

Identification card systems — Inter-sector messages between devices and hosts — Acceptor to acquirer messages

ICS 35.240.15; 35.240.40

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National foreword

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- present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this committee can be obtained on request to its secretary.

Cross-references

The British Standards which implement international publications referred to in this document may be found in the BSI Standards Catalogue under the section entitled “International Standards Correspondence Index”, or by using the “Find” facility of the BSI Standards Electronic Catalogue.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the CR title page, pages 2 to 81 and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

This Published Document, having been prepared under the direction of the DISC Board, was published under the authority of the Standards Committee and comes into effect on 15 November 1999

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Amendments issued since publication

Amd. No.	Date	Comments

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English version

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Systèmes de cartes d'identification — Messages
intersectoriels entre terminaux et hôtes —
Messages entre accepteur et acquéreur

Identifikationskartensysteme —
Branchenübergreifende Nachrichten zwischen
Endgeräten und Zentrarechnern —
Nachrichten zwischen kartenakzeptant und
Acquirer

This CEN Report was approved by CEN on 3 March 1999. It has been drawn up by the Technical Committee CEN/TC 224.

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart 36, B-1050 Brussels

Foreword

This document has been prepared by CEN/TC 224, “Machine readable cards, related device interfaces and operations”.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this document: Austria, Belgium, the Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom.

A financial transaction between a retailer and the financial institutions concerned by a card payment brings into play:

- a commercial operation giving rise to a payment by card;
- a relationship between the retailer (card acceptor) and an initial financial institution (acquirer) in order to ensure the transmission of the elements of the commercial operation;
- a relationship between the initial financial institution and the banking system.

This last relationship has formed the subject of international CEN Reportisation work within the banking sector (ISO 8583).

Since it involved the banking sector, the scope of the ISO 8583 CEN Report was unable to be extended in order to constitute an intersector CEN Report taking into account the card acceptor — acquirer relationship upstream stage. An attempt along these lines, within the competent ISO committee, which met with a refusal by the national committees, confirmed this assertion.

The development of an intersector CEN Report, dealing specifically with the retailer — initial financial institution relationship, retranscribing as far as possible the data elements and the syntax of the CEN Reportised messages used in the banking sector, was therefore decided upon and undertaken in order to meet the needs of the corresponding European markets.

The CEN Report draft submitted to vote gave rise to two types of reactions, on behalf of certain countries, which led to its rejection:

- such a CEN Report would be unnecessary, as the ISO 8583 CEN Report already meets the need;

— such a CEN Report would be inappropriate for some of the countries which had already heavily invested in their payment terminal software, despite the envisaged transitional period, which might have resulted in a period of up to five or six years, prior to the putting into application of the CEN Report.

This last objection was unable to be resolved.

So that all those, incidentally numerous, who, in Europe, wish to implement this specification may nevertheless do it on a joint and coherent basis, it was decided to allow them to have at their disposal the result of the quality technical work carried out within the framework of this CEN Reportisation work and to render it public in the form of a CEN Report.

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Introduction

This CEN Report is designed to support message exchange between card acceptors (normally retailers) and acquirers. It defines, among other things, the structure, format and content of messages including those used for authorization, batch data transfer and single message processing. It is based upon the same principles as the well established banking International Standard which supports message exchange between acquirers and card issuers (ISO 8583:1993).

Recognizing that no public domain standard on card acceptor to acquirer messaging exists in Europe, this CEN Report is designed to offer an optional solution to meet on-going business needs which may not have been accommodated by the designs of various de facto national standard. The objectives of this CEN Report include:

- a) accommodate on-going business needs;
- b) satisfy the needs of a wide variety of retail markets;
- c) provide flexibility to accommodate emerging technologies, and associated CEN Reports;
- d) reduce procurement costs;
- e) accommodate cross-border acceptance;
- f) facilitate message conversion by the acquirer in processing messages received from the card acceptor into the format suitable for onward transmission, via the respective payments system, to the card issuer.

This CEN Report has potential implications for existing commercial investment in card handling systems throughout Europe. It is recognised within CEN that, in the face of such substantial investment, an EN is not appropriate. It is also recognised that the relationship between this CEN Report and existing national practices varies widely between one country and another. Successful implementation will, therefore only occur when implementors are themselves able to determine clear commercial benefits. For these reasons, this document is published as a CEN Report.

The differences between this CEN Report and EN 28583 are limited to those needed to support the many different environments found between the acceptor and the acquirer.

These differences are detailed in clause **B.1**.

In summary these deal with

- batch uploading/downloading;
- the need to minimize message length when the communications costs are high and transmission speeds low;
- there are some specific data elements only relevant to the acceptor to acquirer link.

It is furthermore recognized that some system have been implemented using EN 28583 between the acceptor to the acquirer.

Particular attention has been paid in the design of this CEN Report to ensure its suitability for progression beyond Europe and into the global community. The close association of the global payments systems has ensured its applicability to other areas throughout the world.

1 Scope

This CEN Report specifies a common interface for the exchange of messages between card acceptors and acquirers or their agents. It defines the message structure, format and content, data elements, and values for data elements. It is based upon the same principles as EN 28583 (ISO 8583) and is intended to be used when EN 28583 is not appropriate. Where possible, data element names and attributes common to ISO usage are employed. Data representation and communication related characteristics such as protocol, header and trailer information, and transmission control are outside the scope of this CEN Report.

Data representation used in individual systems is subject to the commercial relationships between the parties contracting to each system. The message formats specified in this CEN Report are designed to ensure that compatibility between systems conforming to this CEN Report is always feasible.

2 Normative references

This CEN Report incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this CEN Report only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 24909:1989, *Bank cards — Magnetic stripe data content for track 3 (ISO 4909:1987, ed. 2)*.

EN 27813:1992, *Identification cards — Financial transaction cards (ISO 7813:1990, ed. 3)*.

EN 28583, *Financial transaction card originated messages — Interchange message specifications*.

EN 28601:1992, *Data elements and interchange formats — Information interchange — Representation of dates and times (ISO 8601:1998 and its technical corrigendum 1:1991)*.

EN 29564-1:1993, *Banking — Personal Identification Number management and security — Part 1: PIN protection principles and techniques (ISO 9564-1:1991)*.

ISO 4217:1995, *Codes for the representation of currencies and funds*.

ISO 13489, *Banking — Data elements to be used in international interchange in relation to bit 55 (ICC system — related data) of ISO 8583*.

EN ISO 3166-1:1997, *Codes for the representation of names of countries and their subdivisions — Part 1: Country codes (ISO 3166-1:1997)*.

EN ISO 8583-2:1998, *Financial transaction card originated messages — Interchange message specifications — Part 2: Application and registration procedures for Institution Identification Codes (IIC) (ISO 8583-2:1998)*.

EN ISO 8583-3:1998, *Financial transaction card originated messages — Interchange message specifications — Part 3: Maintenance procedures for codes (ISO 8583-3:1998)*.

EN ISO 9807:1996, *Banking and related financial services — Requirements for message authentication (retail) (ISO 9807:1991)*.

EN ISO/IEC 7812-1:1995, *Identification cards — Identification of issuers — Part 1: Numbering system (ISO/IEC 7812-1:1993)*.

3 Terms and definitions

For the purposes of this CEN Report, the following terms and definitions apply:

3.1 Definitions

3.1.1

acquirer

the financial institution or its agent that acquires from the card acceptor the data relating to the transaction

3.1.2

advice

a message where the sender notifies the receiver of an action that has been taken, requiring no approval but requiring a response

3.1.3

authorization

the approval or guarantee of funds given to the card acceptor

3.1.4

bit map

a series of 64 bits used to identify the presence (denoted by 1) or absence (denoted by 0) of each data element in a message

3.1.5

card accepting device (CAD)

the logical terminal (transaction terminal, electronic cash register, computer or other device or system) used at the card acceptor location to enter transaction data to be communicated to an acquirer

3.1.6**card acceptor**

the party accepting the card and presenting transaction data to an acquirer

3.1.7**cardholder**

the customer associated with the primary account number requesting the transaction from the card acceptor

3.1.8**credit transaction**

a claim for funds by the cardholder for the credit of his account. At the same time it provides detail of funds acknowledged as payable by the acquirer (and/or the card acceptor) to the issuer

3.1.9**debit transaction**

an approval by the cardholder of the debit to his account. At the same time it provides a claim of funds made by the acquirer (and/or the card acceptor) against the issuer

3.1.10**download**

a batch data transfer from acquirer to card acceptor

3.1.11**elementary data record**

the smallest logical component of a file

3.1.12**file**

a collection of elementary data records

3.1.13**file action**

a transaction used to add, change, delete or replace a file or a record

3.1.14**financial transaction**

a transaction from the card acceptor to the acquirer containing all the necessary data elements for authorization, application to the cardholder's account and reconciliation

3.1.15**instruction**

a message where the sender notifies the receiver of an activity to be taken, not requiring an approval or response

3.1.16**instruction acknowledgment**

a message where the receiver notifies the sender that one or more instruction messages have been received

3.1.17**issuer**

the financial institution or its agent that issues the financial transaction card to the cardholder

3.1.18**message**

a set of data elements used to exchange information between card acceptor and acquirer

3.1.19**message class**

the set of messages which describe a specific type of activity

3.1.20

notification

a message where the sender notifies the receiver of an activity that has been taken, not requiring an approval or response

3.1.21

notification acknowledgment

a message where the receiver notifies the sender that one or more notification messages have been received. There is no financial liability implicit in sending a notification acknowledgment

3.1.22

point of service (POS)

the card acceptor location where the transaction originates on behalf of the cardholder

3.1.23

receiving institution

institution within a transaction flow that receives a message before it reaches the final destination

3.1.24

reconciliation

the exchange of messages between card acceptor and acquirer for purposes of reaching agreement on financial totals

3.1.25

request

a message where the sender informs the receiver that a transaction is in progress and that a response is required to complete the activity

3.1.26

response

a message that answers a request or an advice

3.1.27

reversal

a message from the card acceptor to the acquirer informing the acquirer that the previously initiated transaction has not been completed as expected or has been cancelled by the cardholder

3.1.28

transaction

a collection of related messages within the same message class designed to complete (in so far as this is possible) the intention of the sender of the original message

3.1.29

upload

a batch data transfer from card acceptor to acquirer

3.2 Abbreviations

CAD: Card accepting device;

ICC: Integrated circuit card;

MAC: Message authentication code;

MTI: Message type identifier;

PAN: Primary account number;

PIN: Personal identification number;

POS: Point of service

4 Message structure

4.1 General

Each message identified in this CEN Report shall be constructed of the following components in sequence: message type identifier, one or two bit maps, and a series of data elements in the order of the bit map representation.

This CEN Report uses the bit map concept whereby each data element is assigned a position indicator in a control field or bit map. The presence of a data element in a specific message is indicated by a one in the assigned position; the absence of a data element is indicated by a zero in the assigned position.

4.1.1 *Message type identifier structure*

The message type identifier (MTI) is a four (4) character numeric field describing the version number, message class, message function and the transaction originator.

Character one (1) identifies the version number as follows:

- 0 the CEN Report as specified herein
- 1–7 reserved for future use
- 8 reserved for national use
- 9 reserved for private use

Character two (2) identifies the class of the message as follows:

- 0 reserved for future use
- 1 authorization messages
- 2 financial messages
- 3 file action messages
- 4 reversal messages
- 5 reconciliation messages
- 6 administrative messages
- 7 Not available
- 8 network management messages
- 9 reserved for future use

Character three (3) identifies the message function as follows:

- 0 request
- 1 request response
- 2 advice
- 3 advice response
- 4 notification
- 5 notification acknowledgment
- 6 instruction
- 7 instruction acknowledgment
- 8–9 reserved for future use

Character four (4) identifies the transaction originator as follows:

- 0 acquirer
- 1 acquirer repeat
- 2–3 not available
- 4 other
- 5 other repeat
- 6 card acceptor
- 7 card acceptor repeat
- 8–9 reserved for future use

4.1.2 *Message repeats*

In 4.2, whenever a repeat message is identified, that repeat message shall be identical to its original message with the exception of the message type identifier and, if present, the message authentication code. The use of repeat messages is optional. Repeat messages shall only be used for request and advice messages.

4.2 **Description of message type identifiers**

The following subclauses 4.2.1 through 4.2.7 identify the message types supported for each message class. Each of the message classes support a particular activity.

4.2.1 *Authorization message class*

An authorization is an approval or guarantee of funds given to the card acceptor. Authorization messages are not intended to permit the application of the approved transaction amount to the cardholder's account. Authorization messages may be used for cardholder inquiries requesting information on the cardholder accounts. The following apply to all authorizations:

- a) an authorization request message shall be used when the transaction cannot complete at the POS. When an authorization request message is used, the transaction cannot complete at the POS until the response message is received indicating the action to be taken. The use of an authorization request message does not imply that the cardholder is present (e.g., telephone or mail order);
- b) an authorization request response message shall be sent in response to an authorization request message to indicate the approval or guarantee of funds or the action to be taken as specified in the data element action code (bit 39);
- c) an authorization advice message shall be used to inform the acquirer of an authorized transaction which has completed at the POS;
- d) an authorization advice response message shall be sent in response to an authorization advice message to indicate the acceptance or rejection of financial liability;
- e) when the data element function code (bit 24) is used, it shall indicate the type of authorization required and whether the amount transaction is accurate or estimated. If the final amount, transaction is available the amount, transaction shall be an accurate amount. If the final amount, transaction cannot be determined until later, the amount, transaction shall be an estimated amount;
- f) the following types of authorization are defined:
 - 1) original authorization: the first or only authorization used;
 - 2) replacement authorization: an authorization used when a previous authorization was approved and a subsequent authorization is required to replace the previously authorized amount because the amount of the transaction is now greater or less;
 - 3) resubmission authorization: an authorization used to reenter a previous authorization that was denied or rejected;
 - 4) supplementary authorization: an authorization used when one or more previous authorizations were approved and a further authorization is required for an additional amount;
- g) the following types of authorization decisions are defined:
 - 1) full approval: an authorization where the response indicates approval of the requested amount;
 - 2) partial approval: an authorization where the response indicates approval of an amount less than the originally requested amount;
 - 3) declined or rejected: an authorization where the request for approval is declined or the authorization request or advice message is rejected.

In Annex B, Table B.22 and Table B.23 identify the usage of amount, transaction and amount, original transaction within the types of authorizations and authorization decisions.

Table 1 — Message type identifiers 01xx

MTI	Name	Purpose	From	To	Usage
0106	Authorization request	Requests approval for an authorization transaction	Card acceptor	Acquirer	In response to 0106, 0107
0107	Authorization request repeat		Card acceptor	Acquirer	
0116	Authorization request response	Carries the answer to an authorization request	Acquirer	Card acceptor	
0126	Authorization advice	Advises of an authorization carried out	Card acceptor	Acquirer	In response to 0126, 0127
0127	Authorization advice repeat		Card acceptor	Acquirer	
0136	Authorization advice response	Carries the answer to an authorization advice	Acquirer	Card acceptor	

4.2.2 Financial message class

A financial transaction permits the application of the approved transaction amount to the cardholder's account. The following apply to all financial transactions:

- a) a financial request message shall be used when the transaction cannot complete at the POS. When a financial request message is used, the transaction cannot complete at the POS until the response message is received indicating the action to be taken. The use of a financial request message does not imply that the cardholder is present (e.g., telephone or mail order);
- b) a financial request response message shall be sent in response to a financial request message to indicate the approval or guarantee and posting of funds or the action to be taken as specified in the data element action code (bit 39);
- c) a financial advice message shall be used to inform the acquirer of a financial transaction which has completed at the POS;
- d) a financial advice response message shall be sent in response to a financial advice message to indicate the acceptance or rejection of financial liability;
- e) a financial notification message shall be used to inform the acquirer of a financial transaction which has completed at the POS (batch upload);
- f) a financial notification acknowledgment message may optionally be sent in response to one or more financial notification messages to indicate receipt;
- g) when the data element function code (bit 24) is used, it shall indicate the type of financial transaction required and whether the amount transaction is the same or different from any previously authorized amount;
- h) the following types of financial transactions are defined:
 - 1) original: the first or only financial transaction used;
 - 2) previously authorized: a financial transaction used when an authorization was previously approved;
 - 3) resubmission: a financial transaction used to reenter a previous financial transaction that was denied or rejected;
- i) the following types of financial transaction decisions are defined:
 - 1) full approval: a financial transaction where the response indicates approval of the originally requested amount;
 - 2) partial approval: a financial transaction where the response indicates approval of an amount less than the originally requested amount;

3) declined or rejected: a financial transaction where the request for approval is declined or the financial request or advice message is rejected.

In Annex B, Table B.24 and Table B.25 identify the usage of amount, transaction and amount, original transaction within the types of financial messages and financial message decisions.

Table 2 — Message type identifiers 02xx

MTI	Name	Purpose	From	To	Usage
0206	Financial request	Requests approval for a financial transaction	Card acceptor	Acquirer	In response to 0206, 0207
0207	Financial request repeat		Card acceptor	Acquirer	
0216	Financial request response	Carries the answer to a financial request	Acquirer	Card acceptor	
0226	Financial advice	Advises of a financial transaction carried out	Card acceptor	Acquirer	In response to 0226, 0227
0227	Financial advice repeat		Card acceptor	Acquirer	
0236	Financial advice response	Carries the answer to a financial advice	Acquirer	Card acceptor	
0246	Financial notification	Notifies the acquirer of a financial transaction (e.g., batch upload)	Card acceptor	Acquirer	In response to one or more 0246 messages
0256	Financial notification acknowledgment	Acknowledges the receipt of one or more notification messages	Acquirer	Card acceptor	

4.2.3 File action message class

A file action message shall be used to add, change, delete or replace a file or record. File action notification and instruction messages may be used for both batch data and software transfer. A file action notification/instruction acknowledgment message may optionally be sent in response to one or more file action notification/instruction messages to indicate receipt. The data element data record (bit 72) shall be used to convey specific file action record or file information.

Table 3 — Message type identifiers 03xx

MTI	Name	Purpose	From	To	Usage
0346	File action notification	Notifies the acquirer of file action	Card acceptor	Acquirer	In response to one or more 0346 messages
0356	File action notification acknowledgment	Acknowledges the receipt of one or more notification messages	Acquirer	Card acceptor	
0360	File action instruction	Instructs the card acceptor of file action to be taken	Acquirer	Card acceptor	
0370	File action instruction acknowledgment	Acknowledges the receipt of one or more instruction messages	Card acceptor	Acquirer	In response to one or more 0360 messages

4.2.4 Reversal message class

A reversal shall be used to partially or completely nullify the effects of a previous authorization or financial transaction. The following apply to all reversals:

- a) a reversal request message shall be used when the card acceptor initiates a CAD generated partial or complete cancellation of a previous transaction. This may not necessarily be the last transaction processed by the CAD;
- b) a reversal request response message shall be sent in response to a reversal request message. It indicates the approval of the cancellation or the action to be taken as specified in the data element action code (bit 39);
- c) a reversal advice message shall be used when a transaction was not completed properly at the POS. Data elements for these automated CAD initiated transactions are obtained from the transaction that did not complete, with no information supplied by the card acceptor;
- d) a reversal advice response message shall be sent in response to a reversal advice message. A reversal advice shall not be declined except for specific reasons as defined in annex A.9;
- e) the amount, transaction data element in a reversal shall contain the amount to be reversed and shall be less than or equal to the original amount;
- f) the processing code in a reversal shall be the same as presented in the original message. If the original transaction was a debit, the reversal also indicates a debit; if the original transaction was a credit, the reversal also indicates a credit;
- g) only authorization and financial transactions shall be reversed;
- h) a reversal shall not be reversed;
- i) a reversal shall not be used for a refund. Partial or complete refunds shall be independent authorization or financial transactions using processing codes for adjustments and returns.

In Annex B, Table B.26 identifies the usage of amounts in reversal messages.

Table 4 — Message type identifiers 04xx

MTI	Name	Purpose	From	To	Usage
0406	Reversal request	Reverses an earlier authorization or financial transaction	Card acceptor	Acquirer	In response to 0406, 0407
0407	Reversal request repeat		Card acceptor	Acquirer	
0416	Reversal request response	Carries the answer to a reversal request	Acquirer	Card Acceptor	
0426	Reversal advice	Advises of a reversal transaction carried out	Card acceptor	Acquirer	
0427	Reversal advice repeat		Card acceptor	Acquirer	In response to 0426, 0427
0436	Reversal advice response	Carries the answer to a reversal advice	Acquirer	Card Acceptor	

4.2.5 Reconciliation message class

A reconciliation transaction provides financial totals between one CAD and one acquirer. The following apply to all reconciliations:

- a) a reconciliation request message shall be used to request the reconciliation totals (number and value);
- b) a reconciliation request response message shall be sent in response to a reconciliation request message and shall indicate one of the following results:
 - 1) totals provided: all amount and number data elements shall be returned with the values from the institution sending the reconciliation response message;
 - 2) totals not available;

- c) a reconciliation advice message shall be used to request the confirmation of totals (number and value). These totals shall be used to indicate a CAD's position;
- d) a reconciliation advice response message shall be sent in response to a reconciliation advice message and shall indicate one of the following results:
- 1) reconciled, in balance: only the data element amount, net reconciliation shall be returned in the reconciliation advice response message;
 - 2) reconciled, out of balance: all amount and number data elements shall be returned with the values from the institution sending the reconciliation advice response message;
 - 3) totals not available;
- e) a checkpoint reconciliation transaction shall be indicated by the function codes "501" or "503". A checkpoint reconciliation period shall be identified with the data element reconciliation indicator (bit 29);
- f) a final reconciliation transaction shall be indicated by the function codes "500" or "502". A final reconciliation period shall be identified with the data element date, reconciliation (bit 28). A final reconciliation transaction may contain any number of checkpoint reconciliation periods;
- g) the checkpoint reconciliation amount shall be the sum of all the financial amounts from the individual transactions identified with the same reconciliation indicator (bit 29) and date, reconciliation (bit 28). The checkpoint reconciliation count shall be the number of transactions identified with the same reconciliation indicator (bit 29) and date, reconciliation (bit 28);
- h) the final reconciliation amount shall be the sum of all the financial amounts from the individual transactions identified with the same date, reconciliation (bit 28). The final reconciliation count shall be the number of transactions identified with the same date, reconciliation (bit 28);
- i) reconciliation to multiple currencies shall use a separate reconciliation transaction for each currency.

Table 5 — Message type identifiers 05xx

MTI	Name	Purpose	From	To	Usage
0506	Reconciliation request	Card acceptor requests totals for the last reconciliation period	Card acceptor	Acquirer	In response to 0506, 0507
0507	Reconciliation request repeat		Card acceptor	Acquirer	
0516	Reconciliation request response	Carries the answer to a reconciliation request	Acquirer	Card acceptor	
0526	Reconciliation Advice	Advises of card acceptor totals for the last reconciliation period	Card acceptor	Acquirer	
0527	Reconciliation advice Repeat		Card acceptor	Acquirer	
0536	Reconciliation advice response	Carries the answer to a reconciliation advice	Acquirer	Card acceptor	In response to 0526, 0527

4.2.6 Administrative message class

An administrative message shall be used when the sender (card acceptor or acquirer) needs to activate a process or exchange information.

Table 6 — Message type identifiers 06xx

MTI	Name	Purpose	From	To	Usage
0604	Administrative request	Requests an administrative transaction	Sender	Receiver	In response to 0604, 0605
0605	Administrative request repeat		Sender	Receiver	
0614	Administrative request response	Carries the answer to an administrative request	Receiver	Sender	
0624	Administrative advice	Advises of an administrative transaction	Sender	Receiver	
0625	Administrative advice repeat		Sender	Receiver	In response to 0624, 0625
0634	Administrative advice response	Carries the answer to an administrative advice	Receiver	Sender	
0644	Administrative notification	Notifies the receiver of an administrative activity	Sender	Receiver	

4.2.7 Network management message class

Network management messages shall be used to control system security and operating conditions of message exchange and may be initiated by any transaction originator. The types of network management messages are:

- a) system audit control messages that may be used to test the integrity of interchange links and/or used as part of an integrity check or failure recovery scheme;
- b) system security messages that may be used to control security aspects of the interchange system such as key and password management and security alerts. These messages may be used as part of a security procedure (e.g., automatic periodic key changes);
- c) exchange control messages that may be used to synchronize message exchange. Exchange control messages may be used in batch data transfer;
- d) system accounting messages that may be used to identify the end of a reconciliation period. These messages may be used as part of a reconciliation process. System accounting messages shall not be declined by the receiver without specific reasons as defined by the action code (bit 39). See A.9.

Table 7 — Message type identifiers 08xx

MTI	Name	Purpose	From	To	Usage
0804	Network management request	Requests network management activity	Sender	Receiver	In response to 0804, 0805
0805	Network management request repeat		Sender	Receiver	
0814	Network management request response	Carries the answer to a network management request	Receiver	Sender	
0824	Network management advice	Advises of a network management activity	Sender	Receiver	
0825	Network management advice repeat		Sender	Receiver	In response to 0824, 0825
0834	Network management advice response	Carries the answer to a network management advice	Receiver	Sender	
0844	Network management notification	Notifies the receiver of a network management action	Sender	Receiver	

4.3 Bit map

The second message component is one or two bit maps, each consisting of 64 bits. Each bit signifies the presence (1) or absence (0) in the message of the data element associated with that particular bit.

The primary bit map (bits 1-64) shall always be present, and the most frequently used data elements are indexed from these bit positions. Less frequently used data elements are indexed from the secondary bit map (bits 65-128). The presence of the secondary bit map shall be signified by a “1” in bit 01 of the primary bit map. (see Figure 1).

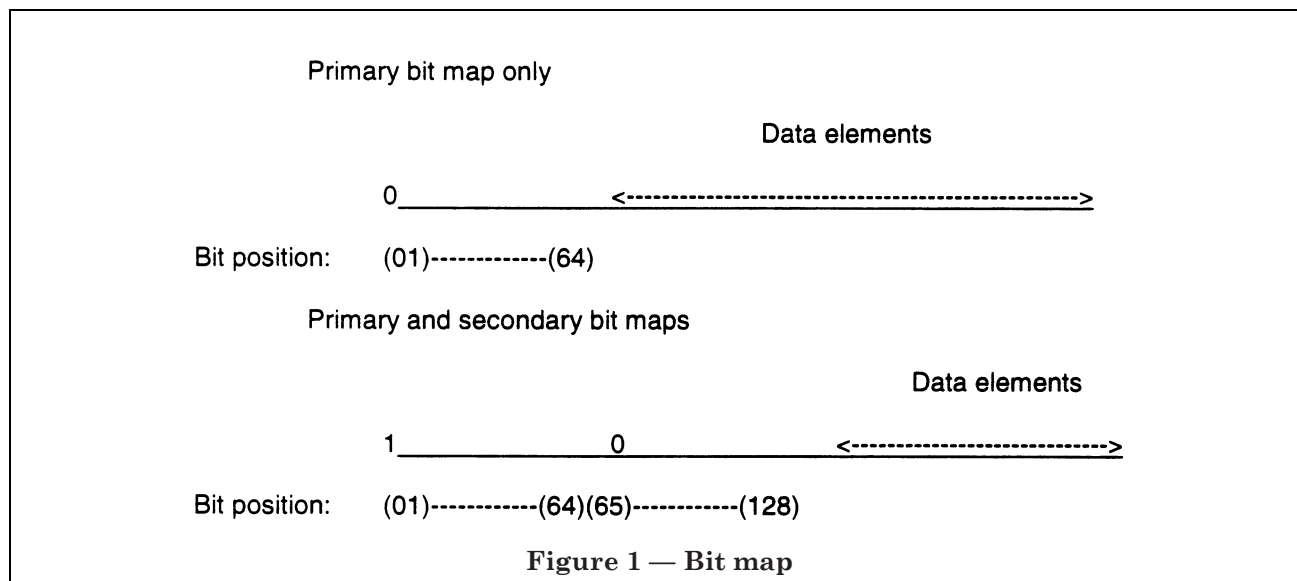


Table 8 shows the data element assignment to each bit, the data element length, format and attribute specification as outlined in the following legend. Bit position 33 in the primary bit map is reserved for future use as are bit positions 91 – 95, 99, and 104 – 111 to allow for the addition of undefined data elements without a new edition of this CEN Report.

Table 8 — Bit maps (in numerical order)

Bit	Data element name	Format	Attribute
1	See 4.3 for usage		b 8
2	Primary account number (PAN)	LVAR	n ..19
3	Processing code		n 6
4	Amount, transaction		n 12
5	Amount, reconciliation		n 12
6	Amount, cardholder billing		n 12
7	Amount, net reconciliation		x + n 16
8	Cash amount		n 12
9	Conversion rate, reconciliation		n 8
10	Conversion rate, cardholder billing		n 8
11	Systems trace audit number		n 6
12	Time, local transaction	hhmmss	n 6
13	Date, local transaction	MMDD	n 4
14	Date, expiration	YYMM	n 4
15	UTC offset		n 3

Table 8 — Bit maps (in numerical order)

Bit	Data element name	Format	Attribute	
16	Date, effective	YYMM	n	4
17	Acquirer sequence number		n	6
18	Merchant type		n	4
19	Country code, acquiring institution		n	3
20	Country code, primary account number extended		n	3
21	Point of service capability code		an	6
22	Point of service entry mode		n	6
23	Card sequence number		n	3
24	Function code		n	3
25	Message reason code		n	4
26	Upload control		n	6
27	Download control		n	6
28	Date, reconciliation	YYMMDD	n	6
29	Reconciliation indicator		n	3
30	Amount, original transaction		n	12
31	Print/display data	LVAR	anscb	..255
32	Acquiring institution identification code	LVAR	n	..11
33	Reserved for future use			
34	Primary account number (PAN) extended	LVAR	ns	..28
35	Track 2 data	LVAR	z	..37
36	Track 3 data	LVAR	z	..104
37	Retrieval reference number		anp	12
38	Approval code		anp	6
39	Action code		n	4
40	Service code		n	3
41	Card accepting device identification		ans	8
42	Card acceptor identification code		ans	15
43	Card acceptor name/location	LVAR	ans	..99
44	Additional response data	LVAR	ans	..99
45	Track 1 data	LVAR	ans	..76
46	CAD management/service quality data	LVAR	ansb	..255
47	Additional data — national	LVAR	ans	..255
48	Additional data — private	LVAR	ans	..255
49	Currency code, transaction		n	3
50	Currency code, reconciliation		n	3
51	Currency code, cardholder billing		n	3
52	Personal identification number (PIN) data		b	8
53	Security related control information		b	8

Table 8 — Bit maps (in numerical order)

Bit	Data element name	Format	Attribute	
54	Amounts, additional	LVAR	ans	..120
55	Integrated circuit card (ICC) system related data	LVAR	b	..255
56	Original data elements	LVAR	n	..32
57	Transaction description	LVAR	ansb	..255
58	Reserved — national	LVAR	ansb	..255
59	Reserved — national	LLVAR	ansb	..MAX
60	Reserved — private	LVAR	ansb	..255
61	Reserved — private	LVAR	ansb	..255
62	Reserved — private	LVAR	ansb	..255
63	Reserved — private	LLVAR	ansb	..MAX
64	Message authentication code (MAC)		b	8
65	Bit map, reserved for future use		b	8
66	Reconciliation code		n	1
67	Batch management		n	4
68	Upload file description		n	18
69	Download file description		n	18
70	Upload file management		n	14
71	Download file management		n	14
72	Data record	LLVAR	ansb	..MAX
73	Date, action	YYMMDD	n	6
74	Credits, number		n	10
75	Credits, reversal number		n	10
76	Debits, number		n	10
77	Debits, reversal number		n	10
78	Transfer, number		n	10
79	Transfer, reversal number		n	10
80	Inquiries, number		n	10
81	Authorizations, number		n	10
82	Inquiries, reversal number		n	10
83	Payments, number		n	10
84	Payments, reversal number		n	10
85	Original amount, reconciliation		n	12
86	Credits, amount		n	16
87	Credits, reversal amount		n	16
88	Debits, amount		n	16
89	Debits, reversal amount		n	16
90	Authorizations, reversal number		n	10
91	Reserved for future use			

Table 8 — Bit maps (in numerical order)

Bit	Data element name	Format	Attribute
92	Reserved for future use		
93	Reserved for future use		
94	Reserved for future use		
95	Reserved for future use		
96	Key management data	LLVAR	b ..999
97	Supplementary card data	LVAR	ans ..255
98	Cardholder biometrics data	LLVAR	ansb ..MAX
99	Reserved for future use		
100	Receiving institution identification code	LVAR	n ..11
101	File name	LVAR	ans ..17
102	Account identification 1	LVAR	ans ..28
103	Account identification 2	LVAR	ans ..28
104	Reserved for future use		
105	Reserved for future use		
106	Reserved for future use		
107	Reserved for future use		
108	Reserved for future use		
109	Reserved for future use		
110	Reserved for future use		
111	Reserved for future use		
112	Reserved for national use		
113	Reserved for national use		
114	Reserved for national use		
115	Reserved for national use		
116	Reserved for national use		
117	Reserved for national use		
118	Reserved for national use		
119	Reserved for national use		
120	Reserved for private use		
121	Reserved for private use		
122	Reserved for private use		

Table 8 — Bit maps (in numerical order)

Bit	Data element name	Format	Attribute
123	Reserved for private use		
124	Reserved for private use		
125	Reserved for private use		
126	Reserved for private use		
127	Message digital signature		b 64
128	Message authentication code (MAC)		b 8
Legend for abbreviations used under format and attribute. a = alphabetic characters, A through Z and a through z c = control characters (not printable or displayable) n = numeric digits, 0 through 9 p = pad character, space s = special characters an = alphabetic and numeric characters as = alphabetic and special characters ns = numeric and special characters anp = alphabetic, numeric and space (pad) characters ans = alphabetic, numeric and special characters ansb = alphabetic, numeric, special characters and binary representation of data ansc = alphabetic, numeric, special characters and control characters anscb = alphabetic, numeric, special characters, control characters and binary representation of data MM = month, 01 through 12 DD = day, 01 through 31 YY = year, 00 through 99 hh = hour, 00 through 23 mm = minute, 00 through 59 ss = second, 00 through 59 L = length (1 8-bit binary block) of variable data element that follows; 1 through 255 LL = length (2 8-bit binary blocks) of variable data element that follows; 1 through 65535 VAR = variable length data element 3 = fixed length of three characters ..17 = variable length up to maximum 17 characters. All variable length fields shall in addition contain one or two binary bytes at the beginning of the data element to identify the number of positions following to the end of that data element			

Table 8 — Bit maps (in numerical order)

Legend for abbreviations used under format and attribute (concluded)	
x	= “C” for credit, “D” for debit and shall always be associated with a numeric amount data element, i.e., $x + n \times 16$ in amount, net reconciliation means prefix “C” or “D” and 16 digits of amount, net reconciliation
b	= binary representation of data
z	= tracks 2 and 3 code set as defined in EN 27813:1989 and EN 24909:1989
NOTES All fixed length “n” data elements are assumed to be right justified with leading zeroes. All other fixed length data elements are left justified with trailing spaces. In all “b” data elements, blocks of 8 bits are assumed to be left justified with trailing zeroes. All data elements are counted from left to right, i.e., the leftmost position is number 1. Special characters include pad character, space.	

4.4 Requirements for data elements

4.4.1 Variable length data elements of 255 characters or less

For any variable length data element with a maximum length of 255 characters, an additional 8-bit binary block (most significant bit to the left) shall prefix the data element and shall indicate its length. The format shall be LVAR. None of the variable length data elements include the length indicator byte in the attribute column of Table 8.

4.4.2 Variable length data elements greater than 255 characters

For any variable length data element with a length of greater than 255 characters, an additional two 8-bit binary blocks (most significant bit to the left) shall prefix the data element and shall indicate its length. The maximum length shall be 65,535 characters. The format shall be LLVAR. None of the variable length data elements include the two binary length indicator blocks in the attribute column of Table 8.

4.4.3 Binary data elements

Binary data shall be grouped into blocks of 8-bits. The length attribute defines the number of such blocks present (e.g., the data element personal identification number (PIN) data has an attribute of “b 8”, i.e., 64 bits of data). In all “b” data elements, blocks of 8-bits are assumed to be left justified with trailing zeroes.

If the format indicates a variable length (LVAR or LLVAR), the first one or two 8-bit binary blocks contain the length of the binary data element which follows. Binary data elements shall have a length which is a multiple of 8-bits.

4.4.4 Identification of account numbers

The following data elements shall contain account numbers used to identify a customer account or relationship and shall remain unchanged for the life of a transaction:

- a) primary account number (PAN); or
- b) primary account number (PAN) extended.

The PAN or PAN extended shall be present in a message but not both.

The following data elements shall be used to identify specific accounts held by the cardholder at the Issuer and if present, they shall remain unchanged for the life of a transaction:

- a) account identification 1;
- b) account identification 2.

4.4.5 Expression of amounts

The amount shall be expressed in the currency of the associated currency code data element. Where a minor unit of currency applies, amounts shall be expressed in the minor unit of currency, without a decimal separator. For example, an amount value of 100 in US currency signifies one US dollar, but 100 in Italian currency signifies 100 lire.

4.4.6 Conversion rates

The leftmost digit denotes the number of positions the decimal separator shall be moved from the right. Position 2 through 8 is the rate (e.g. a conversion rate value of 91234567 would equate to 0.001234567).

The maximum number of digits to the right of the decimal separator is 9, provided the first two digits to the right of the decimal separator are zeroes.

4.4.7 Amount, net reconciliation (bit 7)

All amounts in the reconciliation messages shall be in the currency of reconciliation. See **B.2.4**, Table B.27 for the reconciliation amount and count calculation guidelines.

For calculation of amount, net reconciliation:

add the sum of:

credits, amount

credits, reversal amount

less the sum of:

debits, amount

debits, reversal amount

equals:

amount, net reconciliation

The amount, net reconciliation shall use a “D” when the amount is due from the acquirer or a “C” when the amount is due to the acquirer in the “x” portion of the data element defined as $(x + n \ 16)$.

4.4.8 UTC offset (bit 15)

This data element contains a 3 digit code used to calculate the local time. The first digit specifies the direction of the differential and the offset increment. The second and third digits specify the magnitude of the offset. See **A.2** for the code description.

4.4.9 Amount, original transaction (bit 30)/original amount, reconciliation (bit 85)

The data element amount, original transaction (bit 30) shall consist of the data element amount, transaction (bit 4) from the original transaction. Where the reconciliation currency differs from the transaction currency, the data element original amount, reconciliation (bit 85) shall consist of the data element amount, reconciliation (bit 5) of the original transaction. These data elements shall be used when attempting to partially reverse a previous transaction or to perform a partial approval. They may also be used when performing replacement or supplementary authorizations. The new transaction amount may be in the appropriate data element. These amounts are for information only and shall not be used in the calculation of reconciliation totals.

4.4.10 Print/display data (bit 31)

When used in a response message, the data element print/display data (bit 31) shall contain one or more set of sub-data elements. Each set shall consist of:

a) addressing code (an 1). This code indicates whether the text is to be printed, displayed or both. See **A.8** for the code description;

b) length of the text (n 3). This indicates the length of the subsequent text to be printed, displayed or both;

c) text (ansc ..251). The text may be for the information of the cardholder, the card acceptor or both. The text may contain control characters which allow management of the data to be printed or displayed.

4.4.11 Action code (bit 39)

The data element action code is a 4 position code, and shall indicate the immediate (position 1) and the subsequent (position 2) actions to be taken by the CAD and/or the card acceptor as well as more detailed information (positions 3 and 4) related to the immediate action. See **A.9** for the code description.

a) position 1 shall indicate the action to be taken (e.g., approved, refer, ...) to complete or continue the transaction;

b) position 2 shall indicate any subsequent action to be taken (e.g., hold connection, ...) after completion of the transaction;