conditional
52	PIN data	Conditional
53	Security related control information	Conditional
54	Additional amounts	Conditional
56	Message reason code	Optional
57	Authorization life cycle	Optional
59	Transport (echo) data	Optional
67	Extended payment code	Conditional
90	Original data elements	Conditional
98	Payee	Conditional
100	Receiving institution id code	Conditional
102	Account identification 1	Conditional
103	Account identification 2	Conditional
123	POS data code	Mandatory
124	Near Field Communication Data	Conditional
127.1	Bitmap	Conditional
127.4	POS data	Optional
127.5	Service station data	Optional
127.7	Check data	Conditional
127.10	CVV2	Optional
127.12	Terminal owner	Conditional
127.13	POS geographic data	Conditional



127.14	Sponsor bank	Conditional
127.15	Address verification data	Conditional
127.18	Validation data	Optional
127.19	Bank Details	Conditional
127.20	Originator/Authorizer date settlement	Optional
127.23	Payee name and address	Conditional
127.24	Payer account	Optional
127.25	ICC data	Optional
127.26	Original node	Conditional
127.27	Card verification result	Optional
127.28	American Express Card Identifier (CID)	Optional
127.29	3D Secure Data	Optional
128	MAC Extended	Conditional

### 3.3 Authorization Request Response (0110)

Bit Data	Element Name	Presence Indicator
2	Primary account number	Mandatory
3	Processing code	Mandatory
4	Amount, transaction	Mandatory
7	Transmission Date and Time	Conditional
11	Systems trace audit number	Conditional
12	Time, local transaction	Mandatory

13	Date, local transaction	Conditional
14	Date, expiration	Conditional
15	Date, Settlement	Conditional
18	Merchant's type	Mandatory
22	POS entry mode	Mandatory
23	Card sequence number	Conditional
25	POS condition code	Mandatory
28	Amount, transaction fee	Conditional
30	Amount, transaction processing fee	Conditional
32	Acquiring institution id code	Mandatory
33	Forwarding institution id code	Conditional
35	Track 2 data	Conditional
37	Retrieval reference number	Mandatory
38	Authorization id response	Conditional
39	Response code	Mandatory
40	Service restriction code	Conditional
41	Card acceptor terminal id	Optional
42	Card acceptor id code	Conditional
43	Card acceptor name/location	Conditional
49	Currency code, transaction	Mandatory
54	Additional amounts	Conditional
59	Transport (echo) data	Conditional





102	Account identification 1	Optional
103	Account identification 2	Optional
123	POS data code	Mandatory
124	Near Field Communication Data	Conditional
127.1	Fieldmap	Conditional
127.6	Authorization profile	Optional
127.16	Address verification result	Conditional
127.17	Cardholder information	Optional
127.20	Originator/Authorizer date settlement	Optional
127.25	ICC data	Optional
127.27	Card verification result	Optional
127.30	3D Secure Result	Optional
128	MAC Extended	Conditional

### 3.4 Authorization Advice (0120/0121)

Bit Data	Element Name	Presence Indicator
2	Primary account number	Conditional
3	Processing code	Mandatory
4	Amount, transaction	Mandatory
5	Amount, settlement	Conditional
7	Transmission date and time	Mandatory
9	Conversion rate, settlement	Conditional

11	Systems trace audit number	Mandatory
12	Time, local transaction	Mandatory
13	Date, local transaction	Mandatory
14	Date, expiration	Conditional
15	Date, settlement	Conditional
16	Date, conversion	Conditional
18	Merchant's type	Conditional
22	POS entry mode	Mandatory
23	Card sequence number	Conditional
25	POS condition code	Mandatory
28	Amount, transaction fee	Optional
29	Amount, settlement fee	Conditional
30	Amount, transaction processing fee	Optional
31	Amount, settle processing fee	Conditional
32	Acquiring institution id code	Conditional
33	Forwarding institution id code	Optional
35	Track 2 data	Conditional
37	Retrieval reference number	Optional
40	Service restriction code	Optional
41	Card acceptor terminal id	Mandatory
42	Card acceptor id code	Mandatory
43	Card acceptor name/location	Mandatory

45	Track 1 data	Optional
49	Currency code, transaction	Mandatory
50	Currency code, settlement	Conditional
54	Additional amounts	Conditional
56	Message reason code	Optional
58	Authorizing agent id cod	Conditional
59	Transport (echo) data	Optional
67	Extended payment code	Conditional
90	Original data elements	Conditional
95	Replacement amounts	Conditional
98	Payee	Conditional
100	Receiving institution id code	Conditional
102	Account identification 1	Conditional
103	Account identification 2	Conditional
123	POS data code	Mandatory
124	Near Field Communication Data	Conditional
127.1	Bitmap	Conditional
127.4	POS data	Optional
127.5	Service station data	Optional
127.7	Check data	Conditional
127.12	Terminal owner	Conditional
127.13	POS geographic data	Conditional



127.14	Sponsor bank	Conditional
127.19	Bank Details	Conditional
127.20	Originator/Authorizer date settlement	Optional
127.23	Payee name and address	Conditional
127.24	Payer account	Optional
127.25	ICC data	Optional
127.26	Original node	Conditional
127.28	American Express Card Identifier (CID)	Optional
128	MAC Extended	Conditional

### 3.5 Authorization Advice Response (0130)

Bit Data	Element Name	Presence Indicator
2	Primary account number	Conditional
3	Processing code	Optional
4	Amount, transaction	Optional
5	Amount, settlement	Conditional
7	Transmission date and time	Mandatory
9	Conversion rate, settlement	Conditional
11	Systems trace audit number	Mandatory
12	Time, local transaction	Mandatory
13	Date, local transaction	Mandatory
14	Date, expiration	Optional

15	Date, settlement	Conditional
16	Date, conversion	Conditional
18	Merchant's type	Conditional
22	POS entry mode	Mandatory
23	Card sequence number	Optional
25	POS condition code	Mandatory
28	Amount, transaction fee	Optional
29	Amount, settlement fee	Conditional
30	Amount, transaction processing fee	Optional
31	Amount, settle processing fee	Conditional
32	Acquiring institution id code	Optional
33	Forwarding institution id code	Conditional
35	Track 2 data	Conditional
37	Retrieval reference number	Optional
38	Authorization id response	Conditional
39	Response code	Mandatory
40	Service restriction code	Conditional
41	Card acceptor terminal id	Mandatory
42	Card acceptor id code	Mandatory
43	Card acceptor name/location	Mandatory
44	Additional response data	Optional
48	Additional data	Conditional

49	Currency code, transaction	Mandatory
50	Currency code, settlement	Conditional
54	Additional amounts	Optional
58	Authorizing agent id code	Conditional
59	Transport (echo) data	Conditional
90	Original data elements	Conditional
102	Account identification 1	Optional
103	Account identification 2	Optional
123	POS data code	Mandatory
124	Near Field Communication Data	Conditional
127.1	Bitmap	Conditional
127.2	Switch Key	Optional
127.3	Routing Information	Mandatory
127.6	Authorization profile	Optional
127.12	Terminal Owner	Conditional
127.16	Address verification result	Conditional
127.17	Cardholder information	Optional
127.20	Originator/Authorizer date settlement	Optional
127.22	Structured Data	Conditional
127.25	ICC data	Optional
127.27	Card verification result	Optional
127.30	3D Secure Result	Optional



128	MAC Extended	Conditional
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### 3.6 Financial Request/Repeat (0200/0201)

Bit Data	Element Name	Presence Indicator
2	Primary account number	Conditional
3	Processing code	Mandatory
4	Amount, transaction	Mandatory
5	Amount, settlement	Conditional
7	Transmission date and time	Mandatory
9	Conversion rate, settlement	Conditional
11	Systems trace audit number	Mandatory
12	Time, local transaction	Mandatory
13	Date, local transaction	Mandatory
14	Date, expiration	Conditional
15	Date, settlement	Conditional
16	Date, conversion	Conditional
18	Merchant's type	Conditional
22	POS entry mode	Mandatory
23	Card sequence number	Conditional
25	POS condition code	Mandatory
26	POS PIN capture code	Conditional
27	Authorization id response length	Conditional

28	Amount, transaction fee	Optional
29	Amount, settlement fee	Conditional
30	Amount, transaction processing fee	Optional
31	Amount, settle processing fee	Conditional
32	Acquiring institution id code	Conditional
33	Forwarding institution id code	Optional
35	Track 2 data	Conditional
37	Retrieval reference number	Mandatory
40	Service restriction code	Conditional
41	Card acceptor terminal id	Mandatory
42	Card acceptor id code	Mandatory
43	Card acceptor name/location	Mandatory
45	Track 1 data	Optional
49	Currency code, transaction	Mandatory
50	Currency code, settlement	Conditional
52	PIN data	Conditional
53	Security related control information	Conditional
54	Additional amounts	Conditional
56	Message reason code	Optional
57	Authorization life cycle	Optional
59	Transport (echo) data	Optional
67	Extended payment code	Conditional





90	Original data elements	Conditional
98	Payee	Conditional
100	Receiving institution id code	Conditional
102	Account identification 1	Conditional
103	Account identification 2	Conditional
123	POS data code	Mandatory
124	Near Field Communication Data	Conditional
127.1	Bitmap	Conditional
127.4	POS data	Optional
127.5	Service station data	Optional
127.7	Check or address verification data	Conditional
127.10	CVV2	Optional
127.12	Terminal owner	Conditional
127.13	POS geographic data	Conditional
127.14	Sponsor bank	Conditional
127.15	Address verification data	Conditional
127.18	Validation data	Optional
127.19	Bank Details	Conditional
127.20	Originator/Authorizer date settlement	Optional
127.22		
127.23	Payee name and address	Conditional
127.24	Payer account	Optional



127.25	ICC data	Optional
127.26	Original node	Conditional
127.27	Card verification result	Optional
127.28	American Express Card Identifier (CID)	Optional
127.29	3D Secure Data	Optional
128	MAC Extended	Conditional

### 3.6 Financial Request Response (0210)

Bit Data	Element Name	Presence Indicator
2	Primary account number	Conditional
3	Processing code	Optional
4	Amount, transaction	Optional
5	Amount, settlement	Conditional
7	Transmission date and time	Mandatory
9	Conversion rate, settlement	Conditional
11	Systems trace audit number	Mandatory
12	Time, local transaction	Mandatory
13	Date, local transaction	Mandatory
14	Date, expiration	Optional
15	Date, settlement	Conditional
16	Date, conversion	Conditional
18	Merchant's type	Conditional

22	POS entry mode	Mandatory
23	Card sequence number	Optional
25	POS condition code	Mandatory
28	Amount, transaction fee	Optional
29	Amount, settlement fee	Conditional
30	Amount, transaction processing fee	Optional
31	Amount, settle processing fee	Conditional
32	Acquiring institution id code	Optional
33	Forwarding institution id code	Conditional
35	Track 2 data	Conditional
37	Retrieval reference number	Optional
38	Authorization id response	Conditional
39	Response code	Mandatory
40	Service restriction code	Conditional
41	Card acceptor terminal id	Mandatory
42	Card acceptor id code	Mandatory
43	Card acceptor name/location	Mandatory
44	Additional response data	Optional
48	Additional data	Conditional
49	Currency code, transaction	Mandatory
50	Currency code, settlement	Conditional
54	Additional amounts	Optional



58	Authorizing agent id code	Conditional
59	Transport (echo) data	Conditional
102	Account identification 1	Optional
103	Account identification 2	Optional
123	POS data code	Mandatory
124	Near Field Communication Data	Conditional
127.1	Bitmap	Conditional
127.2	Switch Key	Optional
127.3	Routing Information	Mandatory
127.6	Authorization profile	Optional
127.12	Terminal Owner	Conditional
127.16	Address verification result	Conditional
127.17	Cardholder information	Optional
127.20	Originator/Authorizer date settlement	Optional
127.22	Structured Data	Conditional
127.25	ICC data	Optional
127.27	Card verification result	Optional
127.30	3D Secure Result	Optional
128	MAC Extended	Conditional

### 3.8 Financial Advice/Repeat (Repeat) (0220/0221)

Bit Data	Element Name	Presence Indicator

2	Primary account number	Conditional
3	Processing code	Mandatory
4	Amount, transaction	Mandatory
5	Amount, settlement	Conditional
7	Transmission date and time	Mandatory
9	Conversion rate, settlement	Conditional
11	Systems trace audit number	Mandatory
12	Time, local transaction	Mandatory
13	Date, local transaction	Mandatory
14	Date, expiration	Conditional
15	Date, settlement	Conditional
16	Date, conversion	Conditional
18	Merchant's type	Conditional
22	POS entry mode	Mandatory
23	Card sequence number	Conditional
25	POS condition code	Mandatory
26	POS PIN capture code	Conditional
28	Amount, transaction fee	Optional
29	Amount, settlement fee	Conditional
30	Amount, transaction processing fee	Optional
31	Amount, settle processing fee	Conditional
32	Acquiring institution id code	Conditional

33	Forwarding institution id code	Optional
35	Track 2 data	Conditional
37	Retrieval reference number	Optional
38	Authorization id response	Conditional
40	Service restriction code	Optional
41	Card acceptor terminal id	Mandatory
42	Card acceptor id code	Mandatory
43	Card acceptor name/location	Mandatory
45	Track 1 data	Optional
49	Currency code, transaction	Mandatory
50	Currency code, settlement	Conditional
54	Additional amounts	Conditional
56	Message reason code	Optional
58	Authorizing agent id code	Conditional
59	Transport (echo) data	Optional
67	Extended payment code	Conditional
90	Original data elements	Conditional
95	Replacement amounts	Conditional
98	Payee	Conditional
100	Receiving Institution ID Code	Optional
102	Account identification 1	Conditional
103	Account identification 2	Conditional



123	POS data code	Mandatory
124	Near Field Communication Data	Conditional
127.1	Bitmap	Conditional
127.4	POS data	Optional
127.5	Service station data	Optional
127.6	Authorization profile	Optional
127.12	Terminal owner	Conditional
127.13	POS geographic data	Conditional
127.14	Sponsor bank	Conditional
127.19	Bank Details	Conditional
127.20	Originator/Authorizer date settlement	Optional
127.23	Payee name and address	Conditional
127.24	Payer account	Optional
127.25	ICC data	Optional
127.26	Original node	Conditional
127.27	Card verification result	Optional
128	MAC Extended	Conditional

### 3.9 Financial Advice Response (0230)

Bit Data	Element Name	Presence Indicator
2	Primary account number	Conditional
3	Processing code	Optional



4	Amount, transaction	Optional
5	Amount, settlement	Conditional
7	Transmission date and time	Mandatory
9	Conversion rate, settlement	Conditional
11	Systems trace audit number	Mandatory
12	Time, local transaction	Mandatory
13	Date, local transaction	Mandatory
14	Date, expiration	Optional
15	Date, settlement	Conditional
16	Date, conversion	Conditional
18	Merchant's type	Conditional
22	POS entry mode	Mandatory
23	Card sequence number	Optional
25	POS condition code	Mandatory
28	Amount, transaction fee	Optional
29	Amount, settlement fee	Conditional
30	Amount, transaction processing fee	Optional
31	Amount, settle processing fee	Conditional
32	Acquiring institution id code	Optional
33	Forwarding institution id code	Conditional
35	Track 2 data	Conditional
37	Retrieval reference number	Optional





38	Authorization id response	Conditional
39	Response code	Mandatory
40	Service restriction code	Conditional
41	Card acceptor terminal id	Mandatory
42	Card acceptor id code	Mandatory
43	Card acceptor name/location	Mandatory
44	Additional response data	Optional
48	Additional data	Conditional
49	Currency code, transaction	Mandatory
50	Currency code, settlement	Conditional
54	Additional amounts	Optional
58	Authorizing agent id code	Conditional
59	Transport (echo) data	Conditional
90	Original data elements	Conditional
102	Account identification 1	Optional
103	Account identification 2	Optional
123	POS data code	Mandatory
124	Near Field Communication Data	Conditional
127.1	Bitmap	Conditional
127.2	Switch Key	Optional
127.3	Routing Information	Mandatory
127.6	Authorization profile	Optional

127.12	Terminal Owner	Conditional
127.16	Address verification result	Conditional
127.17	Cardholder information	Optional
127.20	Originator/Authorizer date settlement	Optional
127.22	Structured Data	Conditional
127.25	ICC data	Optional
127.27	Card verification result	Optional
127.30	3D Secure Result	Optional
128	MAC Extended	Conditional

### 3.10 Reversal Advice (Repeat) (0420/0421)

Bit Data	Element Name	Presence Indicator
2	Primary account number	Conditional
3	Processing code	Mandatory
4	Amount, transaction	Mandatory
5	Amount, settlement	Conditional
7	Transmission date and time	Mandatory
9	Conversion rate, settlement	Conditional
11	Systems trace audit number	Mandatory
12	Time, local transaction	Mandatory
13	Date, local transaction	Mandatory
14	Date, expiration	Conditional

15	Date, settlement	Conditional
16	Date, conversion	Conditional
18	Merchant's type	Conditional
22	POS entry mode	Mandatory
23	Card sequence number	Conditional
25	POS condition code	Mandatory
28	Amount, transaction fee	Optional
29	Amount, settlement fee	Conditional
30	Amount, transaction processing fee	Optional
31	Amount, settle processing fee	Conditional
32	Acquiring institution id code	Conditional
33	Forwarding institution id code	Optional
35	Track 2 data	Conditional
37	Retrieval reference number	Optional
38	Authorization id response	Conditional
39	Response Code	Optional
40	Service restriction code	Optional
41	Card acceptor terminal id	Mandatory
42	Card acceptor id code	Mandatory
43	Card acceptor name/location	Mandatory
45	Track 1 data	Optional
49	Currency code, transaction	Mandatory



50	Currency code, settlement	Conditional
56	Message reason code	Optional
59	Transport (echo) data	Optional
67	Extended payment code	Conditional
90	Original data elements	Mandatory
95	Replacement amounts	Conditional
98	Payee	Conditional
100	Receiving Institution ID Code	Optional
123	POS data code	Mandatory
124	Near Field Communication Data	Conditional
127.1	Bitmap	Conditional
127.4	POS data	Optional
127.5	Service station data	Optional
127.12	Terminal owner	Conditional
127.13	POS geographic data	Conditional
127.14	Sponsor bank	Conditional
127.19	Bank Details	Conditional
127.20	Originator/Authorizer date settlement	Optional
127.23	Payee name and address	Conditional
127.24	Payer account	Optional
127.25	ICC data	Optional
127.26	Original node	Conditional



127.27	Card verification result	Optional
128	MAC Extended	Conditional

### 3.11 Reversal Advice Response (0430)

Bit Data	Element Name	Presence Indicator
2	Primary account number	Conditional
3	Processing code	Mandatory
4	Amount, transaction	Mandatory
5	Amount, settlement	Conditional
7	Transmission date and time	Mandatory
9	Conversion rate, settlement	Conditional
11	Systems trace audit number	Mandatory
12	Time, local transaction	Mandatory
13	Date, local transaction	Mandatory
14	Date, expiration	Conditional
15	Date, settlement	Conditional
16	Date, conversion	Conditional
18	Merchant's type	Conditional
22	POS entry mode	Mandatory
23	Card sequence number	Conditional
25	POS condition code	Mandatory
29	Amount, settlement fee	Optional

31	Amount, settle processing fee	Optional
32	Acquiring institution id code	Conditional
33	Forwarding institution id code	Optional
35	Track 2 data	Conditional
37	Retrieval reference number	Optional
38	Authorization id response	Conditional
39	Response code	Mandatory
40	Service restriction code	Optional
41	Card acceptor terminal id	Mandatory
42	Card acceptor id code	Mandatory
49	Currency code, transaction	Mandatory
50	Currency code, settlement	Conditional
54	Additional amounts	Conditional
59	Transport (echo) data	Conditional
90	Original data elements	Mandatory
95	Replacement amounts	Conditional
124	Near Field Communication Data	Conditional
127.1	Bitmap	Conditional
127.3	Routing Information	Mandatory
128	MAC Extended	Conditional

### 3.12 Network Management (Repeat) (0800/0801)



Bit Data	Element Name	Presence Indicator
7	Transmission date and time	Mandatory
11	Systems trace audit number	Mandatory
12	Time, local transaction	Mandatory
13	Date, local transaction	Mandatory
70	Network management info code	Mandatory
128	MAC Extended	Conditional

### 3.13 Network Management (0810)

Bit Data	Element Name	Presence Indicator
7	Transmission date and time	Mandatory
11	Systems trace audit number	Mandatory
12	Time, local transaction	Mandatory
13	Date, local transaction	Mandatory
39	Response code	Mandatory
53	Security related control information	Conditional
70	Network management info code	Always sent
125	Network management information	Conditional
128	MAC Extended	Conditional

# DATA ELEMENT DEFINITION

The following ISO Data Elements are supported by the Interface.

## Field #2 - Primary, Account Number

Field No	Format	Attr
2	LLVAR	n ..19

A number identifying the cardholder and the card issuer. Typically, this number is embossed on the front of the card and encoded on Track 2 of the magnetic stripe.

## Field #3 - Processing Code

Field No	Format	Attr
3		n 6

The customer transaction type and the account types, if any, affected by the transaction. This is a fixed length field consisting of 3 data elements:

- **Transaction type** (positions 1 - 2)
- **Account type** affected for debits and inquiries and the "from" account for transfers (positions 3 - 4)
- **Account type** affected for credits and the "to" account for transfers (positions 5 - 6)

The following processing codes will be supported in the Interface





Transaction Type	Code
Cash Withdrawal	01
Cheque Book Request	91
Adhoc Statement Request	90
Cash Advance	01
Purchase with Cash back	09
Balance Inquiry	31
Link Account Inquiry	30
Mini Statement	38
Fund Transfer	40
POS Pre – Authorization	60
POS Pre – Authorization Completion	61
PIN Change	90
Purchase	00
Refund	20
Deposit	21
Purchase Adjustment	02
Refund Adjustment	02

#### Account Type Codes

Code	Description
00	Default – unspecified



10	Savings
20	Current
30	Credit
40	Universal Account
50	Investment Account

## Field #4 - Amount, Transaction

Field No	Format	Attr
4		n 12

This field contains the transaction amount in the transaction currency. This amount is expressed in lowest denominations.

## Field #5 - Amount, Settlement

Field No	Format	Attr
5		n 12

The funds to be transferred between the acquirer and card issuer equal to the **amount, transaction** as expressed in the **settlement currency**.

## Field #7 - Transmission Date and Time

Field No	Format	Attr

7	MMDDhhmmss	n 10
---	------------	------

The date and time, expressed in Coordinated Universal Time (UTC), when this message is sent by the message initiator.

## Field #9 - Conversion Rate, Settlement

Field No	Format	Attr
9		n 8

This field contains the factor used in conversion from the transaction currency amount to the local currency amount. The left most digit indicates the number of decimal places from the right.

## Field #11 - System Trace Audit Number

Field No	Format	Attr
11		n 6

A number assigned by a transaction originator to assist in identifying a transaction uniquely. The systems trace audit number remains unchanged for all messages within a transaction.

## Field #12 - Time, Local Transaction

Field No	Format	Attr
<b>12</b>	<b>Hhmmss</b>	<b>n 6</b>

The local time at which the transaction takes place at the card acceptor location in authorization and financial messages.

For all other transactions, this field indicates the local time set by the initiator of the first message of the transaction.

## Field #13 - Date, Local Transaction

Field No	Format	Attr
<b>13</b>	<b>MMDD</b>	<b>n 4</b>

The local date at which the transaction takes place at the card acceptor location in authorization and financial messages.

For all other transactions, this field indicates the local date set by the initiator of the first message of the transaction.

## Field #14 - Date, Expiration

Field No	Format	Attr
<b>14</b>	<b>YYMM</b>	<b>n 4</b>

This field contains the date on which settlement between the gateway and intermediate network facilities will be done.

## Field #15 - Date, Settlement

Field No	Format	Attr
13	MMDD	n 4

The month and day for which financial totals are reconciled between the acquirer and the issuer.

## Field #16- Date, Conversion

Field No	Format	Attr
13	MMDD	n 4

The month and day on which the currency for the transaction was converted.

## Field #18 –Merchant Type

Field No	Format	Attr
18		n 4

The classification of the merchant’s type of business product or service. Codes to be developed within each country.

## Field #22 –POS Entry Mode



Field No	Format	Attr
22		N3

A series of codes that identify the actual method used to capture the account number and expiry date when a terminal is used, and the PIN capture capability of the terminal. This is a fixed length field consisting of 2 data elements:

- PAN entry mode (positions 1 - 2)
- PIN entry capability (position 3)

## Field #23 – Card Sequence number

Field No	Format	Attr
23		n3

A number distinguishing between separate cards with the same primary account number or primary account number extended.

## Field #25 –POS Condition Code

Field No	Format	Attr
25		n2

A code that describes the condition under which the transaction takes place at the Point-Of-Service.

00	Normal presentment
----	--------------------

01	Customer not present
02	Unattended terminal - card can be retained
03	Merchant suspicious
04	Electronic Cash Register interface
05	Customer present, card not present
06	Pre-authorized request
07	Telephone device required
08	Mail/telephone order
09	POS security alert
10	Customer identity verified
11	Suspected fraud
12	Security reasons
13	Representation of item
14	Public utility terminal
15	Customer's terminal
16	Administrative terminal
17	Returned item
18	No check in envelope – return
19	Deposit out of balance – return
20	Payment out of balance – return
21	Manual reversal
22	Terminal error – counted



23	Terminal error - not counted
24	Deposit out of balance – apply
25	Payment out of balance – apply
26	Withdrawal error – reversed
27	Unattended terminal - card cannot be retained

Additional codes can be defined for private use.

## Field #26 – POS PIN Capture Code

Field No	Format	Attr
26		n2

The maximum number of PIN characters that can be accepted by the Point-of-Service device.

Valid values are "04" to "12" ("00" to "03" are reserved by ISO) and if the POS device does not accept PINs or it is unknown whether the device does, this value should be set to "12".

## Field #27 – Authorization ID Response Length

Field No	Format	Attr
27		N1

The maximum length of the authorization ID response which the acquirer can accommodate. The card issuer or agent shall limit the authorization ID response to this



length.

---

## Field #28 - Amount, Transaction Fee

Field No	Format	Attr
28		x + n 8

A fee charged, by the acquirer to the issuer, for transaction activity, in the currency of the amount, transaction.

---

## Field #29 - Amount, Settlement Fee

Field No	Format	Attr
29		x + n 8

A fee charged, by the acquirer to the issuer, for transaction activity, in the currency of the amount, settlement.

---

## Field #30 - Amount, Transaction Processing Fee

Field No	Format	Attr
30		x + n 8

A fee charged by the network for the handling and routing of messages, in the currency of amount, transaction. This field is usually inserted by the network into the applicable messages

---

## Field #31 - Amount, Settlement Processing Fee

Field No	Format	Attr
31		x + n 8

A fee charged by the network for the handling and routing of messages, in the currency of [amount, settlement](#). This field is usually inserted by the network into the applicable messages.

## Field #32 - Acquiring Institution Identification Code

Field No	Format	Attr
32	LLVAR	an.. 11

A code identifying the financial institution acting as the acquirer of this customer transaction. The acquirer is the member or system user that signed the merchant, installed the ATM or dispensed cash. This field usually contains the BIN (see [PAN](#)) of the acquirer, but could be any other number assigned to it by the relevant authorities.

When a processing center operates for multiple acquirers, this is the code for the individual member or system user, not a code for the processing center.

## Field #33 - Forwarding Institution Identification Code

Field No	Format	Attr
33	LLVAR	n.. 11

A code identifying the institution that forwards the transaction in an interchange system en route to the card issuer. For example, assume that an acquirer routes a transaction via a third-party EFT switch to the card issuer. In the request from the acquirer to the EFT switch, this field contains the code of the acquirer. When the request is forwarded by the EFT switch to the card issuer, this field contains the code assigned to the EFT switch.

## Field #35 – Track 2 Data

Field No	Format	Attr
35	LLVAR	z..37

The information encoded on Track 2 of the magnetic stripe as defined in ISO 7813, including field separators but excluding the begin sentinel, end sentinel and longitudinal redundancy check characters. The field separator (FS) can be either a "=" or a "D" character. The layout of this field is as follows:

Field	Length
Primary account number	up to 19 digits
Field separator	1 digit
Expiry date (YYMM)	4 digits (or a field separator if not present)
Service restriction code	3 digits (or a field separator if not present)
Discretionary data	balance of available digits

The primary account number, expiry date and service restriction code fields are described in further detail under fields 2, 14 and 40 in this document.

For **Visa Cash** load transactions, this field contains the Visa Cash load signature data from the chip that is sent to the issuer to allow the issuer to verify the Visa Load Request Signature (S1). The layout of this field is as follows:

Field	Length
Visa Cash card number	16 digits
Field separator	1 digit (can be a "=" or a "D" character)
Expiry date (YYMM)	4 digits: Only the YYMM portion of the Visa Cash expiration date
Service restriction code	3 digits (must be "101")
Visa Cash balance	6 digits
Transaction number	5 digits
GMT offset	2 digits

## Field #37 – Retrieval Reference Number

Field No	Format	Attr
37		an 12

A reference number supplied by the system retaining the original source information and used to assist in locating that information or a copy thereof.

## Field #38 – Authorization code

Field No	Format	Attr
38		n 6

A code assigned by the authorizing institution indicating approval.

## Field #39 - Response Code

Field No	Format	Attr
39		an 2

A code that defines the disposition of a transaction.

00	Approved or completed successfully
01	Refer to card issuer
02	Refer to card issuer, special condition
03	Invalid merchant
04	Pick-up card
05	Do not honor
06	Error
07	Pick-up card, special condition
08	Honor with identification
09	Request in progress
10	Approved, partial
11	Approved, VIP
12	Invalid transaction
13	Invalid amount
14	Invalid card number

15	No such issuer
16	Approved, update track 3
17	Customer cancellation
18	Customer dispute
19	Re-enter transaction
20	Invalid response
21	No action taken
22	Suspected malfunction
23	Unacceptable transaction fee
24	File update not supported
25	Unable to locate record
26	Duplicate record
27	File update edit error
28	File update file locked
29	File update failed
30	Format error
31	Bank not supported
32	Completed partially
33	Expired card, pick-up
34	Suspected fraud, pick-up
35	Contact acquirer, pick-up
36	Restricted card, pick-up

37	Call acquirer security, pick-up
38	PIN tries exceeded, pick-up
39	No credit account
40	Function not supported
41	Lost card
42	No universal account
43	Stolen card
44	No investment account
51	Not sufficient funds
52	No check account
53	No savings account
54	Expired card
55	Incorrect PIN
56	No card record
57	Transaction not permitted to cardholder
58	Transaction not permitted on terminal
59	Suspected fraud
60	Contact acquirer
61	Exceeds withdrawal limit
62	Restricted card
63	Security violation
64	Original amount incorrect



65	Exceeds withdrawal frequency
66	Call acquirer security
67	Hard capture
68	Response received too late
75	PIN tries exceeded
77	Intervene, bank approval required
78	Intervene, bank approval required for partial amount
90	Cut-off in progress
91	Issuer or switch inoperative
92	Routing error
93	Violation of law
94	Duplicate transaction
95	Reconcile error
96	System malfunction
98	Exceeds cash limit

## Field #40 - Service Restriction Code

Field No	Format	Attr
40		N3

An identification of geographic/service availability. Contains:

- The area of usage and whether the card has additional read facilities



## 1 International card

---

2 International card - integrated circuit facilities

---

5 National use only

---

6 National use only - integrated circuit facilities

---

9 Test card - online authorization mandatory

---

- The authorization processing requirements for this card

## 0 Normal authorization

---

2 Online authorization mandatory

---

4 Online authorization mandatory

---

- The range of services available and PIN requirements

## 0 PIN required

---

1 No restrictions - normal cardholder verification

---

2 Goods and services only

---

3 PIN required, ATM only

---

5 PIN required, goods and services only at POS, cash at ATM

---

6 PIN required if PIN pad present

---

7 PIN required if PIN pad present, goods and services only at POS, cash at ATM

---

## Field #41 - Card Acceptor Terminal Identification

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Field No	Format	Attr
41		ans 8

A unique code identifying a terminal at the card acceptor location.

#### Field #42 - Card Acceptor Identification Code

Field No	Format	Attr
42		ans 15

A code identifying the card acceptor (typically a merchant).

### Field #43 - Card Acceptor Name / Location

Field No	Format	Attr
43		ans 40

The name and location of the card acceptor (such as a merchant or an ATM). This is a fixed length field consisting of 4 data elements:

- The location information (positions 1 - 23), exclusive of city, state and country
- The city (positions 24 - 36) in which the Point-of-Service is located
- The state (positions 37 - 38) in which the Point-of-Service is located
- The country (positions 39 - 40) in which the Point-of-Service is located

For **Visa Cash** load transactions, this field contains the Visa Cash Service Identifier ("SV:") followed by the load request signature (S1), the load acquirer BIN and other location information. This is a fixed length field consisting of 5 data elements:

- The Visa cash service identifier (positions 1 - 3), a constant value of "SV:"
- The Visa load request signature (positions 4 - 19)
- The Visa load acquirer BIN (positions 20 - 25)
- The city (positions 26 - 38) in which the Point-of-Service is located
- The country (positions 39 - 40) in which the Point-of-Service is located.

---

## Field #44 - Additional Response Data

Field No	Format	Attr
48	LLVAR	ans..25

Used to provide other supplemental data (such as a telephone number for referrals) that may be required in response to an authorization or other type of transaction request.

After a **PIN Change** request has been processed, this field contains the PIN offset (or PVV) in a 0610 message to the Source Node, as well as in a 0620 message to the Sink Node. If set in a 0610 message from the Sink Node, this field again indicates the PIN offset (or PVV).

For **Visa Cash** load transactions, this field is used to carry signature information. In load responses, it contains the Visa Cash Service Identifier ("SV:") followed by the load response signature (S2). This is a fixed length field consisting of 2 data elements:

- The Visa cash service identifier (positions 1 - 3), a constant value of "SV:"
- The load authorization signature (positions 4 - 19) for this load operation

In load settlement advices, it contains the Visa Cash Service Identifier ("SV:") followed by the load completion signature (S3). This is a fixed length field consisting of 2 data elements:

- The Visa cash service identifier (positions 1 - 3), a constant value of "SV:"
- The load completion signature (positions 4 - 19) for this load operation

## Field #45 - Track 1 Data

Field No	Format	Attr
48	LLVAR	ans..76

The information encoded on Track 1 of the magnetic stripe as defined in ISO 7813, including field separators but excluding the begin sentinel, end sentinel and longitudinal redundancy check characters.

Note that two structures are defined by ISO 7813, namely Structure A and Structure B. Structure A is reserved for proprietary use by card issuers, while Structure B is defined as follows:

Field	Length
Format Code	B (ASCII 66)
Primary account number	up to 19 digits
Field separator	1 character (ASCII 61 or 94)
Country Code	3 digits (or a field separator if not present)
Name	2 to 26 characters (this field is further described below)
Field separator	1 character (ASCII 61 or 94)
Expiry date (YYMM)	4 digits (or a field separator if not present)
Service restriction code	3 digits (or a field separator if not present)
Discretionary data	balance of available digits

The primary account number, expiry date and service restriction code fields are described in further detail under fields 2, 14 and 40 in this document.

The structure of the **Name** field is defined in the following table. Sub-fields are separated by means of a space character (ASCII 32). The minimum encoded data allowed is a single character followed by the surname separator.

Field	Notes
Surname	
Surname separator	ASCII 47
First Name or Initial	
Space	When required
Middle Name or Initial	
Period	When followed by Title; ASCII 46
Title	When used

The space character (ASCII 32) is required to separate the sub-fields of the **Name** field other than the surname. The separator terminating the surname should be encoded following the last sub-field of the **Name** field. If only the surname is encoded, it will follow the surname separator.

**Note:** The NCS currently performs no validation on track 1 data and in no way attempts to unpack the sub-fields. The contents of this field are simply saved in the transaction record and passed upstream unchanged.

## Field #48 - Additional Data

Field No	Format	Attr

Used to provide linked account or mini-statement information for a linked account inquiry or a mini-statement inquiry.

#### Mini-statement Information

The format for field 48 when mini-statement data is to be sent downstream, is as follows:

1. A mini-statement heading line, containing tags to identify the format of the mini-statement data lines that follows, e.g.

```
DATE_TIME|SEQ_NR|TRAN_TYPE|TRAN_AMOUNT~
```

The different fields of the mini-statement heading line are separated by bar characters ("|") and the line is terminated by a tilde character ("~").

2. One or more mini-statement data lines, each similar to the identifying string above in structure, but containing the actual transaction data to be printed per line, e.g.

```
19971201123123|001234|01|000000005000~
```

Below is a list of tags supported.

Field	Tag name	Format
Sequence number	SEQ_NR	n6
Date and time	DATE_TIME	n14, CCYYMMDDhhmmss
Terminal ID	TERM_ID	n8
Transaction type	TRAN_TYPE	n2

From account	FROM_ACC	n2
To account	TO_ACC	n2
Transaction amount	TRAN_AMOUNT	n12
Account ID 1	ACC_ID1	ans28
Account ID 2	ACC_ID2	ans28
Authorization ID	AUTH_ID	n6
Currency code	CURR_CODE	n3 (Currency code of the Transaction Amount field)
Surcharge	SURCHARGE	n8

### Linked Account Inquiry

In the case of a linked account inquiry, this field contains information relating to the accounts linked to the card that initiated the transaction. The information for up to 20 accounts can be returned. Note that when "00" is specified as an account type in the original request, a list of all accounts linked to the card is retrieved, and not only the linked accounts of the default account type. The format of the information associated with each account is as follows:

Field	Length	Description
Account ID	28	The identifier uniquely identifying the account, left justified, space-filled.
Account type	2	The ISO 8583 account type of the account.
Currency code	3	The ISO numeric currency code of the account.



Ledger balance	13	The ledger balance of the account. The first character contains the sign. A "D" indicates a debit (negative) balance and a "C" indicates a credit (positive) balance.
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## Field #49 - Currency Code, Transaction

Field No	Format	Attr
49		n 3

The local currency of the acquirer or source location of the transaction. This is the currency code used for the following amount fields:

- amount, transaction
- amount, transaction fee
- amount, transaction processing fee

## Field #50 - Currency Code, Settlement

Field No	Format	Attr
50		n 3

A code identifying the currency of settlement. If this field is not present for a transaction, it is assumed that this field is the same as the currency code, transaction field. This is the currency code used for the following amount fields:

- amount, settlement



- amount, settlement fee
- amount, settlement processing fee
- amount, net settlement

---

## Field #52 – PIN Data

Field No	Format	Attr
52		Hex16

The PIN data field contains the PIN (a number assigned to a cardholder intended to uniquely identify that cardholder) of the cardholder formatted into a 64-bit block and encrypted with a DES key.

---

## Field #53 – Security Related Control Information

Field No	Format	Attr
53		Hex96

Identifies security management information used in the current transaction or specifies security management information to be used in future transactions.

If the **DUKPT** scheme is used, the first 8 bytes of this field in authorization and financial transaction request messages containing an encrypted PIN block, contain the DUKPT key sequence number.

In **PIN change** transactions, the first byte indicates the PIN to change:

- binary 0 – insecure PIN (e.g. telephone PIN)

- binary 1 – secure PIN (e.g. ATM PIN)

The following 8 bytes of this field contains the new PIN formatted into a 64-bit block and encrypted with a DES key. It may be followed by the 8-byte DUKPT key sequence number if the DUKPT scheme is used.

In **key change** transactions, this field contains the encrypted key in the first 8-24 bytes (8 for single, 16 for double, 24 for triple length), followed by a 3-byte key check value (i.e. the first 3 bytes of a clear value of all zeroes encrypted with the key).

---

## Field #54 – Additional Amounts

Field No	Format	Attr
54	LLLVAR	an...120

Information on up to 6 amounts and related account data for which specific data elements have not been defined. Each amount is a fixed length field consisting of 5 data elements:

- **Account type** (positions 1 - 2)
- **Amount type** (positions 3 - 4)
- Currency code (positions 5 - 7)
- Amount sign (position 8) - "C" or "D"
- Amount (position 9 - 20)

When this field is sent by the entity that performed currency conversion this field should contain amounts in the transaction and settlement currencies if they differ.

In a response message from the NCS, this field will always contain the approved amounts and cash amounts, if applicable.

---

# Field #56 – Message Reason Code

Field No	Format	Attr
56	LLVAR	n4

A code that provides the receiver of a request, advice or notification message with the reason, or purpose of that message.

For original authorizations and financial transactions, it identifies why the type of message was sent (e.g. why an advice versus a request); for other messages, it states why this action was taken.

1003	Card issuer unavailable
1006	Under floor limit
1376	PIN verification failure
1377	Change dispensed
1378	IOU receipt printed
1510	Over floor limit
1800	Negative card
4000	Customer cancellation
4001	Unspecified, no action taken
4004	Completed partially
4021	Timeout waiting for response

For place hold on card transactions, in Issuer File Update Advice (0322) or Administration (0600/0620) messages, it states why a card should be put on the hotcard list:



3000	Lost card
3001	Stolen card
3002	Undelivered card
3003	Counterfeit card
3700	Lost PIN

If a hold response code has not been specified in these transactions, the message reason code field will be used to determine which hold response code to use for the transaction. A message reason code of "3001-Stolen card" will result in a hold response code of "43-Stolen card", otherwise "41-Lost card" will be used.

In the case of a message to bank transaction, the message reason code specifies the type of message the cardholder wants to forward to the issuer. Note that in this case, the message reason code field is treated as a free-format field that the user can use for any user specific code.

Message reason codes are defined in the ISO 8583 (1993) specification, and this specification has been used as basis for the codes defined here.

The use of the following message reason codes have been deprecated:

1801	Card lost
1802	Card stolen

## Field #57 – Authorization Life – Cycle Code

Field No	Format	Attr
57	LLLVAR	n3

A value in calendar days, hours or minutes which defines the time period for which the acquirer is requesting guarantee of funds, or that the card issuer shall guarantee funds for a financial transaction which may follow. It consists of 2 fields:

- Time code (position 1)

0	reserved for ISO use
1	calendar days
2	hours
3	minutes
4-5	reserved for ISO use
6-7	reserved for national use
8-9	reserved for private use

- Time interval (positions 2 - 3): A value of 01 through 99 indicating the number of reiterations indicated in position 1.

## Field #58 – Authorizing Agent ID Code

Field No	Format	Attr
58	LLLVAR	n...11

A code identifying the authorizing agent institution.

## Field #59 – Echo Data



Field No	Format	Attr
59	LLVAR	ans...255

Contains data from the originator of the message that shall be returned unaltered in the response message.

## Field #67 – Extended Payment Code

Field No	Format	Attr
67		n 2

The number of months that the cardholder prefers to pay for this item if permitted by the card issuer.

## Field #70 – Network Management Information Code

Field No	Format	Attr
70		n 3

The code that defines the type of network management needed.

001	Sign On request
002	Sign Off request
101	Pin Working Key Change
160	MAC Working Key Change

301	Echo test
999	Text

## Field #90 – Original Data Elements

Field No	Format	Attr
90		n 42

The data elements contained in the original message intended for transaction matching (e.g. to identify a transaction for correction or reversal). It is a fixed length field consisting of 5 data elements:

- Original message type (positions 1 - 4) - the message type identifier of the original message of the transaction being reversed.
- Original systems trace audit number (positions 5 - 10) - the **systems trace audit number** of the original message.
- Original transmission date and time (positions 11 - 20) - the **transmission date and time** of the original message
- Original acquirer institution ID code (position 21 - 31) - the **acquirer institution ID code** of the original message (right justified with leading zeroes).
- Original forwarding institution ID code (position 32 - 42) - the **forwarding institution ID code** of the original message (right justified with leading zeroes).

## Field #95 – Replacement Amounts

Field No	Format	Attr
----------	--------	------

The corrected amounts of a transaction in a partial or full reversal (or the final amounts for the transaction). It is a fixed length field consisting of 4 data elements:

- Actual amount, transaction (positions 1 - 12) - the corrected, actual amount of the customer's transaction, in the **currency of the transaction**.
- Actual amount, settlement (positions 13 - 24) - the corrected, actual amount of the customer's transaction, in the **settlement currency**.
- Actual amount, transaction fee (positions 25 - 33) - the corrected, actual amount of the fee (in format x + n8) for this customer transaction, in the **currency of the transaction**.
- Actual amount, settlement fee (positions 34 - 42) - the corrected, actual amount of the fee (in format x + n8) for this customer transaction, in the **settlement currency**.

## Field #97 – Amount, Net Settlement

Field No	Format	Attr
97		X + n16

The net of all gross debit and gross credit amounts for a settlement period for a specific settlement entity. Specified in the settlement currency.

## Field #98 – Payee

Field No	Format	Attr
98		ans25



A code or ID identifying the payee (recipient) of a payment transaction. This field is used in a payment transaction when the payee is an Institution defined payee. Customer defined payees do not have a payee ID.

When using this field with the NCS Payments Engine, however, it contains the ID of the payee as maintained in the payee list for a cardholder. Because the Payments Engine assigns an ID to both institution and customer defined payees, this field can be used to refer to either type of payee.

---

## Field #100 – Receiving Institution ID Code

Field No	Format	Attr
100	LLVAR	n...11

A code identifying the financial institution that should receive a request or advice. This identification code is used when it is not possible to route a message using the account number field in the message, e.g. in a check verification message. When this field is included in a request or advice, it takes precedence over all account number fields for routing.

---

## Field #102 – Account Identification 1

Field No	Format	Attr
102	LLVAR	n..28

A series of digits and/or characters used to identify a specific account held by the cardholder at the card issuer and if present, shall remain unchanged for the life of the transaction. This field usually contains the description of the "from" account.

---

## Field #103 – Account Identification 2

Field No	Format	Attr
103	LLVAR	n..28

A series of digits and/or characters used to identify a specific account held by the cardholder at the card issuer and if present, shall remain unchanged for the life of the transaction. This field usually contains the description of the "to" account.

When used in payment transactions, this field specifies the bank account number of the payee.

## Field #118 – Payments, Number

Field No	Format	Attr
118	LLLVAR	n10

The total number of payments processed since the last settlement cutover (i.e. the sum number of all authorization transactions where positions 1 – 2 of the processing code in the financial transaction indicated a payment (50-59)).

## Field #119 – Payments, Reversal Numbers

Field No	Format	Attr
119	LLLVAR	n10

The total number of payment transactions reversed since the last settlement cutover (i.e. the sum number of all reversal transactions where positions 1 – 2 of the processing code in

the reversal transaction indicated a payment (50-59) and where the original message type identifier indicates a financial transaction (02xx)).

---

## Field #123 – POS Data Code

Field No	Format	Attr
123	LLVAR	an15

The field is used to identify terminal capability, terminal environment and presentation security data. It is used to indicate specific conditions that were present at the time a transaction took place at the Point-of-Service. This field consists of the following sub-fields:

- The card data input capability (position 1) of the terminal.
- The cardholder authentication capability (position 2) of the terminal.
- The card capture capability (position 3) of the terminal.
- The operating environment (position 4) of the terminal.
- Indicates whether the cardholder is present (position 5).
- Indicates whether the card is present (position 6).
- The actual card data input mode (position 7) of the transaction.
- The actual cardholder authentication method (position 8) of the transaction.
- The cardholder authentication entity (position 9) of the transaction.
- The card data output capability (position 10) of the terminal.
- The terminal output capability (position 11) of the terminal.

- The PIN capture capability (position 12) of the terminal.
- The terminal operator (position 13).

---

## Field #124 – Near Field Communication Data

Field No	Format	Attr
124	LLLLVAR	ans...9999

This data element carries NFC Data. This would be transmitted to the processing system as received from POS Terminal.

---

## Field #125 – Network Management Information

Field No	Format	Attr
125	LLLVAR	ans..40

In key change transactions, this field contains the encrypted key in the first 16-32 positions of this field (16 for Single Length, 32 for Double Length), followed by 6 positions for the key check value. The encrypted key and key check value are encoded as hexadecimal characters in this field. (When using this field for key exchange messages Triple Length keys cannot be used)

---

## Field #127 – Reserved for Private Use

Field No	Format	Attr

---

127	LLVAR	ans...999
-----	-------	-----------

---

## Field 127.1 - Bitmap

The bitmap signifies the presence (1) or absence (0) of data sub-elements contained within field 127.

---

## Field 127.2 – Switch Key

ANS..32. LLVAR

The Switch Key is used by some processors to uniquely identify transactions.

---

## Field 127.3 - Routing Information

The totals group, Source Node, Sink Node and systems trace audit numbers associated with a customer transaction. Although passed in a variable length field, this is a fixed length field of 48 characters consisting of 5 data elements:

- The source node (positions 1 - 12), left justified, space-filled.
  - The sink node (positions 13 - 24), left justified, space-filled.
  - The source node **systems trace audit number** (positions 25 - 30).
  - The sink node **systems trace audit number** (positions 31 - 36).
  - The totals group (positions 37 - 48), left justified, space-filled
-

## Field 127.4 - POS Data

Contains data passed from the Point-of-Service (POS) system, e.g. a cash register. Although passed in a variable length field, this is a fixed length field of 22 characters consisting of 3 data elements:

- The POS terminal ID (positions 1 - 8) identifying the POS terminal, e.g. a cash register, on which the transaction was performed.
  - The POS sequence number (positions 9 - 14) specifying the POS terminal sequence number.
  - The POS operator ID (positions 15 - 22) specifying the cashier that performed the transaction.
- 

## Field 127.5 - Service Station Data

Contains data passed from a service station, i.e. forecourt system, for forwarding to the card issuer. This data is typically used for fleet management. This data element consists of 2 mandatory fields and up to 3 repetitions of a group of 3 fields. Note that this is a fixed format data element. All unused fields should contain spaces.

- The vehicle usage (position 1) indicates whether the product(s) was purchased for business or private use (0 - private, 1 - business).
- The odometer reading (positions 2 - 7) of the vehicle.

The following group of fields represents a fuel product and can be repeated up to 3 times (i.e. 3 different products are supported):

- The product ID (positions 1 - 2) specifying the fuel product purchased.
  - The literage (positions 3 - 10) specifying the literage of the product purchased.
  - The amount (positions 11 - 22) of the product purchased.
-

## **Field 127.6 – Authorization Profile**

Provides additional information on the conditions under which authorization should be or was performed.

### **Field 127.7 – Check Data**

Contains check guarantee or check verification data. This field can be in a number of different formats. The first 2 digits indicate the format. This field may be extended to new formats in the future.

### **Field 127.10 – CVV2**

The embossed Visa CVV2 value manually entered when the magnetic stripe could not be read.

### **Field 127.12 - Terminal Owner**

Contains the name of the financial institution that owns the ATM, or the name of the merchant where the POS terminal is located.

### **Field 127.13 - POS Geographic Data**

Contains a series of codes to identify the state, county, postal service code and country code where the POS device is physically located. This data element is defined in ANSI X9.2 (1988). The layout is as follows:

- The numeric state code (positions 1 - 2).
- The numeric county code (positions 3 - 5).
- The alphanumeric postal service code (positions 6 - 14).
- The numeric country code (positions 15 - 17).

If any of the sub-fields are not used, it should be set to spaces.

### **Field 127.14 - Sponsor Bank**

Identifies the institution sponsoring the card acceptor POS terminal.

**Field 127.15 - Address Verification Data**

This field can contain cardholder address information for a mail order or airline transaction. The layout is as follows:

- The alphanumeric postal/ZIP code (positions 1 - 9).
- The alphanumeric cardholder address (positions 10 - 29).

**Field 127.16 - Address Verification Result**

Contains the result of a transaction involving address verification.

A	Address matches, postal/ZIP code does not
E	Error
N	Neither address nor postal/ZIP code matches
R	Retry
U	Unavailable
Y	Address and postal/ZIP code matches
Z	postal/ZIP code matches, address does not

**Field 127.17 - Cardholder Information**

Contains cardholder related response information. This information is typically returned by the authorizer of the transaction.

**Field 127.18 - Validation data**



Contains cardholder related validation information. This information is typically supplied by the originator of the transaction as an additional security mechanism. This data can be used by the authorizer when authorizing a transaction. For example, this field could contain the identification number of the cardholder. If this value differs from the value carried in the cardholder database of the authorizer, the transaction may be declined.

---

## Field 127.19 - Bank details

Contains bank and branch details.

This field is used to specify the bank details of the payee (recipient) of a payment transaction. Payments made to Customer defined payees require either bank details or address details to be specified in the transaction message.

Field	Length	Format	Description
Bank ID	9	ANS	The financial institution where the bank account of the recipient is kept. Typically, the field will be space filled to the right when less than 9 characters are available. The interpretation of this field varies by country.
Branch ID	22	ANS	The branch where the bank account is kept. Typically, the field will be space filled to the right when less than 22 characters are available. The interpretation of this field varies by country.

## Field 127.20 - Originator / Authorizer date settlement

This field contains the settlement date of the authorizer.

## Field 127.22 – Structured Data

### Format

ans..9999,LLLLLLVAR

## Remarks

This is a Postilion specific addition to the ISO 8583 standard. As of Postilion 4.0 Service Pack 5, this field is stored in the Postilion Transaction Table.

## Description

This field uses a key/value pair structure to represent data. The idea behind the field is to provide a flexible mechanism with which to transport data through Postilion. There is therefore no limitation to what either the key or value may contain, provided of course that the format of the field is adhered to.

The physical layout of the field is as follows:

1 byte length indicator of the key length indicator
Length indicator of the key
Key
1 byte length indicator of the value length indicator
Length indicator of the value
Value

The table above describes the physical layout of a single key/value pair, it is therefore repeated for each key/value pair in the field. There is no limitation to the number of key value pairs that may be used, besides the overall field length.

## XML content

Postilion defines DTDs for the following:

- StatementData
- CardManagementUpdateData

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## Field 127.23 - Payee name and address

Contains identification and billing information for a payee. All fields are left-justified, space filled to the right.

This field is used when making a payment to a Customer defined payee, where the payee is defined by its address details. A bank, for example, would use these details to post a check to the payee on the customers behalf.

Field	Length	Format	Description
Name	35	ANS	Name of the payee.
Address line 1	35	ANS	First address line.
Address line 2	35	ANS	Second address line.
Address line 3	35	ANS	Third address line.
City	35	ANS	City payee is located in.
Region	20	ANS	Region / State the City is located in.
Postal code	20	ANS	Postal code of the City.
Country code	3	A	A 3 letter ISO country code.
Phone	35	ANS	Phone number of payee.

## Field 127.24 - Payer account

Defines the payer account ID at the payee.

---

## Field 127.25 – Integrated circuit card (ICC) Data

The field contains data for use with integrated circuit cards that implement the [EMV specification](#). This field can contain ICC Data in XML formats

lccData (field 127.25) is formatted as an XML document, as per a [DTD](#). This XML document has an outer tag (lccData), and 2 primary inner tags (lccRequest and lccResponse). The lccRequest tag is used in request messages, and the lccResponse tag is used in response messages.

A request message would have the following structure for example

```
<?xml version="1.0"?>
```

```
<lccData>
```

```
<lccRequest>
```

```
...
```

```
...
```

```
</lccRequest>
```

```
</lccData>
```

A response message would have the following structure for example:

```
<?xml version="1.0"?>
```

```
<lccData>
```

```
<lccResponse>
```

```
...
```

```
...
```

</IccResponse>

</IccData>

The IccRequest and IccResponse tags have a number of sub-tags which are defined as follows:

## ICC Data - IccRequest

The IccRequest tag may be present for a request or advice message (0100, 0120, 0200, 0220 or 0420).

Field	Format	Condition	Description
AmountAuthorized	n12	Conditional	The amount of the transaction.
AmountOther	n12	Conditional	Secondary amount associated with the transaction, representing a cashback amount.
ApplicationIdentifier	ans..32	Optional	Identifies the application on the ICC as described in ISO/IEC 7816-5. (Field value: translate 16 byte binary EMV value to 32 byte hex string.)



ApplicationInterchangeProfile	ans4	Conditional	Indicates the capabilities of the ICC to support specific functions in the application. (Field value: translate 2 byte binary EMV value to 4 byte hex string.)
ApplicationTransactionCounter	ans4	Conditional	Counter maintained by the application in the ICC. (Incrementing the ATC is managed by the ICC). (Field value: translate 2 byte binary EMV value to 4 byte hex string.)
ApplicationUsageControl	ans4	Optional	Indicates the issuer's specified restrictions on the geographic usage and services allowed for the application. (Field value: translate 2 byte binary EMV value to 4 byte hex string.)
AuthorizationResponseCode	an2	Optional	Code returned by the issuer or generated by the terminal if it did not receive an online response from the issuer.



CardAuthenticationReliabilityIndicator	n1	Optional	May be set and sent by the acquirer when the acquirer or issuer is inactive for card authentication.
CardAuthenticationResultsCode	ans1	Optional	An issuer-supplied code indicating card authentication results.
ChipConditionCode	n1	Optional	Indicates the status of last chip attempt at the terminal.
Cryptogram	ans16	Conditional	<p>The cryptogram generated by the ICC. Consists of one of the following: Authorization Request Cryptogram (ARQC) for an authorization request, Application Authentication Cryptogram (AAC) for a declined transaction, or Transaction Certificate (TC) for an approved transaction.</p> <p>(Field value: translate 8 byte binary EMV value to 16 byte hex string.)</p>

CryptogramInformationData	ans2	Conditional	Indicates the type of cryptogram returned by the ICC (ARQC, AAC or TC) and the actions to be performed by the terminal. (Field value: translate 1 byte binary EMV value to 2 byte hex string.)
CvmList	ans..504	Optional	Identifies the cardholder verification methods (CVMs) supported by the application. (Field value: translate 252 byte binary EMV value to 504 byte hex string.)
CvmResults	ans6	Optional	Cardholder verification method (CVM) results indicating the results of the last CVM performed. (Field value: translate 3 byte binary EMV value to 6 byte hex string.)
InterfaceDeviceSerialNumber	an8	Conditional	A unique and permanent serial number assigned to the interface device (IFD) by the terminal manufacturer





IssuerActionCode		Optional	Card parameters that instruct the terminal about actions to take under various conditions.
Default	ans10	Conditional	Specifies the issuer's conditions that cause a transaction to be rejected if it might have been approved online, but the terminal is unable to process the transaction online. (Field value: translate 5 byte binary EMV value to 10 byte hex string.)
Denial	ans10	Conditional	Specifies the issuer's conditions that cause the denial of a transaction without attempt to go online. (Field value: translate 5 byte binary EMV value to 10 byte hex string.)
Online	ans10	Conditional	Specifies the issuer's conditions that cause a transaction to be transmitted online. (Field value: translate 5 byte binary EMV value to 10 byte hex string.)



IssuerApplicationData	ans..64	Conditional	<p>Proprietary application data for transmission from the ICC to the issuer. May contain the following subfields: Scheme Discretionary Data, Issuer Discretionary Data, Derivation Key Index, Cryptogram Version Number, Card Verification Results, DAC. The layout of this field is specific to the issuer.</p> <p>(Field value: translate 32 byte binary EMV value to 64 byte hex string.)</p>
IssuerScriptResults	ans..	Optional	<p>Indicates the result of the terminal script processing.</p> <p>(Field value: translate binary EMV value to hex string.)</p>
TerminalApplicationVersionNumber	ans4	Optional	<p>Version number assigned by the payment system for the application.</p>



TerminalCapabilities	ans6	Optional	Indicates the card data input, CVM, and security capabilities of the terminal. (Field value: translate 3 byte binary EMV value to 6 byte hex string.)
TerminalCountryCode	n3	Conditional	Indicates the country of the terminal, represented according to ISO 3166.
TerminalType	n2	Optional	Indicates the environment of the terminal, its communications capability, and its operational control.
TerminalVerificationResult	ans10	Conditional	Status of the different functions as seen from the terminal. (Field value: translate 5 byte binary EMV value to 10 byte hex string.)
TransactionCategoryCode	ans1	Optional	Defines the type of transaction for which authorization is being requested. Used in risk management.
TransactionCurrencyCode	n3	Conditional	Indicates the currency code of the transaction according to ISO 4217.



TransactionDate	n6	Conditional	The local date (in YYMMDD format) on which the transaction was authorized.
TransactionSequenceCounter	n..8	Optional	Counter maintained by the terminal and incremented by one for each transaction.
TransactionType	n2	Conditional	Indicates the type of the transaction, represented by the first two digits of the ISO 8583:1997 Processing Code.
UnpredictableNumber	ans8	Conditional	Value to provide uniqueness to the generation of the cryptogram. (Field value: translate 4 byte binary EMV value to 8 byte hex string.)
FormFactorIndicator	n8	Conditional	Indicates the form factor of the consumer payment device and the type of contactless interface over which the transaction was conducted. This information is made available to the issuer host.
ApplicationPrimaryAccountNumber	n2	Conditional	Identifies and differentiates cards with the same PAN

DedicatedFileName	5–16	Conditional	Identifies the name of the DF
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## ICC Data - IccResponse

The IccResponse tag may be present for request response message (0110 or 0210).

Field	Format	Condition	Description
ApplicationTransactionCounter	ans4	Conditional	Counter maintained by the application in the ICC. (Incrementing the ATC is managed by the ICC). (Field value: translate 2 byte binary EMV value to 4 byte hex string.)
CardAuthenticationResultsCode	ans1	Optional	An issuer-supplied code indicating card authentication results.
IssuerAuthenticationData	ans32	Optional	Data sent to the ICC for online issuer authentication. May contain the following subfields: Authorization Response Cryptogram (ARPC), Authorization Response Code. The layout of this field is specific to the issuer. (Field value: translate binary EMV value to hex string.)

IssuerScriptTemplate1	ans..	Optional	A command from the issuer for transmission to the ICC. This script is processed by the terminal before sending the second GENERATE AC command to the ICC. (Field value: translate 16 byte binary EMV value to 32 byte hex string.)
IssuerScriptTemplate2	ans..	Optional	A command from the issuer for transmission to the ICC. This script is processed by the terminal after sending the second GENERATE AC command to the ICC. (Field value: translate binary EMV value to hex string.)

### Field 127.26 - Original Node

Contains the name of the original source node for this transaction.

This field is used for linking transactions across source nodes, to handle cases where (for example) the authorization request arrives from one source node, while the matching transaction request or reversal is sent from another.

### Field 127.27 - Card Verification Result

Contains the result of a transaction involving card verification.

**M**    CVV2 valid (match), CVV valid or not available

**N**    CVV2 invalid (non-match), CVV valid or not available

**P**    Unable to process CVV2, CVV valid or not available

U	Issuer unregistered to process CVV2, CVV valid or not available
Y	CVV invalid

## Field 127.28 - American Express Card Identifier (CID)

The American Express Card Identifier (CID) is similar to Visa's CVV2 and MasterCard's CVC2. It is used for additional validation in card-not-present transactions.

Note that if the NCS is configured to perform stand-in, it will not validate the American Express Card Identifier (CID) while performing stand-in. Hence if the NCS performs stand-in for a transaction where this field is present, it does not imply that the data in this field is valid and correct.

The American Express Card Identifier (CID) is passed through the NCS unaltered and not saved in the database.

## Field 127.29 - 3D Secure Data

3D-Secure Data is made up of the following two subfields (both with format **b20**):

- The **Transaction Identifier (XID)** (positions 1 to 20).
- The **Cardholder Authentication Verification Value (CAVV)** (positions 21 to 40).

3D-Secure data is passed through the NCS unaltered and not saved in the database.

The NCS is not allowed to perform stand-in authorization for 3D-Secure transactions.

## Field 127.30 - 3D Secure Result

Contains the Cardholder Authentication Verification Value (CAVV) results code.

blank  
(a space)      CAVV not validated

0	CAVV not validated due to erroneous data submitted
1	CAVV failed validation
2	CAVV passed validation
3	CAVV validation could not be performed. Issuer attempt incomplete.
4	CAVV validation could not be performed. Issuer system error.

3D-Secure Result is passed through NCS unaltered and saved in the database.

**Note:**

- 1.) We strongly suggest that clients connecting to NCS perform period key exchange at a specific time interval.
- 2.) Also, when there is a disconnection between and NCS and the client(s), we advise that the client initiate a sign-on and fresh key exchange to NCS in order to ensure message security.