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Foreword

This document is a part of ITSO TS 1000, a specification published and maintained by ITSO, a membership company limited by guarantee without shareholders. The membership of ITSO comprises transport organisations, equipment and system suppliers, local and national government. For the current list of members see the ITSO web site www.itso.org.uk

ITSO TS 1000 is the result of extensive consultation between transport providers, sponsors, system suppliers and manufacturers. The Department for Transport (DfT) has also contributed funding and expertise to the process.

Its purpose is to provide a platform and tool-box for the implementation of interoperable contactless smart customer media public transport ticketing and related services in the UK in a manner which offers end to end loss-less data transmission and security. It has been kept as open as possible within the constraints of evolving national, European and International standards in order to maximise competition in the supply of systems and components to the commercial benefit of the industry as a whole. In general, it promotes open standards but it does not disallow proprietary solutions where they are offered on reasonable, non-discriminatory, terms and contribute towards the ultimate objective of interoperability.

ITSO has been established to maintain the technical specification and business rules required to facilitate interoperability. It also accredits participants and interoperable equipment. ITSO is a facilitator of interoperability at the minimum level of involvement necessary. It will not involve itself in any commercial decisions or arrangements for particular ticketing schemes; neither will it set them up nor run them. It will however “register” them in order to provide the necessary interoperability services (e.g. issue and control of unique scheme identifiers, certification and accreditation, security oversight).

Consequently, adoption of this Specification for particular ticket schemes will be a matter for the commercial judgement of the sponsors/participants, as will the detailed business rules and precise partnership arrangements.

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1. Scope

ITSO TS 1000 defines the key technical items and interfaces that are required to deliver interoperability. To this end, the end-to-end security system and shell layout are defined in detail; while other elements (e.g. terminals, 'back-office' databases) are described only in terms of their interfaces. The business rules that supplement the technical requirements are defined elsewhere.

1.1 Scope of Part 6

This Part of ITSO TS 1000 defines the ITSO message data elements and structures, excepting that messages between the ITSO Security Management Service (ISMS) and ISAMs / HSAMs are not detailed in this document¹.

The section of the specification uses terms, definitions and data types which are defined in ITSO TS 1000-1.

¹ ISMS – ISAM/HSAM messages are defined in ITSO TS 1000-8.

2. Message data

2.1 Message Codes

2.1.1 Message Code Format

Message codes shall be a two byte value (x = any value).

Table 1 - Message Code Format

Code (HEX)	Hashed Message ?	Type of message	Message Group	Reference to individual Message Definitions in this document
00xx	No	Transaction Record data	ITSO shell, IPE Administration, Card issuer messages	Table 7
01xx	No	Transaction Record data	Stored Travel Rights, CTA	Table 7
02xx	No	Transaction Record data	ITSO ID, loyalty, create or amend IPE, journey record, Actionlist acknowledge	Table 7
03xx	No	Transaction Record data	Reversals and refunds, miscellaneous, list match event records	Table 7
04xx	No	Other Message Data	Exceptions and card transaction error messages (POST to HOPS)	Table 7
05xx	No	Other Message Data	POST to HOPS queries	Table 113
06xx	Yes	Other Message Data	HOPS to HOPS and HOPS to POST messages	Table 78
07xx	RFU	RFU	RFU	---
08xx	As Required	HOPS to POST, POST to HOPS and HOPS to HOPS messages	Miscellaneous messages	Table 146
09 xx	No	HOPS to POST /HOPS messages	Message control	Table 2
0Axx	No	HOPS to POST /HOPS messages	Parameter tables	Table 99
0Bxx	Yes	HOPS to POST /HOPS messages	Parameter tables	Table 99
0Cxx	As Required	HOPS to POST /HOPS messages	Inter-operability list, Capability list, Hotlist, Actionlist, Data Correction record.	Table 78
0Dxx	No	HOPS to POST /HOPS messages	HOPS Response to POST queries	Table 113
0Exx	No	User defined system specific messages	Messages are user defined, and it is the responsibility of the sender to ensure that the addressee can interpret the message. Both data format and content are user defined, excepting that the messaging system shall assume that "the native format data is of another data type", as defined in ITSO 1000-9 annex A, clause A.3.3. ¹	----

0Fxx	Yes	User defined system specific messages	Messages are user defined, and it is the responsibility of the sender to ensure that the addressee can interpret the message. Both data format and content are user defined. For the formatting and processing of long messages refer to ITSO TS 1000-9, excepting that the messaging system shall assume that "the native format data is of another data type", as defined in ITSO 1000-9 annex A, clause A.3.3.	----
>1000	RFU	RFU	RFU	----

Note that any message codes not defined herein are reserved for future use.

¹ These messages may be used to return user defined audit registers.

2.2 Data Destinations

Data records sent from POST to HOPS may be sent to one or more destinations, as defined in the destination(s) and count of destinations elements. Where so required by the ITSO Operating Licence, messages shall also be addressed to a destination mandated within the Operating Licence, for the purposes of centralised monitoring for fraudulent activity (Governance).

2.3 Data Format.

Data shall be formatted for transmission according to the provisions of ITSO TS 1000-9.

Messages transmitted from HOPS to POST and vice versa shall be in accordance with the stated Transmission Methods and Data Formats defined in ITSO TS 1000-3.

2.3.1 Not Used

2.3.2 Note on actions to take when there is no data available for a specific message data element:

When there is no data available for a specific data element, then the following action shall be taken, depending upon the type of data element involved:

The data element shall always be included in the message, and the content set to a null value as follows.

Where the data element contains a numeric value of data type BCDN, DEC, HEX, BIN, FLAG, VALI, VALS, VAT or VATM, then the element shall be set to a value of zero.

Where the data element contains a numeric value of data type BCDS, then the element may be set either to a value of zero, or set every 4 bit subfield to 0xF.

Where the data element contains an ASCII value, then the element shall contain all spaces, that is, each byte of the element shall contain the hex value 20h.

2.3.3 Note on actions to take when a Transaction with an older format IPE is reported using later format messages

The general rule for the case where a data element has been added to a later version IPE, but older version IPEs are being used with later version messages is that if a message data element is mandatory and is not included in an earlier version of the IPE data, the element should be included in the message and populated with zero or ASCII spaces according to data type.

2.4 Notation

Data element sizes detailed in this part of ITSO TS 1000 are defined as a count of bytes.

3. Message control messages

3.1 Message Codes

Table 2 - Message Codes

Message Group	Data Frame Type	Message Code (hex)
Message Control	Acknowledgement to Class 1 message (ACK1)	0901
	Acknowledgement to Class 2 message (ACK2)	0902
	Negative Acknowledgement to Class 1 message (NAK1)	0911
	Negative Acknowledgement to Class 2 message (NAK2)	0912
	Envelop Frame	0920

All other Message Codes with a high-order byte value of 09 (hex) are RFU.

3.2 Acknowledgement to Class 1 message (ACK1)

A Data Frame with this Message Code shall be issued by a HOPS (to a POST) to acknowledge correct and full receipt of a set of Class 1 Application Messages that form a Transaction Session Batch.

The format of the Data Block is defined in Table 3:

Table 3 - Acknowledgement to Class 1 message (ACK1)

Data Element	Format	Size (bytes)	Comment
IBatch Header sequence number	HEX	3	Generated by ISAM in the HOPS
IBatch Header delete parameters	HEX	8	Generated by ISAM in the HOPS

3.3 Acknowledgement to Class 2 message (ACK2)

A Data Frame with this Message Code shall be issued by a POST or HOPS to acknowledge correct receipt of a Data Frame within a Class 2 Application Message.

The format of the Data Block is defined in Table 4:

Table 4 - Acknowledgement to Class 2 message (ACK2)

Data Element	Format	Size (bytes)	Comment
Data Frame Sequence Number	HEX	3	Sequence Number of the Data Frame being ACKed.

3.4 Negative acknowledgement to Class 1 message (NAK1)

A Data Frame with this Message Code shall be issued by a HOPS (to a POST) to indicate an error in the reception of one or more Class 1 Application Messages that form a Transaction Session Batch.

The format of the Data Block is defined in Table 5:

Table 5 - Negative acknowledgement to Class 1 message (NAK1)

Data Element	Format	Size (bytes)	Comment
IBatch Header sequence number	HEX	3	Generated by ISAM in the HOPS
NAK reason code	HEX	1	The value Reason code shall be a bitmapped field, encoded as follows: DATA_FRAME_ERROR : bit 0 shall be set to one (1) MISSING_DATA_FRAME : bit 1 shall be set to one (1) IBATCH_HEADER_ERROR :bit 2 shall be set to one (1) RFU : bits 3-7.

3.5 Negative acknowledgement to Class 2 message (NAK2)

A Data Frame with this Message Code shall be issued to indicate an error in the reception of a Data Frame within a Class 2 Application Message.

The format of the Data Block is defined in Table 6:

Table 6 - Negative acknowledgement to Class 2 message (NAK2)

Data Element	Format	Size (bytes)	Comment
Data Frame Sequence Number	HEX	3	Sequence Number of the Data Frame being NAKed.
NAK reason code	HEX	1	The value shall be the following: DATA_FRAME_ERROR 01 (hex)

3.6 Envelop Frame, Code 0920

The data associated with this message code shall be an entire Data Frame including its seal².

² Refer to ITSO TS 1000-9 for an explanation of the use of Envelop Frames.

4. Transaction Record Data Messages

4.1 Introductory Note

The following Data messages shall be generated by POSTs as and when appropriate for each Customer Media transaction and transmitted to the HOPS. There are a large variety of data flow types, depending upon the transaction type and the IPE type(s) used in the transaction.

4.2 Record creation rules

4.2.1 Determining Message Destinations

Messages shall be addressed to the following destinations³:

1. All records of transactions involving an IPE shall be addressed to the owner of the IPE, identified by OID in the relevant IPE directory entry. Note that when a check in transaction takes place in a check in / check out environment the IPE which will be used for the exit transaction cannot always be determined at check in. Under these circumstances a 0210 message need not be sent to an IPE owner.
2. Records of transactions which create or delete an ITSO shell, or which change the directory contents shall be sent to the owner of the ITSO shell, identified by the OID in the Shell Environment Data Group, except that in the case of Compact Shells messages with message codes 0001 to 0007 (inclusive) shall not be created or sent. In the case of Compact Shells all other messages which would normally be sent to the Shell Owner shall be sent to the Product Owner.
3. All records of transactions shall be addressed to the owner of the ISAM installed in the terminal where the transaction took place, identified by OID within the POST's ISAM ID, where this differs from the IPE owner ID, excepting that this is not mandatory for messages with message codes 0005, 0006, 0008, 0009, 0313, and 0314.
4. Journey Records created upon exit from a check in / check out environment shall also be addressed to the entry service operator where this can be identified as different from the owner of the ISAM who performed the check out transaction.

Note that in some circumstances, one record type shall be sent to the Shell Owner, and a different record type sent to the IPE and POST owners.

For the avoidance of doubt, the above destinations shall be automatically procured from either the customer media or the ISAM, as appropriate.

4.2.2 General Data Creation Rules

4. Where no data is available for a given element, then an element of the specified size shall still be included in the record, with its contents set to zero if the element is of a numeric type and to 20h (space if the element is of an ASCII type).
5. Note that for reasons of ensuring Customer Media holder privacy the ISRN shall be encrypted according to ITSO specification 1000-8.
6. Where a data element to be recorded does not consist of a multiple of 8 bits, then that data shall be stored in the appropriate element of the message such that the least significant bit of the data to be stored shall be stored in the least significant bit of the message element, and so on for the remaining bits of the element.
7. The "Source" column in the following definitions indicates the original source of the data. However, it is not mandatory to read this source to obtain the data if a POST can reliably determine the data value by other means.

³ Where a message is intended for more than one destination, a POST shall transmit a single message with multiple destinations as defined in ITSO TS 1000-9.

4.3 Transaction Record Message Codes.

Table 7 - Transaction Record Message Codes

Transaction Group	Transaction Type	Hex Code	Ver ⁴	Sent To Owners Of:
ITSO shell	Create ITSO shell (inactive)	0001	2, 3	Shell POST
	RFU	0002		RFU
	RFU	0003		RFU
	Delete ITSO shell	0004	2	Shell POST
IPE administration	Create IPE (sent to ITSO Shell owner)	0005	2	Shell
	Amend IPE (sent to ITSO Shell owner)	0006	2	Shell
	Delete IPE ⁵ (sent to ITSO Shell owner and IPE owner)	0007	2	Shell POST IPE
ITSO Shell owner records ⁶	Stored Travel Rights first use	0008	2	Shell
	Enable/disable CTA	0009	2	Shell
ITSO ID	Create ITSO ID TYPs 14 & 16 (includes any deposit payment)	0200	2	POST IPE
	Amend ITSO ID TYPs 14 & 16	0201	2	POST IPE
Stored Travel Rights	Create Stored Travel Rights TYP 2	0120	2, 3	POST IPE
	Amend Stored Travel Rights TYP 2	0121	2, 3	POST IPE
	Stored Travel Rights usage (deduction from store) (funds transfer request)	0100	2, 3	POST IPE
	Stored Travel Rights load (manual or Actionlist)	0101	2, 3	POST IPE
	Stored Travel Rights load (Auto-Top-Up)	0102	2, 3	POST IPE
	Stored Travel Rights load check record	0103	2, 3	POST IPE
	Enable or amend Auto-Top-Up	0104	2	POST IPE
	Disable Auto-Top-Up	0105	2	POST IPE

⁴ This column indicates the currently valid RecordFormatRevisions for this message data.

⁵ Note that the LOG IPE shall not be deleted.

⁶ Data records returned to the card or shell owner, identified by OID found in the Shell Environment Data Group.

Transaction Group	Transaction Type	Hex Code	Ver ⁴	Sent To Owners Of:
	First use of Stored Travel Rights (to IPE owner)	0106	2	POST IPE
	Stored Travel Rights TransactionReversal (restoration of Stored Travel Rights deducted during a Transaction which has been cancelled)	0107	2, 3	POST IPE
	Stored Travel Rights – refund of part/all Stored Travel Rights (which may, or may not, follow a loading transaction)	0108	2, 3	POST IPE
	Refund all Stored Travel Rights, together with any deposit amount and disable the Stored Travel Rights IPE.	0109	2, 3	POST IPE
Charge to account (CTA)	Create CTA IPE TYP 4	0122	2, 3	POST IPE
	Amend CTA IPE TYP 4	0123	2, 3	POST IPE
	Create CTA IPE TYP 5	0124	2, 3	POST IPE
	Amend CTA IPE TYP 5	0125	2, 3	POST IPE
	Bank Account Details	010B	2	POST IPE
	Disable CTA	010C	2	POST IPE
	CTA Full / Partial Refund for a purchased ticket	010D	2, 3	POST IPE
	CTA TYP 4 Usage	010E	2, 3	POST IPE
	CTA TYP 4 Value Adjustment	010F	2	POST IPE
	CTA TYP 5 Full / Partial Refund for a purchased ticket	0110	2, 3	POST IPE
	CTA TYP 5 Usage	0111	2, 3	POST IPE
	CTA TYP 5 Value Adjustment	0112	2	POST IPE
Loyalty	Create Loyalty IPE	020B	2	POST IPE
	RFU	0202		
	Loyalty add points	0203	2	POST IPE
	Loyalty redemption	0204	2	POST IPE
	Loyalty transaction reversal	0205	2	POST IPE
	First use of scheme	0206	2	POST IPE
TransactionReversal	(other than Stored Travel Rights, with rides refund to Customer Media if appropriate)	0300	2, 3	POST IPE

Transaction Group	Transaction Type	Hex Code	Ver ⁴	Sent To Owners Of:
Predefined ticket and predefined specific journey ticket transactions	Create IPE (sent to IPE owner)	0207	2, 3, 4, 5	POST IPE
	Amend IPE (sent to IPE owner). A record code 0208 is generated for every change to the IPE, including a stored rides use.	0208	2, 3, 4, 5	POST IPE
Refund	Full / Partial refund for a purchased ticket (IPE)	0301	2, 3	POST IPE
Journey record	Journey / entry / exit record (IPE usage)	0209	2, 3, 4	POST IPE
	Journey / entry / exit record (Transient Ticket)	0210	2, 3, 4, 5	POST IPE
Miscellaneous	Deposit received	0302	2	POST and IPE or Shell as appropriate
	Deposit refund	0303	2, 3	POST and IPE or Shell as appropriate
	Enable / Amend Auto-Renew	0304	2	POST IPE
	Disable Auto-Renew	0305	2	POST IPE
	Supplementary Data message	0310	3	POST IPE
	Hotlist match event record	0311	2, 3	See note below
	Actionlist match event record	0312	2, 3	See note below
	Cyclic Log status change	0313	2	Shell
	Unblock Shell or Product	0314	2	Shell and, if appropriate, the Product
	Shell or IPE blocking event not arising as an outcome of a Hotlist match event	0315	2	POST always, and either Shell or IPE owner as appropriate
Exceptions	Transaction Failed	0400	2	Shell POST IPE (see note below)
	Transaction with Customer Media apparently successful, but the POST was unable to confirm this.	0410	2	Shell POST IPE

Note regarding Message code 0311 **Hotlist match event record** and Message code 0312 **Actionlist match event record**. These messages shall always be sent to the POST owner

0311 messages shall also be sent to the IPE and Shell owners if applicable to an IPE, or sent to the Shell owner if applicable to a Shell. When transmitted to the IPE or Shell owner, the contents of the Hotlist data group HotItemOriginator data element shall be used as one of the destinations.

0312 messages shall also be sent to the IPE owner if applicable to an IPE, or sent to the Shell owner if applicable to a Shell. When transmitted to the IPE or Shell owner, the contents of the Actionlist data group ActionListOriginator data element shall be used as one of the destinations.

Codes within the range 0000 to 04FF not explicitly specified in the above table are reserved for future use by ITSO (RFU).

Note that there is no prohibition on sending messages to additional destinations, other than those mandated in Table 7.

In this context, POST owner is defined as the owner of the ISAM installed in the terminal where the transaction took place.

4.4 Transaction Record Data Content – RecordFormatRevision = 2

The data elements shall comprise standard data always returned for each Customer Media transaction, together with transaction type specific data.

4.4.1 Standard Elements.

The following elements shall always be returned as the leading data elements (StandardData) in every transaction record for all types of transaction.

Table 8 - Standard Elements – RecordFormatRevision = 2

Name	Source	Format	Size	Comment
RecordFormatRevision	POST	HEX code	1	Defines format revision of this message.
TransactionDateTime	POST	DTS	3	Date & time at which the transaction took place, which shall be identical to any DTS recorded in the shell, IPEs or Transient Ticket store
TransactionInformation	POST	UD	1	User defined element.
StaffID	POST	HEX	4	Identifies the operators member of staff (if any) conducting the transaction. If none then zero shall be recorded in this element.
SupplementalInformation	POST	HEX	1	Additional information code
FormatVersionCode	Shell	FVC	1	Format version information from the Shell Environment Data Group.
KeyStrategyVersion	Shell	KSC	1	Format version information from the Shell Environment Data Group
KeyVersion	Shell	KVC	1	Format version information from the Shell Environment Data Group

Name	Source	Format	Size	Comment
IPEID	Shell, Dir	IPEIDM	7	<p>Identifies the IPE involved in the transaction, taken from the ITSO Shell's directory entry. It is a concatenation of IIN, OID, TYP and PTYP in that order.</p> <p>When a message is used to record an event relating to an ITSO Shell, then this IPEID element shall either:</p> <ul style="list-style-type: none"> be made up of the Shell's IIN, the Shell owner's OID, IPE TYP - which shall be set to a value of 32 (decimal), and IPE PTYP which shall be set to either a Shell owner defined value to indicate the Shell version, or to a value of zero, or be set to zero to indicate that the message relates to a Shell. (This option shall not be used in new or amended implementations. Note that this option will be removed in a future version of the ITSO Specification.) <p>If no IPE or Shell ID information is available, then the contents of this Data Element shall be set to 0.</p> <p>If the IPE cannot be read and IINL = 1, set the IIN portion of this element to zero (0).</p>
Shell_IterationNumber	Shell	INS#	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.

Table 9 - Supplemental information element codes – RecordFormatRevision = 2

Code	Meaning
00	No supplemental information stored
01	Test/Maintenance/training transaction
02	Incomplete transaction
03	Commercial In (required for 0209 Journey Records only)
04	Commercial Out (required for 0209 Journey Records only)
05	Minimum Subsidy In (required for 0209 Journey Records only)
06	Minimum Subsidy Out (required for 0209 Journey Records only)
07	Minimum Cost In (required for 0209 Journey Records only)
08	Minimum Cost Out (required for 0209 Journey Records only)
09 – 255	RFU

4.4.2 Create an ITSO shell, code 0001.

This applies to creation of an ITSO shell.

Use RecordFormatRevision = 3 in order to provide additional data required for the creation of Detached IPEs.

Note: Unlike other messages relating to the IPE_Fulfilment_Action and Customer Media Holder Not Present this message does NOT use ASN.1 for any elements in this message.

Table 10 - Create an ITSO shell, code 0001 – RecordFormatRevision = 2.

Name	Source	Format	Size	Comment
StandardData			21	
DepositAmount	POST	VALI	2	
DepositCurrencyCode	POST	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
DepositMethodOfPayment	POST	MOP	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
DepositVATSalesTax	POST	VATM	2	
EXP	Shell	DATE	2	Shell Expiry Date
CardReferenceNumber	Shell	MCRN	10	Identity number of a host multi-application Customer Media. Note that this element is optional, and where not included in the Customer Media this message element shall be set to 0. Where MCRN is available in the ITSO Shell it shall be included in this record
ITSOShellReferenceNumberEncrypted	Shell via ISAM	eISRN	16	

4.4.3 Delete ITSO Shell, code 0004.

Table 11 - Delete ITSO Shell, code 0004 – RecordFormatRevision = 2.

Name	Source	Format	Size	Comment
StandardData			21	
CardReferenceNumber	Shell	MCRN	10	Identity number of a host multi-application Customer Media. Note that this element is optional, and where not included in the Customer Media this element shall be set to 0. Where MCRN is available to shall be included in this record
DepositRefundAmount	IPE	VALI	2	
DepositCurrencyCode	IPE	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
ITSOShellReferenceNumberEncrypted	Shell via ISAM	eISRN	16	

4.4.4 Create or Amend IPE, code 0005, 0006.

Note, this record shall be sent to the ITSO Shell owner. An IPE specific creation record shall also be created and sent to the IPE owner.

A 0006 message shall only be generated when an IPE’s fixed data is modified. This message shall not be generated when an IPE’s Value Group data is modified.

These messages shall not be sent when an IPE of TYP 27, 28, or 29, is created or amended on CMD 4, 5 or 6 Media.

Table 12 - Create or Amend IPE, code 0005, 0006 – RecordFormatRevision = 2.

Name	Source	Format	Size	Comment
StandardData			21	
DirectoryEntryNumber	DIR	En	1	A copy of the directory entry number for this IPE. This and the DIM elements may be used for recovery purposes.
DirectoryImageLength	POST	HEX	1	Length of DirectoryImage in bytes
DirectoryImage	DIR	HEX	Variable	A copy of the Directory Data Group Dataset (ITSO TS 1000-2,) after the transaction is performed.
IPEFormatRevision	IPE	HEX	1	
RemoveDate	IPE	RDATE	1	
ProductRetailer	IPE	OID16	2	
IPE_IterationNumber	IPE	INP#	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
IPE_ISAMID	IPE	ISAM ID	4	Included for IPE instance identification. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
IPE_SAMSequenceNumber	IPE	ISAM S#	3	Included for IPE instance identification This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
ITSOShellReferenceNumberEncrypted	Shell via ISAM	eISRN	16	

4.4.5 Delete IPE, Stored Travel Rights first use, Enable/disable CTA, code 0007, 0008, 0009.

This record shall be used for all IPE deletion transactions.

This record shall be created and addressed to the ITSO shell owner when the Stored Travel Rights IPE is first used, and when CTA is either enabled or disabled.

A 0007 message shall not be sent to the Shell owner when an IPE of TYP 27, 28, or 29, is deleted from a CMD 4, 5 or 6 Media.

Table 13 - Delete IPE, Stored Travel Rights first use, Enable/disable CTA, code 0007, 0008, 0009 – RecordFormatRevision = 2.

Name	Source	Format	Size	Comment
StandardData			21	
ProductRetailer	IPE	OID16	2	
IPE_IterationNumber	IPE	INP#	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
IPE_ISAMID	IPE	ISAM ID	4	Included for IPE instance identification. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
IPE_SAMSequenceNumber	IPE	ISAM S#	3	Included for IPE instance identification This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
ITSOShellReferenceNumberEncrypted	Shell via ISAM	eISRN	16	

4.4.6 Stored Travel Rights travel, Product or service purchase, load (manual, Actionlist and Auto-Top-Up), load check record, TransactionReversal, codes 0100, 0101, 0102, 0103, 0107.

4.4.6.1 Stored Travel Rights travel, Product or service purchase, load (manual, Actionlist and auto-top up), TransactionReversal, codes 0100, 0101, 0102, 0107.

Data from the most recently written IPE Value Group only shall be recorded in the appropriate elements of this transaction record. Only one set of elements shall be recorded in the record, even where more than one Value Group exists.

Table 14 - Stored Travel Rights travel, Product or service purchase, load (manual, Actionlist and Auto-Top-Up), TransactionReversal, codes 0100, 0101, 0102, 0107 – RecordFormatRevision = 2

Name	Source	Format	Size	Comment
StandardData			21	
ProductRetailer	IPE	OID16	2	
POSTAmount	POST	VALI	2	Value of transaction in the POST native currency, defined by POSTAmountCurrencyCode
POSTAmountCurrencyCode	POST	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TransactionType	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TransactionSequenceNumber	IPE VG	TS#	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0. The current value of TS# after transaction completion, where TS# is stored in the IPE.
DateTimeStamp	IPE VG	DTS	3	
SAMIDModifier	IPE VG	HEX	4	
ActionSequenceNumber	IPE VG	HEX	1	
Value	IPE VG	VALS	2	
ValueCurrencyCode	IPE VG	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
CountJourneyLegs	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
CumulativeFare	IPE VG	VALI	2	A 1.625 byte value occupying bits 0-7 of the least significant byte and bits 0-4 of the most significant byte. Bits 5-7 of the most significant byte shall be set to 0.
TYP2ValueFlags	IPE VG	BMP	1	A 0.375 byte value, occupying bits 0 to 2, bits 3 to 7 shall be set to 0.

Name	Source	Format	Size	Comment
IPE_IterationNumber	IPE	INP#	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
IPE_ISAMID	IPE	ISAM ID	4	Included for IPE instance identification. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
IPE_SAMSequenceNumber	IPE	ISAM S#	3	Included for IPE instance identification This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
ITSOShellReferenceNumberEncrypted	Shell via ISAM	eISRN	16	

4.4.6.2 Stored Travel Rights load check record code 0103.

A Stored Travel Rights load check record message shall be created with each Stored Travel Rights Transaction where the STR IPE value record data group contains a record of an add value Transaction. If there is no record of an add value Transaction in the value record data group then the message is not sent. Data from the most recently written IPE Value Record recording addition of Stored Travel Rights shall be recorded in the appropriate elements of this transaction record, noting that if the current Transaction is an add value Transaction then the data relating to the most recent previous add value Transaction shall be recorded, not that from the current Transaction. Only one set of elements shall be recorded in the record, relevant to most recent load Transaction, even where more than one Value Group exists.

Table 14a - Stored Travel Rights load check record code 0103 – RecordFormatRevision = 2

Name	Source	Format	Size	Comment
StandardData			21	
ProductRetailer	IPE	OID16	2	
RFU		RFU	2	RFU
RFU		RFU	1	RFU
TransactionType	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TransactionSequenceNumber	IPE VG	TS#	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0.
DateTimeStamp	IPE VG	DTS	3	
SAMIDModifier	IPE VG	HEX	4	
ActionSequenceNumber	IPE VG	HEX	1	
Value	IPE VG	VALS	2	
ValueCurrencyCode	IPE VG	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
CountJourneyLegs	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
CumulativeFare	IPE VG	VALI	2	A 1.625 byte value occupying bits 0-7 of the least significant byte and bits 0-4 of the most significant byte. Bits 5-7 of the most significant byte shall be set to 0.
TYP2ValueFlags	IPE VG	BMP	1	A 0.375 byte value, occupying bits 0 to 2, bits 3 to 7 shall be set to 0.

Name	Source	Format	Size	Comment
IPE_IterationNumber	IPE	INP#	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
IPE_ISAMID	IPE	ISAM ID	4	Included for IPE instance identification. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
IPE_SAMSequenceNumber	IPE	ISAM S#	3	Included for IPE instance identification This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
ITSOShellReferenceNumberEncrypted	Shell via ISAM	eISRN	16	

4.4.7 Enable or amend Auto-Top-Up, code 0104.

When the Transaction which triggered creation of a Transaction Record of this type occurred as a result of implementing an Actionlist item, then the following elements shall be set to a null value in accordance with clause 2.3.2 of this part: BankName; BankACNumber; ExpiryDate; IssueDate; and IssueNumber.

Table 15 - Enable or amend Auto-Top-Up, code 0104 – RecordFormatRevision = 2

Name	Source	Format	Size	Comment
StandardData			21	
BankName	POST	ASCII	40	
BankACNumber	POST	BCDS	16	<p>Element used to transmit either bank a/c number or credit card number</p> <p>Bank A/C number format:</p> <ul style="list-style-type: none"> - Byte 15 (MSB) = 01 - Bytes 14 - 11 = sort code in BCD format - Bytes 10 - 0 = account number in BCD format <p>Credit card number format:</p> <ul style="list-style-type: none"> - Byte 15 (MSB) = 02 - Bytes 14 - 0 = account number in BCD format <p>Null entry:</p> <ul style="list-style-type: none"> - byte 15 (MSB) = 00 - no bank account details sent in this message instance
BankCardExpiryDate	POST	BCDN	4	Date shall be transmitted as 8 characters in the form ddmmyyyy without delimiters, for example, 21/04/00 shall be transmitted as 21042000
BankCardStartDate	POST	BCDN	4	Date shall be transmitted as 8 characters in the form ddmmyyyy without delimiters, for example, 21/04/00 shall be transmitted as 21042000
BankCardIssueNumber	POST	BCDN	2	Applies to credit or other bank card.
TransactionSequenceNumber	IPE VG	TS#	2	<p>A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0.</p> <p>The current value of TS# after transaction completion, where TS# is stored in the IPE.</p>
ActionSequenceNumber	IPE VG	HEX	1	
ProductRetailer	IPE	OID	2	

Name	Source	Format	Size	Comment
ValueCurrencyCode	IPE VG	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TopUpAmount	IPE	VALI	2	The updated value
Threshold	IPE	VALI	2	The updated value
IPE_IterationNumber	IPE	INP#	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
IPE_ISAMID	IPE	ISAM ID	4	Included for IPE instance identification. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
IPE_SAMSequenceNumber	IPE	ISAM S#	3	Included for IPE instance identification This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
ITSOShellReferenceNumberEncrypted	Shell via ISAM	eISRN	16	

4.4.8 Disable Auto-Top-Up, Auto-Renew or CTA, code 0105, 0305, 010C.

Data from the most recently written IPE Value Group only shall be recorded in the appropriate elements of this transaction record. Only one set of elements shall be recorded in the record, even where more than one Value Group exists. The message type 0305 shall only be used with Ticket Product IPE types which support Auto-Renew of the Ticket.

Table 16 - Disable Auto-Top-Up, Auto-Renew or CTA, code 0105, 0305, 010C – RecordFormatRevision = 2.

Name	Source	Format	Size	Comment
StandardData			21	
TransactionSequenceNumber	IPE	TS#	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0. The current value of TS# after transaction completion, where TS# is stored in the IPE.
ActionSequenceNumber	IPE	HEX	1	
IPE_IterationNumber	IPE	INP#	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
IPE_ISAMID	IPE	ISAM ID	4	Included for IPE instance identification. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
IPE_SAMSequenceNumber	IPE	ISAM S#	3	Included for IPE instance identification This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
ITSOShellReferenceNumberEncrypted	Shell via ISAM	eISRN	16	

4.4.9 First Use of Stored Travel Rights, code 0106.

Data from the most recently written IPE Value Group only shall be recorded in the appropriate elements of this transaction record. Only one set of elements shall be recorded in the record, even where more than one Value Group exists.

Table 17 - First Use of Stored Travel Rights, code 0106 – RecordFormatRevision = 2.

Name	Source	Format	Size	Comment
StandardData			21	
TransactionSequenceNumber	IPE VG	TS#	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0. The current value of TS# after transaction completion, where TS# is stored in the IPE.
DateTimeStamp	IPE VG	DTS	3	
ISAMIDModifier	IPE VG	HEX	4	
ProductRetailer	IPE	OID16	2	
Threshold	IPE	VALI	2	
TopUpAmount	IPE	VALI	2	
MaxValue2	IPE	VALI	2	
MaxNegativeAmount	IPE	VALI	2	
DepositAmount	IPE	VALI	2	
StartDateAutoTopUp	IPE	DATE	2	A 1.75 byte value, occupying bits 0-7 of the least significant byte, and bits 0-5 of the most significant byte. Bits 6-7 of the most significant byte shall be set to 0.
DepositMethodOfPayment	IPE	MOP	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
DepositCurrencyCode	IPE	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.

Name	Source	Format	Size	Comment
DepositVATSalesTax	IPE	VAT	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0.
IPE_IterationNumber	IPE	INP#	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
IPE_ISAMID	IPE	ISAM ID	4	Included for IPE instance identification. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
IPE_SAMSequenceNumber	IPE	ISAM S#	3	Included for IPE instance identification This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
ITSOShellReferenceNumberEncrypted	Shell via ISAM	eISRN	16	

4.4.10 Full / partial refund of Stored Travel Rights, code 0108

This message records the amount by which Stored Travel Rights changes as a result of a refund.

Data from the most recently written IPE Value Group only shall be recorded in the appropriate elements of this transaction record. Only one set of elements shall be recorded in the record, even where more than one Value Group exists.

Table 18 - Full / partial refund of Stored Travel Rights, code 0108 – RecordFormatRevision = 2.

Name	Source	Format	Size	Comment
StandardData			21	
TransactionType	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TransactionSequenceNumber	IPE VG	TS#	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0. The current value of TS# after transaction completion, where TS# is stored in the IPE.
ProductRetailer	IPE	OID16	2	
DateTimeStamp	IPE VG	DTS	3	
ISAMIDModifier	IPE VG	HEX	4	
ActionSequenceNumber	IPE VG	HEX	1	
Value	IPE VG	VALS	2	
ValueCurrencyCode	IPE VG	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
CountJourneyLegs	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
CumulativeFare	IPE VG	VALI	2	A 1.625 byte value occupying bits 0-7 of the least significant byte and bits 0-4 of the most significant byte. Bits 5-7 of the most significant byte shall be set to 0.
TYP2ValueFlags	IPE VG	BMP	1	A 0.375 byte value, occupying bits 0 to 2, bits 3 to 7 shall be set to 0.
IPE_IterationNumber	IPE	INP#	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.

Name	Source	Format	Size	Comment
IPE_ISAMID	IPE	ISAM ID	4	Included for IPE instance identification. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
IPE_SAMSequenceNumber	IPE	ISAM S#	3	Included for IPE instance identification This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
ITSOShellReferenceNumberEncrypted	Shell via ISAM	eISRN	16	

4.4.11 Refund all Stored Travel Rights, together with any deposit amount and disable the Stored Travel Rights IPE, code 0109.

Data from the most recently written IPE Value Group only shall be recorded in the appropriate elements of this transaction record. Only one set of elements shall be recorded in the record, even where more than one Value Group exists.

Table 19 - Refund all Stored Travel Rights, together with any deposit amount and disable the Stored Travel Rights IPE, code 0109 – RecordFormatRevision = 2.

Name	Source	Format	Size	Comment
StandardData			21	
ProductRetailer	IPE	OID16	2	
IPEAmount	POST	VALI	2	Value of Stored Travel Rights refund in IPE native currency defined by ValueCurrencyCode
POSTAmount	POST	VALI	2	Value of the Stored Travel Rights refund in POST native currency defined by POSTAmountCurrencyCode
POSTAmountCurrencyCode	POST	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TransactionSequenceNumber	IPE	TS#	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0. The current value of TS# after transaction completion, where TS# is stored in the IPE.
DepositAmount	IPE	VALI	2	
DepositCurrencyCode	IPE	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
Value	IPE	VALS	2	Stored Travel Rights – after transaction, in IPE native currency defined by ValueCurrencyCode
ValueCurrencyCode	IPE	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
IPE_IterationNumber	IPE	INP#	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
IPE_ISAMID	IPE	ISAM ID	4	Included for IPE instance identification. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
IPE_SAMSequenceNumber	IPE	ISAM S#	3	Included for IPE instance identification

Name	Source	Format	Size	Comment
				This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
ITSOShellReferenceNumberEncrypted	Shell via ISAM	elSRN	16	

4.4.12 CTA TYP 5 Full / Partial Refund for a purchased ticket code 0110

Data from the most recently written IPE Value Group only shall be recorded in the appropriate elements of this transaction record. Only one set of elements shall be recorded in the record, even where more than one Value Group exists.

The data set used for this message shall be the data set defined in table 21 for a message code 0111.

4.4.13 CTA TYP 5 Usage, Code 0111.

Data from the most recently written IPE Value Group only shall be recorded in the appropriate elements of this transaction record. Only one set of elements shall be recorded in the record, even where more than one Value Group exists.

Table 21 - CTA TYP 5 Usage, Code 0111 – RecordFormatRevision = 2.

Name	Source	Format	Size	Comment
StandardData			21	
IPEAmount	POST	VALI	2	Value of transaction in the IPE native currency, defined by ValueCurrencyCode
POSTAmount	POST	VALI	2	Value of transaction in the POST native currency, defined by POSTAmountCurrencyCode
POSTAmountCurrencyCode	POST	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
ProductRetailer	IPE	OID16	2	
TransactionType	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TransactionSequenceNumber	IPE VG	TS#	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0. The current value of TS# after transaction completion, where TS# is stored in the IPE.
ActionSequenceNumber	IPE VG	HEX	1	
LastResetDate	IPE VG	Date	2	A 1.75 byte value, occupying bits 0-7 of the least significant byte, and bits 0-5 of the most significant byte. Bits 6-7 of the most significant byte shall be set to 0.
ValueCurrencyCode	IPE VG	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TYP5ValueFlags	IPE VG	BMP	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
CountOfTransactions	IPE VG	HEX	1	
CountOfJourneyLegs	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
IPE_IterationNumber	IPE	INP#	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.

Name	Source	Format	Size	Comment
IPE_ISAMID	IPE	ISAM ID	4	Included for IPE instance identification. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
IPE_SAMSequenceNumber	IPE	ISAM S#	3	Included for IPE instance identification This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
ITSOShellReferenceNumberEncrypted	Shell via ISAM	eISRN	16	

4.4.14 Deleted

Clause 4.4.14 is deleted but the Clause sub section has been left in to retain the sequencing.

4.4.15 Bank Account Details, code 010B

This message should be used with caution, because the data is not encrypted except within the VPN. It is provided only for completeness, and it is recommended that it is only used in the absence of other methods.

Table 23 - Bank Account Details, code 010B – RecordFormatRevision = 2.

Name	Source	Format	Size	Comment
StandardData			21	
BankName	POST	ASCII	40	
BankACNumber	POST	BCDS	16	Element used to transmit either bank a/c number or credit card number Bank A/C number format: - Byte 15 (MSB) = 01 - Bytes 14 - 11 = sort code in BCD format - Bytes 10 - 0 = account number in BCD format Credit card number format: - Byte 15 (MSB) = 02 - Bytes 14 - 0 = account number in BCD format
BankCardExpiryDate	POST	BCDN	4	Date shall be transmitted as 8 characters in the form ddmmyyyy without delimiters, for example, 21/04/00 shall be transmitted as 21042000
BankCardStartDate	POST	BCDN	4	Date shall be transmitted as 8 characters in the form ddmmyyyy without delimiters, for example, 21/04/00 shall be transmitted as 21042000
BankCardIssueNumber	POST	BCDN	2	Applies to credit or other bank card.
ProductRetailer	IPE	OID	2	
IPE_IterationNumber	IPE	INP#	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
IPE_ISAMID	IPE	ISAM ID	4	Included for IPE instance identification. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
IPE_SAMSequenceNumber	IPE	ISAM S#	3	Included for IPE instance identification This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.

Name	Source	Format	Size	Comment
ITSOShellReferenceNumberEncrypted	Shell via ISAM	eISRN	16	

4.4.16 Full / partial refund of CTA cumulative amount, code 010D.

This message records the amount by which a CTA cumulative amount changes as a result of a refund.

Data from the most recently written IPE Value Group only shall be recorded in the appropriate elements of this transaction record. Only one set of elements shall be recorded in the record, even where more than one Value Group exists.

Table 24 - Full / partial refund of CTA cumulative amount, code 010D – RecordFormatRevision = 2.

Name	Source	Format	Size	Comment
StandardData			21	
IPEAmount	POST	VALI	2	Value of refund in IPE native currency defined by IPECurrencyCode
POSTAmount	POST	VALI	2	Value of the Stored Travel Rights refund in POST native currency defined by POSTAmountCurrencyCode
POSTAmountCurrencyCode	POST	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
ProductRetailer	IPE	OID16	2	
TransactionSequenceNumber	IPE	TS#	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0. The current value of TS# after transaction completion, where TS# is stored in the IPE.
CumulativeAmount	IPE	VALIS	2	value after transaction
ValueCurrencyCode	IPE	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
IPE_IterationNumber	IPE	INP#	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
IPE_ISAMID	IPE	ISAM ID	4	Included for IPE instance identification. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.

Name	Source	Format	Size	Comment
IPE_SAMSequenceNumber	IPE	ISAM S#	3	Included for IPE instance identification This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
ITSOShellReferenceNumberEncrypted	Shell via ISAM	eISRN	16	

4.4.17 CTA TYP 4 usage (travel, Product or service purchase), code 010E

Data from the most recently written IPE Value Group only shall be recorded in the appropriate elements of this transaction record. Only one set of elements shall be recorded in the record, even where more than one Value Group exists.

Table 25 - CTA TYP 4 usage (travel, Product or service purchase), code 010E – RecordFormatRevision = 2.

Name	Source	Format	Size	Comment
StandardData			21	
IPEAmount	POST	VALI	2	Value of transaction in the IPE native currency, defined by ValueCurrencyCode
POSTAmount	POST	VALI	2	Value of transaction in the POST native currency, defined by POSTAmountCurrencyCode
POSTAmountCurrencyCode	POST	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
ProductRetailer	IPE	OID16	2	
TransactionType	IPE	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TransactionSequenceNumber	IPE	TS#	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0. The current value of TS# after transaction completion, where TS# is stored in the IPE.
ActionSequenceNumber	IPE	HEX	1	
CumulativeAmount	IPE	VALI	2	Value following transaction
ValueCurrencyCode	IPE	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
CountJourneyLegs	IPE	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
CumulativeFare	IPE	VALI	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0.
TYP4ValueFlags	IPE	BMP	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
IPE_IterationNumber	IPE	INP#	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.

Name	Source	Format	Size	Comment
IPE_ISAMID	IPE	ISAM ID	4	<p>Included for IPE instance identification.</p> <p>This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.</p>
IPE_SAMSequenceNumber	IPE	ISAM S#	3	<p>Included for IPE instance identification</p> <p>This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.</p>
ITSOShellReferenceNumberEncrypted	Shell via ISAM	<u>eISRN</u>	16	

4.4.18 CTA TYP 4, TYP 5, Value Adjustment, Code, 010F, 0112

Data from the most recently written IPE Value Group only shall be recorded in the appropriate elements of this transaction record. Only one set of elements shall be recorded in the record, even where more than one Value Group exists.

Table 26 - TYP 4, TYP 5, Value Adjustment, Code, 010F, 0112 – RecordFormatRevision = 2.

Name	Source	Format	Size	Comment
StandardData			21	
IPEAmount	POST	VALI	2	Value of transaction in the IPE native currency, defined by ValueCurrencyCode
POSTAmount	POST	VALI	2	Value of transaction in the POST native currency, defined by POSTAmountCurrencyCode
POSTAmountCurrencyCode	POST	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
ProductRetailer	IPE	OID16	2	
TransactionType	IPE	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TransactionSequenceNumber	IPE	TS#	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0. The current value of TS# after transaction completion, where TS# is stored in the IPE.
ActionSequenceNumber	IPE	HEX	1	
CumulativeAmount	IPE	VALI	2	Value following transaction applies to TYP 4 only, for TYP 5, this value shall be set to 0.
IPE_IterationNumber	IPE	INP#	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
IPE_ISAMID	IPE	ISAM ID	4	Included for IPE instance identification. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
IPE_SAMSequenceNumber	IPE	ISAM S#	3	Included for IPE instance identification This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.

Name	Source	Format	Size	Comment
ITSOShellReferenceNumberEncrypted	Shell via ISAM	elSRN	16	

4.4.19 Create or Amend Stored Travel Rights, codes 0120, 0121.

Note that if any value is loaded when the IPE is created then this shall be recorded using an additional Stored Travel Rights load message.

It is not mandatory to send a 0121 message in parallel with a specific change message, if the 0121 message does not convey any additional information (i.e. the contents of the additional data items sent in the 0121 message are unchanged), and if both messages would have been sent to the same destination(s). However, optionally 0121 messages can be sent under these conditions.

Data from the most recently written IPE Value Group only shall be recorded in the appropriate elements of this transaction record. Only one set of elements shall be recorded in the record, even where more than one Value Group exists.

Table 27 - Create or Amend Stored Travel Rights, codes 0120, 0121 – RecordFormatRevision = 2.

Name	Source	Format	Size	Comment
StandardData			21	
IPEExpiryDate	Shell	DATE	2	A copy of the relevant EXP directory data element relevant to this IPE.
IPELength	IPE	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
IPEBitMap	IPE	BMP	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
IPEFormatRevision	IPE	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
RemoveDate	IPE	RDATE	1	
ProductRetailer	IPE	OID16	2	
TYP2Flags	IPE	BMP	1	
Threshold	IPE	VALI	2	
TopUpAmount	IPE	VALI	2	
MaxValue2	IPE	VALI	2	
MaximumNegativeAmount	IPE	VALI	2	
DepositAmount	IPE	VALI	2	
StartDateAutoTopUp	IPE	DATE	2	A 1.75 byte value, occupying bits 0-7 of the least significant byte, and bits 0-5 of the most significant byte. Bits 6-7 of the most significant byte shall be set to 0.
DepositMethodOfPayment	IPE	MOP	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
DepositCurrencyCode	IPE	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
DepositVATSalesTax	IPE	VAT	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0.

Name	Source	Format	Size	Comment
VGLength	IPE VG	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
VGBitMap	IPE VG	BMP	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
VGFormatRevision	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TransactionType	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TransactionSequenceNumber	IPE VG	TS#	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0. The current value of TS# after transaction completion, where TS# is stored in the IPE.
DateTimeStamp	IPE VG	DTS	3	
ISAMIDModifier	IPE VG	HEX	4	
ActionSequenceNumber	IPE VG	HEX	1	
Value	IPE VG	VALS	2	
ValueCurrencyCode	IPE VG	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
CountJourneyLegs	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
CumulativeFare	IPE VG	VALI	2	A 1.625 byte value occupying bits 0-7 of the least significant byte and bits 0-4 of the most significant byte. Bits 5-7 of the most significant byte shall be set to 0.
TYP2ValueFlags	IPE VG	BMP	1	A 0.375 byte value, occupying bits 0 to 2, bits 3 to 7 shall be set to 0.
IPE_IterationNumber	IPE	INP#	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
IPE_ISAMID	IPE	ISAM ID	4	Included for IPE instance identification. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.

Name	Source	Format	Size	Comment
IPE_SAMSequenceNumber	IPE	ISAM S#	3	<p>Included for IPE instance identification</p> <p>This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.</p>
ITSOShellReferenceNumberNonEncrypted	Shell	uISRN	16	<p>Not encrypted.</p> <p>In a code 0121 message, this element shall be set to zero (0)</p>
ITSOShellReferenceNumberEncrypted	Shell via ISAM	eISRN	16	

4.4.20 Create or Amend CTA IPE TYP 4, codes 0122, 0123

Note that this message shall only be used for amendments not covered by other transaction type specific messages defined elsewhere herein.

Data from the most recently written IPE Value Group only shall be recorded in the appropriate elements of this transaction record. Only one set of elements shall be recorded in the record, even where more than one Value Group exists.

Table 28 - Create or Amend CTA IPE TYP 4, codes 0122, 0123 – RecordFormatRevision = 2.

Name	Source	Format	Size	Comment
StandardData			21	
IPEExpiryDate	Shell	DATE	2	A copy of the relevant EXP directory data element relevant to this IPE.
IPELength	IPE	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
IPEBitMap	IPE	BMP	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
IPEFormatRevision	IPE	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
RemoveDate	IPE	RDATE	1	
ProductRetailer	IPE	OID	2	
TYP4Flags	IPE	BMP	1	
MaxValue4	IPE	VALI	2	
DepositAmount	IPE	VALI	2	
StartDateCTA	IPE	DATE	2	A 1.75 byte value, occupying bits 0-7 of the least significant byte, and bits 0-5 of the most significant byte. Bits 6-7 of the most significant byte shall be set to 0.
EndDate	IPE	DATE	2	A 1.75 byte value, occupying bits 0-7 of the least significant byte, and bits 0-5 of the most significant byte. Bits 6-7 of the most significant byte shall be set to 0.
DepositMethodOfPayment	IPE	MOP	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
DepositCurrencyCode	IPE	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
DepositVATSalesTax	IPE	VAT	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0.

Name	Source	Format	Size	Comment
VGLength	IPE VG	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
VGBitMap	IPE VG	BMP	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
VGFormatRevision	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TransactionType	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TransactionSequenceNumber	IPE VG	TS#	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0. The current value of TS# after transaction completion, where TS# is stored in the IPE.
DateTimeStamp	IPE VG	DTS	3	
ISAMIDModifier	IPE VG	HEX	4	
ActionSequenceNumber	IPE VG	HEX	1	
CumulativeAmount	IPE VG	VALI	2	
ValueCurrencyCode	IPE VG	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
CountJourneyLegs	IPE VG	HEX	1	
CumulativeFare	IPE VG	VALI	2	
TYP4ValueFlags	IPE VG	BMP	1	
IPE_IterationNumber	IPE	INP#	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
IPE_ISAMID	IPE	ISAM ID	4	Included for IPE instance identification. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.

Name	Source	Format	Size	Comment
IPE_SAMSequenceNumber	IPE	ISAM S#	3	<p>Included for IPE instance identification</p> <p>This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.</p>
ITSOShellReferenceNumberNonEncrypted	Shell	uISRN	16	<p>Not encrypted.</p> <p>In a code 0123 message, this element shall be set to zero (0)</p>
ITSOShellReferenceNumberEncrypted	Shell via ISAM	eISRN	16	

4.4.21 Create or Amend CTA IPE TYP 5, Code 0124, 0125.

Note that this message shall only be used for amendments not covered by other Transaction type specific messages defined elsewhere herein.

Data from the most recently written IPE Value Group only shall be recorded in the appropriate elements of this transaction record. Only one set of elements shall be recorded in the record, even where more than one Value Group exists.

Table 29 - Create or Amend CTA IPE TYP 5, Code 0124, 0125 – RecordFormatRevision = 2.

Name	Source	Format	Size	Comment
StandardData			21	
IPEExpiryDate	Shell	DATE	2	A copy of the relevant EXP directory data element relevant to this IPE
IPELength	IPE	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
IPEBitMap	IPE	BMP	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
IPEFormatRevision	IPE	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
RemoveDate	IPE	RDATE	1	
ProductRetailer	IPE	OID16	2	
TYP5Flags	IPE	BMP	1	
WeeksPerPeriod	IPE	HEX	1	
QuantityTransactions	IPE	HEX	1	
MaxValue5	IPE	VALI	2	
DepositAmount	IPE	VALI	2	
StartDateCTA	IPE	DATE	2	A 1.75 byte value, occupying bits 0-7 of the least significant byte, and bits 0-5 of the most significant byte. Bits 6-7 of the most significant byte shall be set to 0.
EndDate	IPE	DATE	2	A 1.75 byte value, occupying bits 0-7 of the least significant byte, and bits 0-5 of the most significant byte. Bits 6-7 of the most significant byte shall be set to 0.
DepositMethodOfPayment	IPE	MOP	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
DepositCurrencyCode	IPE	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.

Name	Source	Format	Size	Comment
DepositVATSalesTax	IPE	VAT	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0.
VGLength	IPE VG	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
VGBitMap	IPE VG	BMP	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
VGFormatRevision	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TransactionType	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TransactionSequenceNumber	IPE VG	TS#	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0. The current value of TS# after transaction completion, where TS# is stored in the IPE.
DateTimeStamp	IPE VG	DTS	3	
ISAMIDModifier	IPE VG	HEX	4	
ActionSequenceNumber	IPE VG	HEX	1	
CountOfTransactions	IPE VG	HEX	1	
LastResetDate	IPE VG	DATE	2	A 1.75 byte value, occupying bits 0-7 of the least significant byte, and bits 0-5 of the most significant byte. Bits 6-7 of the most significant byte shall be set to 0.
ValueCurrencyCode	IPE VG	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TYP5ValueFlags	IPE VG	BMP	1	
CountJourneyLegs	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
IPE_IterationNumber	IPE	INP#	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
IPE_ISAMID	IPE	ISAM ID	4	Included for IPE instance identification. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.

Name	Source	Format	Size	Comment
IPE_SAMSequenceNumber	IPE	ISAM S#	3	Included for IPE instance identification This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
ITSOShellReferenceNumberNonEncrypted	Shell	uISRN	16	Not encrypted. In a code 0125 message, this element shall be set to zero (0)
ITSOShellReferenceNumberEncrypted	Shell via ISAM	eISRN	16	

4.4.22 Create or Amend ITSO ID IPE or Entitlement IPE, code 0200, 0201

This record shall be used for both ID TYP 16 and Entitlement TYP 14. All data elements shall be included. Where no data is available for a specific message element then that element shall contain zero, excepting that any message element of format LOC1, LOC2, LOC3 or LOC4 shall not be set to zero, but shall contain a NULL location definition in the form of LocDefType 255, and with the minimum permissible structure length.

For a creation transaction, all elements appropriate to the IPE type shall be completed. For an amendment, only those elements for which data is available need be completed, other elements shall contain zero if the element is of a numeric type, or 20h (space) if the element is an of ASCII type.

Some data elements in the 0200 and 0201 are intended to hold personal data. For the purposes of data protection Product Owners may choose not to populate these elements, in which case they shall be handled according to clause 2.3.2. In these circumstances the Product Owner must make their own arrangements to recover the affected data (if it is required to be sent to the back office). The affected elements are as follows: HolderTitle; HolderSurname; HolderOtherNames; HolderAddress1; HolderAddress2; HolderAddress3; HolderAddress4; HolderPostcode; HolderPhoneDay; HolderPhoneHome; HolderPhoneMobile; HolderEmail; DateOfBirth; Forename; Surname.

It is not mandatory to send a 0201 message in parallel with a specific change message (e.g. a 0303 deposit refund message), if the 0201 message does not convey any additional information (i.e. the contents of the additional data items sent in the 0201 message are unchanged), and if both messages would have been sent to the same destination(s).

However, optionally 0201 messages can be sent under these conditions.

Table 30 - Create or Amend ITSO ID IPE or Entitlement IPE, code 0200, 0201 – RecordFormatRevision = 2.

Name	Source	Format	Size	Comment
StandardData			21	
Amount	POST	VALI	2	Amount of any remittance by the Customer Media holder, excluding a deposit.
AmountCurrencyCode	POST	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
HolderTitle	POST	ASCII	4	Where necessary, this element shall be padded with trailing spaces
HolderSurname	POST	ASCII	20	Where necessary, this element shall be padded with trailing spaces
HolderOtherNames	POST	ASCII	30	Where necessary, this element shall be padded with trailing spaces
HolderAddress1	POST	ASCII	30	Where necessary, this element shall be padded with trailing spaces
HolderAddress2	POST	ASCII	30	Where necessary, this element shall be padded with trailing spaces
HolderAddress3	POST	ASCII	30	Where necessary, this element shall be padded with trailing spaces
HolderAddress4	POST	ASCII	30	Where necessary, this element shall be padded with trailing spaces
HolderPostcode	POST	ASCII	10	Where necessary, this element shall be padded with trailing spaces
HolderPhoneDay	POST	ASCII	20	Where necessary, this element shall be padded with trailing spaces
HolderPhoneHome	POST	ASCII	20	Where necessary, this element shall be padded with trailing spaces
HolderPhoneMobile	POST	ASCII	20	Where necessary, this element shall be padded with trailing spaces
HolderEmail	POST	ASCII	40	Where necessary, this element shall be padded with trailing spaces
IPE-TYP	POST	TYP	1	This element shall indicate the TYP of IPE to which a message instance refers, and also indicates the type of optional data which may be found within a message instance. In this instance it shall be used to identify whether the IPE is of TYP 14 or TYP 16.
IPEExpiryDate	Shell	DATE	2	A copy of the relevant EXP directory data element relevant to this IPE.

Name	Source	Format	Size	Comment
IPELength	IPE	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
IPEBitMap	IPE	BMP	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
IPEFormatRevision	IPE	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
RemoveDate	IPE	RDATE	1	
ConcessionaryPassIssuer CostCentre	IPE	HEX	2	
IDFlags	IPE	BMP	1	
RoundingFlagsEnable	IPE	BMP	1	A 0.125 byte value, occupying bit 0 of the byte. Bits 1-7 of the byte shall be set to 0.
PassbackTime	IPE	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
DateOfBirth	IPE	DOB	4	
Language	IPE	HEX	1	
HolderID	IPE	HEX	4	
RoundingFlag	IPE	BMP	1	A 0.125 byte value, occupying bit 0 of the byte. Bits 1-7 of the byte shall be set to 0.
RoundingValueFlag	IPE	BMP	1	A 0.125 byte value, occupying bit 0 of the byte. Bits 1-7 of the byte shall be set to 0.
EntitlementExpiryDate	IPE	DATE	2	A 1.75 byte value, occupying bits 0-7 of the least significant byte, and bits 0-5 of the most significant byte. Bits 6-7 of the most significant byte shall be set to 0.
DepositMethodOfPayment	IPE	MOP	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
DepositVATSalesTax	IPE	VAT	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0.
ShellDepositMethodOfPayment	IPE	MOP	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.

Name	Source	Format	Size	Comment
ShellDepositVATSalesTax	IPE	VAT	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0.
DepositCurrencyCode	IPE	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
ShellDepositCurrencyCode	IPE	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
DepositAmount	IPE	VALI	2	
ShellDeposit	IPE	VALI	2	
EntitlementCode	IPE	HEX	1	
ConcessionaryClass	IPE	HEX	1	
IPE_IterationNumber	IPE	INP#	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
IPE_ISAMID	IPE	ISAM ID	4	Included for IPE instance identification. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
IPE_SAMSequenceNumber	IPE	ISAM S#	3	Included for IPE instance identification This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
ITSOShellReferenceNumberNonEncrypted	Shell	uISRN	16	Not encrypted. In a code 0201 message, this element shall be set to zero (0)
SecondaryHolderID	IPE	HEX	4	
ForenameLength	IPE	HEX	1	Length of Forename, in bytes Set to 0. if no Forename stored
Forename	IPE	ASCII	39	A variable length element, actual length is determined by ForenameLength. Length may exceed 39, but combined length of Forename plus Surname shall not exceed 78 bytes.

Name	Source	Format	Size	Comment
SurnameLength	IPE	HEX	1	Length of Surname, in bytes Set to 0. if no Surname stored
Surname	IPE	ASCII	39	A variable length element, actual length is determined by SurnameLength. Length may exceed 39, but combined length of Forename plus Surname shall not exceed 78 bytes.
HalfDayOfWeek	IPE	BMP	2	
ValidAtOrFrom	IPE	LOC1	Variable , maximum 17	Variable length element
ValidTo	IPE	LOC1	Variable , maximum 17	Variable length element
ITSOShellReferenceNumberEncrypted	Shell via ISAM	eISRN	16	

IDFlag definitions

These shall be as defined for the ITSO ID IPE, TYP = 16 and entitlement IPE TYP 14.

4.4.23 Code 0202, RFU.

This message code is RFU.

4.4.24 Loyalty add points, Loyalty redemption, Loyalty transaction reversal, codes 0203, 0204, 0205.

This record covers both types of loyalty, as defined in specification ITSO TS 1000-4.

Data from the most recently written IPE Value Group only shall be recorded in the appropriate elements of this transaction record. Only one set of elements shall be recorded in the record, even where more than one Value Group exists.

Table 33 - Loyalty add points, Loyalty redemption, Loyalty transaction reversal, codes 0203, 0204, 0205 – RecordFormatRevision = 2.

Name	Source	Format	Size	Comment
StandardData			21	
IPE-TYP	POST	TYP	1	This element shall indicate the TYP of IPE to which a message instance refers, and also indicates the type of optional data which may be found within a message instance. In this instance it shall be used to identify whether the IPE is of TYP 3 or TYP 17.
POSTDefinedData	POST	UD	4	User defined element (note that this does not relate to any IPE element)
TransactionAmountOfPoints	POST	HEX	2	Points added, redeemed, or restored as appropriate to the transaction type
ProductRetailer	IPE	OID16	2	
TransactionSequenceNumber	IPE	TS#	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0. The current value of TS# after transaction completion, where TS# is stored in the IPE.
TransactionType	IPE	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
LoyaltyPoints	IPE	HEX	3	Value after transaction Applies to loyalty type 1 (TYP 3 IPE) only for type 2 loyalty programs this value shall be set to 0.
UserDefined	IPE	UD	2	Applies to loyalty type 1 (TYP 3 IPE) only for type 2 loyalty programs this value shall be set to 0.
IPE_IterationNumber	IPE	INP#	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
IPE_ISAMID	IPE	ISAM ID	4	Included for IPE instance identification. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group

Name	Source	Format	Size	Comment
				shall not be used here.
IPE_SAMSequenceNumber	IPE	ISAM S#	3	Included for IPE instance identification This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
ITSOShellReferenceNumberEncrypted	Shell via ISAM	eISRN	16	

4.4.25 Create Loyalty IPE, First Use of loyalty scheme, code 020B, 0206

This record covers both types of loyalty, as defined in specification ITSO TS 1000-4.

When a 0206 message is created, use of the HolderTitle; HolderName; HolderAddress; HolderPostcode; HolderPhoneDay; HolderPhoneHome; and HolderEmail elements is optional. When not used they shall be populated with ASCII spaces in accordance with clause 2.3.2.

Table 34 - Create Loyalty IPE, First Use of loyalty scheme, code 020B, 0206 – RecordFormatRevision = 2.

Name	Source	Format	Size	Comment
StandardData			21	
HolderTitle	POST	ASCII	4	
HolderName	POST	ASCII	50	
HolderAddress	POST	ASCII	100	
HolderPostcode	POST	ASCII	8	
HolderPhoneDay	POST	ASCII	20	
HolderPhoneHome	POST	ASCII	20	
HolderEmail	POST	ASCII	40	
IPE-TYP	POST	TYP	1	This element shall indicate the TYP of IPE to which a message instance refers, and also indicates the type of optional data which may be found within a message instance. In this instance it will be used to identify whether the IPE is of TYP 3 or TYP 17.

Name	Source	Format	Size	Comment
IPEExpiryDate	Shell	DATE	2	A copy of the relevant EXP directory data element relevant to this IPE.
IPELength	IPE	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
IPEBitMap	IPE	BMP	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
IPEFormatRevision	IPE	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
RemoveDate	IPE	RDATE	1	
ProductRetailer	IPE	OID16	2	
IPE_IterationNumber	IPE	INP#	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
IPE_ISAMID	IPE	ISAM ID	4	Included for IPE instance identification. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
IPE_SAMSequenceNumber	IPE	ISAM S#	3	Included for IPE instance identification This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
ITSOShellReferenceNumberNonEncrypted	Shell	uISRN	16	Not encrypted. In a code 0206 message, this element shall be set to zero (0)
ITSOShellReferenceNumberEncrypted	Shell via ISAM	eISRN	16	

4.4.26 Create or Amend Ticket IPE, code 0207, 0208

This records the creation or amendment of a ticket IPE. If a simultaneous journey is made a journey record shall also be transmitted.

The actual Data is dependant upon the type of IPE being created or amended. For efficiency, the record is split into common data (common to all IPEs), IPE TYP specific data and a footer.

Data from the most recently written IPE Value Group only shall be recorded in the appropriate elements of this transaction record. Only one set of elements shall be recorded in the record, even where more than one Value Group exists.

It is not mandatory to send a 0208 message in parallel with a specific change message (e.g. a 0303 deposit refund message), if the 0208 message does not convey any additional information (i.e. the contents of the additional data items sent in the 0208 message are unchanged), and if both messages would have been sent to the same destination(s).

However, optionally 0208 messages can be sent under these conditions.

4.4.26.1 Record Structure.

The record shall always be structured in the following manner, in the sequence shown.

Table 35 - Create or Amend Ticket IPE, code 0207, 0208, Record Structure – RecordFormatRevision = 2.

Data Group	Comment
Common data	Always required
Optional data	Present according to IPE type involved, as defined by TYP and the IPEBitMap. These optional data groups shall be included in the record in the same order as they occur in this specification.
Footer	Always required

4.4.26.2 Common Data.

Table 36 - Common Data – RecordFormatRevision = 2.

Name	Source	Format	Size	Comment
StandardData			21	
IPE-TYP	POST	TYP	1	This element shall indicate the TYP of IPE to which a message instance refers, and also indicates the type of optional data which may be found within a message instance.
NormalPrice	POST	VALI	2	Full price for ticket (if any), currency is defined by CurrencyCode
CurrencyCode	POST	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
MachineNumber	POST	HEX	4	Serial number of the terminal conducting the transaction

Name	Source	Format	Size	Comment
TransactionFlags	POST	HEX	1	
MessageBitMap	DIR & POST	BMP	1	<p>Bit 0 shall be a copy of the Value Group Present flag from the directory. This indicates whether a value group is present in an IPE instance, and therefore also present in a message instance.</p> <p>Bit 1 shall be set to one (1) when the ID_IPEID, ID_ISAMID and ID_ISAMSeq# data elements are included in the record.</p> <p>Bits 2 – 7 are RFU.</p>
ITSOShellReferenceNumberNonEncrypted	Shell	uISRN	16	<p>Not encrypted.</p> <p>In a code 0208 message, this element shall be set to zero (0)</p>
IPEExpiryDate	Shell	DATE	2	A copy of the relevant EXP directory data element relevant to this IPE.
IPELength	IPE	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
IPEBitMap	IPE	BMP	1	<p>A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.</p> <p>For TYP 27, 28, 29 IPEs the contents of this element shall have no effect on the contents of a Transaction Record instance, i.e. all elements shall be included in the Transaction Record.</p> <p>For TYP 22-26 IPEs this element shall be used to determine which optional data elements are included in a Transaction Record instance, i.e. optional elements are only included in the Transaction Record if they are also included in the IPE instance.</p> <p>Refer to ITSO TS 1000-5 for the definition of IPEBitMap and optional elements.</p>
IPEFormatRevision	IPE	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
RemoveDate	IPE	RDATE	1	

Name	Source	Format	Size	Comment
ProductRetailer	IPE	OID16	2	
ID_IPEID	IPE	IPEIDM	7	<p>Identifies an identity IPE. Include this element only if MessageBitMap bit 1 is set to one (1).</p> <p>IPE instance identity details for an ID IPE contained in the same ITSO Shell as the IPE that is the subject of this message. May be sent for the purpose of enabling identification of the card holder in circumstances where the ISRN is not known due to its being encrypted.</p>
ID_ISAMID	IPE	HEX	4	<p>Identifies an identity IPE.</p> <p>This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.</p> <p>Include this element only if MessageBitMap bit 1 is set to one (1)</p>
ID_ISAMSeq#	IPE	HEX	3	<p>Identifies an identity IPE.</p> <p>This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.</p> <p>Include this element only if MessageBitMap bit 1 is set to one (1)</p>

Table 37 - TransactionFlags Definition – RecordFormatRevision = 2.

A combination of flags shall be set where appropriate so to do. Note that an attended POST is one where the POST is operated by a member of staff, whilst an unattended POST is one where the POST is essentially operated by the card holder.

Flag ID	Flag name	Flag purpose
0	AutoTransaction	Set to one (1) when the relevant transaction took place automatically due to auto-renew, otherwise set to zero (0). Note that the use of flags 0, 1 and 2 is mutually exclusive. Only one of flags 0, 1 and 2 shall be set for every transaction.
1	ActionListTransaction	Set to one (1) when the relevant transaction took place due to an Actionlist item, otherwise set to zero (0). Note that the use of flags 0, 1 and 2 is mutually exclusive. Only one of flags 0, 1 and 2 shall be set for every transaction.
2	StoredTicketActivation	Set to one (1) when the relevant transaction took place due to Stored Ticket activation, otherwise set to zero (0). Note that the use of flags 0, 1 and 2 is mutually exclusive. Only one of flags 0, 1 and 2 shall be set for every transaction.
3	ManualPostTransaction	Set to one (1) when the relevant transaction took place at an attended POST, e.g. a ticket office machine or bus ticket machine, otherwise set to zero (0). Note that the use of flags 3, 4 and 5 is mutually exclusive. Only one of flags 3, 4 and 5 shall be set for every transaction.
4	UnattendedPostTransaction	Set to one (1) when the relevant transaction took place at an unattended POST, e.g. a ticket vending machine, otherwise set to zero (0). Note that the use of flags 3, 4 and 5 is mutually exclusive. Only one of flags 3, 4 and 5 shall be set for every transaction.
5	RemotePostTransaction	Set to one (1) when the relevant transaction took place with a remote POST, e.g. CM holder not present, otherwise set to zero (0). Note that the use of flags 3, 4 and 5 is mutually exclusive. Only one of flags 3, 4 and 5 shall be set for every transaction.
6	RFU	
7	RFU	

4.4.26.3 Footer.

Table 38 - Footer – RecordFormatRevision = 2.

Name	Source	Format	Size	Comment
IIN	IPE	IIN	3	IIN shall always be included in the Transaction Record, where necessary its contents shall be deduced from the ITSO Shell Owner Identity.
KID	IPE	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
IPE_IterationNumber	IPE	INP#	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
IPE_ISAMID	IPE	ISAM ID	4	Included for IPE instance identification. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
IPE_SAMSequenceNumber	IPE	ISAM S#	3	Included for IPE instance identification This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
ITSOShellReferenceNumberEncrypted	Shell via ISAM	eISRN	16	

4.4.26.4 IPE TYP 22.

Table 39 - IPE TYP 22 – RecordFormatRevision = 2.

Name	Source	Format	Size	Comment
ProductRetailer	IPE	OID	2	
TYP22Flags	IPE	BMP	2	
PassBackTime	IPE	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
IssueDate	IPE	DATE	2	A 1.75 byte value, occupying bits 0-7 of the least significant byte, and bits 0-5 of the most significant byte. Bits 6-7 of the most significant byte shall be set to 0.
ExpiryTime	IPE	TIME	2	A 1.375 byte value, occupying bits 0-7 of the least significant byte, and bits 0-2 of the most significant byte. Bits 3-7 of the most significant byte shall be set to 0.
AutoRenewQuantity1	IPE	BIN	1	
Class	IPE	UD	1	
ValidityStartDTS	IPE	DTS	3	
PromotionCode	IPE	HEX	1	
ValidOnDaytypeCode	IPE	DOW	1	
PartySizeAdult	IPE	HEX	1	
PartySizeChild	IPE	HEX	1	
PartySizeConcession	IPE	HEX	1	
AmountPaidCurrencyCode	IPE	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
AmountPaid	IPE	VALI	2	
AmountPaidMethodOfPayment	IPE	MOP	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
AmountPaidVATSalesTax	IPE	VATM	2	
ConcessionaryPassIssuerCostCentre	IPE	HEX	2	

Name	Source	Format	Size	Comment
ValidAtOrFrom	IPE	LOC1	Variable, maximum 17	
ValidTo	IPE	LOC1	Variable, maximum 17	
PassDuration	IPE	HEX	1	

Flag definitions are as defined for the relevant IPEs.

Table 40 - IPE TYP 22, Value Group – RecordFormatRevision = 2.

Name	Source	Format	Size	Comment
VGLength	IPE VG	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
VGBitMap	IPE VG	BMP	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
VGFormatRevision	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TransactionType	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TransactionSequenceNumber	IPE VG	TS#	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0.
DateTimeStamp	IPE VG	DTS	3	
ISAMIDModifier	IPE VG	HEX	4	
ActionSequenceNumber	IPE VG	HEX	1	
NumberRemainingPasses	IPE VG	BIN	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
TYP22ValueFlags	IPE VG	BMP	1	A 0.25 byte value, occupying bits 0 to 1, bits 2 to 7 shall be set to 0.
ExpiryDateSP	IPE VG	DATE	2	A 1.75 byte value, occupying bits 0-7 of the least significant byte, and bits 0-5 of the most significant byte. Bits 6-7 of the most significant byte shall be set to 0.
ExpiryDateCurrent	IPE VG	DATE	2	

4.4.26.5 IPE TYP 23.

Table 41 - IPE TYP 23 – RecordFormatRevision = 2.

Name	Source	Format	Size	Comment
ProductRetailer	IPE	OID	2	
TYP23Flags	IPE	BMP	1	
PassBackTime	IPE	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
IssueDate	IPE	DATE	2	A 1.75 byte value, occupying bits 0-7 of the least significant byte, and bits 0-5 of the most significant byte. Bits 6-7 of the most significant byte shall be set to 0.
ExpiryTime	IPE	TIME	2	A 1.375 byte value, occupying bits 0-7 of the least significant byte, and bits 0-2 of the most significant byte. Bits 3-7 of the most significant byte shall be set to 0.
Class	IPE	UD	1	
PartySizeAdult	IPE	HEX	1	
PartySizeChild	IPE	HEX	1	
PartySizeConcession	IPE	HEX	1	
AmountPaidCurrencyCode	IPE	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
AmountPaid	IPE	VALI	2	
AmountPaidMethodOfPayment	IPE	MOP	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
AmountPaidVATSalesTax	IPE	VATM	2	
PhotocardNumber	IPE	UD	4	
PromotionCode	IPE	HEX	1	
ConcessionaryPassIssuerCostCentre	IPE	HEX	2	
TYP23Mode	IPE	BMP	1	
MaxTransfers	IPE	HEX	1	
TimeLimit	IPE	HEX	1	

Name	Source	Format	Size	Comment
ValueOfRideJourney	IPE	VALI	2	
ValueOfRideJourneyCurrencyCode	IPE	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
Origin1	IPE	LOC1	Variable, maximum 17	
Destination1	IPE	LOC1	Variable, maximum 17	

Flag definitions are as defined for the relevant IPEs.

Table 42 - IPE TYP 23 Value Group – RecordFormatRevision = 2

Name	Source	Format	Size	Comment
VGLength	IPE VG	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
VGBitMap	IPE VG	BMP	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
VGFormatRevision	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TransactionType	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TransactionSequenceNumber	IPE VG	TS#	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0.
DateTimeStamp	IPE VG	DTS	3	
ISAMIDModifier	IPE VG	HEX	4	
ActionSequenceNumber	IPE VG	HEX	1	
CountRemainingRidesJourneys	IPE VG	HEX	1	
CountTransfers	IPE VG	HEX	1	
TYP23ValueFlags	IPE VG	BMP	1	

4.4.26.6 IPE TYP 24

In this version of the specification, transmission of 0207 and 0208 messages relating to TYP 24 IPEs is not permitted at Record Format Revision 2.

4.4.26.7 IPE TYP 25

Table 49 - IPE TYP 25 – RecordFormatRevision = 2.

Name	Source	Format	Size	Comment
ProductRetailer	IPE	OID16	2	
TYP25Flags	IPE	BMP	1	
PassBackTime	IPE	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
IssueDate	IPE	DATE	2	A 1.75 byte value, occupying bits 0-7 of the least significant byte, and bits 0-5 of the most significant byte. Bits 6-7 of the most significant byte shall be set to 0.
ValidityStartDTS	IPE	DTS	3	
ExpiryTime	IPE	TIME	2	A 1.375 byte value, occupying bits 0-7 of the least significant byte, and bits 0-2 of the most significant byte. Bits 3-7 of the most significant byte shall be set to 0.
ServiceID	IPE	UD	1	
MaxValue25	IPE	VALI	2	
MaxValueCurrencyCode	IPE	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
AmountPaidCurrencyCode	IPE	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
AmountPaid	IPE	VALI	2	
AmountPaidMethodOfPayment	IPE	MOP	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
AmountPaidVATSalesTax	IPE	VATM	2	
UserDefined	IPE	UD	1	
AutoRenewQuantity2	IPE	HEX	1	

Table 50 - IPE TYP 25 Value Group – RecordFormatRevision = 2

Name	Source	Format	Size	Comment
VGLength	IPE VG	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
VGBitMap	IPE VG	BMP	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
VGFormatRevision	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TransactionType	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TransactionSequenceNumber	IPE VG	TS#	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0.
DateTimeStamp	IPE VG	DTS	3	
ISAMIDModifier	IPE VG	HEX	4	
ActionSequenceNumber	IPE VG	HEX	1	
CountUsesAvailable	IPE VG	HEX	1	
TYP25ValueFlags	IPE VG	BMP	1	

4.4.26.8 IPE TYP 26

Table 51 - IPE TYP 26 – RecordFormatRevision = 2

Name	Source	Format	Size	Comment
ProductRetailer	IPE	OID16	2	
PassBackTime	IPE	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
TYP26Flags	IPE	BMP	1	
TYP26Class	IPE	UD	1	
IssueDate	IPE	DATE	2	A 1.75 byte value, occupying bits 0-7 of the least significant byte, and bits 0-5 of the most significant byte. Bits 6-7 of the most significant byte shall be set to 0.
ValidityStartDTS	IPE	DTS	3	
UserDefined	IPE	UD	7	
AutoRenewQuantity3	IPE	HEX	1	

Table 52 - IPE TYP 26 Value Group – RecordFormatRevision = 2

Name	Source	Format	Size	Comment
VGLength	IPE VG	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
VGBitMap	IPE VG	BMP	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
VGFormatRevision	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TransactionType	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TransactionSequenceNumber	IPE VG	TS#	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0.
DateTimeStamp	IPE VG	DTS	3	
ISAMIDModifier	IPE VG	HEX	4	
ActionSequenceNumber	IPE VG	HEX	1	
CountRemainingRidesJourneys	IPE VG	HEX	1	
TYP26ValueFlags	IPE VG	BMP	1	

4.4.26.9 IPE TYP 27, 28, 29

Table 53 IPE TYP 27, IPEFormatRevision = 1, – RecordFormatRevision = 2.

Name	Source	Format	Size	Comment
IssueDate	IPE	DATE	2	A 1.75 byte value, occupying bits 0-7 of the least significant byte, and bits 0-5 of the most significant byte. Bits 6-7 of the most significant byte shall be set to 0.
Sterling/Euro	IPE	BMP	1	A 0.125 byte value, occupying bit 0 of the byte. Bits 1-7 of the byte shall be set to 0.
Child	IPE	BMP	1	A 0.125 byte value, occupying bit 0 of the byte. Bits 1-7 of the byte shall be set to 0.
PassbackTime	IPE	HEX	1	A 0.5 byte value, occupying bits 0-3 of the element. Bits 4-7 shall be set to 0.
AmountPaidMethod OfPayment	IPE	MOP	1	A 0.5 byte value, occupying bits 0-3 of the element. Bits 4-7 shall be set to 0.
AmountPaid	IPE	VALI	2	
TYP27PassFlags	IPE	BMP	1	A 0.5 byte value, occupying bits 0-3 of the element. Bits 4-7 shall be set to 0.
GeoValidity/AreaValidity	IPE	LOC4/ LOC3	13	The 4 most significant bits of this element shall be set to 0, with the data commencing from the 5 bit of the element. The least significant 4 bytes of this element shall be set to 0 when it contains AreaValidity
Event1	IPE	HEX	1	
Event2	IPE	HEX	1	
LastUseDTS	IPE	DTS	3	
PhotocardNumber	IPE	HEX	3	
TYP27ExpiryDate	IPE	HEX	1	
Seq#	IPE	HEX	1	Set to all 0's if this element is not present in the IPE

[Editor's Note Table 54 deleted]

Table 55 IPE TYP 28, IPEFormatRevision = 1, – RecordFormatRevision = 2.

Name	Source	Format	Size	Comment
IssueDate	IPE	DATE	2	A 1.75 byte value, occupying bits 0-7 of the least significant byte, and bits 0-5 of the most significant byte. Bits 6-7 of the most significant byte shall be set to 0.
Sterling/Euro	IPE	BMP	1	A 0.125 byte value, occupying bit 0 of the byte. Bits 1-7 of the byte shall be set to 0.
PassbackTime	IPE	HEX	1	A 0.5 byte value, occupying bits 0-3 of the element. Bits 4-7 shall be set to 0.
AmountPaidMethod OfPayment	IPE	MOP	1	A 0.5 byte value, occupying bits 0-3 of the element. Bits 4-7 shall be set to 0.
AmountPaid	IPE	VALI	2	
TYP28PassFlags	IPE	BMP	1	A 0.5 byte value, occupying bits 0-3 of the element. Bits 4-7 shall be set to 0.
AreaValidity	IPE	LOC3	9	The 4 most significant bits of this element shall be set to 0, with the data commencing from the 5 bit of the element.
LastUseDTS	IPE	DTS	3	
ExpiryTick1	IPE	HEX	1	A 0.625 byte value, occupying bits 0-4 of the element. Bits 5-7 shall be set to 0.
ExpiryTick2	IPE	HEX	1	A 0.625 byte value, occupying bits 0-4 of the element. Bits 5-7 shall be set to 0.
ExpiryTick3	IPE	HEX	1	A 0.625 byte value, occupying bits 0-4 of the element. Bits 5-7 shall be set to 0.
ExpiryTick4	IPE	HEX	1	A 0.625 byte value, occupying bits 0-4 of the element. Bits 5-7 shall be set to 0.
ExpiryTick5	IPE	HEX	1	A 0.625 byte value, occupying bits 0-4 of the element. Bits 5-7 shall be set to 0.
ExpiryTick6	IPE	HEX	1	A 0.625 byte value, occupying bits 0-4 of the element. Bits 5-7 shall be set to 0.
NDoIE	IPE	BMP	1	A 0.125 byte value, occupying bit 0 of the byte. Bits 1-7 of the byte shall be set to 0.
NDoEE	IPE	BMP	1	A 0.125 byte value, occupying bit 0 of the byte. Bits 1-7 of the byte shall be set to 0.
Seq#	IPE	HEX	1	Set to all 0's if this element is not present in the IPE.

[Editor's Note Table 56 deleted]

Table 57 IPE TYP 29, IPEFormatRevision = 1, – RecordFormatRevision = 2.

Name	Source	Format	Size	Comment
IssueDate	IPE	DATE	2	A 1.75 byte value, occupying bits 0-7 of the least significant byte, and bits 0-5 of the most significant byte. Bits 6-7 of the most significant byte shall be set to 0.
Sterling/Euro	IPE	FLAG	1	A 0.125 byte value, occupying bit 0 of the byte. Bits 1-7 of the byte shall be set to 0.
Ticket/Coupon	IPE	FLAG	1	A 0.125 byte value, occupying bit 0 of the byte. Bits 1-7 of the byte shall be set to 0.
ScalingFactor	IPE	HEX	1	A 0.5 byte value, occupying bits 0-3 of the element. Bits 4-7 shall be set to 0.
AmountPaidMethod OfPayment	IPE	MOP	1	A 0.5 byte value, occupying bits 0-3 of the element. Bits 4-7 shall be set to 0.
AmountPaid	IPE	VALI	2	
TYP29PassFlags	IPE	BMP	1	A 0.5 byte value, occupying bits 0-3 of the element. Bits 4-7 shall be set to 0.
AreaValidity	IPE	LOC3	9	The 4 most significant bits of this element shall be set to 0, with the data commencing from the 5 bit of the element.
TYP29UsageRecCode	IPE	HEX	1	A 0.375 byte value, occupying bits 0-2 of the element. Bits 3-7 shall be set to 0.
QtyRemaining	IPE	HEX	2	A 1.625 byte value, occupying bits 0-12 of the element. Bits 13-15 shall be set to 0.
UsageRecord	IPE	HEX	4	
ScaledQtyBackup	IPE	BMP	4	
Seq#	IPE	HEX	1	Set to all 0's if this element is not present in the IPE.

Table 58 IPE TYP 29, IPEFormatRevision = 2, – RecordFormatRevision = 2.

Name	Source	Format	Size	Comment
IssueDate	IPE	DATE	2	A 1.75 byte value, occupying bits 0-7 of the least significant byte, and bits 0-5 of the most significant byte. Bits 6-7 of the most significant byte shall be set to 0.
Sterling/Euro	IPE	BMP	1	A 0.125 byte value, occupying bit 0 of the byte. Bits 1-7 of the byte shall be set to 0.
PassbackTime	IPE	HEX	1	A 0.5 byte value, occupying bits 0-3 of the element. Bits 4-7 shall be set to 0.
MaxDailyJourneys	IPE	HEX	1	A 0.5 byte value, occupying bits 0-3 of the element. Bits 4-7 shall be set to 0.
MaxTransfers	IPE	HEX	1	A 0.5 byte value, occupying bits 0-3 of the element. Bits 4-7 shall be set to 0.
ScalingFactor	IPE	HEX	1	A 0.5 byte value, occupying bits 0-3 of the element. Bits 4-7 shall be set to 0.
TYP29PassFlags	IPE	BMP	1	A 0.5 byte value, occupying bits 0-3 of the element. Bits 4-7 shall be set to 0.
AreaValidity	IPE	LOC3	9	The 4 most significant bits of this element shall be set to 0, with the data commencing from the 5 bit of the element.
JnyComDTS	IPE	DTS	3	
QtyRemaining	IPE	HEX	1	
TransferCounter	IPE	HEX	1	A 0.5 byte value, occupying bits 0-3 of the element. Bits 4-7 shall be set to 0.
DailyJnyCounter	IPE	HEX	1	A 0.5 byte value, occupying bits 0-3 of the element. Bits 4-7 shall be set to 0.
LastUseDTS	IPE	DTS	3	
ScaledQtyBackup	IPE	BMP	4	
Seq#	IPE	HEX	1	Set to all 0's if this element is not present in the IPE

4.4.27 Journey Record, code 0209.

This record shall be used to record all Journeys made using an ITSO Customer Media. For the avoidance of doubt this includes (but is not necessarily limited to):

- Journeys when a Ticket IPE is used;
- Journeys when a Transient Ticket record is created (in addition to a 0210 record);
 - o Where more than one Transient Ticket is created in the course of a Journey it is only mandatory to create one 0209 message for that Journey;
- Closed System entry and exit transactions;
 - o The 0209 message shall be sent for either the entry or the exit transaction so as to record the Journey, and optionally may be sent for both transactions.
- Usage of STR or CTA to purchase a ticket;
- Usage of a voucher or open system toll IPE; and
- Free concessionary Journeys authorised solely by the ITSO ID/Entitlement IPEs, TYPs 14 and 16.

This record may also be used to record other types of Transaction, at the discretion of the relevant Licensed Member.

The 0209 message should refer to the primary authorisation for that journey, which could be:

- a Ticket IPE used to authorise a Journey; or
- a concessionary entitlement used to authorise a free or discounted Journey; or
- a STR or CTA IPE, BUT ONLY if STR (or CTA) was used to pay for the Journey AND an IPE was neither used to authorise the Journey nor was an IPE created.

Data from this primary IPE shall be used in the 0209 message where the source is indicated to be "IPE".

Data from the most recently written IPE Value Group only shall be recorded in the appropriate elements of this transaction record. Where the primary IPE does not include a value group then the Transaction sequence number shall be set to 0. Only one set of elements shall be recorded in the record, even where more than one Value Group exists.

Table 59 - Journey Record, code 0209 – RecordFormatRevision = 2.

Name	Source	Format	Size	Comment
StandardData			21	
AmountPaid	POST	VALI	2	Actual fare/price paid for journey (if any). Do not insert any value here if an amount value is entered in a simultaneous ticket creation or amendment record. Currency is defined by CurrencyCode.
NormalPrice	POST	VALI	2	Full fare/price for journey. Do not insert any value here if an amount value is entered in a simultaneous ticket creation or amendment record. Currency is defined by CurrencyCode.
CurrencyCode	POST	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
Location	POST	LOC2	7	Location at which the journey commenced or location at which the event recorded herein occurred.
Destination	POST	LOC2	7	Destination or proposed destination where known.

Name	Source	Format	Size	Comment
ConcessionaryAuthority	POST	HEX	2	<p>Identity of the concessionary authority within whose area the journey commenced, obtained from the POST configuration data where this information may be stored for this purpose. Where no concessionary authority ID data is stored in this data element then it shall be set to 0.</p> <p>This is a number that is unique to a given Travel Concession Authority. These numbers are allocated by the appropriate National Concessionary Travel Authority for the country in which the boarding point is located. The maximum value is 65535.</p> <p>This value might be an OID.</p>
ProductRetailer	IPE	OID16	2	
TransactionSequenceNumber	IPE	TS#	2	<p>A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0.</p> <p>The current value of TS# after transaction completion, where TS# is stored in the IPE.</p> <p>Where the IPE does not include a value group then set this element to a value of 0.</p>
RemainingUses	IPE	HEX	1	<p>If a multi-use IPE (i.e. multi-ride, journey ticket or multi-use voucher) then record the remaining number of uses after the transaction.</p> <p>This data will be extracted from the TYP 22 NumberRemainingPasses, TYP 23 or TYP 26 CountRemainingRidesJourneys, TYP 24 CountRemainingJourneys, or TYP 25 CountUsesAvailable, or TYP 29 QtyRemaining, IPE element, depending on the IPE used for the transaction. If the IPE element is smaller than 1 byte, then it shall occupy the least significant bits of this element.</p> <p>If the IPE does not include this data, then set this element to a value of 0.</p> <p>If the value of the data element in the IPE is greater than or equal to 255, then set this element to 255, or if the IPE value is less than 255 then set this element to that value.</p>

Name	Source	Format	Size	Comment
ConcessionaryPassIssuerCostCentre	IPE	HEX	2	<p>A copy of the IPE data element of the same name.</p> <p>If the IPE does not include this data, then set this element to a value of 0.</p>
TransactionType	IPE POST	HEX	1	<p>If a TransactionType code has been recorded in either the transient ticket log or in the IPE value record, then that value shall be recorded here.</p> <p>Otherwise, where no TransactionType code has been stored in an IPE or a transient Ticket relevant to the Journey Record, use an appropriate code according to EN1545 EventTypeCode. As 8 bit codes can be stored here [whereas only 4 bit codes are permissible in IPEs] then if a more appropriate code, greater than 15, is available in the EN1545 EventTypeCode list; that EventTypeCode value may be used here.</p> <p>Further guidance may be found in ITSO DG0007.</p>
IPE_IterationNumber	IPE	INP#	1	<p>A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.</p>
IPE_ISAMID	IPE	ISAM ID	4	<p>Included for IPE instance identification.</p> <p>This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.</p>
IPE_SAMSequenceNumber	IPE	ISAMS #	3	<p>Included for IPE instance identification</p> <p>This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.</p>
ITSOShellReferenceNumberEncrypted	Shell via ISAM	eISRN	16	

4.4.28 Journey Record, code 0210.

This record shall be used to record journeys made, entry and exit transactions, where a transient ticket record is recorded.

4.4.28.1 Journey Record, code 0210 – RecordFormatRevision = 2

This version of the Journey record is used to record Transient Ticket records created according to TTFormatRevision 1.

Table 60 - Journey Record, code 0210 – RecordFormatRevision = 2.

Name	Source	Format	Size	Comment
StandardData			21	
TTRLength	TTR	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
TTRBitMap1	TTR	BMP	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
TTRFormatRevision	TTR	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TTRBitMap2	TTR	BMP	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0. This element shall be used to determine which optional data elements are included in a Transaction Record instance. Refer to ITSO TS 1000-5 for the definition of TTRBitMap2 and optional elements.
TTRTransactionType	TTR	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
DateTimeStamp	TTR	DTS	3	
AmountPaidMethodOfPayment	TTR	MOP	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
AmountPaidCurrencyCode	TTR	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
AmountPaid	TTR	VALI	2	
NoFareCharged	TTR	BMP	1	A 0.125 byte value, occupying bit 0 of the byte. Bits 1-7 of the byte shall be set to 0.

Name	Source	Format	Size	Comment
AmountPaidVATSalesTax	TTR	VATM	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0.
DestinationTT	TTR	LOC2	7	
IPEPointer	TTR	HEX	1	A 0.625 byte value, occupying bits 0-4 of the element. Bits 5-7 shall be set to 0.
OriginLocation	TTR	LOC2	7	
RoutingCode	TTR	LOC2	7	
IIN	TTR	IIN	3	
UserDefinedSize	POST	HEX	1	The size of the UserDefined element in bytes.
UserDefined	TTR	UD	Variable	
IPE_ISAMID	IPE	ISAM ID	4	Included for IPE instance identification. See note below. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
IPE_SAMSequenceNumber	IPE	ISAM S#	3	Included for IPE instance identification See note below. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
ITSOShellReferenceNumberEncrypted	Shell via ISAM	eISRN	16	

Note: When a ticket has been recorded in the Transient Ticket Record then the IPE_ISAMID and IPE_SAMSequenceNumber elements shall contain a pointer to any entitlement IPE used in the Tickets creation. Where this does not apply then the element may be used to record the identity of any IPE relevant to the transaction, or set to 0 indicating that no IPE is pointed to.

4.4.29 TransactionReversal, code 0300

Data from the most recently written IPE Value Group only shall be recorded in the appropriate elements of this transaction record. Only one set of elements shall be recorded in the record, even where more than one Value Group exists. This message type shall only be used with Ticket Product IPE types, and with IPE TYPs 14 and 16.

Table 61 - TransactionReversal, code 0300 – RecordFormatRevision = 2.

Name	Source	Format	Size	Comment
StandardData			21	
AmountPaid	POST	VALI	2	Actual fare/price refund amount for ticket (if any), currency is defined by CurrencyCode
NormalPrice	POST	VALI	2	Full fare/price for ticket (if any), currency is defined by CurrencyCode
CurrencyCode	POST	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
StoredUsesRefunded	POST	HEX	1	Number of stored uses of the ticket refunded (if any) Refer to table 61a.
ProductRetailer	IPE	OID16	2	
StoredUses	IPE	HEX	1	Number of stored uses after transaction (if any) Refer to table 61a.
TicketNumber	IPE or POST	UD	6	Operators Ticket number, when available, otherwise set to 0. Shall be obtained from the IPE if IPE is of TYP 24, otherwise obtained from the POST. An IPE element shorter than 6 bytes shall occupy the least significant bytes of this element.
TransactionSequenceNumber	IPE	TS#	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0. The current value of TS# after transaction completion, where TS# is stored in the IPE.
IPE_IterationNumber	IPE	INP#	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
IPE_ISAMID	IPE	ISAM ID	4	Included for IPE instance identification. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.

Name	Source	Format	Size	Comment
IPE_SAMSequenceNumber	IPE	ISAM S#	3	Included for IPE instance identification This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
ITSOShellReferenceNumberEncrypted	Shell via ISAM	eISRN	16	

Table 61a: StoredUses data element map.

The following table maps the element StoredUses to the appropriate IPE data element. Note that the element StoredUsesRefunded maps indirectly to the same IPE data element as does StoredUses.

IPE TYP	IPE Data element to which StoredUses maps
22	NumberRemainingPasses
23	CountRemainingRidesJourneys
24	CountRemainingJourneys
25	CountUsesAvailable
26	CountRemainingRidesJourneys

4.4.30 Full / Partial refund for a purchased ticket (IPE), code 0301

This message type shall only be used with Ticket Product IPE types. This message is sent in addition to a 0007 message when an IPE is deleted and a refund given.

Table 62 - Full / Partial refund for a purchased ticket (IPE), code 0301 – RecordFormatRevision = 2.

Name	Source	Format	Size	Comment
StandardData			21	
ProductRetailer	IPE	OID16	2	
Amount	POST	VALI	2	Amount refunded
AmountCurrencyCode	POST	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TicketNumber	IPE or POST	UD	6	Operators Ticket number, when available, otherwise set to 0. Shall be obtained from the IPE if IPE is of TYP 24, otherwise obtained from the POST. An IPE element shorter than 6 bytes shall occupy the least significant bytes of this element.
ReasonCode	POST	UD	1	
VATSalesTax	POST	VATM	2	
IPE_IterationNumber	IPE	INP#	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
IPE_ISAMID	IPE	ISAM ID	4	Included for IPE instance identification. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
IPE_SAMSequenceNumber	IPE	ISAM S#	3	Included for IPE instance identification This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
ITSOShellReferenceNumberEncrypted	Shell via ISAM	eISRN	16	

4.4.31 Deposit Received or Refunded, code 0302, 0303

This record relates to a deposit received or refunded for an ITSO Shell or an IPE.

When the deposit is for an ITSO Shell, the IPE-ID element of the standard data shall identify the Shell in accordance with the alternate rules for identifying a Shell as defined in table 8 such that IIN and OID are those of the Shell owner, TYP shall be set to 32, and PTYP shall be set to indicate the shell version. It is also permissible, but not preferred, that in these circumstances the IIN and OID are those of the Shell owner, TYP shall be set to 16, and PTYP shall be set to the PTYP of the TYP 16 IPE wherein the deposit amount is stored. Note that in these circumstances this method of identification of the Shell is not optional as it is with other message types. Note also that in these circumstances the IPE_IterationNumber, ProductRetailer, IPE_ISAMID and IPE_SAMSequenceNumber may be set to zero (0).

When the deposit is for an IPE, the standard data shall identify the IPE.

Table 63 - Deposit Received, code 0302 – RecordFormatRevision = 2.

Name	Source	Format	Size	Comment
StandardData			21	
DepositType	POST	HEX	1	A value of zero (0) shall not be used. A value of one (1) indicates that the deposit applies to a Shell. A value of two (2) indicates that the deposit applies to an IPE. Values between three (3) and 255 inclusive are RFU.
ProductRetailer	IPE	OID16	2	This data element shall contain a value identifying the product retailer.
DepositAmount	IPE	VALI	2	DepositAmount shall be encoded according to DepositCurrencyCode. This data element shall contain a value relevant to the deposit charged.
DepositCurrencyCode	IPE	VALC	1	A 0.5 byte value, occupying bits 0 to 4, bits 5 to 7 shall be set to 0. This data element shall contain a value relevant to the deposit charged and recorded in the IPE.
DepositMethodOfPayment	IPE	MOP	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This data element shall contain a value relevant to the deposit charged and recorded in the IPE.
DepositVATSalesTax	IPE	VAT	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0. This data element shall contain a value relevant to the deposit charged and recorded

Name	Source	Format	Size	Comment
				in the IPE.
IPE_IterationNumber	IPE	INP#	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
IPE_ISAMID	IPE	ISAM ID	4	Included for IPE instance identification. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
IPE_SAMSequenceNumber	IPE	ISAM S#	3	Included for IPE instance identification. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
ITSOShellReferenceNumberEncrypted	Shell via ISAM	eISRN	16	

RecordFormatRevision 2 of the 0303 message shall not be used by POSTs, which shall use the RecordFormatRevision 3 of this message. HOPS however shall be capable of processing received 0303 messages to RecordFormatRevision 2.

Table 63a - Deposit Refunded, code 0303 – RecordFormatRevision = 2.

Name	Source	Format	Size	Comment
StandardData			21	
DepositType	POST	HEX	1	A value of zero (0) shall not be used. A value of one (1) indicates that the deposit applies to a Shell. A value of two (2) indicates that the deposit applies to an IPE. Values between three (3) and 255 inclusive are RFU.
ProductRetailer	IPE	OID16	2	
DepositAmount	IPE	VALI	2	DepositAmount shall be encoded according to DepositCurrencyCode
DepositCurrencyCode	IPE	VALC	1	A 0.5 byte value, occupying bits 0 to 4, bits 5

Name	Source	Format	Size	Comment
				to 7 shall be set to 0.
DepositMethodOfPayment	IPE	MOP	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
DepositVATSalesTax	IPE	VAT	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0.
IPE_IterationNumber	IPE	INP#	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
IPE_ISAMID	IPE	ISAM ID	4	Included for IPE instance identification. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was use to create the IPE. The IPE instance data from a value group shall not be used here.
IPE_SAMSequenceNumber	IPE	ISAM S#	3	Included for IPE instance identification This value shall be taken from the IPE data group instance information, and identifies the ISAM which was use to create the IPE. The IPE instance data from a value group shall not be used here.
ITSOShellReferenceNumberEncrypted	Shell via ISAM	eISRN	16	

4.4.32 Enable or Amend Auto-Renew, code 0304 - RecordFormatRevision = 2.

This record shall be used when an IPE is created with, or amended to include, Auto-Renew. The message type 0304 shall only be used with Ticket Product IPE types which support Auto-Renew of the Ticket.

Data from the most recently written IPE Value Group only shall be recorded in the appropriate elements of this transaction record. Only one set of elements shall be recorded in the record, even where more than one Value Group exists.

When the Transaction which triggered creation of a Transaction Record of this type occurred as a result of implementing an Actionlist item, then the following elements shall be set to a null value in accordance with clause 2.3.2 of this part: BankName; BankACNumber; ExpiryDate; IssueDate; and IssueNumber.

Table 64 - Enable or Amend Auto-Renew, code 0304 – RecordFormatRevision = 2.

Name	Source	Format	Size	Comment
StandardData			21	
BankName	POST	ASCII	40	
BankACNumber	POST	BCDS	16	Element used to transmit either bank a/c number or credit card number Bank A/C number format: - Byte 15 (MSB) = 01. - Bytes 14 - 11= sort code in BCD format. - Bytes 10 - 0 = account number in BCD format. Credit card number format: - Byte 15 (MSB) = 02. - Bytes 14 - 0 = account number in BCD format. Null entry: - byte 15 (MSB) = 00. - no bank account details sent in this message instance.
ExpiryDate	POST	BCDN	4	Applies to credit or other bank card. Date shall be transmitted as 8 characters in the form ddmmyyy without delimiters, for example, 21/04/00 shall be transmitted as 21042000.
StartDate	POST	BCDN	4	Applies to credit or other bank card. Date shall be transmitted as 8 characters in the form ddmmyyy without delimiters, for example, 21/04/00 shall be transmitted as 21042000.
IssueNumber	POST	BCDN	2	Applies to credit or other bank card.

Name	Source	Format	Size	Comment
ProductRetailer	IPE	OID16	2	
TransactionSequenceNumber	IPE	TS#	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0. The current value of TS# after transaction completion, where TS# is stored in the IPE.
TransactionType	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
Auto-RenewAmount	IPE	HEX	2	Revised value, taken from the TYP 22 AutoRenewQuantity1 element, the TYP 25 AutoRenewQuantity2 element, or the TYP 26 AutoRenewQuantity3 element, as appropriate. This data element is not used in a TYP 23 IPE, and when the message relates to a TYP 23 IPE, this element shall be set to 0.
Auto-RenewThreshold	IPE	HEX	2	Revised value.
Auto-RenewValue	POST	VALI	2	The Monetary value of the Auto-Renew Transaction, where known.
IPE_IterationNumber	IPE	INP#	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
IPE_ISAMID	IPE	ISAM ID	4	Included for IPE instance identification. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
IPE_SAMSequenceNumber	IPE	ISAM S#	3	Included for IPE instance identification. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
ITSOShellReferenceNumberEncrypted	Shell via ISAM	eISRN	16	

4.4.33 Not used

4.4.34 Hotlist match event, code 0311 - RecordFormatRevision = 2.

This message shall be used for reporting all Hotlist match events.

When the Hotlist item is related to a Shell, then the IPEID element in the StandardData shall be formatted in accordance with Part 6, Table 8.

All new implementations shall use version 3, or a subsequent version, and this old version (2) should only be used for the purposes of backwards compatibility.

Table 67 - Hotlist match event, code 0311 – RecordFormatRevision = 2.

Name	Source	Format	Size	Comment
StandardData			21	
HotListIdentifier	List	HEX	2	
HotType	List	HEX	1	
HotListOriginator	List	OID16	2	
OriginalHotListIdentifier	List	HEX	2	
0311ActionTaken	POST	HEX	1	
0311CustomerMediaDisposition	POST	HEX	1	
IPEID	IPE	IPEIDM	7	Identifies any IPE blocked. If record relates to a Shell set this element to 0.
CreatingISAMID	IPE	HEX	4	Identifies any IPE blocked. If record relates to a Shell set this element to 0. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
CreatingISAMSeq#	IPE	HEX	3	Identifies any IPE blocked. If record relates to a Shell set this element to 0. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
ITSOShellReferenceNumberEncrypted	Shell via ISAM	eISRN	16	

Table 68 - 0311ActionTaken Code List – RecordFormatRevision = 2.

Code	Action Taken
0	Not Used
1	Action successful
2	Action unsuccessful
3-255	RFU

Table 69 - 0311Customer Media Disposition Code List – RecordFormatRevision = 2.

Code	Meaning
0	Unknown
1	Customer Media left with Customer Media holder
2	Customer Media left with Customer Media holder, and name and address recorded
3	Customer Media confiscated
4-255	RFU

4.4.35 Actionlist match event, code 0312.

This message shall be used for reporting all Actionlist match events.

When the Actionlist item is related to an IPE with a Value Group, then the data from the most recently written IPE Value Group only shall be recorded in the appropriate elements of this transaction record. Only one set of elements shall be recorded in the record, even where more than one Value Group exists.

When the Actionlist item is related to a Shell, then the IPEID element in the StandardData shall be formatted in accordance with Part 6, Table 8.

All new implementations shall use version 3, or a subsequent version, and this old version (2) should only be used for the purposes of backwards compatibility.

Table 70 - Actionlist match event, code 0312 – RecordFormatRevision = 2.

Name	Source	Format	Size	Comment
StandardData			21	
ActionListIdentifier	List	HEX	2	
ActionListOriginator	List	OID16	2	
OriginalActionListIdentifier	List	HEX	2	
0312ActionTaken	POST	HEX	1	
ActionSequenceNumber	IPE	HEX	1	If there is no ActionSequenceNumber to store, because ActionSequenceNumber was not relevant to this match event, then this value shall be set to 0.
IPEID	IPE	IPEIDM	7	Identifies IPE acted upon. If record relates to a Shell set this element to 0.
CreatingISAMID	IPE	HEX	4	Identifies IPE acted upon. If record relates to a Shell set this element to 0. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
CreatingISAMSeq#	IPE	HEX	3	Identifies IPE acted upon. If record relates to a Shell set this element to 0. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
IPE_IterationNumber	IPE	INP#	1	A 0.5 byte value, occupying bits 0 to 3. Bits 4 to 7 shall be set to zero (0).

Name	Source	Format	Size	Comment
ITSOShellReferenceNumberEncrypted	Shell via ISAM	eISRN	16	

Table 71 - 0312ActionTaken Code List – RecordFormatRevision = 2.

Code	Action Taken
0	Not Used
1	Action successful
2	Action unsuccessful - unspecified event match problem
3	Action unsuccessful – POST could not write to the CM
4	Action unsuccessful – POST attempted to write to the CM but could not confirm that the write was successful
5	Action unsuccessful – POST does not have the necessary ISAM permissions
6	Action unsuccessful – Actionlist Sequence Number mismatch, where the Action Sequence Number held in the Actionlist item is greater than the Action Sequence Number held in the IPE.
7-255	RFU

Note that in all cases where the action was unsuccessful, it will be assumed that the copy of action sequence number held in the IPE (in the CM) has not been changed. The value of action sequence number returned in the match event record shall be identical to that contained in the list item.

4.4.36 Exception, Transaction Failed, code 0400.

Record of transactions which fail to complete.

These messages shall also be used to indicate POST health status, as specified in ITSO TS 1000-3.

Table 72 - Exception, code 0400 – RecordFormatRevision = 2

Name	Source	Format	Size	Comment
StandardData			21	
ExceptionType	POST	HEX	1	Exception code defined in Table 73. The most appropriate exception code shall be used to reflect the condition triggering the sending of an 0400 message.
POSTType	POST	UD	2	Code defining terminal type, allows different result codes for different terminal types, depending upon the terminals capabilities
IPE_IterationNumber	IPE	INP#	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
IPE_ISAMID	IPE	ISAM ID	4	If no data is available this element shall be set to 0. Included for IPE instance identification. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
IPE_SAMSequenceNumber	IPE	ISAM S#	3	if data unavailable this element shall be set to 0 Included for IPE instance identification This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
ITSOShellReferenceNumberEncrypted	Shell via ISAM	eISRN	16	

The destinations defined in Table 73 shall be interpreted as the owners of POSTs, Shells and IPEs, and are the minimum required, messages may also be sent to additional destinations. However, code 0400 messages shall only be sent to Shell and IPE owners when to do so would be appropriate and possible, i.e. when the identities of the Shell and IPE owners can be determined and when the content of the message is appropriate to be sent to the relevant owner. It is recommended that 0400 messages with exception code 21 are only sent to the Shell owner if the ISRN Luhn check digit is correct.

ExceptionType shall be a one byte code defined as follows:

Table 73 - Definition of ExceptionType – RecordFormatRevision = 2

The codes defined in Table 73 may be used in 0311, 0312 and 0400 messages.

Code	Meaning	Destination		
		POST	Shell	IPE
0	This code shall not be used			
1	Customer Media read failure	√		
2	ITSO Shell invalid – shell expired (VUT date)	√	√	
3	ITSO Shell invalid – FVC not supported	√	√	
4	ITSO Shell invalid – KSC not supported	√	√	
5	ITSO Shell invalid – ITSO directory invalid	√	√	
6	ITSO directory certificate check failed (both copies where software anti-tear provided)	√	√	
7	Requested transaction failed – POST not permitted	√		
8	Requested IPE creation failed – insufficient ITSO Shell memory space or no free directory entries available	√	√	√
9	Requested IPE creation failed – POST not permitted	√		√
10	No valid IPE	√		
11	IPE requested for transaction unusable and there is no usable alternative IPE	√		√
12	IPE requested for transaction not found	√		√
13	IPE requested for transaction certificate check failed	√		√
14	IPE requested for transaction not acceptable at this POST	√		√
15	IPE requested for transaction invalid – here (geographic check)	√		√
16	IPE requested for transaction invalid – today (for example, date, day type, day of week, including expiry date) check	√		√
17	IPE requested for transaction invalid – at this time (for example, time band, AM/PM check)	√		√
18	IPE requested for transaction invalid – on this service (for example, bus or rail service)	√		√
19	IPE requested for transaction invalid – insufficient funds (Stored Travel Rights)	√		√
20	IPE requested for transaction invalid – no rides/journeys/uses left (for example, stored rides, multiple use IPEs)	√		√
21	Shell CRC (SECRC) is incorrect	√	√	
22	Invalid ISRN found (Luhn check does not match)	√	√	

Code	Meaning	Destination		
		POST	Shell	IPE
23	Invalid ISRN found (IIN not accepted)	√	√	
24	Invalid ISRN found (other non specified ISRN error)	√	√	
25	Unable to determine CMD	√		
26	CM serial number found to be in error (refer to ITSO 1000-10)	√	√	
27	Customer Media does not accept write commands	√	√	
28	Shell format error	√	√	
29	Shell format revision not supported	√	√	
30	IPE format revision not supported	√		√
31	MCRN check digit contains incorrect value	√	√	
32	STR Value exceeds MaxValue2, or TYP 4 CumulativeAmount exceeds MaxValue4, or TYP 5 Transaction value exceeds MaxValue5, or TYP 5 CountOfTransactions exceeds QuantityTransactions prior to the Transaction	√		√
33	Transaction type requires use of STR but there is no valid STR Product present or there are insufficient STR funds available	√		√
34	IPE invalid – all Value Group Seals invalid	√		√
35	No Transaction conducted because the IPE requested for the Transaction was still in its passback period. See note below.	√		√
36	Attempt to create or use an IPE of TYPs 4, 5 or 14, but there is no valid TYP 16 present in the ITSO shell	√		√
37	Attempt to enable TYP 2 Auto-Top-Up, but there is no valid TYP 16 present in the ITSO shell	√		√
38	Transaction aborted because TYP 2 STR Value would exceed MaxValue2, or TYP 4 CumulativeAmount would exceed MaxValue4, or TYP 5 Transaction value would exceed MaxValue5, or TYP 5 CountOfTransactions would exceed QuantityTransactions if the Transaction were conducted	√		√
39	IPE parameter essential to the Transaction does not contain a valid value	√		√
40	Transaction aborted because TYP 3 LoyaltyPoints would exceed maximum permissible, or would be reduced to a value less than 0	√		√
41	Transaction aborted because TYP 2 Value would be less than MaximumNegativeAmount, or TYP 4 CumulativeAmount or TYP 5 CountOfTransactions would be reduced to less than 0, if the Transaction took place	√		√
42	IPE delete failed, POST not permitted	√		√
43	Attempt to refund deposit failed because refund not allowed	√		√

Code	Meaning	Destination		
		POST	Shell	IPE
44	Attempt to enable Auto-Renew failed because there was no valid TYP 16 IPE in the Shell	√		√
45	Transaction aborted because the value of TYP22 NumberRemainingPasses, TYP23 CountRemainingRidesJourneys, TYP24 CountRemainingJourneys, TYP25 CountUsesAvailable, TYP26 CountRemainingRidesJourneys would exceed the maximum permissible (when adding pass/rides/journeys/uses)	√		√
46	Transaction aborted because the proposed transaction value (with a TYP25 IPE) exceeds MaxValue25	√		√
47	Transaction aborted because either: - the remaining IPE life defined by IPE expiry date (EXP) is shorter than the product validity which would be created by the Auto-Renew action; or - an Auto-Top-Up action is triggered within a short time (determined by a POST configuration parameter) of IPE expiry (EXP).	√		√
48 - 127	RFU			
128	Persistent poor Customer Media reading/writing performance detected.	√		
129	Customer Media reader/writer not in service	√		
130	Ticket or Receipt printer not in service	√		
131	Customer Media holder interface (display, traffic light indicators or audible device) not in service	√		
132	Other Unspecified POST problem	√		
133	IPE found in Hotlist and blocked	√		√
134	ITSO shell found in Hotlist and blocked	√	√	
135	Blocked IPE found	√		√
136	Blocked ITSO shell found	√	√	
137	Blocked Customer Media found	√	√	
138	ISAM error	√		
139	ITSO shell found in Hotlist and both Shell and CM blocked	√	√	
140	Hotlist, Actionlist or POST Configuration Data list, processing error, occurring when a POST or a HOPS cannot successfully process a received list (for whatever reason)(see note below)			
141	Match Event Transaction successful. (This code value shall be used only with the 0311 and 0312 messages)	√	√	√
142	The circumstances under which a 0410 message is generated apply, and a separate 0410 message has been sent. (This code value shall be used only	√	√	√

Code	Meaning	Destination		
		POST	Shell	IPE
	with the 0311 and 0312 messages)			
143	Hotlist or Actionlist match event unsuccessful - unspecified event match problem (which is not covered by one of codes 144 – 147 inclusive)	√	√	√
144	Hotlist or Actionlist match event unsuccessful – POST could not write to the CM	√	√	√
145	Hotlist or Actionlist match event unsuccessful – POST attempted to write to the CM but could not confirm that the write was successful	√	√	√
146	Hotlist or Actionlist match event unsuccessful – POST does not have the necessary ISAM permissions	√	√	√
147	Hotlist or Actionlist match event unsuccessful – Actionlist Sequence Number mismatch, where the Action Sequence Number held in the Actionlist item is greater than the Action Sequence Number held in the IPE.	√	√	√
148 – 255	RFU			

Implementation of code 3 in POSTs is optional. When code 35 is implemented, it is recommended that generation of 0400 messages in response to a passback violation be controlled by a configurable parameter stored in the POST. It is further recommended that such messages shall only be generated in response to passback violations with specific predetermined IPE embodiments, where the list of such IPE embodiments is stored as a configurable parameter table.

Note regarding the use of error code 140:

- 0400 messages containing error code 140 shall be addressed to the originator of the Hotlist, Actionlist or Post Configuration Data List which could not be successfully processed;
- The following data elements shall be set to a value of zero: the IPE ID data elements within the StandardData; IPE_IterationNumber; IPE_ISAMID; and IPE_SAMSequenceNumber.

Note regarding 0400 messages reporting circumstances which do not involve an ITSO Shell, or circumstances where the ITSO Shell Reference Number is not known:

In these circumstances the ITSOShellReferenceNumberEncrypted data element shall be calculated by setting the ISRN parameter in the ISAM IMAC command to a value of zero.

4.4.37 Exception, Transaction with Customer Media apparently successful, but the POST was unable to confirm that this Transaction was successful, code 0410.

This message shall be sent when a Transaction was conducted which involved writing to the CM, but the success of that write could not be verified.

Table 74 - Exception, code 0410 – RecordFormatRevision = 2

Name	Source	Format	Size	Comment
StandardData			21	
POSTType	POST	UD	2	Code defining terminal type, allows different result codes for different terminal types, depending upon the terminals capabilities
ShellImage	POST	HEX	as req'd	<p>An image of such data as has been read by the POST, from the media, for purposes of the transaction process to which this message relates. The data will be loaded in the following order:</p> <p>Shell environment Data Group Directory (2 copies where present) IPE and value record data groups (as many as were read) Logs (as many as were read)</p>
IPE_IterationNumber	IPE	INP#	1	<p>A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. If no data is available this element shall be set to 0. Used to identify the last IPE (if any) which was being written to during the Transaction.</p>
IPE_ISAMID	IPE	ISAM ID	4	<p>If no data is available this element shall be set to 0. Included for IPE instance identification.</p> <p>This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here. Used to identify the last IPE (if any) which was being written to during the Transaction.</p>
IPE_SAMSequenceNumber	IPE	ISAM S#	3	<p>If data unavailable this element shall be set to 0.</p> <p>Included for IPE instance identification</p> <p>This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here. Used to identify the last IPE (if any) which was being written to during the Transaction.</p>
ITSOShellReferenceNumber Encrypted	Shell via ISAM	eISRN	16	

4.4.38 Cyclic Log Status Change, code 0313

This message is used to record a change in the status of a cyclic log.

Table 75 - Cyclic Log Status Change, code 0313 – RecordFormatRevision = 2

Name	Source	Format	Size	Comment
StandardData			21	In this instance the IPEID data element shall point to the Shell as defined in clause 4.4.1 Standard Elements.
CyclicLogStatusCode	POST	HEX	1	Refer to Table 76
ITSOShellReferenceNumberEncrypted	Shell via ISAM	eISRN	16	

The CyclicLogStatusCode Data Element shall be coded (Table 76) as two nibbles:

- The most significant nibble containing the value of the code
- The least significant nibble containing the value in the interpretation of code column as required

Table 76 - Cyclic Log Status Code List – RecordFormatRevision = 2

Code MS nibble	Code LS nibble	Applies to Log type:	Interpretation of code
1	0	Normal	Log could not be created no room in directory
2	0	Normal	Log could not be created no room on CM
3	n	Normal	Log created with n records
4	n	Normal	Log of n records deleted
5	m	Normal	Log extended and is now m records
6	p	Normal	Log reduced and is now p records
7	0	Normal	Log full with messages marked for retention
8	0	Normal	Log full and could not be extended or used
9	0	Basic	Log could not be created no room in directory
A	0	Basic	Log deleted
B-F	0-F	RFU	

4.4.39 Unblock Shell or Product, code 0314

This message is used to record the unblocking of an ITSO Shell or Product at an attended terminal, e.g. a ticket office machine.

Table 77 - Unblock Shell or Product, code 0314 - RecordFormatRevision = 2

Name	Source	Format	Size	Comment
StandardData			21	
IPEID	IPE	IPEIDM	7	Identifies IPE acted upon Set to 0 only if unblock Transaction applied to an ITSO Shell
CreatingISAMID	IPE	HEX	4	Identifies IPE acted upon Set to 0 only if unblock Transaction applied to an ITSO Shell
CreatingISAMSeq#	IPE	HEX	3	Identifies IPE acted upon Set to 0 only if unblock Transaction applied to an ITSO Shell
IPE_IterationNumber	IPE	INP#	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. Set to 0 only if unblock Transaction applied to an ITSO Shell
ITSOShellReferenceNumberEncrypted	Shell via ISAM	eISRN	16	

4.4.40 Shell or IPE blocking event not arising as an outcome of a Hotlist match event, code 0315 – RecordFormatRevision = 2

Implementation of this message is optional in HOPS and POSTs.

When implemented, this message shall be created and transmitted when a POST blocks a Shell or an IPE, not as an outcome of a Hotlist match event, but as an outcome of a business rule implemented in the POST. Note that the TYP value recorded in the StandardData / IPE ID indicates whether a Shell or an IPE was blocked.

Table 77a - Shell or IPE blocking event not arising as an outcome of a Hotlist match event, code 0315 – RecordFormatRevision = 2.

Name	Source	Format	Size	Comment
StandardData			21	
0315CustomerMediaDisposition	POST	HEX	1	
0315ReasonCode	POST	UD	1	An optional user defined code defining the reason for the blocking event
CreatingISAMID	IPE	HEX	4	Identifies any IPE blocked. If record relates to a Shell set this element to 0. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
CreatingISAMSeq#	IPE	HEX	3	Identifies any IPE blocked. If record relates to a Shell set this element to 0. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
ITSOShellReferenceNumberEncrypted	Shell via ISAM	eISRN	16	

Table 77b - 0315Customer Media Disposition Code List – RecordFormatRevision = 2.

Code	Meaning
0	Unknown
1	Customer Media left with Customer Media holder
2	Customer Media left with Customer Media holder, and name and address recorded
3	Customer Media confiscated
4-255	RFU

4.5 Transaction Record Data Content – RecordFormatRevision = 3

The data elements shall comprise standard data always returned for each Customer Media transaction, together with transaction type specific data.

Note that in this section:

- clause numbers are chosen to match those in clause 4.4; and
- table numbers are chosen to match those in clause 4.4 and prefixed with the RecordFormatRevision number and a stop;
- therefore neither clause nor table numbers are contiguous.

4.5.1 Standard Elements – RecordFormatRevision = 3.

The following elements shall always be returned as the leading data elements (StandardData) in every transaction record for all types of transaction.

Table 3.8 - Standard Elements – RecordFormatRevision = 3

Name	Source	Format	Size	Comment
RecordFormatRevision	POST	HEX code	1	Defines format revision of this message.
TransactionDateTime	POST	DTS	3	Date & time at which the transaction took place, which shall be identical to any DTS recorded in the shell, IPEs or Transient Ticket store
TransactionInformation	POST	UD	1	User defined element.
StaffID	POST	HEX	4	Identifies the operators member of staff (if any) conducting the transaction. If none then 0 shall be recorded in this element.
SupplementalInformation	POST	HEX	1	Additional information code
FormatVersionCode	Shell	FVC	1	Format version information from the Shell Environment Data Group.
KeyStrategyVersion	Shell	KSC	1	Format version information from the Shell Environment Data Group
KeyVersion	Shell	KVC	1	Format version information from the Shell Environment Data Group

Name	Source	Format	Size	Comment
IPEID	Shell, Dir	IPEIDM	7	<p>Identifies the IPE involved in the transaction, taken from the ITSO Shell's directory entry. It is a concatenation of IIN, OID, TYP and PTYP in that order.</p> <p>When a message is used to record an event relating to an ITSO Shell, then this IPEID element shall either:</p> <ul style="list-style-type: none"> be made up of the Shell's IIN, the Shell owner's OID, IPE TYP - which shall be set to a value of 32 (decimal), and IPE PTYP which shall be set to either a Shell owner defined value to indicate the Shell version, or to a value of 0, or be set to 0 to indicate that the message relates to a Shell. (This option shall not be used in new or amended implementations. Note that this option will be removed in a future version of the ITSO Specification.) <p>If no IPE or Shell ID information is available, then the contents of this Data Element shall be set to 0.</p> <p>If the IPE cannot be read and IINL = 1, set the IIN portion of this element to zero (0).</p>
Shell_IterationNumber	Shell	INS#	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.

Table 3.9 - Supplemental information element codes – RecordFormatRevision = 3

Code	Meaning
00	No supplemental information stored
01	Test/Maintenance/training transaction
02	Incomplete transaction
03	Commercial In (required for 0209 Journey Records only)
04	Commercial Out (required for 0209 Journey Records only)
05	Minimum Subsidy In (required for 0209 Journey Records only)
06	Minimum Subsidy Out (required for 0209 Journey Records only)
07	Minimum Cost In (required for 0209 Journey Records only)
08	Minimum Cost Out (required for 0209 Journey Records only)
09 – 255	RFU

4.5.2 Create an ITSO shell, code 0001 – RecordFormatRevision = 3

Table 3.10 - Create an ITSO shell, code 0001 – RecordFormatRevision = 3

Name	Source	Format	Size	Comment
StandardData			21	
DepositAmount	POST	VALI	2	
DepositCurrencyCode	POST	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
DepositMethodOfPayment	POST	MOP	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
DepositVATSalesTax	POST	VATM	2	
MID	Shell	HEX	8	The MID relating to this Shell
LEN_Shell_Data_Group	Shell	HEX	1	The number of bytes in the following Shell Environment Data Group
ITSO_Shell_Environment_Data_Group	Shell	HEX	Var	The entire contents of this Shell's ITSO Shell Environment Data Group Dataset or Compact ITSO Shell Environment Dataset
LEN_DIR_Data_Group	Shell	HEX	1	The number of bytes in the following Directory Data Group
Directory_Data_Group	Shell	HEX	Var	The entire contents of this Shell's ITSO Directory Data Group.
Media_Reference_Number	Shell	MCRN	10	The Identity number of a host Customer Media (MCRN) relating to the Shell_Reference. Note: This Data Element is not required and shall be set to all 0's if there is no host CM or this number is already present in the ITSO Shell Environment Data Group Dataset.
Anti_Tear_Type	Shell	HEX	1	A single byte coded as follows: 0x01 Software anti-tear is used 0x02 Hardware anti-tear is used 0x03 No anti-tear, OTP areas may be used All other values RFU
ITSOShellReferenceNumberEncrypted	Shell via ISAM	eISRN	16	

4.5.6 Stored Travel Rights travel, Product or service purchase, load (manual, Actionlist and Auto-Top-Up), load check record, TransactionReversal, codes 0100, 0101, 0102, 0103, 0107, RecordFormatRevision = 3.

4.5.6.1 Stored Travel Rights travel, Product or service purchase, load (manual, Actionlist and auto-top up), TransactionReversal, codes 0100, 0101, 0102, 0107.

Data from the most recently written IPE Value Group only shall be recorded in the appropriate elements of this transaction record. Only one set of elements shall be recorded in the record, even where more than one Value Group exists.

Implementation of this format revision of this message is optional in both POSTs and HOPS.

Table 3.14 - Stored Travel Rights travel, Product or service purchase, load (manual, Actionlist and Auto-Top-Up), TransactionReversal, codes 0100, 0101, 0102, 0107 – RecordFormatRevision = 3

Name	Source	Format	Size	Comment
StandardData			21	
MessageBitMap	POST	BMP	1	Bit 0 shall be set to one (1) when complex capping data is stored in a value group extension, those data elements being included in the message. Bits 1 – 7 RFU.
ProductRetailer	IPE	OID16	2	
POSTAmount	POST	VALI	2	Value of transaction in the POST native currency, defined by POSTAmountCurrencyCode.
POSTAmountCurrencyCode	POST	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TransactionType	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TransactionSequenceNumber	IPE VG	TS#	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0. The current value of TS# after transaction completion, where TS# is stored in the IPE.
DateTimeStamp	IPE VG	DTS	3	
SAMIDModifier	IPE VG	HEX	4	
ActionSequenceNumber	IPE VG	HEX	1	
Value	IPE VG	VALS	2	
ValueCurrencyCode	IPE VG	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
CountJourneyLegs	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
CumulativeFare	IPE VG	VALI	2	A 1.625 byte value occupying bits 0-7 of the least significant byte and bits 0-4 of the most significant byte. Bits 5-7 of the most significant byte shall be set to 0.
TYP2ValueFlags	IPE VG	BMP	1	A 0.375 byte value, occupying bits 0 to 2, bits 3 to 7 shall be set to 0.
VGXLength	IPE-VGX	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1
VGXRef (Bit9; Bit8)	IPE-VGX	BMP	1	A 0.25 byte value, occupying bits 0 to 1, bits 2 to 7 shall be set to 0.

Name	Source	Format	Size	Comment
				This element shall be included in the message only if MessageBitMap/0 = 1.
VGXRef (Bit7 – Bit0)	IPE-VGX	HEX	1	This element shall be included in the message only if MessageBitMap/0 = 1.
CapStrategyCode	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
CapAccumulator1Rule	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid1	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid1TransactionType	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
UncappedAccumulator1	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
DayCapAccumulator1	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
MultidayCapAccumulator1	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
Cap1DayCount	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
CapAccumulator2Rule	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid2	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid2TransactionType	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
UncappedAccumulator2	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
DayCapAccumulator2	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
MultidayCapAccumulator2	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
Cap2DayCount	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
CapAccumulator3Rule	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid3	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid3TransactionType	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
UncappedAccumulator3	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
DayCapAccumulator3	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
MultidayCapAccumulator3	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
Cap3DayCount	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
CapAccumulator4Rule	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid4	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.

Name	Source	Format	Size	Comment
LastFarePaid4TransactionType	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
UncappedAccumulator4	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
DayCapAccumulator4	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
MultidayCapAccumulator4	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
Cap4DayCount	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
Location	IPE-VGX	LOC1	Variable, maximum 17	This element shall be included in the message only if MessageBitMap/0 = 1.
Location1	IPE-VGX	LOC1	Variable, maximum 17	This element shall be included in the message only if MessageBitMap/0 = 1.
DateTimeStamp1	IPE-VGX	DTS	3	This element shall be included in the message only if MessageBitMap/0 = 1.
Location2	IPE-VGX	LOC1	Variable, maximum 17	This element shall be included in the message only if MessageBitMap/0 = 1.
DateTimeStamp2	IPE-VGX	DTS	3	This element shall be included in the message only if MessageBitMap/0 = 1.
Location3	IPE-VGX	LOC1	Variable, maximum 17	This element shall be included in the message only if MessageBitMap/0 = 1.
DateTimeStamp3	IPE-VGX	DTS	3	This element shall be included in the message only if MessageBitMap/0 = 1.
Location4	IPE-VGX	LOC1	Variable, maximum 17	This element shall be included in the message only if MessageBitMap/0 = 1.
DateTimeStamp4	IPE-VGX	DTS	3	This element shall be included in the message only if MessageBitMap/0 = 1.
IPE_IterationNumber	IPE	INP#	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
IPE_ISAMID	IPE	ISAM ID	4	Included for IPE instance identification. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
IPE_SAMSequenceNumber	IPE	ISAM S#	3	Included for IPE instance identification. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
ITSOShellReferenceNumberEncrypted	Shell via ISAM	eISRN	16	

4.5.6.2 Stored Travel Rights load check record code 0103.

A Stored Travel Rights load check record message shall be created with each Stored Travel Rights Transaction where the STR IPE value record data group contains a record of an add value Transaction. If there is no record of an add value Transaction in the value record data group then the message is not sent. Data from the most recently written IPE Value Record recording addition of Stored Travel Rights shall be recorded in the appropriate elements

of this transaction record, noting that if the current Transaction is an add value Transaction then the data relating to the most recent previous add value Transaction shall be recorded, not that from the current Transaction. Only one set of elements shall be recorded in the record, relevant to most recent load Transaction, even where more than one Value Group exists.

Implementation of this format revision of this message is optional in both POSTs and HOPS.

Table 3.14A - Stored Travel Rights load check record code 0103 – RecordFormatRevision = 3

Name	Source	Format	Size	Comment
StandardData			21	
MessageBitMap	POST	BMP	1	Bit 0 shall be set to one (1) when complex capping data is stored in a value group extension, those data elements being included in the message. Bits 1 - 7 RFU.
ProductRetailer	IPE	OID16	2	
RFU		RFU	2	RFU
RFU		RFU	1	RFU
TransactionType	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TransactionSequenceNumber	IPE VG	TS#	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0.
DateTimeStamp	IPE VG	DTS	3	
SAMIDModifier	IPE VG	HEX	4	
ActionSequenceNumber	IPE VG	HEX	1	
Value	IPE VG	VALS	2	
ValueCurrencyCode	IPE VG	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
CountJourneyLegs	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
CumulativeFare	IPE VG	VALI	2	A 1.625 byte value occupying bits 0-7 of the least significant byte and bits 0-4 of the most significant byte. Bits 5-7 of the most significant byte shall be set to 0.
TYP2ValueFlags	IPE VG	BMP	1	A 0.375 byte value, occupying bits 0 to 2, bits 3 to 7 shall be set to 0.
VGXLength	IPE-VGX	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.

Name	Source	Format	Size	Comment
VGXRef (Bit9; Bit8)	IPE-VGX	BMP	1	A 0.25 byte value, occupying bits 0 to 1, bits 2 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
VGXRef (Bit7 – Bit0)	IPE-VGX	HEX	1	This element shall be included in the message only if MessageBitMap/0 = 1.
CapStrategyCode	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
CapAccumulator1Rule	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid1	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid1TransactionType	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0 This element shall be included in the message only if MessageBitMap/0 = 1.
UncappedAccumulator1	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
DayCapAccumulator1	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
MultidayCapAccumulator1	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
Cap1DayCount	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
CapAccumulator2Rule	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid2	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid2TransactionType	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
UncappedAccumulator2	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
DayCapAccumulator2	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
MultidayCapAccumulator2	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
Cap2DayCount	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
CapAccumulator3Rule	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.

Name	Source	Format	Size	Comment
LastFarePaid3	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid3TransactionType	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
UncappedAccumulator3	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
DayCapAccumulator3	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
MultidayCapAccumulator3	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
Cap3DayCount	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
CapAccumulator4Rule	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid4	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid4TransactionType	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
UncappedAccumulator4	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
DayCapAccumulator4	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
MultidayCapAccumulator4	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
Cap4DayCount	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
Location	IPE-VGX	LOC1	Variable, maximum 17	This element shall be included in the message only if MessageBitMap/0 = 1.
Location1	IPE-VGX	LOC1	Variable, maximum 17	This element shall be included in the message only if MessageBitMap/0 = 1.
DateTimeStamp1	IPE-VGX	DTS	3	This element shall be included in the message only if MessageBitMap/0 = 1.
Location2	IPE-VGX	LOC1	Variable, maximum 17	This element shall be included in the message only if MessageBitMap/0 = 1.
DateTimeStamp2	IPE-VGX	DTS	3	This element shall be included in the message only if MessageBitMap/0 = 1.
Location3	IPE-VGX	LOC1	Variable, maximum 17	This element shall be included in the message only if MessageBitMap/0 = 1.
DateTimeStamp3	IPE-VGX	DTS	3	This element shall be included in the message only if MessageBitMap/0 = 1.
Location4	IPE-VGX	LOC1	Variable, maximum 17	This element shall be included in the message only if MessageBitMap/0 = 1.

Name	Source	Format	Size	Comment
DateTimeStamp4	IPE-VGX	DTS	3	This element shall be included in the message only if MessageBitMap/0 = 1.
IPE_IterationNumber	IPE	INP#	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
IPE_ISAMID	IPE	ISAM ID	4	Included for IPE instance identification. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
IPE_SAMSequenceNumber	IPE	ISAM S#	3	Included for IPE instance identification This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
ITSOShellReferenceNumber Encrypted	Shell via ISAM	eISRN	16	

4.5.10 Full / partial refund of Stored Travel Rights, code 0108, RecordFormatRevision = 3

This message records the amount by which Stored Travel Rights changes as a result of a refund.

Data from the most recently written IPE Value Group only shall be recorded in the appropriate elements of this transaction record. Only one set of elements shall be recorded in the record, even where more than one Value Group exists.

Implementation of this format revision of this message is optional in both POSTs and HOPS.

Table 3.18 - Full / partial refund of Stored Travel Rights, code 0108 – RecordFormatRevision = 3.

Name	Source	Format	Size	Comment
StandardData			21	
MessageBitMap	POST	BMP	1	Bit 0 shall be set to one (1) when complex capping data is stored in a value group extension, those data elements being included in the message. Bits 1 - 7 RFU.
TransactionType	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TransactionSequenceNumber	IPE VG	TS#	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0. The current value of TS# after transaction completion, where TS# is stored in the IPE.

Name	Source	Format	Size	Comment
ProductRetailer	IPE	OID16	2	
DateTimeStamp	IPE VG	DTS	3	
ISAMIDModifier	IPE VG	HEX	4	
ActionSequenceNumber	IPE VG	HEX	1	
Value	IPE VG	VALS	2	
ValueCurrencyCode	IPE VG	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
CountJourneyLegs	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
CumulativeFare	IPE VG	VALI	2	A 1.625 byte value occupying bits 0-7 of the least significant byte and bits 0-4 of the most significant byte. Bits 5-7 of the most significant byte shall be set to 0.
TYP2ValueFlags	IPE VG	BMP	1	A 0.375 byte value, occupying bits 0 to 2, bits 3 to 7 shall be set to 0.
VGXLength	IPE-VGX	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
VGXRef (Bit9; Bit8)	IPE-VGX	BMP	1	A 0.25 byte value, occupying bits 0 to 1, bits 2 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
VGXRef (Bit7 – Bit0)	IPE-VGX	HEX	1	This element shall be included in the message only if MessageBitMap/0 = 1.
CapStrategyCode	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
CapAccumulator1Rule	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid1	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid1TransactionType	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
UncappedAccumulator1	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
DayCapAccumulator1	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
MultidayCapAccumulator1	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
Cap1DayCount	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.

Name	Source	Format	Size	Comment
CapAccumulator2Rule	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid2	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1
LastFarePaid2TransactionType	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0 This element shall be included in the message only if MessageBitMap/0 = 1
UncappedAccumulator2	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
DayCapAccumulator2	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
MultidayCapAccumulator2	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
Cap2DayCount	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
CapAccumulator3Rule	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid3	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid3TransactionType	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
UncappedAccumulator3	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
DayCapAccumulator3	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
MultidayCapAccumulator3	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
Cap3DayCount	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
CapAccumulator4Rule	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid4	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid4TransactionType	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
UncappedAccumulator4	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
DayCapAccumulator4	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
MultidayCapAccumulator4	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.

Name	Source	Format	Size	Comment
Cap4DayCount	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
Location	IPE-VGX	LOC1	Variable, maximum 17	This element shall be included in the message only if MessageBitMap/0 = 1.
Location1	IPE-VGX	LOC1	Variable, maximum 17	This element shall be included in the message only if MessageBitMap/0 = 1.
DateTimeStamp1	IPE-VGX	DTS	3	This element shall be included in the message only if MessageBitMap/0 = 1.
Location2	IPE-VGX	LOC1	Variable, maximum 17	This element shall be included in the message only if MessageBitMap/0 = 1.
DateTimeStamp2	IPE-VGX	DTS	3	This element shall be included in the message only if MessageBitMap/0 = 1.
Location3	IPE-VGX	LOC1	Variable, maximum 17	This element shall be included in the message only if MessageBitMap/0 = 1.
DateTimeStamp3	IPE-VGX	DTS	3	This element shall be included in the message only if MessageBitMap/0 = 1.
Location4	IPE-VGX	LOC1	Variable, maximum 17	This element shall be included in the message only if MessageBitMap/0 = 1.
DateTimeStamp4	IPE-VGX	DTS	3	This element shall be included in the message only if MessageBitMap/0 = 1.
IPE_IterationNumber	IPE	INP#	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
IPE_ISAMID	IPE	ISAM ID	4	Included for IPE instance identification. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
IPE_SAMSequenceNumber	IPE	ISAM S#	3	Included for IPE instance identification This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
ITSOShellReferenceNumberEncrypted	Shell via ISAM	eISRN	16	

4.5.11 Refund all Stored Travel Rights, together with any deposit amount and disable the Stored Travel Rights IPE, code 0109, RecordFormatRevision = 3.

Data from the most recently written IPE Value Group only shall be recorded in the appropriate elements of this transaction record. Only one set of elements shall be recorded in the record, even where more than one Value Group exists.

Implementation of this format revision of this message is optional in both POSTs and HOPS.

Table 3.19 - Refund all Stored Travel Rights, together with any deposit amount and disable the Stored Travel Rights IPE, code 0109 – RecordFormatRevision = 3.

Name	Source	Format	Size	Comment
StandardData			21	
MessageBitMap	POST	BMP	1	Bit 0 shall be set to one (1) when complex capping data is stored in a value group extension, those data elements being included in the message. Bits 1 - 7 RFU.
ProductRetailer	IPE	OID16	2	
IPEAmount	POST	VALI	2	Value of Stored Travel Rights refund in IPE native currency defined by ValueCurrencyCode.
POSTAmount	POST	VALI	2	Value of the Stored Travel Rights refund in POST native currency defined by POSTAmountCurrencyCode.
POSTAmountCurrencyCode	POST	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TransactionSequenceNumber	IPE	TS#	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0. The current value of TS# after transaction completion, where TS# is stored in the IPE.
DepositAmount	IPE	VALI	2	
DepositCurrencyCode	IPE	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
Value	IPE	VALS	2	Stored Travel Rights – after transaction, in IPE native currency defined by ValueCurrencyCode.
ValueCurrencyCode	IPE	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
VGXLength	IPE-VGX	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
VGXRef (Bit9; Bit8)	IPE-VGX	BMP	1	A 0.25 byte value, occupying bits 0 to 1, bits 2 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.

Name	Source	Format	Size	Comment
VGXRef (Bit7 – Bit0)	IPE-VGX	HEX	1	This element shall be included in the message only if MessageBitMap/0 = 1.
CapStrategyCode	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
CapAccumulator1Rule	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid1	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid1TransactionType	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
UncappedAccumulator1	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
DayCapAccumulator1	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
MultidayCapAccumulator1	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
Cap1DayCount	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
CapAccumulator2Rule	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid2	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid2TransactionType	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
UncappedAccumulator2	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
DayCapAccumulator2	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
MultidayCapAccumulator2	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
Cap2DayCount	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
CapAccumulator3Rule	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid3	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid3TransactionType	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
UncappedAccumulator3	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.

Name	Source	Format	Size	Comment
DayCapAccumulator3	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
MultidayCapAccumulator3	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
Cap3DayCount	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
CapAccumulator4Rule	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid4	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid4TransactionType	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
UncappedAccumulator4	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
DayCapAccumulator4	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
MultidayCapAccumulator4	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
Cap4DayCount	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
Location	IPE-VGX	LOC1	Variable, maximum 17	This element shall be included in the message only if MessageBitMap/0 = 1.
Location1	IPE-VGX	LOC1	Variable, maximum 17	This element shall be included in the message only if MessageBitMap/0 = 1.
DateTimeStamp1	IPE-VGX	DTS	3	This element shall be included in the message only if MessageBitMap/0 = 1.
Location2	IPE-VGX	LOC1	Variable, maximum 17	This element shall be included in the message only if MessageBitMap/0 = 1.
DateTimeStamp2	IPE-VGX	DTS	3	This element shall be included in the message only if MessageBitMap/0 = 1.
Location3	IPE-VGX	LOC1	Variable, maximum 17	This element shall be included in the message only if MessageBitMap/0 = 1.
DateTimeStamp3	IPE-VGX	DTS	3	This element shall be included in the message only if MessageBitMap/0 = 1.
Location4	IPE-VGX	LOC1	Variable, maximum 17	This element shall be included in the message only if MessageBitMap/0 = 1.
DateTimeStamp4	IPE-VGX	DTS	3	This element shall be included in the message only if MessageBitMap/0 = 1.
IPE_IterationNumber	IPE	INP#	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.

Name	Source	Format	Size	Comment
IPE_ISAMID	IPE	ISAM ID	4	Included for IPE instance identification. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
IPE_SAMSequenceNumber	IPE	ISAM S#	3	Included for IPE instance identification This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
ITSOShellReferenceNumberEncrypted	Shell via ISAM	eISRN	16	

4.5.12 CTA TYP 5 Full / Partial Refund for a purchased ticket code 0110, RecordFormatRevision = 3

Data from the most recently written IPE Value Group only shall be recorded in the appropriate elements of this transaction record. Only one set of elements shall be recorded in the record, even where more than one Value Group exists.

The data set used for this message shall be the data set defined in table 3.21 for a message code 0111.

Implementation of this format revision of this message is optional in both POSTs and HOPS.

4.5.13 CTA TYP 5 Usage, Code 0111, RecordFormatRevision = 3.

Data from the most recently written IPE Value Group only shall be recorded in the appropriate elements of this transaction record. Only one set of elements shall be recorded in the record, even where more than one Value Group exists.

Implementation of this format revision of this message is optional in both POSTs and HOPS.

Table 3.21 - CTA TYP 5 Usage, Code 0111 – RecordFormatRevision = 3.

Name	Source	Format	Size	Comment
StandardData			21	
MessageBitMap	POST	BMP	1	Bit 0 shall be set to one (1) when complex capping data is stored in a value group extension, those data elements being included in the message. Bits1 – 7 RFU.
IPEAmount	POST	VALI	2	Value of transaction in the IPE native currency, defined by ValueCurrencyCode.
POSTAmount	POST	VALI	2	Value of transaction in the POST native currency, defined by POSTAmountCurrencyCode.
POSTAmountCurrencyCode	POST	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
ProductRetailer	IPE	OID16	2	
TransactionType	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TransactionSequenceNumber	IPE VG	TS#	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0. The current value of TS# after transaction completion, where TS# is stored in the IPE.
ActionSequenceNumber	IPE VG	HEX	1	
LastResetDate	IPE VG	Date	2	A 1.75 byte value, occupying bits 0-7 of the least significant byte, and bits 0-5 of the most significant byte. Bits 6-7 of the most significant byte shall be set to 0.
ValueCurrencyCode	IPE VG	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TYP5ValueFlags	IPE VG	BMP	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
CountOfTransactions	IPE VG	HEX	1	
CountOfJourneyLegs	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.

Name	Source	Format	Size	Comment
VGXLength	IPE-VGX	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
VGXRef (Bit9; Bit8)	IPE-VGX	BMP	1	A 0.25 byte value, occupying bits 0 to 1, bits 2 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
VGXRef (Bit7 – Bit0)	IPE-VGX	HEX	1	This element shall be included in the message only if MessageBitMap/0 = 1.
CapStrategyCode	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
CapAccumulator1Rule	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid1	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid1TransactionType	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
UncappedAccumulator1	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
DayCapAccumulator1	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
MultidayCapAccumulator1	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
Cap1DayCount	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
CapAccumulator2Rule	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid2	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid2TransactionType	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
UncappedAccumulator2	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
DayCapAccumulator2	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
MultidayCapAccumulator2	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
Cap2DayCount	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
CapAccumulator3Rule	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.

Name	Source	Format	Size	Comment
LastFarePaid3	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid3TransactionType	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
UncappedAccumulator3	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
DayCapAccumulator3	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
MultidayCapAccumulator3	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
Cap3DayCount	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
CapAccumulator4Rule	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid4	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid4TransactionType	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
UncappedAccumulator4	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
DayCapAccumulator4	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
MultidayCapAccumulator4	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
Cap4DayCount	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
Location	IPE-VGX	LOC1	Variable, maximum 17	This element shall be included in the message only if MessageBitMap/0 = 1.
Location1	IPE-VGX	LOC1	Variable, maximum 17	This element shall be included in the message only if MessageBitMap/0 = 1.
DateTimeStamp1	IPE-VGX	DTS	3	This element shall be included in the message only if MessageBitMap/0 = 1.
Location2	IPE-VGX	LOC1	Variable, maximum 17	This element shall be included in the message only if MessageBitMap/0 = 1.
DateTimeStamp2	IPE-VGX	DTS	3	This element shall be included in the message only if MessageBitMap/0 = 1.
Location3	IPE-VGX	LOC1	Variable, maximum 17	This element shall be included in the message only if MessageBitMap/0 = 1.
DateTimeStamp3	IPE-VGX	DTS	3	This element shall be included in the message only if MessageBitMap/0 = 1.
Location4	IPE-VGX	LOC1	Variable, maximum 17	This element shall be included in the message only if MessageBitMap/0 = 1.

Name	Source	Format	Size	Comment
DateTimeStamp4	IPE-VGX	DTS	3	This element shall be included in the message only if MessageBitMap/0 = 1.
IPE_IterationNumber	IPE	INP#	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
IPE_ISAMID	IPE	ISAM ID	4	Included for IPE instance identification. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
IPE_SAMSequenceNumber	IPE	ISAM S#	3	Included for IPE instance identification This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
ITSOShellReferenceNumber Encrypted	Shell via ISAM	eISRN	16	

4.5.16 Full / partial refund of CTA cumulative amount, code 010D – RecordFormatRevision = 3.

This message records the amount by which a CTA cumulative amount changes as a result of a refund.

Data from the most recently written IPE Value Group only shall be recorded in the appropriate elements of this transaction record. Only one set of elements shall be recorded in the record, even where more than one Value Group exists.

Implementation of this format revision of this message is optional in both POSTs and HOPS.

Table 3.24 - Full / partial refund of CTA cumulative amount, code 010D – RecordFormatRevision = 3.

Name	Source	Format	Size	Comment
StandardData			21	
MessageBitMap	POST	BMP	1	Bit 0 shall be set to one (1) when complex capping data is stored in a value group extension, those data elements being included in the message. Bits 1 – 7 RFU.
IPEAmount	POST	VALI	2	Value of refund in IPE native currency defined by IPECurrencyCode.
POSTAmount	POST	VALI	2	Value of the Stored Travel Rights refund in POST native currency defined by POSTAmountCurrencyCode.
POSTAmountCurrencyCode	POST	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
ProductRetailer	IPE	OID16	2	
TransactionSequenceNumber	IPE	TS#	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0. The current value of TS# after transaction completion, where TS# is stored in the IPE.
CumulativeAmount	IPE	VALIS	2	value after transaction.
ValueCurrencyCode	IPE	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
VGXLength	IPE- VGX	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
VGXRef (Bit9; Bit8)	IPE- VGX	BMP	1	A 0.25 byte value, occupying bits 0 to 1, bits 2 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
VGXRef (Bit7 – Bit0)	IPE- VGX	HEX	1	This element shall be included in the message only if MessageBitMap/0 = 1.

Name	Source	Format	Size	Comment
CapStrategyCode	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
CapAccumulator1Rule	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid1	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid1TransactionType	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
UncappedAccumulator1	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
DayCapAccumulator1	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
MultidayCapAccumulator1	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
Cap1DayCount	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
CapAccumulator2Rule	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid2	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid2TransactionType	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
UncappedAccumulator2	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
DayCapAccumulator2	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
MultidayCapAccumulator2	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
Cap2DayCount	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
CapAccumulator3Rule	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.

Name	Source	Format	Size	Comment
LastFarePaid3	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid3TransactionType	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
UncappedAccumulator3	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
DayCapAccumulator3	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
MultidayCapAccumulator3	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
Cap3DayCount	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
CapAccumulator4Rule	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid4	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid4TransactionType	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
UncappedAccumulator4	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
DayCapAccumulator4	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
MultidayCapAccumulator4	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
Cap4DayCount	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
Location	IPE-VGX	LOC1	Variable, maximum 17	This element shall be included in the message only if MessageBitMap/0 = 1.
Location1	IPE-VGX	LOC1	Variable, maximum 17	This element shall be included in the message only if MessageBitMap/0 = 1.
DateTimeStamp1	IPE-VGX	DTS	3	This element shall be included in the message only if MessageBitMap/0 = 1.
Location2	IPE-VGX	LOC1	Variable, maximum 17	This element shall be included in the message only if MessageBitMap/0 = 1.

Name	Source	Format	Size	Comment
DateTimeStamp2	IPE-VGX	DTS	3	This element shall be included in the message only if MessageBitMap/0 = 1.
Location3	IPE-VGX	LOC1	Variable, maximum 17	This element shall be included in the message only if MessageBitMap/0 = 1.
DateTimeStamp3	IPE-VGX	DTS	3	This element shall be included in the message only if MessageBitMap/0 = 1.
Location4	IPE-VGX	LOC1	Variable, maximum 17	This element shall be included in the message only if MessageBitMap/0 = 1.
DateTimeStamp4	IPE-VGX	DTS	3	This element shall be included in the message only if MessageBitMap/0 = 1.
IPE_IterationNumber	IPE	INP#	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
IPE_ISAMID	IPE	ISAM ID	4	Included for IPE instance identification. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
IPE_SAMSequenceNumber	IPE	ISAM S#	3	Included for IPE instance identification. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
ITSOShellReferenceNumberEncrypted	Shell via ISAM	eISRN	16	

4.5.17 CTA usage (travel, Product or service purchase), code 010E, RecordFormatRevision = 3

Data from the most recently written IPE Value Group only shall be recorded in the appropriate elements of this transaction record. Only one set of elements shall be recorded in the record, even where more than one Value Group exists.

Implementation of this format revision of this message is optional in both POSTs and HOPS.

Table 3.25 - CTA usage (travel, Product or service purchase), code 010E – RecordFormatRevision = 3

Name	Source	Format	Size	Comment
StandardData			21	

Name	Source	Format	Size	Comment
MessageBitMap	POST	BMP	1	Bit 0 shall be set to one (1) when complex capping data is stored in a value group extension, those data elements being included in the message. Bits 1 - 7 RFU.
IPEAmount	POST	VALI	2	Value of transaction in the IPE native currency, defined by ValueCurrencyCode
POSTAmount	POST	VALI	2	Value of transaction in the POST native currency, defined by POSTAmountCurrencyCode
POSTAmountCurrencyCode	POST	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
ProductRetailer	IPE	OID16	2	
TransactionType	IPE	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TransactionSequenceNumber	IPE	TS#	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0. The current value of TS# after transaction completion, where TS# is stored in the IPE.
ActionSequenceNumber	IPE	HEX	1	
CumulativeAmount	IPE	VALI	2	Value following transaction
ValueCurrencyCode	IPE	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
CountJourneyLegs	IPE	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
CumulativeFare	IPE	VALI	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0.
TYP4ValueFlags	IPE	BMP	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
VGXLength	IPE-VGX	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
VGXRef (Bit9; Bit8)	IPE-VGX	BMP	1	A 0.25 byte value, occupying bits 0 to 1, bits 2 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
VGXRef (Bit7 – Bit0)	IPE-VGX	HEX	1	This element shall be included in the message only if MessageBitMap/0 = 1.

Name	Source	Format	Size	Comment
CapStrategyCode	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
CapAccumulator1Rule	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid1	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid1Transaction Type	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
UncappedAccumulator1	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
DayCapAccumulator1	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
MultidayCapAccumulator1	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
Cap1DayCount	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
CapAccumulator2Rule	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid2	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid2Transaction Type	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0, This element shall be included in the message only if MessageBitMap/0 = 1.
UncappedAccumulator2	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
DayCapAccumulator2	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
MultidayCapAccumulator2	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
Cap2DayCount	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1,
CapAccumulator3Rule	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid3	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid3Transaction Type	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
UncappedAccumulator3	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.

Name	Source	Format	Size	Comment
DayCapAccumulator3	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
MultidayCapAccumulator3	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
Cap3DayCount	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
CapAccumulator4Rule	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid4	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid4Transaction Type	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
UncappedAccumulator4	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
DayCapAccumulator4	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
MultidayCapAccumulator4	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
Cap4DayCount	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
Location	IPE-VGX	LOC1	Variable, maximum 17	This element shall be included in the message only if MessageBitMap/0 = 1.
Location1	IPE-VGX	LOC1	Variable, maximum 17	This element shall be included in the message only if MessageBitMap/0 = 1.
DateTimeStamp1	IPE-VGX	DTS	3	This element shall be included in the message only if MessageBitMap/0 = 1.
Location2	IPE-VGX	LOC1	Variable, maximum 17	This element shall be included in the message only if MessageBitMap/0 = 1.
DateTimeStamp2	IPE-VGX	DTS	3	This element shall be included in the message only if MessageBitMap/0 = 1.
Location3	IPE-VGX	LOC1	Variable, maximum 17	This element shall be included in the message only if MessageBitMap/0 = 1.
DateTimeStamp3	IPE-VGX	DTS	3	This element shall be included in the message only if MessageBitMap/0 = 1.
Location4	IPE-VGX	LOC1	Variable, maximum 17	This element shall be included in the message only if MessageBitMap/0 = 1.
DateTimeStamp4	IPE-VGX	DTS	3	This element shall be included in the message only if MessageBitMap/0 = 1.
IPE_IterationNumber	IPE	INP#	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.

Name	Source	Format	Size	Comment
IPE_ISAMID	IPE	ISAM ID	4	<p>Included for IPE instance identification.</p> <p>This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.</p>
IPE_SAMSequenceNumber	IPE	ISAM S#	3	<p>Included for IPE instance identification</p> <p>This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.</p>
ITSOShellReferenceNumberEncrypted	Shell via ISAM	<u>eISRN</u>	16	

4.5.19 Create or Amend Stored Travel Rights, codes 0120, 0121, RecordFormatRevision = 3.

Note that if any value is loaded when the IPE is created then this shall be recorded using an additional Stored Travel Rights load message.

Note that this message shall only be used for amendments not covered by other messages defined elsewhere herein.

Data from the most recently written IPE Value Group only shall be recorded in the appropriate elements of this transaction record. Only one set of elements shall be recorded in the record, even where more than one Value Group exists.

Implementation of this format revision of this message is optional in both POSTs and HOPS.

Table 3.27 - Create or Amend Stored Travel Rights, codes 0120, 0121 – RecordFormatRevision = 3.

Name	Source	Format	Size	Comment
StandardData			21	
MessageBitMap	POST	BMP	1	Bit 0 shall be set to one (1) when complex capping data is stored in a value group extension, those data elements being included in the message. Bits 1 - 7 RFU.
IPEExpiryDate	Shell	DATE	2	A copy of the relevant EXP directory data element relevant to this IPE.
IPELength	IPE	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
IPEBitMap	IPE	BMP	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
IPEFormatRevision	IPE	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
RemoveDate	IPE	RDATE	1	
ProductRetailer	IPE	OID16	2	
TYP2Flags	IPE	BMP	1	
Threshold	IPE	VALI	2	
TopUpAmount	IPE	VALI	2	
MaxValue2	IPE	VALI	2	
MaximumNegativeAmount	IPE	VALI	2	
DepositAmount	IPE	VALI	2	
StartDateAutoTopUp	IPE	DATE	2	A 1.75 byte value, occupying bits 0-7 of the least significant byte, and bits 0-5 of the most significant byte. Bits 6-7 of the most significant byte shall be set to 0.
DepositMethodOfPayment	IPE	MOP	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
DepositCurrencyCode	IPE	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.

Name	Source	Format	Size	Comment
DepositVATSalesTax	IPE	VAT	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0.
VGLength	IPE VG	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
VGBitMap	IPE VG	BMP	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
VGFormatRevision	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TransactionType	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TransactionSequenceNumber	IPE VG	TS#	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0. The current value of TS# after transaction completion, where TS# is stored in the IPE.
DateTimeStamp	IPE VG	DTS	3	
ISAMIDModifier	IPE VG	HEX	4	
ActionSequenceNumber	IPE VG	HEX	1	
Value	IPE VG	VALS	2	
ValueCurrencyCode	IPE VG	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
CountJourneyLegs	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
CumulativeFare	IPE VG	VALI	2	A 1.625 byte value occupying bits 0-7 of the least significant byte and bits 0-4 of the most significant byte. Bits 5-7 of the most significant byte shall be set to 0.
TYP2ValueFlags	IPE VG	BMP	1	A 0.375 byte value, occupying bits 0 to 2, bits 3 to 7 shall be set to 0
VGXLength	IPE-VGX	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
VGXRef (Bit9; Bit8)	IPE-VGX	BMP	1	A 0.25 byte value, occupying bits 0 to 1, bits 2 to 7 shall be set to 0 This element shall be included in the message only if MessageBitMap/0 = 1.
VGXRef (Bit7 – Bit0)	IPE-VGX	HEX	1	This element shall be included in the message only if MessageBitMap/0 = 1.
CapStrategyCode	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.

Name	Source	Format	Size	Comment
CapAccumulator1Rule	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid1	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid1TransactionType	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
UncappedAccumulator1	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
DayCapAccumulator1	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
MultidayCapAccumulator1	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
Cap1DayCount	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
CapAccumulator2Rule	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid2	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid2TransactionType	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
UncappedAccumulator2	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
DayCapAccumulator2	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
MultidayCapAccumulator2	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
Cap2DayCount	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
CapAccumulator3Rule	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid3	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid3TransactionType	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
UncappedAccumulator3	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.

Name	Source	Format	Size	Comment
DayCapAccumulator3	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
MultidayCapAccumulator3	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
Cap3DayCount	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
CapAccumulator4Rule	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid4	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid4TransactionType	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
UncappedAccumulator4	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
DayCapAccumulator4	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
MultidayCapAccumulator4	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
Cap4DayCount	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
Location	IPE-VGX	LOC1	Variable, maximum 17	This element shall be included in the message only if MessageBitMap/0 = 1.
Location1	IPE-VGX	LOC1	Variable, maximum 17	This element shall be included in the message only if MessageBitMap/0 = 1.
DateTimeStamp1	IPE-VGX	DTS	3	This element shall be included in the message only if MessageBitMap/0 = 1.
Location2	IPE-VGX	LOC1	Variable, maximum 17	This element shall be included in the message only if MessageBitMap/0 = 1.
DateTimeStamp2	IPE-VGX	DTS	3	This element shall be included in the message only if MessageBitMap/0 = 1.
Location3	IPE-VGX	LOC1	Variable, maximum 17	This element shall be included in the message only if MessageBitMap/0 = 1.
DateTimeStamp3	IPE-VGX	DTS	3	This element shall be included in the message only if MessageBitMap/0 = 1.
Location4	IPE-VGX	LOC1	Variable, maximum 17	This element shall be included in the message only if MessageBitMap/0 = 1.
DateTimeStamp4	IPE-VGX	DTS	3	This element shall be included in the message only if MessageBitMap/0 = 1.
IPE_IterationNumber	IPE	INP#	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.

Name	Source	Format	Size	Comment
IPE_ISAMID	IPE	ISAM ID	4	<p>Included for IPE instance identification.</p> <p>This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.</p>
IPE_SAMSequenceNumber	IPE	ISAM S#	3	<p>Included for IPE instance identification</p> <p>This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.</p>
ITSOShellReferenceNumberNonEncrypted	Shell	ulSRN	16	<p>Not encrypted.</p> <p>In a code 0121 message, this element shall be set to zero (0)</p>
ITSOShellReferenceNumberEncrypted	Shell via ISAM	elSRN	16	

4.5.20 Create or Amend CTA IPE TYP 4, codes 0122, 0123, RecordFormatRevision = 3

Note that this message shall only be used for amendments not covered by other transaction type specific messages defined elsewhere herein.

Data from the most recently written IPE Value Group only shall be recorded in the appropriate elements of this transaction record. Only one set of elements shall be recorded in the record, even where more than one Value Group exists.

Implementation of this format revision of this message is optional in both POSTs and HOPS.

Table 3.28 - Create or Amend CTA IPE TYP 4, codes 0122, 0123 – RecordFormatRevision = 3.

Name	Source	Format	Size	Comment
StandardData			21	
MessageBitMap	POST	BMP	1	Bit 0 shall be set to one (1) when complex capping data is stored in a value group extension, those data elements being included in the message. Bits 1 – 7 RFU.
IPEExpiryDate	Shell	DATE	2	A copy of the relevant EXP directory data element relevant to this IPE.
IPELength	IPE	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
IPEBitMap	IPE	BMP	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
IPEFormatRevision	IPE	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
RemoveDate	IPE	RDATE	1	
ProductRetailer	IPE	OID	2	
TYP4Flags	IPE	BMP	1	
MaxValue4	IPE	VALI	2	
DepositAmount	IPE	VALI	2	
StartDateCTA	IPE	DATE	2	A 1.75 byte value, occupying bits 0-7 of the least significant byte, and bits 0-5 of the most significant byte. Bits 6-7 of the most significant byte shall be set to 0.
EndDate	IPE	DATE	2	A 1.75 byte value, occupying bits 0-7 of the least significant byte, and bits 0-5 of the most significant byte. Bits 6-7 of the most significant byte shall be set to 0.
DepositMethodOfPayment	IPE	MOP	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
DepositCurrencyCode	IPE	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
DepositVATSalesTax	IPE	VAT	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0.
VGLength	IPE VG	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.

Name	Source	Format	Size	Comment
VGBitMap	IPE VG	BMP	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
VGFormatRevision	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TransactionType	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TransactionSequenceNumber	IPE VG	TS#	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0. The current value of TS# after transaction completion, where TS# is stored in the IPE.
DateTimeStamp	IPE VG	DTS	3	
ISAMIDModifier	IPE VG	HEX	4	
ActionSequenceNumber	IPE VG	HEX	1	
CumulativeAmount	IPE VG	VALI	2	
ValueCurrencyCode	IPE VG	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
CountJourneyLegs	IPE VG	HEX	1	
CumulativeFare	IPE VG	VALI	2	
TYP4ValueFlags	IPE VG	BMP	1	
VGXLength	IPE-VGX	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
VGXRef (Bit9; Bit8)	IPE-VGX	BMP	1	A 0.25 byte value, occupying bits 0 to 1, bits 2 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
VGXRef (Bit7 – Bit0)	IPE-VGX	HEX	1	This element shall be included in the message only if MessageBitMap/0 = 1.
CapStrategyCode	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
CapAccumulator1Rule	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid1	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid1TransactionType	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
UncappedAccumulator1	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
DayCapAccumulator1	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.

Name	Source	Format	Size	Comment
MultidayCapAccumulator1	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
Cap1DayCount	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
CapAccumulator2Rule	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid2	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid2TransactionType	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
UncappedAccumulator2	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
DayCapAccumulator2	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
MultidayCapAccumulator2	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
Cap2DayCount	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
CapAccumulator3Rule	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid3	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid3TransactionType	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
UncappedAccumulator3	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
DayCapAccumulator3	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
MultidayCapAccumulator3	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
Cap3DayCount	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
CapAccumulator4Rule	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid4	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.

Name	Source	Format	Size	Comment
LastFarePaid4TransactionType	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
UncappedAccumulator4	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
DayCapAccumulator4	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
MultidayCapAccumulator4	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
Cap4DayCount	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
Location	IPE-VGX	LOC1	Variable, maximum 17	This element shall be included in the message only if MessageBitMap/0 = 1.
Location1	IPE-VGX	LOC1	Variable, maximum 17	This element shall be included in the message only if MessageBitMap/0 = 1.
DateTimeStamp1	IPE-VGX	DTS	3	This element shall be included in the message only if MessageBitMap/0 = 1.
Location2	IPE-VGX	LOC1	Variable, maximum 17	This element shall be included in the message only if MessageBitMap/0 = 1.
DateTimeStamp2	IPE-VGX	DTS	3	This element shall be included in the message only if MessageBitMap/0 = 1.
Location3	IPE-VGX	LOC1	Variable, maximum 17	This element shall be included in the message only if MessageBitMap/0 = 1.
DateTimeStamp3	IPE-VGX	DTS	3	This element shall be included in the message only if MessageBitMap/0 = 1.
Location4	IPE-VGX	LOC1	Variable, maximum 17	This element shall be included in the message only if MessageBitMap/0 = 1.
DateTimeStamp4	IPE-VGX	DTS	3	This element shall be included in the message only if MessageBitMap/0 = 1.
IPE_IterationNumber	IPE	INP#	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
IPE_ISAMID	IPE	ISAM ID	4	Included for IPE instance identification. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
IPE_SAMSequenceNumber	IPE	ISAM S#	3	Included for IPE instance identification This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
ITSOShellReferenceNumberNonEncrypted	Shell	uISRN	16	Not encrypted. In a code 0123 message, this element shall be set to 0.

Name	Source	Format	Size	Comment
ITSOShellReferenceNumber Encrypted	Shell via ISAM	elSRN	16	

4.5.21 Create or Amend CTA IPE TYP 5, Code 0124, 0125, RecordFormatRevision = 3.

Note that this message shall only be used for amendments not covered by other Transaction type specific messages defined elsewhere herein.

Data from the most recently written IPE Value Group only shall be recorded in the appropriate elements of this transaction record. Only one set of elements shall be recorded in the record, even where more than one Value Group exists.

Implementation of this format revision of this message is optional in both POSTs and HOPS.

Table 3.29 - Create or Amend CTA IPE TYP 5, Code 0124, 0125 – RecordFormatRevision = 3.

Name	Source	Format	Size	Comment
StandardData			21	
MessageBitMap	POST	BMP	1	Bit 0 shall be set to one (1) when complex capping data is stored in a value group extension, those data elements being included in the message. Bits 1 - 7 RFU.
IPEExpiryDate	Shell	DATE	2	A copy of the relevant EXP directory data element relevant to this IPE.
IPELength	IPE	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
IPEBitMap	IPE	BMP	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
IPEFormatRevision	IPE	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
RemoveDate	IPE	RDATE	1	
ProductRetailer	IPE	OID16	2	
TYP5Flags	IPE	BMP	1	
WeeksPerPeriod	IPE	HEX	1	
QuantityTransactions	IPE	HEX	1	
MaxValue5	IPE	VALI	2	
DepositAmount	IPE	VALI	2	
StartDateCTA	IPE	DATE	2	A 1.75 byte value, occupying bits 0-7 of the least significant byte, and bits 0-5 of the most significant byte. Bits 6-7 of the most significant byte shall be set to 0.
EndDate	IPE	DATE	2	A 1.75 byte value, occupying bits 0-7 of the least significant byte, and bits 0-5 of the most significant byte. Bits 6-7 of the most significant byte shall be set to 0.
DepositMethodOfPayment	IPE	MOP	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.

Name	Source	Format	Size	Comment
DepositCurrencyCode	IPE	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
DepositVATSalesTax	IPE	VAT	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0.
VGLength	IPE VG	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
VGBitMap	IPE VG	BMP	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
VGFormatRevision	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TransactionType	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TransactionSequenceNumber	IPE VG	TS#	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0. The current value of TS# after transaction completion, where TS# is stored in the IPE.
DateTimeStamp	IPE VG	DTS	3	
ISAMIDModifier	IPE VG	HEX	4	
ActionSequenceNumber	IPE VG	HEX	1	
CountOfTransactions	IPE VG	HEX	1	
LastResetDate	IPE VG	DATE	2	A 1.75 byte value, occupying bits 0-7 of the least significant byte, and bits 0-5 of the most significant byte. Bits 6-7 of the most significant byte shall be set to 0.
ValueCurrencyCode	IPE VG	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TYP5ValueFlags	IPE VG	BMP	1	
CountJourneyLegs	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
VGXLength	IPE-VGX	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
VGXRef (Bit9; Bit8)	IPE-VGX	BMP	1	A 0.25 byte value, occupying bits 0 to 1, bits 2 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
VGXRef (Bit7 – Bit0)	IPE-VGX	HEX	1	This element shall be included in the message only if MessageBitMap/0 = 1.
CapStrategyCode	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.

Name	Source	Format	Size	Comment
CapAccumulator1Rule	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid1	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid1TransactionType	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
UncappedAccumulator1	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
DayCapAccumulator1	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
MultidayCapAccumulator1	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
Cap1DayCount	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
CapAccumulator2Rule	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid2	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid2TransactionType	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
UncappedAccumulator2	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
DayCapAccumulator2	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
MultidayCapAccumulator2	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
Cap2DayCount	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
CapAccumulator3Rule	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid3	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid3TransactionType	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
UncappedAccumulator3	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
DayCapAccumulator3	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
MultidayCapAccumulator3	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.

Name	Source	Format	Size	Comment
Cap3DayCount	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
CapAccumulator4Rule	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid4	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
LastFarePaid4TransactionType	IPE-VGX	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
UncappedAccumulator4	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
DayCapAccumulator4	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
MultidayCapAccumulator4	IPE-VGX	VALI	2	This element shall be included in the message only if MessageBitMap/0 = 1.
Cap4DayCount	IPE-VGX	HEX	2	This element shall be included in the message only if MessageBitMap/0 = 1.
Location	IPE-VGX	LOC1	Variable, maximum 17	This element shall be included in the message only if MessageBitMap/0 = 1.
Location1	IPE-VGX	LOC1	Variable, maximum 17	This element shall be included in the message only if MessageBitMap/0 = 1.
DateTimeStamp1	IPE-VGX	DTS	3	This element shall be included in the message only if MessageBitMap/0 = 1.
Location2	IPE-VGX	LOC1	Variable, maximum 17	This element shall be included in the message only if MessageBitMap/0 = 1.
DateTimeStamp2	IPE-VGX	DTS	3	This element shall be included in the message only if MessageBitMap/0 = 1.
Location3	IPE-VGX	LOC1	Variable, maximum 17	This element shall be included in the message only if MessageBitMap/0 = 1.
DateTimeStamp3	IPE-VGX	DTS	3	This element shall be included in the message only if MessageBitMap/0 = 1.
Location4	IPE-VGX	LOC1	Variable, maximum 17	This element shall be included in the message only if MessageBitMap/0 = 1.
DateTimeStamp4	IPE-VGX	DTS	3	This element shall be included in the message only if MessageBitMap/0 = 1.
IPE_IterationNumber	IPE	INP#	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to
IPE_ISAMID	IPE	ISAM ID	4	Included for IPE instance identification. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.

Name	Source	Format	Size	Comment
IPE_SAMSequenceNumber	IPE	ISAM S#	3	<p>Included for IPE instance identification</p> <p>This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.</p>
ITSOShellReferenceNumberNonEncrypted	Shell	uISRN	16	<p>Not encrypted.</p> <p>In a code 0125 message, this element shall be set to zero (0)</p>
ITSOShellReferenceNumberEncrypted	Shell via ISAM	eISRN	16	

4.5.26 Create or Amend Ticket IPE, code 0207, 0208 – RecordFormatRevision = 3.

This records the creation or amendment of a ticket IPE. If a simultaneous journey is made a journey record shall also be transmitted.

The actual Data is dependant upon the type of IPE being created or amended. For efficiency, the record is split into common data (common to all IPEs), IPE TYP specific data and a footer.

Data from the most recently written IPE Value Group only shall be recorded in the appropriate elements of this transaction record. Only one set of elements shall be recorded in the record, even where more than one Value Group exists.

It is not mandatory to send a 0208 message in parallel with a specific change message (e.g. a 0303 deposit refund message), if the 0208 message does not convey any additional information (i.e. the contents of the additional data items sent in the 0208 message are unchanged), and if both messages would have been sent to the same destination(s).

However, optionally 0208 messages can be sent under these conditions.

4.5.26.1 Record Structure.

The record shall always be structured in the following manner, in the sequence shown.

Table 3.35 - Create or Amend Ticket IPE, code 0207, 0208, Record Structure – RecordFormatRevision = 3.

Data Group	Comment
Common data	Always required
Optional data	Present according to IPE type involved, as defined by TYP and the IPEBitMap. These optional data groups shall be included in the record in the same order as they occur in this specification.
Footer	Always required

4.5.26.2 Common Data.

Table 3.36 - Common Data – RecordFormatRevision = 3.

Name	Source	Format	Size	Comment
StandardData			21	
IPE-TYP	POST	TYP	1	This element shall indicate the TYP of IPE to which a message instance refers, and also indicates the type of optional data which may be found within a message instance.
NormalPrice	POST	VALI	2	Full price for ticket (if any), currency is defined by CurrencyCode
CurrencyCode	POST	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.

Name	Source	Format	Size	Comment
MachineNumber	POST	HEX	4	Serial number of the terminal conducting the transaction
TransactionFlags	POST	HEX	1	
MessageBitMap	DIR & POST	BMP	1	<p>Bit 0 shall be a copy of the Value Group Present flag from the directory. This indicates whether a value group is present in an IPE instance, and therefore also present in a message instance.</p> <p>Bit 1 shall be set to one (1) when the ID_IPEID, ID_ISAMID and ID_ISAMSeq# data elements are included in the record.</p> <p>Bits 2 – 7 are RFU.</p>
ITSOShellReferenceNumberNonEncrypted	Shell	uISRN	16	<p>Not encrypted.</p> <p>In a code 0208 message, this element shall be set to zero (0).</p>
IPEExpiryDate	Shell	DATE	2	A copy of the relevant EXP directory data element relevant to this IPE.
IPELength	IPE	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
IPEBitMap	IPE	BMP	1	<p>A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.</p> <p>For TYP 27, 28, 29 IPEs the contents of this element shall have no effect on the contents of a Transaction Record instance, i.e. all elements shall be included in the Transaction Record.</p> <p>For TYP 22-26 IPEs this element shall be used to determine which optional data elements are included in a Transaction Record instance, i.e. optional elements are only included in the Transaction Record if they are also included in the IPE instance.</p> <p>Refer to ITSO TS 1000-5 for the definition of IPEBitMap and optional elements.</p>
IPEFormatRevision	IPE	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.

Name	Source	Format	Size	Comment
RemoveDate	IPE	RDATE	1	
ProductRetailer	IPE	OID16	2	
ID_IPEID	IPE	IPEIDM	7	<p>Identifies an identity IPE.</p> <p>IPE instance identity details for an ID IPE contained n the same ITSO Shell as the IPE that is the subject of this message. May be sent for the purpose of enabling identification of the card holder in circumstances where the ISRN is not known due to its being encrypted.</p> <p>Include this element only if MessageBitMap bit 1 is set to one (1).</p>
ID_ISAMID	IPE	HEX	4	<p>Identifies an identity IPE.</p> <p>This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.</p> <p>Include this element only if MessageBitMap bit 1 is set to one (1)</p>
ID_ISAMSeq#	IPE	HEX	3	<p>Identifies an identity IPE.</p> <p>This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.</p> <p>Include this element only if MessageBitMap bit 1 is set to one (1)</p>

Table 3.37 - TransactionFlags Definition – RecordFormatRevision = 3.

A combination of flags shall be set where appropriate so to do. Note that an attended POST is one where the POST is operated by a member of staff, whilst an unattended POST is one where the POST is essentially operated by the card holder.

Flag ID	Flag name	Flag purpose
0	AutoTransaction	Set to one (1) when the relevant transaction took place automatically due to auto-renew, otherwise set to zero (0). Note that the use of flags 0, 1 and 2 is mutually exclusive. Only one of flags 0, 1 and 2 shall be set for every transaction.
1	ActionListTransaction	Set to one (1) when the relevant transaction took place due to an Actionlist item, otherwise set to zero (0). Note that the use of flags 0, 1 and 2 is mutually exclusive. Only one of flags 0, 1 and 2 shall be set for every transaction.
2	StoredTicketActivation	Set to one (1) when the relevant transaction took place due to Stored Ticket activation, otherwise set to zero (0). Note that the use of flags 0, 1 and 2 is mutually exclusive. Only one of flags 0, 1 and 2 shall be set for every transaction.
3	ManualPostTransaction	Set to one (1) when the relevant transaction took place at an attended POST, e.g. a ticket office machine or bus ticket machine, otherwise set to zero (0). Note that the use of flags 3, 4 and 5 is mutually exclusive. Only one of flags 3, 4 and 5 shall be set for every transaction.
4	UnattendedPostTransaction	Set to one (1) when the relevant transaction took place at an unattended POST, e.g. a ticket vending machine, otherwise set to zero (0). Note that the use of flags 3, 4 and 5 is mutually exclusive. Only one of flags 3, 4 and 5 shall be set for every transaction.
5	RemotePostTransaction	Set to one (1) when the relevant transaction took place with a remote POST, e.g. CM holder not present, otherwise set to zero (0). Note that the use of flags 3, 4 and 5 is mutually exclusive. Only one of flags 3, 4 and 5 shall be set for every transaction.
6	RFU	
7	RFU	

4.5.26.3 Footer.

Table 3.38 - Footer – RecordFormatRevision = 3.

Name	Source	Format	Size	Comment
IIN	IPE	IIN	3	IIN shall always be included in the Transaction Record, where necessary it contents shall be deduced from the ITSO Shell Owner Identity.
KID	IPE	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
IPE_IterationNumber	IPE	INP#	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
IPE_ISAMID	IPE	ISAM ID	4	Included for IPE instance identification. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
IPE_SAMSequenceNumber	IPE	ISAM S#	3	Included for IPE instance identification This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
ITSOShellReferenceNumberEncrypted	Shell via ISAM	eISRN	16	

4.5.26.4 IPE TYP 22.

Table 3.39 - IPE TYP 22 – RecordFormatRevision = 3.

Name	Source	Format	Size	Comment
ProductRetailer	IPE	OID	2	
TYP22Flags	IPE	BMP	2	
PassBackTime	IPE	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
IssueDate	IPE	DATE	2	A 1.75 byte value, occupying bits 0-7 of the least significant byte, and bits 0-5 of the most significant byte. Bits 6-7 of the most significant byte shall be set to 0.
ExpiryTime	IPE	TIME	2	A 1.375 byte value, occupying bits 0-7 of the least significant byte, and bits 0-2 of the most significant byte. Bits 3-7 of the most significant byte shall be set to 0.
AutoRenewQuantity1	IPE	BIN	1	
Class	IPE	UD	1	
ValidityCode	IPE	UD	1	A 0.625 byte value, occupying bits 0-4 of the element. Bits 5-7 shall be set to 0.
ValidityStartDTS	IPE	DTS	3	
PromotionCode	IPE	HEX	1	
ValidOnDaytypeCode	IPE	DOW	1	
PartySizeAdult	IPE	HEX	1	
PartySizeChild	IPE	HEX	1	
PartySizeConcession	IPE	HEX	1	
AmountPaidCurrencyCode	IPE	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
AmountPaid	IPE	VALI	2	
AmountPaidMethodOfPayment	IPE	MOP	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
AmountPaidVATSalesTax	IPE	VATM	2	
ConcessionaryPassIssuerCostCentre	IPE	HEX	2	
ValidAtOrFrom	IPE	LOC1	Variable, maximum 17	

Name	Source	Format	Size	Comment
ValidTo	IPE	LOC1	Variable, maximum 17	
PassDuration	IPE	HEX	1	

Flag definitions are as defined for the relevant IPEs.

Table 3.40 - IPE TYP 22, Value Group – RecordFormatRevision = 3.

Name	Source	Format	Size	Comment
VGLength	IPE VG	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
VGBitMap	IPE VG	BMP	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
VGFormatRevision	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TransactionType	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TransactionSequenceNumber	IPE VG	TS#	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0.
DateTimeStamp	IPE VG	DTS	3	
ISAMIDModifier	IPE VG	HEX	4	
ActionSequenceNumber	IPE VG	HEX	1	
NumberRemainingPasses	IPE VG	BIN	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
TYP22ValueFlags	IPE VG	BMP	1	A 0.25 byte value, occupying bits 0 to 1, bits 2 to 7 shall be set to 0.
ExpiryDateSP	IPE VG	DATE	2	A 1.75 byte value, occupying bits 0-7 of the least significant byte, and bits 0-5 of the most significant byte. Bits 6-7 of the most significant byte shall be set to 0.
ExpiryDateCurrent	IPE VG	DATE	2	

4.5.26.5 IPE TYP 23.

Table 3.41 - IPE TYP 23 – RecordFormatRevision = 3.

Name	Source	Format	Size	Comment
ProductRetailer	IPE	OID	2	
TYP23Flags	IPE	BMP	1	
PassBackTime	IPE	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
IssueDate	IPE	DATE	2	A 1.75 byte value, occupying bits 0-7 of the least significant byte, and bits 0-5 of the most significant byte. Bits 6-7 of the most significant byte shall be set to 0.
ValidityCode	IPE	UD	1	A 0.625 byte value, occupying bits 0-4 of the element. Bits 5-7 shall be set to 0.
ExpiryTime	IPE	TIME	2	A 1.375 byte value, occupying bits 0-7 of the least significant byte, and bits 0-2 of the most significant byte. Bits 3-7 of the most significant byte shall be set to 0.
Class	IPE	UD	1	
PartySizeAdult	IPE	HEX	1	
PartySizeChild	IPE	HEX	1	
PartySizeConcession	IPE	HEX	1	
AmountPaidCurrencyCode	IPE	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
AmountPaid	IPE	VALI	2	
AmountPaidMethodOfPayment	IPE	MOP	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
AmountPaidVATSalesTax	IPE	VATM	2	
PhotocardNumber	IPE	UD	4	
PromotionCode	IPE	HEX	1	
ConcessionaryPassIssuerCostCentre	IPE	HEX	2	
TYP23Mode	IPE	BMP	1	
MaxTransfers	IPE	HEX	1	
TimeLimit	IPE	HEX	1	

Name	Source	Format	Size	Comment
ValueOfRideJourney	IPE	VALI	2	
ValueOfRideJourneyCurrencyCode	IPE	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
Origin1	IPE	LOC1	Variable, maximum 17	
Destination1	IPE	LOC1	Variable, maximum 17	

Flag definitions are as defined for the relevant IPEs.

Table 3.42 - IPE TYP 23 Value Group – RecordFormatRevision = 3

Name	Source	Format	Size	Comment
VGLength	IPE VG	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
VGBitMap	IPE VG	BMP	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
VGFormatRevision	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TransactionType	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TransactionSequenceNumber	IPE VG	TS#	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0.
DateTimeStamp	IPE VG	DTS	3	
ISAMIDModifier	IPE VG	HEX	4	
ActionSequenceNumber	IPE VG	HEX	1	
CountRemainingRidesJourneys	IPE VG	HEX	1	
CountTransfers	IPE VG	HEX	1	
TYP23ValueFlags	IPE VG	BMP	1	

4.5.26.6 IPE TYP 24

In this version of the specification, transmission of 0207 and 0208 messages relating to TYP 24 IPEs is not permitted at Record Format Revision 3.

4.5.26.7 IPE TYP 25

Table 3.49 - IPE TYP 25 – RecordFormatRevision = 3.

Name	Source	Format	Size	Comment
ProductRetailer	IPE	OID16	2	
TYP25Flags	IPE	BMP	1	
PassBackTime	IPE	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
IssueDate	IPE	DATE	2	A 1.75 byte value, occupying bits 0-7 of the least significant byte, and bits 0-5 of the most significant byte. Bits 6-7 of the most significant byte shall be set to 0.
ValidityStartDTS	IPE	DTS	3	
ExpiryTime	IPE	TIME	2	A 1.375 byte value, occupying bits 0-7 of the least significant byte, and bits 0-2 of the most significant byte. Bits 3-7 of the most significant byte shall be set to 0.
ServiceID	IPE	UD	1	
MaxValue25	IPE	VALI	2	
MaxValueCurrencyCode	IPE	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
AmountPaidCurrencyCode	IPE	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
AmountPaid	IPE	VALI	2	
AmountPaidMethodOfPayment	IPE	MOP	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
AmountPaidVATSalesTax	IPE	VATM	2	
UserDefined	IPE	UD	1	
AutoRenewQuantity2	IPE	HEX	1	

Table 3.50 - IPE TYP 25 Value Group – RecordFormatRevision = 3

Name	Source	Format	Size	Comment
VGLength	IPE VG	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
VGBitMap	IPE VG	BMP	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
VGFormatRevision	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TransactionType	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TransactionSequenceNumber	IPE VG	TS#	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0.
DateTimeStamp	IPE VG	DTS	3	
ISAMIDModifier	IPE VG	HEX	4	
ActionSequenceNumber	IPE VG	HEX	1	
CountUsesAvailable	IPE VG	HEX	1	
TYP25ValueFlags	IPE VG	BMP	1	

4.5.26.8 IPE TYP 26

Table 3.51 - IPE TYP 26 – RecordFormatRevision = 3

Name	Source	Format	Size	Comment
ProductRetailer	IPE	OID16	2	
PassBackTime	IPE	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
TYP26Flags	IPE	BMP	1	
TYP26Class	IPE	UD	1	
IssueDate	IPE	DATE	2	A 1.75 byte value, occupying bits 0-7 of the least significant byte, and bits 0-5 of the most significant byte. Bits 6-7 of the most significant byte shall be set to 0.
ValidityStartDTS	IPE	DTS	3	
UserDefined	IPE	UD	7	
AutoRenewQuantity3	IPE	HEX	1	

Table 3.52 - IPE TYP 26 Value Group – RecordFormatRevision = 3

Name	Source	Format	Size	Comment
VGLength	IPE VG	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
VGBitMap	IPE VG	BMP	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
VGFormatRevision	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TransactionType	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TransactionSequenceNumber	IPE VG	TS#	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0.
DateTimeStamp	IPE VG	DTS	3	
ISAMIDModifier	IPE VG	HEX	4	
ActionSequenceNumber	IPE VG	HEX	1	
CountRemainingRidesJourneys	IPE VG	HEX	1	
TYP26ValueFlags	IPE VG	BMP	1	

4.5.26.9 IPE TYP 27, 28, 29

Table 3.53 IPE TYP 27, IPEFormatRevision = 1, – RecordFormatRevision = 3.

Name	Source	Format	Size	Comment
IssueDate	IPE	DATE	2	A 1.75 byte value, occupying bits 0-7 of the least significant byte, and bits 0-5 of the most significant byte. Bits 6-7 of the most significant byte shall be set to 0.
Sterling/Euro	IPE	BMP	1	A 0.125 byte value, occupying bit 0 of the byte. Bits 1-7 of the byte shall be set to 0.
Child	IPE	BMP	1	A 0.125 byte value, occupying bit 0 of the byte. Bits 1-7 of the byte shall be set to 0.
PassbackTime	IPE	HEX	1	A 0.5 byte value, occupying bits 0-3 of the element. Bits 4-7 shall be set to 0.
AmountPaidMethod OfPayment	IPE	MOP	1	A 0.5 byte value, occupying bits 0-3 of the element. Bits 4-7 shall be set to 0.
AmountPaid	IPE	VALI	2	
TYP27PassFlags	IPE	BMP	1	A 0.5 byte value, occupying bits 0-3 of the element. Bits 4-7 shall be set to 0.
GeoValidity/AreaValidity	IPE	LOC4/ LOC3	13	The 4 most significant bits of this element shall be set to 0, with the data commencing from the 5 bit of the element. The least significant 4 bytes of this element shall be set to 0 when it contains AreaValidity
Event1	IPE	HEX	1	
Event2	IPE	HEX	1	
LastUseDTS	IPE	DTS	3	
PhotocardNumber	IPE	HEX	3	
TYP27ExpiryDate	IPE	HEX	1	
Seq#	IPE	HEX	1	Set to all 0's if this element is not present in the IPE

Table 3.55 IPE TYP 28, IPEFormatRevision = 1, – RecordFormatRevision = 3.

Name	Source	Format	Size	Comment
IssueDate	IPE	DATE	2	A 1.75 byte value, occupying bits 0-7 of the least significant byte, and bits 0-5 of the most significant byte. Bits 6-7 of the most significant byte shall be set to 0.
Sterling/Euro	IPE	BMP	1	A 0.125 byte value, occupying bit 0 of the byte. Bits 1-7 of the byte shall be set to 0.
PassbackTime	IPE	HEX	1	A 0.5 byte value, occupying bits 0-3 of the element. Bits 4-7 shall be set to 0.
AmountPaidMethod OfPayment	IPE	MOP	1	A 0.5 byte value, occupying bits 0-3 of the element. Bits 4-7 shall be set to 0.
AmountPaid	IPE	VALI	2	
TYP28PassFlags	IPE	BMP	1	A 0.5 byte value, occupying bits 0-3 of the element. Bits 4-7 shall be set to 0.
AreaValidity	IPE	LOC3	9	The 4 most significant bits of this element shall be set to 0, with the data commencing from the 5 bit of the element.
LastUseDTS	IPE	DTS	3	
ExpiryTick1	IPE	HEX	1	A 0.625 byte value, occupying bits 0-4 of the element. Bits 5-7 shall be set to 0.
ExpiryTick2	IPE	HEX	1	A 0.625 byte value, occupying bits 0-4 of the element. Bits 5-7 shall be set to 0.
ExpiryTick3	IPE	HEX	1	A 0.625 byte value, occupying bits 0-4 of the element. Bits 5-7 shall be set to 0.
ExpiryTick4	IPE	HEX	1	A 0.625 byte value, occupying bits 0-4 of the element. Bits 5-7 shall be set to 0.
ExpiryTick5	IPE	HEX	1	A 0.625 byte value, occupying bits 0-4 of the element. Bits 5-7 shall be set to 0.
ExpiryTick6	IPE	HEX	1	A 0.625 byte value, occupying bits 0-4 of the element. Bits 5-7 shall be set to 0.
NDoIE	IPE	BMP	1	A 0.125 byte value, occupying bit 0 of the byte. Bits 1-7 of the byte shall be set to 0.
NDoEE	IPE	BMP	1	A 0.125 byte value, occupying bit 0 of the byte. Bits 1-7 of the byte shall be set to 0.
Seq#	IPE	HEX	1	Set to all 0's if this element is not present in the IPE

Table 3.57 IPE TYP 29, IPEFormatRevision = 1, – RecordFormatRevision = 3.

Name	Source	Format	Size	Comment
IssueDate	IPE	DATE	2	A 1.75 byte value, occupying bits 0-7 of the least significant byte, and bits 0-5 of the most significant byte. Bits 6-7 of the most significant byte shall be set to 0.
Sterling/Euro	IPE	FLAG	1	A 0.125 byte value, occupying bit 0 of the byte. Bits 1-7 of the byte shall be set to 0.
Ticket/Coupon	IPE	FLAG	1	A 0.125 byte value, occupying bit 0 of the byte. Bits 1-7 of the byte shall be set to 0.
ScalingFactor	IPE	HEX	1	A 0.5 byte value, occupying bits 0-3 of the element. Bits 4-7 shall be set to 0.
AmountPaidMethod OfPayment	IPE	MOP	1	A 0.5 byte value, occupying bits 0-3 of the element. Bits 4-7 shall be set to 0.
AmountPaid	IPE	VALI	2	
TYP29PassFlags	IPE	BMP	1	A 0.5 byte value, occupying bits 0-3 of the element. Bits 4-7 shall be set to 0.
AreaValidity	IPE	LOC3	9	The 4 most significant bits of this element shall be set to 0, with the data commencing from the 5 bit of the element.
TYP29UsageRecCode	IPE	HEX	1	A 0.375 byte value, occupying bits 0-2 of the element. Bits 3-7 shall be set to 0.
QtyRemaining	IPE	HEX	2	A 1.625 byte value, occupying bits 0-12 of the element. Bits 13-15 shall be set to 0.
UsageRecord	IPE	HEX	4	
ScaledQtyBackup	IPE	BMP	4	
Seq#	IPE	HEX	1	Set to all 0's if this element is not present in the IPE

Table 3.58 IPE TYP 29, IPEFormatRevision = 2, – RecordFormatRevision = 3.

Name	Source	Format	Size	Comment
IssueDate	IPE	DATE	2	A 1.75 byte value, occupying bits 0-7 of the least significant byte, and bits 0-5 of the most significant byte. Bits 6-7 of the most significant byte shall be set to 0.
Sterling/Euro	IPE	BMP	1	A 0.125 byte value, occupying bit 0 of the byte. Bits 1-7 of the byte shall be set to 0.
PassbackTime	IPE	HEX	1	A 0.5 byte value, occupying bits 0-3 of the element. Bits 4-7 shall be set to 0.
MaxDailyJourneys	IPE	HEX	1	A 0.5 byte value, occupying bits 0-3 of the element. Bits 4-7 shall be set to 0.
MaxTransfers	IPE	HEX	1	A 0.5 byte value, occupying bits 0-3 of the element. Bits 4-7 shall be set to 0.
ScalingFactor	IPE	HEX	1	A 0.5 byte value, occupying bits 0-3 of the element. Bits 4-7 shall be set to 0.
TYP29PassFlags	IPE	BMP	1	A 0.5 byte value, occupying bits 0-3 of the element. Bits 4-7 shall be set to 0.
AreaValidity	IPE	LOC3	9	The 4 most significant bits of this element shall be set to 0, with the data commencing from the 5 bit of the element.
JnyComDTS	IPE	DTS	3	
QtyRemaining	IPE	HEX	1	
TransferCounter	IPE	HEX	1	A 0.5 byte value, occupying bits 0-3 of the element. Bits 4-7 shall be set to 0.
DailyJnyCounter	IPE	HEX	1	A 0.5 byte value, occupying bits 0-3 of the element. Bits 4-7 shall be set to 0.
LastUseDTS	IPE	DTS	3	
ScaledQtyBackup	IPE	BMP	4	
Seq#	IPE	HEX	1	Set to all 0's if this element is not present in the IPE

4.5.27 Journey Record, code 0209 – RecordFormatRevision = 3.

From version 2.1.4 of the specification, format revision 3 is deprecated. Equipment operating to version 2.1.4 of the specification shall support format revision 3 but no new implementations should implement functionality dependent on the use of format revision 3. Format revision 3 will be removed from version 2.1.5 of the specification.

This record shall be used to record all Journeys made using an ITSO Customer Media. For the avoidance of doubt this includes (but is not necessarily limited to):

- Journeys when a Ticket IPE is used;
- Journeys when a Transient Ticket record is created (in addition to a 0210 record);
 - o Where more than one Transient Ticket is created in the course of a Journey it is only mandatory to create one 0209 message for that Journey;
- Closed System entry and exit transactions;
 - o The 0209 message shall be sent for either the entry or the exit transaction so as to record the Journey, and optionally may be sent for both transactions.
- Usage of STR or CTA to purchase a ticket;
- Usage of a voucher or open system toll IPE; and
- Free concessionary Journeys authorised solely by the ITSO ID/Entitlement IPEs, TYPs 14 and 16.

This record may also be used to record other types of Transaction, at the discretion of the relevant Licensed Member.

The 0209 message should refer to the primary authorisation for that journey, which could be:

- a Ticket IPE used to authorise a Journey; or
- a concessionary entitlement used to authorise a free or discounted Journey; or
- a STR or CTA IPE, BUT ONLY if STR (or CTA) was used to pay for the Journey AND an IPE was neither used to authorise the Journey nor was an IPE created.

Data from this primary IPE shall be used in the 0209 message where the source is indicated to be "IPE".

Data from the most recently written IPE Value Group only shall be recorded in the appropriate elements of this transaction record. Where the primary IPE does not include a value group then the Transaction sequence number shall be set to 0. Only one set of elements shall be recorded in the record, even where more than one Value Group exists.

Implementation of this version of the 0209 message is optional in POSTs. POSTs may either use RecordFormatVersion = 2 or this version, and may be capable of creating both versions according to need.

Table 3.59 - Journey Record, code 0209 – RecordFormatRevision = 3:

Name	Source	Format	Size	Comment
StandardData			21	
AmountPaid	POST	VALI	4	Actual fare/price paid for journey (if any). Do not insert any value here if an amount value is entered in a simultaneous ticket creation or amendment record. Currency is defined by CurrencyCode.
NormalPrice	POST	VALI	4	Full fare/price for journey. Do not insert any value here if an amount value is entered in a simultaneous ticket creation or amendment record. Currency is defined by CurrencyCode.

Name	Source	Format	Size	Comment
CurrencyCode	POST	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
Location	POST	LOC1	Variable	Location at which the journey commenced or location at which the event recorded herein occurred
Destination	POST	LOC1	Variable	Destination or proposed destination where known
ConcessionaryAuthority	POST	HEX	2	<p>Identity of the concessionary authority within whose area the journey commenced, obtained from the POST configuration data where this information may be stored for this purpose. Where no concessionary authority ID data is stored in this data element then it shall be set to 0.</p> <p>This is a number that is unique to a given Travel Concession Authority. These numbers are allocated by the appropriate National Concessionary Travel Authority for the country in which the boarding point is located.</p> <p>This value might be an OID</p>
ProductRetailer	IPE	OID16	2	
TransactionSequenceNumber	IPE	TS#	2	<p>A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0. The current value of TS# after transaction completion, where TS# is stored in the IPE.</p> <p>Where the IPE does not include a value group then set this element to a value of 0.</p>

Name	Source	Format	Size	Comment
RemainingUses	IPE	HEX	1	<p>If a multi-use IPE (i.e. multi-ride, journey ticket or multi-use voucher) then record the remaining number of uses after the transaction.</p> <p>This data will be extracted from the TYP 22 NumberRemainingPasses, TYP 23 or TYP 26 CountRemainingRidesJourneys, TYP 24 CountRemainingJourneys, or TYP 25 CountUsesAvailable, or TYP 29 QtyRemaining, IPE element, depending on the IPE used for the transaction.</p> <p>If the IPE element is smaller than 1 byte, then it shall occupy the least significant bits of this element.</p> <p>If the IPE does not include this data, then set this element to a value of 0.</p> <p>If the value of the data element in the IPE is greater than or equal to 255, then set this element to 255, or if the IPE value is less than 255 then set this element to that value.</p>
ConcessionaryPassIssuerCostCentre	IPE	HEX	2	<p>A copy of the IPE data element of the same name.</p> <p>If the IPE does not include this data, then set this element to a value of 0.</p>

Name	Source	Format	Size	Comment
TransactionType	IPE POST	HEX	1	<p>If a TransactionType code has been recorded in either the transient ticket log or in the IPE value record, then that value shall be recorded here.</p> <p>Otherwise, where no TransactionType code has been stored in an IPE or a transient Ticket relevant to the Journey Record, use an appropriate code according to EN1545 EventTypeCode. As 8 bit codes can be stored here [whereas only 4 bit codes are permissible in IPEs] then if a more appropriate code, greater than 15, is available in the EN1545 EventTypeCode list; that EventTypeCode value may be used here.</p> <p>Further guidance may be found in ITSO DG0007.</p>
ServiceOperatorID	POST	UD	2	This could be an OID, or could be a user defined value, defined either by the Service Operator or by the owner of the Product used in the Transaction
ServiceNumber	POST	UD	10	An identifier for the route or service relevant to the Transaction. If there is no relevant identifier available set to a null value (0 or ASCII spaces).
TripNumberOrTrainNumber	POST	UD	10	An identifier for the bus trip number or train number relevant to the Transaction. If there is no relevant identifier available set to a null value (0 or ASCII spaces).
ReimbursementDataFlags	POST	BMP	1	Refer to Table 3.59a below
SupplementaryData	POST	Variable	Variable	One or more elements encoded according to asn.1 using basic encoding rules. Allowable data elements and associated tag values are defined in ITSO Developer Guide DG0009.
IPE_IterationNumber	IPE	INP#	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
IPE_ISAMID	IPE	ISAM ID	4	<p>Included for IPE instance identification.</p> <p>This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.</p>

Name	Source	Format	Size	Comment
IPE_SAMSequenceNumber	IPE	ISAMS#	3	Included for IPE instance identification This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
ITSOShellReferenceNumberEncrypted	Shell via ISAM	eISRN	16	

Table 3.59a – ReimbursementDataFlags Definition

Bit	Meaning
0	Concessionary Minimum Cost Contract if set to 1
1	Concessionary Minimum Subsidy Contract if set to 1
2	Direction (OUT or Clockwise, set to 0, IN or Anticlockwise, set to 1)
3	RFU
4	RFU
5	RFU
6	RFU
7	RFU

Note that the SupplementalInformation data element shall not also be set with reimbursement data when ReimbursementDataFlags are set.

4.5.28 Journey Record, code 0210 – RecordFormatRevision = 3

This version of the Journey record is used to record Transient Ticket records created according to TTRFormatRevision 2.

Table 3.60 - Journey Record, code 0210 – RecordFormatRevision = 3.

Name	Source	Format	Size	Comment
StandardData			21	
TTRLength	TTR	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
TTRBitMap1	TTR	BMP	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
TTRFormatRevision	TTR	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TTRBitMap2	TTR	BMP	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0. This element shall be used to determine which optional data elements are included in a Transaction Record instance. Refer to ITSO TS 1000-5 for the definition of TTRBitMap2 and optional elements.
TTRTransactionType	TTR	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
DateTimeStamp	TTR	DTS	3	
AmountPaidMethodOfPayment	TTR	MOP	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
AmountPaidCurrencyCode	TTR	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
AmountPaid	TTR	VALI	2	
CompanionTravelled	TTR	FLAG	1	A 0.125 byte value, occupying bit 0 of the byte. Bits 1-7 of the byte shall be set to 0.

Name	Source	Format	Size	Comment
ReturnTicket	TTR	FLAG	1	A 0.125 byte value, occupying bit 0 of the byte. Bits 1-7 of the byte shall be set to 0.
RFU	TTR	FLAG	1	A 0.125 byte value, occupying bit 0 of the byte. Bits 1-7 of the byte shall be set to 0.
NoFareCharged	TTR	BMP	1	A 0.125 byte value, occupying bit 0 of the byte. Bits 1-7 of the byte shall be set to 0.
AmountPaidVATSalesTax	TTR	VATM	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0.
DestinationTT	TTR	LOC2	7	
IPEPointer	TTR	HEX	1	A 0.625 byte value, occupying bits 0-4 of the element. Bits 5-7 shall be set to 0.
OriginLocation	TTR	LOC2	7	
RoutingCode	TTR	LOC2	7	
IIN	TTR	IIN	3	
UserDefinedSize	POST	HEX	1	The size of the UserDefined element in bytes
UserDefined	TTR	UD	Variable	
IPE_ISAMID	IPE	ISAM ID	4	<p>Included for IPE instance identification. See note below.</p> <p>This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.</p>

Name	Source	Format	Size	Comment
IPE_SAMSequenceNumber	IPE	ISAM S#	3	<p>Included for IPE instance identification. See note below.</p> <p>This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.</p>
ITSOShellReferenceNumberEncrypted	Shell via ISAM	eISRN	16	

Note: When a ticket has been recorded in the Transient Ticket Record then the IPE_ISAMID and IPE_SAMSequenceNumber elements shall contain a pointer to any entitlement IPE used in the Tickets creation. Where this does not apply then the element may be used to record the identity of any IPE relevant to the transaction, or set to 0 indicating that no IPE is pointed to.

4.5.29 TransactionReversal, code 0300 – RecordFormatRevision = 3

Data from the most recently written IPE Value Group only shall be recorded in the appropriate elements of this transaction record. Only one set of elements shall be recorded in the record, even where more than one Value Group exists. This message type shall only be used with Ticket Product IPE types.

Table 3.61 - TransactionReversal, code 0300 – RecordFormatRevision = 3.

Name	Source	Format	Size	Comment
StandardData			21	
AmountPaid	POST	VALI	4	Actual fare/price refund amount for ticket (if any), currency is defined by CurrencyCode
NormalPrice	POST	VALI	4	Full fare/price for ticket (if any), currency is defined by CurrencyCode
CurrencyCode	POST	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
StoredUsesRefunded	POST	HEX	1	Number of stored uses of the ticket refunded (if any) Refer to table 61a.
ProductRetailer	IPE	OID16	2	
StoredUses	IPE	HEX	1	Number of stored uses after transaction (if any) Refer to table 61a.
TicketNumber	IPE or POST	UD	6	Operators Ticket number, when available, otherwise set to 0. Shall be obtained from the IPE if IPE is of TYP 24, otherwise obtained from the POST. An IPE element shorter than 6 bytes shall occupy the least significant bytes of this element.
TransactionSequenceNumber	IPE	TS#	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0. The current value of TS# after transaction completion, where TS# is stored in the IPE.
IPE_IterationNumber	IPE	INP#	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
IPE_ISAMID	IPE	ISAM ID	4	Included for IPE instance identification. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
IPE_SAMSequenceNumber	IPE	ISAMS#	3	Included for IPE instance identification This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
ITSOShellReferenceNumberEncrypted	Shell via ISAM	eISRN	16	

4.5.30 Full / Partial refund for a purchased ticket (IPE), code 0301 – RecordFormatRevision = 3

This message type shall only be used with Ticket Product IPE types. This message is sent in addition to a 0007 message when an IPE is deleted and a refund given.

Table 3.62 - Full / Partial refund for a purchased ticket (IPE), code 0301 – RecordFormatRevision = 3.

Name	Source	Format	Size	Comment
StandardData			21	
ProductRetailer	IPE	OID16	2	
Amount	POST	VALI	4	Amount refunded
AmountCurrencyCode	POST	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TicketNumber	IPE or POST	UD	6	Operators Ticket number, when available, otherwise set to 0. Shall be obtained from the IPE if IPE is of TYP 24, otherwise obtained from the POST. An IPE element shorter than 6 bytes shall occupy the least significant bytes of this element.
ReasonCode	POST	UD	1	
VATSalesTax	POST	VATM	2	
IPE_IterationNumber	IPE	INP#	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
IPE_ISAMID	IPE	ISAM ID	4	Included for IPE instance identification. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
IPE_SAMSequenceNumber	IPE	ISAMS#	3	Included for IPE instance identification This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
ITSOShellReferenceNumberEncrypted	Shell via ISAM	eISRN	16	

4.5.31 Deposit Received or Refunded, code 0302, 0303 - RecordFormatRevision = 3

This record relates to a deposit received or refunded for an ITSO Shell or an IPE.

When the deposit is for an ITSO Shell, the IPE-ID element of the standard data shall identify the Shell in accordance with the alternate rules for identifying a Shell as defined in table 8 such that IIN and OID are those of the Shell owner, TYP shall be set to 32, and PTYP shall be set to indicate the shell version. It is also permissible,

but not preferred, that in these circumstances the IIN and OID are those of the Shell owner, TYP shall be set to 16, and PTYP shall be set to the PTYP of the TYP 16 IPE wherein the deposit amount is stored. Note that in these circumstances this method of identification of the Shell is not optional as it is with other message types. Note also that in these circumstances the IPE_IterationNumber, ProductRetailer, IPE_ISAMID and IPE_SAMSequenceNumber may be set to zero (0).

When the deposit is for an IPE, the standard data shall identify the IPE.

Note that in this version of the specification, only an 0303 message is defined at this RecordFormatRevision 3.

Note that the entire value of a deposit may be refunded, or a partial refund given, according to rules defined by the Product Owner. If the IPE remains valid after the transaction, then the remaining value of any deposit retained by the Product Owner shall be recorded in the IPE, or the DepositAmount set to zero if the entire deposit is refunded, by deleting and rewriting the IPE.

Table 3.63a - Deposit Refunded, code 0303 – RecordFormatRevision = 3.

Name	Source	Format	Size	Comment
StandardData			21	
DepositType	POST	HEX	1	A value of zero (0) shall not be used. A value of one (1) indicates that the deposit applies to a Shell. A value of two (2) indicates that the deposit applies to an IPE. Values between three (3) and 255 inclusive are RFU.
ProductRetailer	POST	OID16	2	This data element shall contain a value identifying the Licensed Member at whose POST the deposit was refunded
DepositAmount	POST	VALI	2	DepositAmount shall be encoded according to DepositCurrencyCode This data element shall contain the value of the refunded deposit
DepositCurrencyCode	POST	VALC	1	A 0.5 byte value, occupying bits 0 to 4, bits 5 to 7 shall be set to 0. This data element shall contain a value relevant to the refunded deposit
DepositMethodOfPayment	POST	MOP	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0. This data element shall contain a value relevant to the refunded deposit
DepositVATSalesTax	POST	VAT	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0. This data element shall contain a value relevant to the value of the refunded

Name	Source	Format	Size	Comment
				deposit
IPE_IterationNumber	IPE	INP#	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
IPE_ISAMID	IPE	ISAM ID	4	Included for IPE instance identification. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
IPE_SAMSequenceNumber	IPE	ISAM S#	3	Included for IPE instance identification This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
ITSOShellReferenceNumberEncrypted	Shell via ISAM	eISRN	16	

4.5.33 Supplementary Data Message, code 0310 – RecordFormatRevision = 3.

Implementation of the 0310 message is optional in POSTs.

Supplementary data messages are always subservient to another class 1 message, known as the primary message. This primary message is identified by including the message code, signing ISAM ID and signing ISAM sequence number appropriate to the primary message within the supplementary data message.

Table 3.65 – Supplementary Data Message, code 0310 – RecordFormatRevision = 3.

Name	Source	Format	Size	Comment
PrimaryMessageMessageCode	POST	HEX	2	Used to match this message to the relevant primary message
PrimaryMessageSealerID	POST	HEX	7	Used to match this message to the relevant primary message (the value is found in the DF trailer)
PrimaryMessageISAMS#	POST	HEX	3	Used to match this message to the relevant primary message (the value is found in the DF trailer)
DataArea	POST	Variable	Variable	One or more elements encoded according to asn.1 using basic encoding rules. Allowable data elements and associated tag values are defined in ITSO Developer Guide DG0009.
ITSOShellReferenceNumberEncrypted	Shell via ISAM	eISRN	16	

Table 3.66 – Supplementary Data Message, 0310 message DataArea structure

Elements shall be included in the DataArea in the order shown in this table.

All characters are an ASCII representation of hexadecimal values. Note that when ASCII characters are stored, then the hexadecimal value of each ASCII code shall be stored. For example, the string “A123” shall be stored as 41 31 32 33 (HEX).

Tag name	Tag value	Length	Description
ITSO root	0xE0	Calculated – the length of the DataArea, excluding the length of the ITSO root tag and this length element	
ITSO data group	<i>Tag value</i>	Calculated – the length of the elements in this group, excluding the length of this tag and this length element	There may be none or one ITSO defined data groups in the message

ITSO defined-sub group (s)	<i>Tag value</i>	Calculated – the length of the elements in this group, excluding the length of this tag and this length element	There may be no, one or more than one ITSO defined sub-groups in the message
ITSO defined element (s)	<i>Tag value</i>	Calculated	There may be one or more than one ITSO defined elements in the sub-group
Private data group (s)	<i>Tag value</i>	Calculated – the length of the elements in this group, excluding the length of this tag and this length element	There may be no, one or more than one user defined sub-groups in the message
ITSO OID	<i>Tag value</i>	Calculated	The OID of the entity responsible for the message should be recorded here
User defined element (s)	<i>Tag value</i>	Calculated	User defined data, identified by the OID of the originator included in the user defined sub-group data

4.5.34 Hotlist match event, code 0311 - RecordFormatRevision = 3.

All new implementations shall use this new version, or a subsequent version, and the old version (RecordFormatRevision 2) should only be used for the purposes of backwards compatibility.

Table 3.67 - Hotlist match event, code 0311 – RecordFormatRevision = 3.

Name	Source	Format	Size	Comment
StandardData			21	
HotListIdentifier	List	HEX	2	
HotType	List	HEX	1	
HotListOriginator	List	OID16	2	
OriginalHotListIdentifier	List	HEX	2	
0311ActionTaken	POST	HEX	1	
0311CustomerMediaDisposition	POST	HEX	1	
IPEID	IPE	IPEIDM	7	Identifies any IPE blocked. If record relates to a Shell set this element to 0.
CreatingISAMID	IPE	HEX	4	Identifies any IPE blocked. If record relates to a Shell set this element to 0. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
CreatingISAMSeq#	IPE	HEX	3	Identifies any IPE blocked. If record relates to a Shell set this element to 0. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
ITSOShellReferenceNumberEncrypted	Shell via ISAM	eISRN	16	

Table 3.69 - 0311Customer Media Disposition Code List – RecordFormatRevision = 3.

Code	Meaning
0	Unknown
1	Customer Media left with Customer Media holder
2	Customer Media left with Customer Media holder, and name and address recorded
3	Customer Media confiscated
4-255	RFU

An 0400 exception message is not required when a Hotlist match event occurs, and an error prevented the Transaction from being successfully conducted.

The 0311ActionTaken data element shall be populated with a success or exception code as defined in table 73.

Note that in circumstances where sending of an 0410 message is required, then that message shall be sent in addition to this 0311 message, and code 142 used in the 0311ActionTaken data element. In these circumstances, for the purposes of linking the two messages in the back office:

- the 0311 message shall be sent first; and
- the 0410 message shall be sent immediately after, such that it's message sequence number is next in the sequence after the 0311 message sequence number.

4.5.35 Actionlist match event, code 0312.

This message shall be used for reporting all Actionlist match events.

When the Actionlist item is related to an IPE with a Value Group, then the data from the most recently written IPE Value Group only shall be recorded in the appropriate elements of this Transaction record. Only one set of elements shall be recorded in the record, even where more than one Value Group exists.

When the Actionlist item is related to a Shell, then the IPEID element in the StandardData shall be formatted in accordance with Part 6, Table 8.

All new implementations shall use this new version, or a subsequent version, and the old version (RecordFormatRevision 2) should only be used for the purposes of backwards compatibility.

Table 3.70 - Actionlist match event, code 0312 – RecordFormatRevision = 3.

Name	Source	Format	Size	Comment
StandardData			21	
ActionListIdentifier	List	HEX	2	
ActionListOriginator	List	OID16	2	
OriginalActionListIdentifier	List	HEX	2	
0312ActionTaken	POST	HEX	1	
ActionSequenceNumber	IPE	HEX	1	If ActionSequenceNumber was not used, set this value to 0.
IPEID	IPE	IPEIDM	7	Identifies IPE acted upon. If record relates to a Shell set this element to 0.
CreatingISAMID	IPE	HEX	4	Identifies IPE acted upon. If record relates to a Shell set this element to 0. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
CreatingISAMSeq#	IPE	HEX	3	Identifies IPE acted upon. If record relates to a Shell set this element to 0. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
IPE_IterationNumber	IPE	INP#	1	A 0.5 byte value, occupying bits 0 to 3. Bits 4 to 7 shall be set to zero (0).

Name	Source	Format	Size	Comment
ITSOShellReferenceNumberEncrypted	Shell via ISAM	eISRN	16	

Note that in all cases where the action was unsuccessful, it will be assumed that the copy of action sequence number held in the IPE (in the CM) has not been changed. The value of action sequence number returned in the match event record shall be identical to that contained in the list item.

An 0400 exception message is not required when an Actionlist match event occurs, and an error prevented the action being successfully conducted.

The 0312ActionTaken data element shall be populated with a success or exception code as defined in table 73.

In circumstances where sending of an 0410 message is required, then that message shall be sent in addition to this 0312 message, and code 142 used in the 0312ActionTaken data element. In these circumstances, for the purposes of linking the two in the back office:

- the 0312 message shall be sent first; and
- the 0410 message shall be sent immediately after, such that it's message sequence number is next in the sequence after the 0312 message sequence number.

4.6 Transaction Record Data Content – RecordFormatRevision = 4

The data elements shall comprise standard data always returned for each Customer Media transaction, together with transaction type specific data.

Note that in this section:

- clause numbers are chosen to match those in clause 4.4; and
- table numbers are chosen to match those in clause 4.4 and prefixed with the RecordFormatRevision number and a stop;
- therefore neither clause nor table numbers are contiguous.

4.6.1 Standard Elements – RecordFormatRevision = 4.

The following elements shall always be returned as the leading data elements (StandardData) in every transaction record for all types of transaction.

Table 4.8 - Standard Elements – RecordFormatRevision = 4

Name	Source	Format	Size	Comment
RecordFormatRevision	POST	HEX code	1	Defines format revision of this message.
TransactionDateTime	POST	DTS	3	Date & time at which the transaction took place, which shall be identical to any DTS recorded in the shell, IPEs or Transient Ticket store
TransactionInformation	POST	UD	1	User defined element.
StaffID	POST	HEX	4	Identifies the operators member of staff (if any) conducting the transaction. If none then 0 shall be recorded in this element.
SupplementalInformation	POST	HEX	1	Additional information code
FormatVersionCode	Shell	FVC	1	Format version information from the Shell Environment Data Group.

Name	Source	Format	Size	Comment
KeyStrategyVersion	Shell	KSC	1	Format version information from the Shell Environment Data Group
KeyVersion	Shell	KVC	1	Format version information from the Shell Environment Data Group
IPEID	Shell, Dir	IPEIDM	7	<p>Identifies the IPE involved in the transaction, taken from the ITSO Shell's directory entry. It is a concatenation of IIN, OID, TYP and PTYP in that order.</p> <p>When a message is used to record an event relating to an ITSO Shell, then this IPEID element shall either:</p> <ul style="list-style-type: none"> be made up of the Shell's IIN, the Shell owner's OID, IPE TYP - which shall be set to a value of 32 (decimal), and IPE PTYP which shall be set to either a Shell owner defined value to indicate the Shell version, or to a value of 0, or be set to 0 to indicate that the message relates to a Shell. (This option shall not be used in new or amended implementations. Note that this option will be removed in a future version of the ITSO Specification.) <p>If no IPE or Shell ID information is available, then the contents of this Data Element shall be set to 0.</p> <p>If the IPE cannot be read and IINL = 1, set the IIN portion of this element to zero (0).</p>
Shell_IterationNumber	Shell	INS#	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.

Table4.9- Supplemental information element codes – RecordFormatRevision = 4

Code	Meaning
00	No supplemental information stored
01	Test/Maintenance/training transaction
02	Incomplete transaction
03	Commercial In (required for 0209 Journey Records only)
04	Commercial Out (required for 0209 Journey Records only)
05	Minimum Subsidy In (required for 0209 Journey Records only)
06	Minimum Subsidy Out (required for 0209 Journey Records only)
07	Minimum Cost In (required for 0209 Journey Records only)
08	Minimum Cost Out (required for 0209 Journey Records only)
09 – 255	RFU

4.6.26 Create or Amend Ticket IPE, code 0207, 0208 – RecordFormatRevision = 4

This records the creation or amendment of a ticket IPE. If a simultaneous journey is made a journey record shall also be transmitted.

The actual Data is dependant upon the type of IPE being created or amended. For efficiency, the record is split into common data (common to all IPEs), IPE TYP specific data and a footer.

Data from the most recently written IPE Value Group only shall be recorded in the appropriate elements of this transaction record. Only one set of elements shall be recorded in the record, even where more than one Value Group exists.

It is not mandatory to send a 0208 message in parallel with a specific change message (e.g. a 0303 deposit refund message), if the 0208 message does not convey any additional information (i.e. the contents of the additional data items sent in the 0208 message are unchanged), and if both messages would have been sent to the same destination(s).

However, optionally 0208 messages can be sent under these conditions.

4.6.26.1 Record Structure.

The record shall always be structured in the following manner, in the sequence shown.

Table 4.35 - Create or Amend Ticket IPE, code 0207, 0208, Record Structure – RecordFormatRevision = 4.

Data Group	Comment
Common data	Always required
Optional data	Present according to IPE type involved, as defined by TYP and the IPEBitMap. These optional data groups shall be included in the record in the same order as they occur in this specification.
Footer	Always required

4.6.26.2 Common Data.

Table 4.36 - Common Data – RecordFormatRevision = 4.

Name	Source	Format	Size	Comment
StandardData			21	
IPE-TYP	POST	TYP	1	This element shall indicate the TYP of IPE to which a message instance refers, and also indicates the type of optional data which may be found within a message instance.
NormalPrice	POST	VALI	4	Full price for ticket (if any), currency is defined by CurrencyCode
CurrencyCode	POST	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
MachineNumber	POST	HEX	4	Serial number of the terminal conducting the transaction

Name	Source	Format	Size	Comment
TransactionFlags	POST	HEX	1	
MessageBitMap	DIR & POST	BMP	1	<p>Bit 0 shall be a copy of the Value Group Present flag from the directory. This indicates whether a value group is present in an IPE instance, and therefore also present in a message instance.</p> <p>Bit 1 shall be set to one (1) when the ID_IPEID, ID_ISAMID and ID_ISAMSeq# data elements are included in the record.</p> <p>Bits 2 – 7 are RFU.</p>
ITSOShellReferenceNumberNonEncrypted	Shell	uISRN	16	<p>Not encrypted.</p> <p>In a code 0208 message, this element shall be set to zero (0)</p>
IPEExpiryDate	Shell	DATE	2	A copy of the relevant EXP directory data element relevant to this IPE.
IPELength	IPE	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
IPEBitMap	IPE	BMP	1	<p>A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.</p> <p>For TYP 27, 28, 29 IPEs the contents of this element shall have no effect on the contents of a Transaction Record instance, i.e. all elements shall be included in the Transaction Record.</p> <p>For TYP 22-26 IPEs this element shall be used to determine which optional data elements are included in a Transaction Record instance, i.e. optional elements are only included in the Transaction Record if they are also included in the IPE instance.</p> <p>Refer to ITSO TS 1000-5 for the definition of IPEBitMap and optional elements.</p>
IPEFormatRevision	IPE	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
RemoveDate	IPE	RDATE	1	

Name	Source	Format	Size	Comment
ProductRetailer	IPE	OID16	2	
ID_IPEID	IPE	IPEIDM	7	<p>Identifies an identity IPE. Include this element only if MessageBitMap bit 1 is set to one (1).</p> <p>IPE instance identity details for an ID IPE contained n the same ITSO Shell as the IPE that is the subject of this message. May be sent for the purpose of enabling identification of the card holder in circumstances where the ISRN is not known due to its being encrypted.</p>
ID_ISAMID	IPE	HEX	4	<p>Identifies an identity IPE.</p> <p>This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.</p> <p>Include this element only if MessageBitMap bit 1 is set to one (1)</p>
ID_ISAMSeq#	IPE	HEX	3	<p>Identifies an identity IPE.</p> <p>This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.</p> <p>Include this element only if MessageBitMap bit 1 is set to one (1)</p>

Table 4.37 - TransactionFlags Definition – RecordFormatRevision = 4

A combination of flags shall be set where appropriate so to do. Note that an attended POST is one where the POST is operated by a member of staff, whilst an unattended POST is one where the POST is essentially operated by the card holder.

Flag ID	Flag name	Flag purpose
0	AutoTransaction	Set to one (1) when the relevant transaction took place automatically due to auto-renew, otherwise set to zero (0). Note that the use of flags 0, 1 and 2 is mutually exclusive. Only one of flags 0, 1 and 2 shall be set for every transaction.
1	ActionListTransaction	Set to one (1) when the relevant transaction took place due to an Actionlist item, otherwise set to zero (0). Note that the use of flags 0, 1 and 2 is mutually exclusive. Only one of flags 0, 1 and 2 shall be set for every transaction.
2	StoredTicketActivation	Set to one (1) when the relevant transaction took place due to Stored Ticket activation, otherwise set to zero (0). Note that the use of flags 0, 1 and 2 is mutually exclusive. Only one of flags 0, 1 and 2 shall be set for every transaction.
3	ManualPostTransaction	Set to one (1) when the relevant transaction took place at an attended POST, e.g. a ticket office machine or bus ticket machine, otherwise set to zero (0). Note that the use of flags 3, 4 and 5 is mutually exclusive. Only one of flags 3, 4 and 5 shall be set for every transaction.
4	UnattendedPostTransaction	Set to one (1) when the relevant transaction took place at an unattended POST, e.g. a ticket vending machine, otherwise set to zero (0). Note that the use of flags 3, 4 and 5 is mutually exclusive. Only one of flags 3, 4 and 5 shall be set for every transaction.
5	RemotePostTransaction	Set to one (1) when the relevant transaction took place with a remote POST, e.g. CM holder not present, otherwise set to zero (0). Note that the use of flags 3, 4 and 5 is mutually exclusive. Only one of flags 3, 4 and 5 shall be set for every transaction.
6	RFU	
7	RFU	

4.6.26.3 Footer.

Table 4.38 - Footer – RecordFormatRevision = 4

Name	Source	Format	Size	Comment
IIN	IPE	IIN	3	IIN shall always be included in the Transaction Record, where necessary its contents shall be deduced from the ITSO Shell Owner Identity.
KID	IPE	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
IPE_IterationNumber	IPE	INP#	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
IPE_ISAMID	IPE	ISAM ID	4	Included for IPE instance identification. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
IPE_SAMSequenceNumber	IPE	ISAM S#	3	Included for IPE instance identification This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
ITSOShellReferenceNumberEncrypted	Shell via ISAM	eISRN	16	

4.6.26.4 IPE TYP 22.

Table 4.39 - IPE TYP 22 – RecordFormatRevision = 4

Name	Source	Format	Size	Comment
ProductRetailer	IPE	OID	2	
TYP22Flags	IPE	BMP	2	
PassBackTime	IPE	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
IssueDate	IPE	DATE	2	A 1.75 byte value, occupying bits 0-7 of the least significant byte, and bits 0-5 of the most significant byte. Bits 6-7 of the most significant byte shall be set to 0.
ExpiryTime	IPE	TIME	2	A 1.375 byte value, occupying bits 0-7 of the least significant byte, and bits 0-2 of the most significant byte. Bits 3-7 of the most significant byte shall be set to 0.
AutoRenewQuantity1	IPE	BIN	1	
Class	IPE	UD	1	
ValidityCode	IPE	UD	1	A 0.625 byte value, occupying bits 0-4 of the element. Bits 5-7 shall be set to 0.

Name	Source	Format	Size	Comment
ValidityStartDTS	IPE	DTS	3	
PromotionCode	IPE	HEX	1	
ValidOnDaytypeCode	IPE	DOW	1	
PartySizeAdult	IPE	HEX	1	
PartySizeChild	IPE	HEX	1	
PartySizeConcession	IPE	HEX	1	
AmountPaidCurrencyCode	IPE	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
AmountPaid	IPE	VALI	4	
AmountPaidMethodOfPayment	IPE	MOP	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
AmountPaidVATSalesTax	IPE	VATM	2	
ConcessionaryPassIssuerCostCentre	IPE	HEX	2	
ValidAtOrFrom	IPE	LOC1	Variable, maximum 17	
ValidTo	IPE	LOC1	Variable, maximum 17	
PassDuration	IPE	HEX	1	
RouteCode	IPE	UD	5	

Flag definitions are as defined for the relevant IPEs.

Table 4.40 - IPE TYP 22, Value Group – RecordFormatRevision = 4

Name	Source	Format	Size	Comment
VGLength	IPE VG	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
VGBitMap	IPE VG	BMP	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
VGFormatRevision	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TransactionType	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TransactionSequenceNumber	IPE VG	TS#	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0.
DateTimeStamp	IPE VG	DTS	3	
ISAMIDModifier	IPE VG	HEX	4	
ActionSequenceNumber	IPE VG	HEX	1	
NumberRemainingPasses	IPE VG	BIN	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
TYP22ValueFlags	IPE VG	BMP	1	A 0.25 byte value, occupying bits 0 to 1, bits 2 to 7 shall be set to 0.
ExpiryDateSP	IPE VG	DATE	2	A 1.75 byte value, occupying bits 0-7 of the least significant byte, and bits 0-5 of the most significant byte. Bits 6-7 of the most significant byte shall be set to 0.
ExpiryDateCurrent	IPE VG	DATE	2	

4.6.26.5 IPE TYP 23.

Table 4.41 - IPE TYP 23 – RecordFormatRevision = 4

Name	Source	Format	Size	Comment
ProductRetailer	IPE	OID	2	
TYP23Flags	IPE	BMP	1	
PassBackTime	IPE	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
IssueDate	IPE	DATE	2	A 1.75 byte value, occupying bits 0-7 of the least significant byte, and bits 0-5 of the most significant byte. Bits 6-7 of the most significant byte shall be set to 0.
ValidityCode	IPE	UD	1	A 0.625 byte value, occupying bits 0-4 of the element. Bits 5-7 shall be set to 0.
ExpiryTime	IPE	TIME	2	A 1.375 byte value, occupying bits 0-7 of the least significant byte, and bits 0-2 of the most significant byte. Bits 3-7 of the most significant byte shall be set to 0.
Class	IPE	UD	1	
PartySizeAdult	IPE	HEX	1	
PartySizeChild	IPE	HEX	1	
PartySizeConcession	IPE	HEX	1	
AmountPaidCurrencyCode	IPE	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
AmountPaid	IPE	VALI	4	
AmountPaidMethodOfPayment	IPE	MOP	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
AmountPaidVATSalesTax	IPE	VATM	2	
PhotocardNumber	IPE	UD	4	
PromotionCode	IPE	HEX	1	
ConcessionaryPassIssuerCostCentre	IPE	HEX	2	
TYP23Mode	IPE	BMP	1	

Name	Source	Format	Size	Comment
MaxTransfers	IPE	HEX	1	
TimeLimit	IPE	HEX	1	
ValueOfRideJourney	IPE	VALI	2	
ValueOfRideJourneyCurrencyCode	IPE	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
Origin1	IPE	LOC1	Variable, maximum 17	
Destination1	IPE	LOC1	Variable, maximum 17	
RouteCode	IPE	UD	5	

Flag definitions are as defined for the relevant IPEs.

Table 4.42 - IPE TYP 23 Value Group – RecordFormatRevision = 4

Name	Source	Format	Size	Comment
VGLength	IPE VG	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
VGBitMap	IPE VG	BMP	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
VGFormatRevision	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TransactionType	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TransactionSequenceNumber	IPE VG	TS#	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0.
DateTimeStamp	IPE VG	DTS	3	
ISAMIDModifier	IPE VG	HEX	4	
ActionSequenceNumber	IPE VG	HEX	1	
CountRemainingRidesJourneys	IPE VG	HEX	1	
CountTransfers	IPE VG	HEX	1	
TYP23ValueFlags	IPE VG	BMP	1	

4.6.26.6 IPE TYP 24

In this version of the specification, transmission of 0207 and 0208 messages relating to TYP 24 IPEs is not permitted at Record Format Revision 4.

4.6.26.7 IPE TYP 25

Table 4.49 - IPE TYP 25 – RecordFormatRevision = 4

Name	Source	Format	Size	Comment
ProductRetailer	IPE	OID16	2	
TYP25Flags	IPE	BMP	1	
PassBackTime	IPE	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
IssueDate	IPE	DATE	2	A 1.75 byte value, occupying bits 0-7 of the least significant byte, and bits 0-5 of the most significant byte. Bits 6-7 of the most significant byte shall be set to 0.
ValidityStartDTS	IPE	DTS	3	
ExpiryTime	IPE	TIME	2	A 1.375 byte value, occupying bits 0-7 of the least significant byte, and bits 0-2 of the most significant byte. Bits 3-7 of the most significant byte shall be set to 0.
ServiceID	IPE	UD	1	
MaxValue25	IPE	VALI	2	
MaxValueCurrencyCode	IPE	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
AmountPaidCurrencyCode	IPE	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
AmountPaid	IPE	VALI	2	
AmountPaidMethodOfPayment	IPE	MOP	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
AmountPaidVATSalesTax	IPE	VATM	2	
UserDefined	IPE	UD	1	
AutoRenewQuantity2	IPE	HEX	1	

Table 4.50 - IPE TYP 25 Value Group – RecordFormatRevision = 4

Name	Source	Format	Size	Comment
VGLength	IPE VG	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
VGBitMap	IPE VG	BMP	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
VGFormatRevision	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TransactionType	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TransactionSequenceNumber	IPE VG	TS#	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0.
DateTimeStamp	IPE VG	DTS	3	
ISAMIDModifier	IPE VG	HEX	4	
ActionSequenceNumber	IPE VG	HEX	1	
CountUsesAvailable	IPE VG	HEX	1	
TYP25ValueFlags	IPE VG	BMP	1	

4.6.26.8 IPE TYP 26

Table 4.51 - IPE TYP 26 – RecordFormatRevision = 4

Name	Source	Format	Size	Comment
ProductRetailer	IPE	OID16	2	
PassBackTime	IPE	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
TYP26Flags	IPE	BMP	1	
TYP26Class	IPE	UD	1	
IssueDate	IPE	DATE	2	A 1.75 byte value, occupying bits 0-7 of the least significant byte, and bits 0-5 of the most significant byte. Bits 6-7 of the most significant byte shall be set to 0.
ValidityStartDTS	IPE	DTS	3	
UserDefined	IPE	UD	7	
AutoRenewQuantity3	IPE	HEX	1	

Table 4.52 - IPE TYP 26 Value Group – RecordFormatRevision = 4

Name	Source	Format	Size	Comment
VGLength	IPE VG	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
VGBitMap	IPE VG	BMP	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
VGFormatRevision	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TransactionType	IPE VG	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TransactionSequenceNumber	IPE VG	TS#	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0.
DateTimeStamp	IPE VG	DTS	3	
ISAMIDModifier	IPE VG	HEX	4	
ActionSequenceNumber	IPE VG	HEX	1	
CountRemainingRidesJourneys	IPE VG	HEX	1	
TYP26ValueFlags	IPE VG	BMP	1	

4.6.26.9 IPE TYP 27, 28, 29

Table 4.53 IPE TYP 27, IPEFormatRevision = 1, – RecordFormatRevision = 4.

Name	Source	Format	Size	Comment
IssueDate	IPE	DATE	2	A 1.75 byte value, occupying bits 0-7 of the least significant byte, and bits 0-5 of the most significant byte. Bits 6-7 of the most significant byte shall be set to 0.
Sterling/Euro	IPE	BMP	1	A 0.125 byte value, occupying bit 0 of the byte. Bits 1-7 of the byte shall be set to 0.
Child	IPE	BMP	1	A 0.125 byte value, occupying bit 0 of the byte. Bits 1-7 of the byte shall be set to 0.
PassbackTime	IPE	HEX	1	A 0.5 byte value, occupying bits 0-3 of the element. Bits 4-7 shall be set to 0.
AmountPaidMethod OfPayment	IPE	MOP	1	A 0.5 byte value, occupying bits 0-3 of the element. Bits 4-7 shall be set to 0.
AmountPaid	IPE	VALI	2	
TYP27PassFlags	IPE	BMP	1	A 0.5 byte value, occupying bits 0-3 of the element. Bits 4-7 shall be set to 0.
GeoValidity/AreaValidity	IPE	LOC4/ LOC3	13	The 4 most significant bits of this element shall be set to 0, with the data commencing from the 5 bit of the element. The least significant 4 bytes of this element shall be set to 0 when it contains AreaValidity
Event1	IPE	HEX	1	
Event2	IPE	HEX	1	
LastUseDTS	IPE	DTS	3	
PhotocardNumber	IPE	HEX	3	
TYP27ExpiryDate	IPE	HEX	1	
Seq#	IPE	HEX	1	Set to all 0's if this element is not present in the IPE

Table 4.55 IPE TYP 28, IPEFormatRevision = 1, – RecordFormatRevision = 4.

Name	Source	Format	Size	Comment
IssueDate	IPE	DATE	2	A 1.75 byte value, occupying bits 0-7 of the least significant byte, and bits 0-5 of the most significant byte. Bits 6-7 of the most significant byte shall be set to 0.
Sterling/Euro	IPE	BMP	1	A 0.125 byte value, occupying bit 0 of the byte. Bits 1-7 of the byte shall be set to 0.
PassbackTime	IPE	HEX	1	A 0.5 byte value, occupying bits 0-3 of the element. Bits 4-7 shall be set to 0.
AmountPaidMethod OfPayment	IPE	MOP	1	A 0.5 byte value, occupying bits 0-3 of the element. Bits 4-7 shall be set to 0.
AmountPaid	IPE	VALI	2	
TYP28PassFlags	IPE	BMP	1	A 0.5 byte value, occupying bits 0-3 of the element. Bits 4-7 shall be set to 0.
AreaValidity	IPE	LOC3	9	The 4 most significant bits of this element shall be set to 0, with the data commencing from the 5 bit of the element.
LastUseDTS	IPE	DTS	3	
ExpiryTick1	IPE	HEX	1	A 0.625 byte value, occupying bits 0-4 of the element. Bits 5-7 shall be set to 0.
ExpiryTick2	IPE	HEX	1	A 0.625 byte value, occupying bits 0-4 of the element. Bits 5-7 shall be set to 0.
ExpiryTick3	IPE	HEX	1	A 0.625 byte value, occupying bits 0-4 of the element. Bits 5-7 shall be set to 0.
ExpiryTick4	IPE	HEX	1	A 0.625 byte value, occupying bits 0-4 of the element. Bits 5-7 shall be set to 0.
ExpiryTick5	IPE	HEX	1	A 0.625 byte value, occupying bits 0-4 of the element. Bits 5-7 shall be set to 0.
ExpiryTick6	IPE	HEX	1	A 0.625 byte value, occupying bits 0-4 of the element. Bits 5-7 shall be set to 0.
NDoIE	IPE	BMP	1	A 0.125 byte value, occupying bit 0 of the byte. Bits 1-7 of the byte shall be set to 0.
NDoEE	IPE	BMP	1	A 0.125 byte value, occupying bit 0 of the byte. Bits 1-7 of the byte shall be set to 0.
Seq#	IPE	HEX	1	Set to all 0's if this element is not present in the IPE

Table 4.57 IPE TYP 29, IPEFormatRevision = 1, – RecordFormatRevision = 4.

Name	Source	Format	Size	Comment
IssueDate	IPE	DATE	2	A 1.75 byte value, occupying bits 0-7 of the least significant byte, and bits 0-5 of the most significant byte. Bits 6-7 of the most significant byte shall be set to 0.
Sterling/Euro	IPE	FLAG	1	A 0.125 byte value, occupying bit 0 of the byte. Bits 1-7 of the byte shall be set to 0.
Ticket/Coupon	IPE	FLAG	1	A 0.125 byte value, occupying bit 0 of the byte. Bits 1-7 of the byte shall be set to 0.
ScalingFactor	IPE	HEX	1	A 0.5 byte value, occupying bits 0-3 of the element. Bits 4-7 shall be set to 0.
AmountPaidMethod OfPayment	IPE	MOP	1	A 0.5 byte value, occupying bits 0-3 of the element. Bits 4-7 shall be set to 0.
AmountPaid	IPE	VALI	2	
TYP29PassFlags	IPE	BMP	1	A 0.5 byte value, occupying bits 0-3 of the element. Bits 4-7 shall be set to 0.
AreaValidity	IPE	LOC3	9	The 4 most significant bits of this element shall be set to 0., with the data commencing from the 5 bit of the element.
TYP29UsageRecCode	IPE	HEX	1	A 0.375 byte value, occupying bits 0-2 of the element. Bits 3-7 shall be set to 0.
QtyRemaining	IPE	HEX	2	A 1.625 byte value, occupying bits 0-12 of the element. Bits 13-15 shall be set to 0.
UsageRecord	IPE	HEX	4	
ScaledQtyBackup	IPE	BMP	4	
Seq#	IPE	HEX	1	Set to all 0's if this element is not present in the IPE

Table 4.58 IPE TYP 29, IPEFormatRevision = 2, – RecordFormatRevision = 4.

Name	Source	Format	Size	Comment
IssueDate	IPE	DATE	2	A 1.75 byte value, occupying bits 0-7 of the least significant byte, and bits 0-5 of the most significant byte. Bits 6-7 of the most significant byte shall be set to 0.
Sterling/Euro	IPE	BMP	1	A 0.125 byte value, occupying bit 0 of the byte. Bits 1-7 of the byte shall be set to 0.
PassbackTime	IPE	HEX	1	A 0.5 byte value, occupying bits 0-3 of the element. Bits 4-7 shall be set to 0.
MaxDailyJourneys	IPE	HEX	1	A 0.5 byte value, occupying bits 0-3 of the element. Bits 4-7 shall be set to 0.
MaxTransfers	IPE	HEX	1	A 0.5 byte value, occupying bits 0-3 of the element. Bits 4-7 shall be set to 0.
ScalingFactor	IPE	HEX	1	A 0.5 byte value, occupying bits 0-3 of the element. Bits 4-7 shall be set to 0.
TYP29PassFlags	IPE	BMP	1	A 0.5 byte value, occupying bits 0-3 of the element. Bits 4-7 shall be set to 0.
AreaValidity	IPE	LOC3	9	The 4 most significant bits of this element shall be set to 0, with the data commencing from the 5 bit of the element.
JnyComDTS	IPE	DTS	3	
QtyRemaining	IPE	HEX	1	
TransferCounter	IPE	HEX	1	A 0.5 byte value, occupying bits 0-3 of the element. Bits 4-7 shall be set to 0.
DailyJnyCounter	IPE	HEX	1	A 0.5 byte value, occupying bits 0-3 of the element. Bits 4-7 shall be set to 0.
LastUseDTS	IPE	DTS	3	
ScaledQtyBackup	IPE	BMP	4	
Seq#	IPE	HEX	1	Set to all 0's if this element is not present in the IPE

4.6.27 Journey Record, code 0209 – RecordFormatRevision = 4.

Implementation of this version of the 0209 message is mandatory in POSTs that will operate in closed system environments where product selection is performed on exit from the system. Implementation is optional in POSTs that are not designed to run in such an environment. POSTs not requiring this functionality may either use RecordFormatVersion = 2, RecordFormatVersion = 3 or this version, and may be capable of creating all versions according to need.

This record shall be used to record all Journeys made using an ITSO Customer Media. For the avoidance of doubt this includes (but is not necessarily limited to):

- Journeys when a Ticket IPE is used;
- Journeys when a Transient Ticket record is created (in addition to a 0210 record);
 - o Where more than one Transient Ticket is created in the course of a Journey it is only mandatory to create one 0209 message for that Journey;
- Closed System entry and exit transactions;
 - o The 0209 message shall be sent for either the entry or the exit transaction so as to record the Journey, and optionally may be sent for both transactions.
- Usage of STR or CTA to purchase a ticket;
- Usage of a voucher or open system toll IPE; and
- Free concessionary Journeys authorised solely by the ITSO ID/Entitlement IPEs, TYPs 14 and 16.

This record may also be used to record other types of Transaction, at the discretion of the relevant Licensed Member.

Where the POST is operating in a check in/check out closed system environment then no 0209 record is required on entry into the system if the actual product is selected on exit from the system. In the case where no 0209 record is created a corresponding 0210 record shall still be created to record the creation of a transient ticket for entry.

The 0209 message should refer to the primary authorisation for that journey, which could be:

- a Ticket IPE used to authorise a Journey; or
- a concessionary entitlement used to authorise a free or discounted Journey; or
- a STR or CTA IPE, BUT ONLY if STR (or CTA) was used to pay for the Journey AND an IPE was neither used to authorise the Journey nor was an IPE created.

Data from this primary IPE shall be used in the 0209 message where the source is indicated to be "IPE". Data from the most recently written IPE Value Group only shall be recorded in the appropriate elements of this transaction record. Where the primary IPE does not include a value group then the Transaction sequence number shall be set to 0. Only one set of elements shall be recorded in the record, even where more than one Value Group exists.

Table 4.59 - Journey Record, code 0209 – RecordFormatRevision = 4:

Name	Source	Format	Size	Comment
StandardData			21	
AmountPaid	POST	VALI	4	Actual fare/price paid for journey (if any). Do not insert any value here if an amount value is entered in a simultaneous ticket creation or amendment record. Currency is defined by CurrencyCode.
NormalPrice	POST	VALI	4	Full fare/price for journey. Do not insert any value here if an amount value is entered in a simultaneous ticket creation or amendment record. Currency is defined by CurrencyCode.
CurrencyCode	POST	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
Location	POST	LOC1	Variable	Location at which the journey commenced or location at which the event recorded herein occurred

Destination	POST	LOC1	Variable	Destination or proposed destination where known
ConcessionaryAuthority	POST	HEX	2	Identity of the concessionary authority within whose area the journey commenced, obtained from the POST configuration data where this information may be stored for this purpose. Where no concessionary authority ID data is stored in this data element then it shall be set to 0. This is a number that is unique to a given Travel Concession Authority. These numbers are allocated by the appropriate National Concessionary Travel Authority for the country in which the boarding point is located. This value might be an OID
ProductRetailer	IPE	OID16	2	
TransactionSequenceNumber	IPE	TS#	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0. The current value of TS# after transaction completion, where TS# is stored in the IPE. Where the IPE does not include a value group then set this element to a value of 0.
RemainingUses	IPE	HEX	1	If a multi-use IPE (i.e. multi-ride, journey ticket or multi-use voucher) then record the remaining number of uses after the transaction. This data will be extracted from the TYP 22 NumberRemainingPasses, TYP 23 or TYP 26 CountRemainingRidesJourneys, TYP 24 CountRemainingJourneys, or TYP 25 CountUsesAvailable, or TYP 29 QtyRemaining, IPE element, depending on the IPE used for the transaction. If the IPE element is smaller than 1 byte, then it shall occupy the least significant bits of this element. If the IPE does not include this data, then set this element to a value of 0. If the value of the data element in the IPE is greater than or equal to 255, then set this element to 255, or if the IPE value is less than 255 then set this element to that value.
ConcessionaryPassIssuerCost Centre	IPE	HEX	2	A copy of the IPE data element of the same name. If the IPE does not include this data, then set this element to a value of 0.
TransactionType	IPE POST	HEX	1	If a TransactionType code has been recorded in either the transient ticket log or in the IPE value record, then that value shall be recorded here. Otherwise, where no TransactionTypecode has been stored in an IPE or a transient Ticket relevant to the Journey Record, use an appropriate code according to EN1545 EventTypeCode. As 8 bit codes can be stored here [whereas only 4 bit codes are permissible in IPEs] then if a more appropriate code, greater than 15, is available in the EN1545 EventTypeCode list; that EventTypeCode value may be used here. Further guidance may be found in ITSO DG0007.
ServiceOperatorID	POST	UD	2	This could be an OID, or could be a user defined value, defined either by the Service Operator or by the owner of the Product used in the Transaction
ServiceNumber	POST	UD	10	An identifier for the route or service relevant to the Transaction. If there is no relevant identifier available set to a null value (0 or ASCII spaces).
TripNumberOrTrainNumber	POST	UD	10	An identifier for the bus trip number or train number relevant to the Transaction. If there is no relevant identifier available set to a null value (0 or ASCII spaces).

ReimbursementDataFlags	POST	BMP	1	Refer to Table 4.59a below
SupplementaryData	POST	Variable	Variable	One or more elements encoded according to asn.1 using basic encoding rules. Allowable data elements and associated tag values are defined in ITSO Developer Guide DG0009.
ENTRY_TT_IPE_ISAMID	TTR	ISAMID	4	Identifier of the Transient Ticket (IPE) instance of the original TTR created for check in to a closed system. This value shall be taken from the TTR TT_Entry group instance If no TTR exists or the corresponding elements are not present in a TTR to then this should be set to 0.
ENTRY_TT_IPE_SAMSequenceNumber	TTR	IPE ISAMS #	3	Identifier of the Transient Ticket (IPE) instance of the original TTR created for check in to a closed system. This value shall be taken from the TTR TT_Entry group instance. If no TTR exists or the corresponding elements are not present in a TTR to then this should be set to 0.
ENTRY_DateTimeStamp	TTR	DTS	3	The DateTime where the customer media checked in to the closed system. This value shall be taken from the TTR TT_Entry group instance. If no TTR exists or the corresponding elements are not present in a TTR to then this should be set to 0.
ENTRY_OID	TTR	OID16	2	The service operator OID where the customer media entered (check in) to the closed system. This value shall be taken from the TTR TT_Entry_OID group instance. If no TTR exists or the corresponding elements are not present in a TTR to then this should be set to 0.
ENTRY_IIN_Index	TTR	IINIndex	1	The IIN Index for the service operator where the customer media entered (checked in) to the closed system
IPE_IterationNumber	IPE	INP#	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
IPE_ISAMID	IPE	ISAM ID	4	Included for IPE instance identification. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
IPE_SAMSequenceNumber	IPE	ISAMS #	3	Included for IPE instance identification This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
ITSOShellReferenceNumberEncrypted	Shell via ISAM	eISRN	16	

Table 4.59a – ReimbursementDataFlags Definition

Bit	Meaning
0	Concessionary Minimum Cost Contract if set to 1

1	Concessionary Minimum Subsidy Contract if set to 1
2	Direction (OUT or Clockwise, set to 0, IN or Anticlockwise, set to 1)
3	RFU
4	RFU
5	RFU
6	RFU
7	RFU

Note that the SupplementalInformation data element shall not also be set with reimbursement data when ReimbursementDataFlags are set.

4.6.28 Journey Record, code 0210 – RecordFormatRevision = 4

This version of the Journey record is used to record Transient Ticket records created according to TTFormatRevision 3.

Table 4.60 - Journey Record, code 0210 – RecordFormatRevision = 4.

Name	Source	Format	Size	Comment
StandardData			21	
TTLenght	TTR	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
TTBitMap1	TTR	BMP	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
TTFormatRevision	TTR	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TTBitMap2	TTR	BMP	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0. This element shall be used to determine which optional data elements are included in a Transaction Record instance. Refer to ITSO TS 1000-5 for the definition of TTBitMap2 and optional elements.
TTTransactionType	TTR	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
DateTimeStamp	TTR	DTS	3	
AmountPaidMethodOfPayment	TTR	MOP	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
AmountPaidCurrencyCode	TTR	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
AmountPaid	TTR	VALI	2	

CompanionTravelled	TTR	FLAG	1	A 0.125 byte value, occupying bit 0 of the byte. Bits 1-7 of the byte shall be set to 0.
ReturnTicket	TTR	FLAG	1	A 0.125 byte value, occupying bit 0 of the byte. Bits 1-7 of the byte shall be set to 0.
RFU	TTR	FLAG	1	A 0.125 byte value, occupying bit 0 of the byte. Bits 1-7 of the byte shall be set to 0.
NoFareCharged	TTR	BMP	1	A 0.125 byte value, occupying bit 0 of the byte. Bits 1-7 of the byte shall be set to 0.
AmountPaidVATSalesTax	TTR	VATM	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0.
DestinationTT	TTR	LOC2	7	
IPEPointer	TTR	HEX	1	A 0.625 byte value, occupying bits 0-4 of the element. Bits 5-7 shall be set to 0.
OriginLocation	TTR	LOC2	7	
RoutingCode	TTR	LOC2	7	
IIN	TTR	IIN	3	
IPEID1	TTR	HEX	1	A 0.625 byte value, occupying bits 0-4 of the element. Bits 5-7 shall be set to 0.
IPEID2	TTR	HEX	1	A 0.625 byte value, occupying bits 0-4 of the element. Bits 5-7 shall be set to 0.
IPEID3	TTR	HEX	1	A 0.625 byte value, occupying bits 0-4 of the element. Bits 5-7 shall be set to 0.
IPEID4	TTR	HEX	1	A 0.625 byte value, occupying bits 0-4 of the element. Bits 5-7 shall be set to 0.
CIPEFlags	TTR	HEX	1	A 0.5 byte value, occupying bits 0-3 of the element. Bits 4-7 shall be set to 0.
UserDefinedSize	POST	HEX	1	The size of the UserDefined element in bytes
UserDefined	TTR	UD	Variable	
IPE_ISAMID	IPE	ISAM ID	4	Included for IPE instance identification. See note below. This value shall be taken from the IPE data group instance information used for travel, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
IPE_SAMSequenceNumber	IPE	ISAM S#	3	Included for IPE instance identification. See note below. This value shall be taken from the IPE data group instance information used for travel, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
ITSOShellReferenceNumberEncrypted	Shell via ISAM	eISRN	16	

4.7 Transaction Record Data Content – RecordFormatRevision = 5

The data elements shall comprise standard data always returned for each Customer Media transaction, together with transaction type specific data.

Note that in this section:

- clause numbers are chosen to match those in clause 4.4; and
- table numbers are chosen to match those in clause 4.4 and prefixed with the RecordFormatRevision number and a stop;
- therefore neither clause nor table numbers are contiguous.

4.7.1 Standard Elements – RecordFormatRevision = 5.

The following elements shall always be returned as the leading data elements (StandardData) in every transaction record for all types of transaction.

Table 5.8 - Standard Elements – RecordFormatRevision = 5

Name	Source	Format	Size	Comment
RecordFormatRevision	POST	HEX code	1	Defines format revision of this message. For messages formatted according to this version of the specification this value shall be set to 5 (five).
TransactionDateTime	POST	DTS	3	Date & time at which the transaction took place, which shall be identical to any DTS recorded in the shell, IPEs or Transient Ticket store
TransactionInformation	POST	UD	1	User defined element.
StaffID	POST	HEX	4	Identifies the operators member of staff (if any) conducting the transaction. If none then zero (0) shall be recorded in this element.
SupplementalInformation	POST	HEX	1	Additional information code
FormatVersionCode	Shell	FVC	1	Format version information from the Shell Environment Data Group.
KeyStrategyVersion	Shell	KSC	1	Format version information from the Shell Environment Data Group
KeyVersion	Shell	KVC	1	Format version information from the Shell Environment Data Group

Name	Source	Format	Size	Comment
IPEID	Shell, Dir	IPEIDM	7	<p>Identifies the IPE involved in the transaction, taken from the ITSO Shell's directory entry. It is a concatenation of IIN, OID, TYP and PTYP in that order.</p> <p>When a message is used to record an event relating to an ITSO Shell, then this IPEID element shall either:</p> <p style="padding-left: 40px;">be made up of the Shell's IIN, the Shell owner's OID, IPE TYP - which shall be set to a value of 32 (decimal), and IPE PTYP which shall be set to either a Shell owner defined value to indicate the Shell version, or to a value of zero,</p> <p style="padding-left: 40px;">or</p> <p style="padding-left: 40px;">be set to zero to indicate that the message relates to a Shell. (This option shall not be used in new or amended implementations. Note that this option will be removed in a future version of the ITSO Specification.)</p> <p>If no IPE or Shell ID information is available, then the contents of this Data Element shall be set to zero (0).</p> <p>If the IPE cannot be read and IINL = 1, set the IIN portion of this element to zero (0).</p>
Shell_IterationNumber	Shell	INS#	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.

Table 5.9- Supplemental information element codes – RecordFormatRevision = 5

Code	Meaning
00	No supplemental information stored
01	Test/Maintenance/training transaction
02	Incomplete transaction
03	Commercial In (required for 0209 Journey Records only)
04	Commercial Out (required for 0209 Journey Records only)
05	Minimum Subsidy In (required for 0209 Journey Records only)
06	Minimum Subsidy Out (required for 0209 Journey Records only)
07	Minimum Cost In (required for 0209 Journey Records only)
08	Minimum Cost Out (required for 0209 Journey Records only)
09 – 255	RFU

4.7.26 Create or Amend Ticket IPE, code 0207, 0208 – RecordFormatRevision = 5

This records the creation or amendment of a ticket IPE. If a simultaneous journey is made a journey record shall also be transmitted.

The actual Data is dependent upon the type of IPE being created or amended. For efficiency, the record is split into common data (common to all IPEs), IPE TYP specific data and a footer.

Note that for this version of the Specification, only data relating to a TYP 24 IPE may be transmitted using RecordFormatRevision 5 of these messages.

Data from the most recently written IPE Value Group only shall be recorded in the appropriate elements of this transaction record. Only one set of elements shall be recorded in the record, even where more than one Value Group exists.

It is not mandatory to send a 0208 message in parallel with a specific change message (e.g. a 0303 deposit refund message), if the 0208 message does not convey any additional information (i.e. the contents of the additional data items sent in the 0208 message are unchanged), and if both messages would have been sent to the same destination(s).

However, optionally 0208 messages can be sent under these conditions.

4.7.26.1 Record Structure.

The record shall always be structured in the following manner, in the sequence shown.

Table 5.35 - Create or Amend Ticket IPE, code 0207, 0208, Record Structure – RecordFormatRevision = 5.

Data Group	Comment
Common data	Always required
Optional data	Present according to IPE type involved, as defined by TYP and the IPEBitMap. These optional data groups shall be included in the record in the same order as they occur in this specification.
Footer	Always required

4.7.26.2 Common Data.

Table 5.36 - Common Data – RecordFormatRevision = 5.

Name	Source	Format	Size	Comment
StandardData			21	
IPE-TYP	POST	TYP	1	This element shall indicate the TYP of IPE to which a message instance refers, and also indicates the type of optional data which may be found within a message instance.
NormalPrice	POST	VALI	4	Full price for ticket (if any), currency is defined by CurrencyCode
CurrencyCode	POST	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.

Name	Source	Format	Size	Comment
MachineNumber	POST	HEX	4	Serial number of the terminal conducting the transaction
TransactionFlags	POST	HEX	1	
MessageBitMap	DIR & POST	BMP	1	<p>Bit 0 shall be a copy of the Value Group Present flag from the directory. This indicates whether a value group is present in an IPE instance, and therefore also present in a message instance.</p> <p>Bit 1 shall be set to one (1) when the ID_IPEID, ID_ISAMID and ID_ISASeq# data elements are included in the record.</p> <p>Bits 2 – 7 are RFU.</p>
ITSOShellReferenceNumberNonEncrypted	Shell	uISRN	16	<p>Not encrypted.</p> <p>In a code 0208 message, this element shall be set to zero (0)</p>
IPEExpiryDate	Shell	DATE	2	A copy of the relevant EXP directory data element relevant to this IPE.
IPELength	IPE	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
IPEBitMap	IPE	BMP	1	<p>A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.</p> <p>For TYP 27, 28, 29 IPEs the contents of this element shall have no effect on the contents of a Transaction Record instance, i.e. all elements shall be included in the Transaction Record.</p> <p>For TYP 22-26 IPEs this element shall be used to determine which optional data elements are included in a Transaction Record instance, i.e. optional elements are only included in the Transaction Record if they are also included in the IPE instance.</p> <p>Refer to ITSO TS 1000-5 for the definition of IPEBitMap and optional elements.</p>
IPEFormatRevision	IPE	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.

Name	Source	Format	Size	Comment
RemoveDate	IPE	RDATE	1	
ProductRetailer	IPE	OID16	2	
ID_IPEID	IPE	IPEIDM	7	<p>Identifies an identity IPE. Include this element only if MessageBitMap bit 1 is set to one (1).</p> <p>IPE instance identity details for an ID IPE contained n the same ITSO Shell as the IPE that is the subject of this message. May be sent for the purpose of enabling identification of the card holder in circumstances where the ISRN is not known due to its being encrypted.</p>
ID_ISAMID	IPE	HEX	4	<p>Identifies an identity IPE.</p> <p>This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.</p> <p>Include this element only if MessageBitMap bit 1 is set to one (1)</p>
ID_ISAMSeq#	IPE	HEX	3	<p>Identifies an identity IPE.</p> <p>This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.</p> <p>Include this element only if MessageBitMap bit 1 is set to one (1)</p>

Table 5.37 - TransactionFlags Definition – RecordFormatRevision = 5

A combination of flags shall be set where appropriate so to do. Note that an attended POST is one where the POST is operated by a member of staff, whilst an unattended POST is one where the POST is essentially operated by the card holder.

Flag ID	Flag name	Flag purpose
0	AutoTransaction	Set to one (1) when the relevant transaction took place automatically due to auto-renew, otherwise set to zero (0). Note that the use of flags 0, 1 and 2 is mutually exclusive. Only one of flags 0, 1 and 2 shall be set for every transaction.
1	ActionListTransaction	Set to one (1) when the relevant transaction took place due to an Actionlist item, otherwise set to zero (0). Note that the use of flags 0, 1 and 2 is mutually exclusive. Only one of flags 0, 1 and 2 shall be set for every transaction.
2	StoredTicketActivation	Set to one (1) when the relevant transaction took place due to Stored Ticket activation, otherwise set to zero (0). Note that the use of flags 0, 1 and 2 is mutually exclusive. Only one of flags 0, 1 and 2 shall be set for every transaction.
3	ManualPostTransaction	Set to one (1) when the relevant transaction took place at an attended POST, e.g. a ticket office machine or bus ticket machine, otherwise set to zero (0). Note that the use of flags 3, 4 and 5 is mutually exclusive. Only one of flags 3, 4 and 5 shall be set for every transaction.
4	UnattendedPostTransaction	Set to one (1) when the relevant transaction took place at an unattended POST, e.g. a ticket vending machine, otherwise set to zero (0). Note that the use of flags 3, 4 and 5 is mutually exclusive. Only one of flags 3, 4 and 5 shall be set for every transaction.
5	RemotePostTransaction	Set to one (1) when the relevant transaction took place with a remote POST, e.g. CM holder not present, otherwise set to zero (0). Note that the use of flags 3, 4 and 5 is mutually exclusive. Only one of flags 3, 4 and 5 shall be set for every transaction.
6	RFU	
7	RFU	

4.7.26.3 Footer.

Table 5.38 - Footer – RecordFormatRevision = 5

Name	Source	Format	Size	Comment
IIN	IPE	IIN	3	IIN shall always be included in the Transaction Record, where necessary its contents shall be deduced from the ITSO Shell Owner Identity.
KID	IPE	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
IPE_IterationNumber	IPE	INP#	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
IPE_ISAMID	IPE	ISAM ID	4	Included for IPE instance identification. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
IPE_SAMSequenceNumber	IPE	ISAM S#	3	Included for IPE instance identification This value shall be taken from the IPE data group instance information, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
ITSOShellReferenceNumberEncrypted	Shell via ISAM	eISRN	16	

4.7.26.6 IPE TYP 24

Table 5.43 - TYP 24 Core data segment (always included) – RecordFormatRevision = 5

Name	Source	Format	Size	Comment
ProductRetailer	IPE	OID16	2	
TYP24Flags	IPE	BMP	2	A 1.5 byte value, occupying bits 0 to 11, bits 12 to 15 shall be set to 0.
ProductTypeEncoding	IPE	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TicketNumber	IPE	UD	4	
NumberOfAssociatedIPEs	IPE	HEX	1	A 0.25 byte value, occupying bits 0 to 1, bits 2 to 7 shall be set to 0.
NumberOfDiscounts	IPE	HEX	1	A 0.25 byte value, occupying bits 0 to 1, bits 2 to 7 shall be set to 0.
NumberOfSupplements	IPE	HEX	1	A 0.25 byte value, occupying bits 0 to 1, bits 2 to 7 shall be set to 0.
NumberOfTransferTypes	IPE	HEX	1	A 0.25 byte value, occupying bits 0 to 1, bits 2 to 7 shall be set to 0.
NumberOfInterchanges	IPE	HEX	1	A 0.375 byte value, occupying bits 0 to 2, bits 3 to 7 shall be set to 0.
NumberOfRestrictionTimeBands	IPE	HEX	1	A 0.375 byte value, occupying bits 0 to 2, bits 3 to 7 shall be set to 0.
NumberOfVehicleSpecificRestrictions	IPE	HEX	1	A 0.375 byte value, occupying bits 0 to 2, bits 3 to 7 shall be set to 0.
NumberOfRoutingPoints	IPE	HEX	1	A 0.375 byte value, occupying bits 0 to 2, bits 3 to 7 shall be set to 0.
Class	IPE	HEX	1	A 0.375 byte value, occupying bits 0 to 2, bits 3 to 7 shall be set to 0.
AutoRenewTimeAfterExpiry	IPE	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
NumberOfJourneysSold	IPE	HEX	2	A 1.125 byte value, occupying bits 0 to 8, bits 9 to 15 shall be set to 0.
OutPortionPeriodOfValidity	IPE	HEX	2	A 1.125 byte value, occupying bits 0 to 8, bits 9 to 15 shall be set to 0.
RtnPortionPeriodOfValidity	IPE	HEX	2	A 1.125 byte value, occupying bits 0 to 8, bits 9 to 15 shall be set to 0.
OperatorSpecificity	IPE	UD	2	
FaresTypeOfTicket	IPE	UD	3	

Name	Source	Format	Size	Comment
PartySizeAdult	IPE	HEX	1	
PartySizeChild	IPE	HEX	1	
PartySizeConcession	IPE	HEX	1	
IdDocumentReference	IPE	UD	4	
Origin	IPE	LOC1	Variable Maximum 17	
Destination	IPE	LOC1	Variable Maximum 17	
AlternativeOrigin	IPE	LOC1	Variable Maximum 17	
AlternativeDestination	IPE	LOC1	Variable Maximum 17	
Route	IPE	UD	5	
OutPortionValidFrom	IPE	DTS	3	
RtnPortionValidFrom	IPE	DTS	3	
RestrictionCode	IPE	UD	2	
DaysTravelPermitted	IPE	DOW	1	
DaysRestrictionApplies	IPE	DOW	1	
AmountPaidCurrencyCode	IPE	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
AmountPaidMOP	IPE	MOP	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
AmountPaid	IPE	VALI	4	
VendorLoc	IPE	LOC1	Variable Maximum 17	

Table 5.44 - TYP 24 AssociatedIPE Segment (included n times only if the value (n) of NumberOfAssociatedIPEs is not equal to 0) – RecordFormatRevision = 5

Name	Source	Format	Size	Comment
IPEInstanceID	AssociatedIPE	HEX	1	

Table 5.45 - TYP 24 Discounts Segment (included n times only if the value (n) of NumberOfDiscounts is not equal to 0) – RecordFormatRevision = 5

Name	Source	Format	Size	Comment
DiscountCode	Discounts	UD	5	
DiscountAmount	Discounts	VALI	4	
DiscountPercentage	Discounts	HEX	2	A 1.25 byte value, occupying bits 0 to 9, bits 10 to 15 shall be set to 0.
DiscountCodeType	Discounts	UD	1	A 0.625 byte value, occupying bits 0 to 4, bits 5 to 7 shall be set to 0.
RFU	Discounts	RFU	1	

Table 5.46- TYP 24 Supplement Segment (included n times only if the value (n) of NumberOfSupplements is not equal to 0) – RecordFormatRevision = 5

Name	Source	Format	Size	Comment
AssociatedSupplementCode	Supplement	ASCII	3	

Table 5.47 - TYP 24 Interchange Segment (included n times only if the value (n) of NumberOfInterchanges is not equal to 0) – RecordFormatRevision = 5

Name	Source	Format	Size	Comment
OutOfLocationInterchangeExit	Interchange	LOC1	Variable Maximum 17	
OutOfLocationInterchangeEntry	Interchange	LOC1	Variable Maximum 17	
PermittedInterchangeTime	Interchange	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
RFU	Interchange	RFU	1	

Name	Source	Format	Size	Comment

Table 5.48 - TYP 24 Transfers Segment (included n times only if the value (n) of NumberOfTransferTypes is not equal to 0) – RecordFormatRevision = 5

Name	Source	Format	Size	Comment
TransferEntitlementType	Transfers	HEX	1	
NumberOfTransfers	Transfers	HEX	2	A 1.125 byte value, occupying bits 0 to 8, bits 9 to 15 shall be set to 0.
RFU	Transfers	RFU	2	
ExtendedValidityPeriod	Transfers	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.

Table 5.48a - TYP 24 Restriction1 Segment (included n times only if the value (n) of NumberOfRestrictionTimeBands is not equal to 0) – RecordFormatRevision = 5

Name	Source	Format	Size	Comment
OperatorApplicability	Restriction1	UD	2	
SpecificLocationApplicability	Restriction1	LOC1	Variable Maximum 17	
TimeBandOnOutOrReturn	Restriction1	BMP	1	A 0.25 byte value, occupying bits 0 to 1, bits 2 to 7 shall be set to 0.
TimeBandStart	Restriction1	TIME	2	A 1.375 byte value, occupying bits 0 to 10, bits 11 to 15 shall be set to 0.
TimeBandEnd	Restriction1	TIME	2	A 1.375 byte value, occupying bits 0 to 10, bits 11 to 15 shall be set to 0.
TimeBandOnArriveOrDepart	Restriction1	FLAG	1	A 0.125 byte value, occupying bits 0, bits 1 to 7 shall be set to 0.
TimeBandIncludeExcludeFlag	Restriction1	FLAG	1	A 0.125 byte value, occupying bits 0, bits 1 to 7 shall be set to 0.
RFU	Restriction1	RFU	1	

Table 5.48b - TYP 24 Restriction2 Segment (included n times only if the value (n) of NumberOfVehicleSpecificRestrictions is not equal to 0) – RecordFormatRevision = 5

Name	Source	Format	Size	Comment
SpecificVehicleDepartureLocation	Restriction2	LOC1	Variable Maximum 17	
SpecificServiceId	Restriction2	UD	6	
SpecificVehicleDepartureTime	Restriction2	TIME	2	A 1.375 byte value, occupying bits 0 to 10, bits 11 to 15 shall be set to 0.
RestrictionOrEasementFlag	Restriction2	FLAG	1	A 0.125 byte value, occupying bits 0, bits 1 to 7 shall be set to 0.

Table 5.48c - TYP 24 Route Segment (included n times only if the value (n) of NumberOfRoutingPoints is not equal to 0) – RecordFormatRevision = 5

Name	Source	Format	Size	Comment
RoutingLocation	Route	LOC1	Variable Maximum 17	
ViaNotVia	Route	UD	1	A 0.25 byte value, occupying bits 0 to 1, bits 2 to 7 shall be set to 0.
RFU	Route	RFU	1	

Table 5.48d - TYP 24 PaxDetail Segment (included only if bit 1 of IPEBitMap is set.) – RecordFormatRevision = 5

Name	Source	Format	Size	Comment
Name	PaxDetail	ASCII	20	
Gender	PaxDetail	BMP	1	A 0.25 byte value, occupying bits 0 to 1, bits 2 to 7 shall be set to 0.
RFU	PaxDetail	RFU	1	

Table 5.48e - TYP 24 Value Group – RecordFormatRevision = 5

Name	Source	Format	Size	Comment
VGLength	V	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
VGBitMap	V	BMP	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
VGFormatRevision	V	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TransactionType	V	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TransactionSequenceNumber	V	TS#	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0.
DateTimeStamp	V	DTS	3	
ISAMIDModifier	V	HEX	4	
ActionSequenceNumber	V	HEX	1	
JourneysRemaining	V	HEX	1	
TransfersRemaining	V	BMP	2	A 1.375 byte value, occupying bits 0 to 10, bits 11 to 15 shall be set to 0.
JourneyPartUsedFlag	V	FLAG	1	A 0.125 byte value, occupying bits 0, bits 1 to 7 shall be set to 0.
NumberOfReservations	V	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
RFU	V	RFU	2	

Table 5.48f - TYP24 Value Group Extension – RecordFormatRevision = 5

VGXLength	VX	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
VGXRef (Bit9; Bit8)	VX	BMP	1	A 0.25 byte value, occupying bits 0 to 1, bits 2 to 7 shall be set to 0. This element shall be included in the message only if MessageBitMap/0 = 1.
VGXRef (Bit7 – Bit0)	VX	HEX	1	This element shall be included in the message only if MessageBitMap/0 = 1.
DTSOfLastValidation	VX	DTS	3	
LocationOfLastValidation	VX	LOC1	Variable Maximum 17	
BookingReference	VX	ASCII	8	

Table 5.48g - TYP 24Value Group VO Segment (included n times only if the value (n) of NumberOfReservations is not equal to 0) – RecordFormatRevision = 5

Name	Source	Format	Size	Comment
LegDepartureDateTime	VXO	DTS	3	
LegServiceId	VXO	ASCII	6	
LegOrigin	VXO	LOC1	Variable Maximum 17	
LegDestination	VXO	LOC1	Variable Maximum 17	
Coach	VXO	ASCII	2	
SeatNumber	VXO	ASCII	3	
AccommodationAttribute	VXO	ASCII	4	
SeatDirection	VXO	BMP	1	A 0.25 byte value, occupying bits 0 to 1, bits 2 to 7 shall be set to 0.
BerthUpperLower	VXO	BMP	1	A 0.25 byte value, occupying bits 0 to 1, bits 2 to 7 shall be set to 0.
ReservationType	VXO	UD	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TogetherFlag	VXO	FLAG	1	A 0.125 byte value, occupying bits 0, bits 1 to 7 shall be set to 0.
RFU	VXO	RFU	1	

4.7.28 Journey Record, code 0210 – RecordFormatRevision = 5

This version of the Journey record is used to record Transient Ticket records created according to TTRFormatRevision 4.

Table 5.60 - Journey Record, code 0210 – RecordFormatRevision = 5.

Name	Source	Format	Size	Comment
StandardData			21	
TTRLength	TTR	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
TTRBitMap1	TTR	BMP	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
TTRFormatRevision	TTR	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
TTRBitMap2	TTR	BMP	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0. This element shall be used to determine which optional data elements are included in a Transaction Record instance. Refer to ITSO TS 1000-5 for the definition of TTRBitMap2 and optional elements.
TTRTransactionType	TTR	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
DateTimeStamp	TTR	DTS	3	
AmountPaidMethodOfPayment	TTR	MOP	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
AmountPaidCurrencyCode	TTR	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
AmountPaid	TTR	VALI	2	
CompanionTravelled	TTR	FLAG	1	A 0.125 byte value, occupying bit 0 of the byte. Bits 1-7 of the byte shall be set to 0.
ReturnTicket	TTR	FLAG	1	A 0.125 byte value, occupying bit 0 of the byte. Bits 1-7 of the byte shall be set to 0.
RFU	TTR	FLAG	1	A 0.125 byte value, occupying bit 0 of the byte. Bits 1-7 of the byte shall be set to 0.
NoFareCharged	TTR	BMP	1	A 0.125 byte value, occupying bit 0 of the byte. Bits 1-7 of the byte shall be set to 0.
AmountPaidVATSalesTax	TTR	VATM	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0.

DestinationTT	TTR	LOC2	7	
IPEPointer	TTR	HEX	1	A 0.625 byte value, occupying bits 0-4 of the element. Bits 5-7 shall be set to 0.
OriginLocation	TTR	LOC2	7	
RoutingCode	TTR	LOC2	7	
IIN	TTR	IIN	3	
CIPE1_ISAMID	IPE	ISAM ID	4	Identifies IPE instance of the first candidate IPE. This value shall be taken from the IPE data group instance.
CIPE1_SAMSequenceNumber	IPE	ISAM S#	3	Identifies IPE instance of the first candidate IPE. This value shall be taken from the IPE data group instance.
CIPE2_ISAMID	IPE	ISAM ID	4	Identifies IPE instance of the second candidate IPE. This value shall be taken from the IPE data group instance.
CIPE2_SAMSequenceNumber	IPE	ISAM S#	3	Identifies IPE instance of the second candidate IPE. This value shall be taken from the IPE data group instance.
CIPE3_ISAMID	IPE	ISAM ID	4	Identifies IPE instance of the third candidate IPE. This value shall be taken from the IPE data group instance.
CIPE3_SAMSequenceNumber	IPE	ISAM S#	3	Identifies IPE instance of the third candidate IPE. This value shall be taken from the IPE data group instance.
CIPE4_ISAMID	IPE	ISAM ID	4	Identifies IPE instance of the fourth candidate IPE. This value shall be taken from the IPE data group instance.
CIPE4_SAMSequenceNumber	IPE	ISAM S#	3	Identifies IPE instance of the fourth candidate IPE. This value shall be taken from the IPE data group instance.
CIPEFlags	TTR	HEX	1	A 0.5 byte value, occupying bits 0-3 of the element. Bits 4-7 shall be set to 0.
ENTRY_IPE_ISAMID	TTR	ISAM ID	4	Identifies the TTR (IPE) instance of the original TTR created for check in to a closed system. This value shall be taken from the (TTR)IPE data group instance.
ENTRY_IPE_SAMSequenceNumber	TTR	IPE ISAM S#	3	Identifies the TTR (IPE) instance of the original TTR created for check in to a closed system. This value shall be taken from the (TTR)IPE data group instance.
ENTRY_DateTimeStamp	TTR	DTS	3	The DateTime where the customer media checked in to the closed system. This value shall be taken from the (TTR) DateTimeStamp field.
ENTRY_OID	TTR	OID	2	The service operator OID where the customer media entered (checked in) to the closed system
ENTRY_IIN_Index	TTR	IINIndex	1	The IIN Index for the service operator where the customer media entered (checked in) to the closed system

UserDefinedSize	POST	HEX	1	The size of the UserDefined element in bytes
UserDefined	TTR	UD	Variable	
IPE_ISAMID	IPE	ISAM ID	4	Included for IPE instance identification. See note below. This value shall be taken from the IPE data group instance information used for travel, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
IPE_SAMSequenceNumber	IPE	ISAM S#	3	Included for IPE instance identification. See note below. This value shall be taken from the IPE data group instance information used for travel, and identifies the ISAM which was used to create the IPE. The IPE instance data from a value group shall not be used here.
ITSOShellReferenceNumberEncrypted	Shell via ISAM	eISRN	16	

5. HOPS – HOPS and HOPS – POST Data List Transmission Mechanism.

This clause defines:

- Message data content relating to messages between HOPS and POST
- Response message data content between POST and HOPS, where the response is not a record of a Customer Media transaction.
- Message data content sent between HOPS and HOPS.

5.1 Message Format.

Messages shall be formatted in accordance with ITSO TS 1000-9.

When messages are sent according to message codes 0C00 to 0CFF, then each item in a list shall be transmitted as a single Data Block as defined in ITSO TS 1000-9.

Messages sent according to message codes 0601 to 06FF support the transmission of multiple list items (of the same type) in a single Data Block as defined in ITSO TS 1000-9. Implementation of this type of message is optional in both HOPS and POST.

Messages sent according to message code 0600 allows multiple records of multiple types to be included within a single data block as defined in ITSO TS 1000-9. Implementation of this type of message is optional in both HOPS and POST.

5.2 Message Codes.

Table 78 - Data List Transmission, Message codes

Group	Transaction Type	HEX CODE single record per Data Block	HEX CODE multiple records per Data Block (i.e. using a hash)
POST Configuration	RFU	0C00	--
	Multiple records of multiple types	--	0600
	RFU	0C01	0601
	Hotlist	0C02	0602
	Actionlist	0C03	0603
	Data Correction record	0C04	0604
	RFU	0C05-0CFF	0605-06FF

Note that POST event match messages (codes 310-312) shall be sent by the POST to the HOPS in response to receipt and actioning of the matching POST configuration message.

Where the size of an Actionlist item would exceed the maximum size permitted for a normal message using the 0C03 message type, for example when an IPE_Fulfilment_Action or a TYP24_Reservation_Group is sent, then the 0603 message type which uses a hash shall be employed.

5.3 HOPS to POST Configuration message data.

5.3.1 Multi Record Transmission, multiple types (message code 0600)

A message according to the 0600 code can be utilised to send multiple list items records, of multiple types, within a single Data Block. Records according to message codes 0A01 to 0AFF and 0C01 to 0CFF can be included in a 0600 message. These messages also use the hash sealing method defined in ITSO 1000-9 to further improve the efficiency of transmitting large numbers of lists item records.

A multi record message shall always consist of the following data groups, in the order shown

- A header, which defines the message contents; and
- A number of item records, included in the same order as each type of item is identified in the header.

Table 78a - Multi Record (Multi Type) Header Definition

Name	Format	Size	Description
QtyHeaderItems	HEX	3	The number of HeaderItem records within this header.
HeaderItem	HEX	6	Defined in table 78b. As many HeaderItems may be included as necessary.

Table 78b - HeaderItem Definition

Name	Format	Size	Description
RecordType	HEX	2	A Message code in the range 0A00 to 0AFF or 0C00 to 0CFF
QtyRecords	HEX	2	The quantity of records of this type included in the list
Offset	HEX	2	The offset, in bytes, of the first byte in the first record. For the first HeaderItem in the header, this value shall be set to 0.

It is recommended that all records of a single type be grouped together in the message.

5.3.2 Multi Record Transmission (message codes 0601 to 06FF)

Messages according to codes 0601 to 06FF can be utilised to send multiple records (of the same type) within a single Data Block. These messages also uses the hash sealing method defined in ITSO 1000-9 to further improve the efficiency of transmitting large numbers of records.

A multi record message shall always consist of the following data groups, in the order shown

- A header; and
- A number of item records.

Table 78c - Multi Record (single type) Header Definition

Name	Format	Size	Description
Number of List Item Records	HEX	3	The number of list item records within this data block.

5.3.3 Hotlist and Actionlist item records

This data set shall be transmitted as a class 2 message, using the message codes defined in table 78, when the data will be stored in and processed by a POST.

Hotlist and Actionlist items are made up from a number of groups of data elements

A record shall always consist of the following data groups, in the order shown

- A header (either KeyType 0 or KeyType 1)
- A record version number record
- An optional record defining an IPE, used together with a KeyType 0 header, in circumstances where a search first looks for a shell instance, and second looks for an IPE instance contained within that shell.
- A Hotlist or Actionlist data group
- Optional Actionlist data elements and groups, which if more than one is included, shall be included in the same order as defined herein

The header shall contain a bit map element, which defines which data groups follow in the record

The initial 8 bytes of Hotlist and Actionlist records have special significance; they are intended to form the primary search string when searching the lists. Multiple formats for these 8 bytes are possible, identified by KeyType.

A further optional data group allows further identification of IPEs.

5.3.3.1 Hotlist and Actionlist Search Strings Version 0

Note that this version 0 is identical to that defined in v2.1.2 of this specification.

Note that this version (0), identified by the absence of the RecordVersionNumber data element in the message, is included only to enable Hotlist processing to function in the case where either the HOPS or the POST only support a previous version of this Specification (i.e. Version 2.1.2 or earlier). It should be noted that the absence of IPE_INP# from the data group defined in Table 82 may lead to operational problems with an un-blocking function. Where both HOPS and POST support version 2.1.3, or a later version of this specification, then version 1 or greater of the Hotlist and Actionlist messages shall be used.

Table 79 - KeyType Definitions – Version 0

KeyType	Interpretation
0	Item applies to a search for an ITSO shell.
1	List applies to a search for an IPE instance. This search shall only be used when the CMD does not support an identifiable shell
2-255	RFU

Table 80 - KeyType 0, Header Definition – Version 0

Note that data elements from KeyType to ISRN_CHD (the initial 8 bytes) shall be used as the ISAM search string.

Name	Format	Size	Description
Keytype	HEX	0.5	For lists of the type defined in this table, the value of this element shall be set to 0. ISAM search string element.
INS#	HEX	0.5	Shell iteration number ISAM search string element.
IIN_Index	HEX	1	See clause 6.7.10 (table 111) ISAM search string element.
ISRN_OID	HEX	2	OID extracted from ISRN ISAM search string element.
ISRN_ISSN	HEX	3.5	ISSN extracted from ISRN ISAM search string element.
ISRN_CHD	HEX	0.5	ISRN check digit ISAM search string element.
RecordLength	HEX	2	Defines the length, in native format, of the data set commencing with and including the RecordType element, and all the subsequent elements in the record, but excluding all preceding data.
RecordType	HEX	1	Defines the type of record which follows
Bitmap	BMP	2	

Table 81 - KeyType 1, Header Definition – Version 0

Note that data elements from KeyType to ISAM seq# (the initial 8 bytes) shall be used as the ISAM search string.

Name	Format	Size	Description
Keytype	HEX	0.5	For lists of the type defined in this table, the value of this element shall be set to one. ISAM search string element.
INP#	HEX	0.5	IPE iteration number ISAM search string element.
ISAM ID	HEX	4	ISAM identity ISAM search string element.
ISAM seq#	HEX	3	ISAM sequence number ISAM search string element.
RecordLength	HEX	2	Defines the length, in native format, of the data set commencing with and including the RecordType element, and all the subsequent elements in the record, but excluding all preceding data.
RecordType	HEX	1	Defines the type of record which follows
Bitmap	BMP	2	

Table 82 - IPE ID Optional Additional Identification Group Definition – Version 0.

This data group shall be included when the primary search is for a Shell, and a secondary search for an IPE instance within that shell.

Name	Format	Size	Description
IPE_IIN	IIN	3	
IPE_OID	HEX	2	OID16: The value FFFF hex shall indicate a Wildcard
IPE_TYP	HEX	1	TYP: The value FF hex shall indicate a Wildcard
IPE_PTYP	HEX	1	PTYP: The value FF hex shall indicate a Wildcard
IPE_ISAMID_Creator	HEX	4	ISAMID: The value FFFFFFFF hex shall indicate a Wildcard
IPE_ISAMS#_Creator	HEX	3	The value FFFFFFFF hex shall indicate a Wildcard

Great care should be taken when using Wildcards. When the target is a specific IPE then Wildcards shall not be used.

Table 83 - Bit Map Definition – Version 0

Bit#	Data group present if bit is set
0	IPEID
1	Hotlist
2	Actionlist
3	Action Date element
4	Action Quantity element
5	Action Amount element
6	Second Action Amount element
7	Action IPE element
8	Action new iteration number element
9	RecordVersionNumber element
10-15	RFU

5.3.3.2 Hotlist and Actionlist Search Strings Version 1

Table 179 - KeyType Definitions – Version 1

KeyType	Interpretation
0	Item applies to a search for an ITSO shell.
1	List applies to a search for an IPE instance. This search shall only be used when the CMD does not support an identifiable shell.
2-255	RFU

Table 180 - KeyType 0, Header Definition – Version 1

Note that data elements from KeyType to ISRN_CHD (the initial 8 bytes) shall be used as the ISAM search string.

Name	Format	Size	Description
Keytype	HEX	0.5	For lists of the type defined in this table, the value of this element shall be set to 0. ISAM search string element.
INS#	HEX	0.5	Shell iteration number ISAM search string element.
IIN_Index	HEX	1	See clause 6.7.10 (table 111) ISAM search string element.
ISRN_OID	HEX	2	OID extracted from ISRN ISAM search string element.
ISRN_ISSN	HEX	3.5	ISSN extracted from ISRN ISAM search string element.
ISRN_CHD	HEX	0.5	ISRN check digit ISAM search string element.
RecordLength	HEX	2	Defines the length, in native format, of the data set commencing with and including the RecordType element, and all the subsequent elements in the record, but excluding all preceding data.
RecordType	HEX	1	Defines the type of record which follows
Bitmap	BMP	2	

Table 181 - KeyType 1, Header Definition – Version 1

Note that data elements from KeyType to ISAM seq# (the initial 8 bytes) shall be used as the ISAM search string.

Name	Format	Size	Description
Keytype	HEX	0.5	For lists of the type defined in this table, the value of this element shall be set to one. ISAM search string element.
INP#	HEX	0.5	IPE iteration number ISAM search string element.
ISAM ID	HEX	4	ISAM identity ISAM search string element.
ISAM seq#	HEX	3	ISAM sequence number ISAM search string element.
RecordLength	HEX	2	Defines the length, in native format, of the data set commencing with and including the RecordType element, and all the subsequent elements in the record, but excluding all preceding data.
RecordType	HEX	1	Defines the type of record which follows
Bitmap	BMP	2	

Table 182a – Record Version Number Record Definition – Version 1.

Name	Format	Size	Description
RecordVersionNumber	HEX	1	A number indicating the version of the following data. For records according to this version of the specification, this element shall be set to a value of one (1).

Table 182 - IPE ID Optional Additional Identification Group Definition – Version 1.

This data group shall be included when the primary search is for a Shell, and a secondary search for an IPE instance within that shell.

Name	Format	Size	Description
IPE_IIN	IIN	3	
IPE_OID	HEX	2	OID16: The value FFFF hex shall indicate a Wildcard
IPE_TYP	HEX	1	TYP: The value FF hex shall indicate a Wildcard
IPE_PTYP	HEX	1	PTYP: The value FF hex shall indicate a Wildcard
IPE_INP#	HEX	1	IPE iteration number: A 4 bit number, stored in the least significant bits of this element. The most significant bits of this element shall be set to zero (0). The value FF hex shall indicate a Wildcard
IPE_ISAMID_Creator	HEX	4	ISAMID: The value FFFFFFFF hex shall indicate a Wildcard
IPE_ISAMS#_Creator	HEX	3	The value FFFFFFF hex shall indicate a Wildcard

Great care should be taken when using Wildcards. When the target is a specific IPE then Wildcards shall not be used.

Table 183 - Bit Map Definition – Version 1

Bit#	Data group present if bit is set
0	IPEID
1	Hotlist
2	Actionlist
3	Action Date element
4	Action Quantity element
5	Action Amount element
6	Second Action Amount element
7	Action IPE element
8	Action new iteration number element
9	RecordVersionNumber element
10	IPE_Fulfilment_Action present
11	TYP 24 Transfers Element
12	TYP 24 Reservation Group
13-14	RFU
15	Secondary Bitmap Element

5.3.3.3 Hotlist and Actionlist Data Elements Versions 0 and 1.

Table 84 - RecordType Definition

RecordType code	Meaning
0	Not used
1	Hotlist
2	Actionlist
3-255	RFU

Table 85 - Hotlist Data Group, Code 0C02

Name	Format	Size	Description
HotListIdentifier	HEX	2	A unique identifier generated by the list creating HOPS
HotType	HEX	1	Defines the scope of Hotlist record
HotAction	HEX	1	Defines what action should be taken when a match occurs
CustomerMediaDisposition	HEX	1	Defines what should be done with the Customer Media when a match occurs (attended equipment, or capable unattended equipment, only)
HotItemOriginator	OID16	2	Used to identify item originator
OriginalHotListIdentifier	HEX	2	Used to identify the original list when a list is consolidated

Table 86 - Hotlist, Code 0C02, HotType Definition

Code	Meaning
0	Not used
1	Hot item applies to an ITSO shell
2	Hot item applies to an IPE
3	Hot item applies to Customer Media
4-255	RFU

Codes 1 and 3 shall only be used by the Shell owner. Code 2 shall only be used by the IPE owner.

Table 87 - Hotlist, Code 0C02, HotAction Definition

Code	Meaning
0	Not used
1	IPE to be blocked
2	ITSO shell to be blocked
3	ITSO shell to be blocked and, if possible, the Customer Media to be blocked
4	Customer Media to be blocked if possible
5-255	RFU

Codes 2, 3 and 4 shall only be used by the Shell owner. Code 1 shall only be used by the IPE owner.

Table 88 - Hotlist, Code 0C02, Customer Media Disposition Definition

Code	Meaning
0	Not used
1	Customer Media to be left with Customer Media holder, name and address to be recorded if possible
2	Customer Media to be confiscated
3-255	RFU

Table 89 - Actionlist Data Group, Code 0C03

Name	Format	Size	Description
ActionListIdentifier	HEX	2	A unique identifier generated by the list creating OID
ActionToTake	HEX	1	Defines what action should be taken when a match occurs
ActionSequenceNumber	HEX	1	
ActionListOriginator	OID16	2	Used to identify item originator when a list is consolidated
OriginalActionListIdentifier	HEX	2	Used to identify the original list when a list is consolidated

Table 90 - Actionlist, Code 0C03, Optional Date Element

Name	Format	Size	Description
ActionDate	DATE	2	For use when a Date is to be written or changed by the action item.

Table 91 - Actionlist, Code 0C03, Optional Quantity Element

Name	Format	Size	Description
ActionQty	HEX	1	For use when a quantity is to be written or changed by the action item

Table 92 - Actionlist, Code 0C03, Optional Amount Group

Name	Format	Size	Description
ActionAmount	VALI	2	For use when a currency value is to be written or changed by the action item
ActionAmountCurrencyCode		1	

Table 93 - Actionlist, Code 0C03, Optional IPE Group

Name	Format	Size	Comment
ListLength	HEX	1	Length of the entire list, including ListLength
IPE_EmbodimentParameterList	EmbodimentList	Variable	The Target IPE Embodiment Parameter List as defined herein

Note that the ListLength size of 1 byte limits IPE_EmbodimentParameterList to a maximum length of 256 bytes, which is insufficient for the size of embodiment parameter list required to create larger IPEs. Therefore this IPE creation method is not suitable for creation of an IPE containing optional data elements where the embodiment PCD data exceeds 256 bytes in size.

Table 94 - Actionlist, Code 0C03, Optional NewIterationNumber

Name	Format	Size	Description
NewIterationNumber	HEX	1	The new iteration number (INS# or INP# as appropriate) shall occupy the least significant bits of this byte; all other bits shall be set to 0.

Table 94a - Actionlist, Code 0C03, Optional IPE_Fulfilment_Action

Name	Format	Size	Description
Length	HEX	2	The length of the entire IPE_Fulfilment_Action including the Length data element
IPE_Fulfilment_Action	HEX	Var	A collection of ASN.1 Objects comprising an entire IPE Fulfilment Action (as defined in clause 5.3.3.4)

Table 94b - Actionlist, Code 0C03, Optional TYP 24 Transfers Element

Name	Format	Size	Description
TransferQty	BMP	2	For use when a quantity is to be written or changed by the action item

Table 94c - Actionlist, Code 0C03, Optional TYP 24 Reservation Group

Name	Format	Size	Description
ReservationQty	HEX	1	For use when a quantity is to be written or changed by the action item A value of zero means; all existing journey leg reservation groups shall be removed and no groups will be appended to this element
JourneyLegReservationGroup			This is a repeating group of the following data elements Number of such groups defined by ReservationQty
DepartureDateTime	DTS	3	
ServiceID	ASCII	6	
Origin	LOC1	Variable Maximum 17	If no data specified shall contain a NULL location definition in the form of LocDefType 255
Destination	LOC1	Variable Maximum 17	If no data specified shall contain a NULL location definition in the form of LocDefType 255
Coach	ASCII	2	
Seat	ASCII	3	
AccommodationAttribute	ASCII	4	
SeatDirection	BMP	1	
BerthUpperorLower	BMP	1	
ReservationType	HEX	1	
TogetherFlag	FLAG	1	

Note:

In table 94c the ReservationQty relates to the data elements NumberofReservations within the TYP 24 Value Group. The remaining data elements in the above table match to the TYP 24 Value Group VO Segment.

Table 94d - Actionlist, Code 0C03, Optional Secondary Bitmap Element

Name	Format	Size	Description
Additional Actionlist Bitmap	BMP	2	RFU for optional data elements as yet to be defined

Table 95 - Actionlist, Code 0C03, ActionToTake Definition

Code	Meaning
0	Not used
1	Create IPE
2	Update IPE: change expiry date
3	Update Shell
4	Disable STR Auto-Top-Up
5	Add STR Auto-Top-Up
6	Un-Block Shell
7	Un-Block IPE
8	Disable Auto-Renew
9	Enable Auto-Renew and set associated IPE parameters.
10	Update IPE: Add Stored Rides or Journeys
11	Update IPE: Add Stored Rides or Journeys, and amend expiry date
12	Update IPE: Add STR
13	Update IPE: CTA value adjustment (TYP 4 IPE only)
14	Update IPE: Amend IPE iteration number
15	Update Shell contents: IPE_Fulfilment_Action
16	Update IPE (TYP 24): Amend one or more value group count and reservation elements
17-255	RFU

Table 96 - Actionlist, Code 0C03, Actions Which May Be Taken

This table defines those actions which may be instigated by an Actionlist item.

Where the IPE element acted upon is not included in an anti-tear group, care shall be taken when performing the action to ensure that Customer Media corruption does not occur, or will always be corrected if it does occur.

Code	Action to Take	Specific Action	Shell or IPE data elements acted upon	Optional Actionlist data elements used	Contents of optional Actionlist data elements
0	Not used				
1	Create IPE	Create IPE	All	Optional IPE Group	IPE Embodiment parameter table
2	Update IPE	Change Expiry Date	ExpiryDate	ActionDate	The new expiry date
3	Update Shell	Amend shell iteration number	INS#	NewIterationNumber	New iteration number
4	Disable STR Auto-Top-Up		Threshold TopUpAmount	None	Threshold and TopUpAmount are set to 0.
5	Add STR Auto-Top-Up		Threshold TopUpAmount	ActionAmount ActionAmount ActionAmountCurrencyCode	Two amounts are sent: - the first contains a new Threshold value - the second contains a new TopUpAmount value the two copies of ActionAmountCurrencyCode shall be set to the same value
6	Un-Block Shell		Shell blocked flag in DirBitMap	None	Clear shell blocked flag in DirBitMap, increment shell iteration number INS#
7	Un-Block IPE		Data group blocked by SCT setting	None	Clear data group blocked SCT setting, increment IPE iteration number INP#.
8	Disable Auto-Renew		AutoRenewQuantity1 or AutoRenewQuantity2	None	Set target element to 0
9	Enable Auto-Renew and set associated IPE parameters		TYP 22: - AutoRenewQuantity1 - TYP22ValueFlags/Auto-Renew (bit 0) [set this bit to one (1)] TYP 23: - TYP23ValueFlags/Auto-Renew (bit 0) [set this bit to one (1)]	ActionQty	TYP 22: Value to add to NumberRemainingPasses TYP 23: 0 TYP 24: 0 TYP 25: Value to add to CountUsesAvailable TYP 26: Value to add to CountRemainingRidesJourneys

Code	Action to Take	Specific Action	Shell or IPE data elements acted upon	Optional Actionlist data elements used	Contents of optional Actionlist data elements
			TYP 24: - TicketUseFlags/Auto-Renew (bit 7) [set this bit to one (1)] TYP 25: - AutoRenewQuantity2 - TYP25ValueFlags/Auto-Renew (bit 0) [set this bit to one (1)] TYP 26: - AutoRenewQuantity3 - TYP26ValueFlags/Auto-Renew (bit 0) [set this bit to one (1)]		
10	Update IPE	Add stored rides or journeys	TYP 22: NumberRemainingPasses TYP 23: CountRemainingRidesJourneys TYP 24: CountRemainingJourneys TYP 25: CountUsesAvailable TYP 26: CountRemainingRidesJourneys	ActionQty	The quantity to be added to the relevant IPE data element
11	Update IPE	Add stored rides or journeys, and amend ExpiryDate	TYP 22: NumberRemainingPasses ExpiryDateSP	ActionDate ActionQty	The new expiry date The quantity to be added to the relevant IPE data element
12	Update IPE	Add STR	TYP 2: Value	ActionAmount ActionAmountCurrencyCode	The amount to be added to Value.
13	Update IPE	CTA Value Adjustment (TYP 4 IPE only)	TYP 4: CumulativeAmount	ActionAmount ActionAmountCurrencyCode	The amount to be subtracted from CumulativeAmount
14	Update IPE	Amend IPE iteration number	INP#	NewIterationNumber	New iteration number

Code	Action to Take	Specific Action	Shell or IPE data elements acted upon	Optional Actionlist data elements used	Contents of optional Actionlist data elements
15	Update Shell contents	IPE Fulfillment Action	All	IPE Group or Groups	IPEs added, deleted or both (see clause 5.3.3.4)
16	Update IPE (TYP 24)	Amend one or more value group count and reservation elements	TYP 24: JourneysRemaining TransfersRemaining	ActionQty TransferQty	Quantity to be added to the relevant IPE Value Group data element
			NumberOfReservations LegDepartureDateTime LegServiceId LegOrigin LegDestination Coach SeatNumber AccommodationAttribute SeatDirection BerthUpperLower ReservationType TogetherFlag	Optional TYP 24 Reservation Group	The new Value Group VXO segment replacing the existing segment (if present)

5.3.3.4 IPE Fulfillment Action

This clause defines the structure and content of the ActionList IPE_Fulfilment_Action Data Group that is required for use by Fulfilment POSTs only.

The Data Group contains within it a set of ASN.1 objects that, when read and acted upon in sequence by the POST application, applies a complete fulfilment update to the Shell within the CM. The IPE_Fulfilment_Action data group provides details of:

- A unique reference created by the source of the IPE_Fulfilment_Action.
- The fulfilment window.
- The net number of Sectors occupied by the fulfilment.
- Details of IPEs that shall not be present as a precondition to the completion of the fulfilment.
- Details of IPEs that shall be present as a precondition to the completion of the fulfilment.
- Details of IPEs that shall be deleted as a precondition to the completion of the fulfilment.
- Details of the Detached IPEs that are to be conditionally added to the target Shell.

The IPE_Fulfilment_Action Data Group is defined in Table 96a and is made up of Constructed and Primitive Data Objects (CDOs and PDOs) in accordance with ASN.1 the tags and syntax for which are defined in DG0009.

Table 96a shows:

- Primitive Data Objects in plain text
- Constructed Data Objects in bold
- Objects that are optional as shaded
- Objects that may occur more than once in italics
- The *'s prefixing the DO names indicate the nesting level of the DO

Note: A mandatory Primitive Data Object will not be present if it is contained in an optional Constructed Data Object that is not present.

Table 96a Actionlist, Code 0C03, Optional IPE_Fulfilment_Action

ASN.1 Constructed DO names	DATA	Description
ASN.1 Primitive DO names	TYPE	
ITSO_Root_Group		
*ITSO_Data_Group		
**Shell_Reference	ISRN	A single Mandatory PDO containing the reference of the ITSO Shell (ISRN) targeted by this IPE_Fulfilment_Action
**IPE_Fulfilment_Action		<i>One or more mandatory CDOs containing a complete IPE fulfilment action</i>
***Source_Reference		A single mandatory CDO forming a unique reference for this IPE_Fulfilment_Action
****ISAMID	HEX	A single mandatory PDO containing the ISAMID of the ISAM of the retail POST function used in the creation of this IPE_Fulfilment_Action
****Ref#	HEX	A single mandatory PDO containing a 4 Byte binary integer. Added by the source to uniquely identify this IPE_Fulfilment_Action. This shall be incremented by 1 for every different IPE_Fulfilment_Action generated. Rollover is not permitted for the same value of ISAMID
***Fulfilment_Window		A single mandatory CDO forming the period demarcated by the primitive DOs present in this constructed DO during which this fulfilment action is valid
****Start_DTS	DTS	A single mandatory PDO containing the DTS from which this fulfilment action shall be possible
****End_DTS	DTS	A single mandatory PDO containing the DTS after which this fulfilment action shall not take place
***Fulfilment_#Sectors	HEX	A single optional PDO containing the net number of Sectors occupied by this fulfilment action (after taking into account any deletions) A single byte binary integer in the range 1-255
***Not_Present		<i>One or more optional CDOs containing an IPE instance that shall not be present in this Shell before proceeding with this IPE_Fulfilment_Action</i>
****Label	HEX	A single optional PDO containing the IPE label (i.e. DIR entry)
****IIN_Index	HEX	A single mandatory PDO containing the reference to the IPE IIN
****IPE_InstanceID ⁷	HEX	A single mandatory PDO containing the IPE instanceID
***Present		<i>One or more optional CDOs containing an IPE instance that shall be present in this Shell before proceeding with this IPE_Fulfilment_Action</i>

⁷ The actual value of the KID Data Element within the IPE_InstanceID may not be known to the HOPS sending this PDO however the remaining data in the IPE instance is sufficient to uniquely identify the IPE without using the value of KID. Thus the value of KID shall be ignored by the POST application when matching this PDO to the IPE_InstanceID read from the CM. Any HOPS that does not know the true value shall set KID to 0xF

ASN.1 Constructed DO names	DATA TYPE	Description
ASN.1 Primitive DO names		
****Label	HEX	A single optional PDO containing the IPE label (i.e. DIR entry)
****IIN_Index	HEX	A single mandatory PDO containing a reference to the IPE IIN
****IPE_InstanceID	HEX	A single mandatory PDO containing the IPE instanceID
***Delete		<i>One or more optional CDOs containing an IPE instance that shall be deleted from this Shell before proceeding with this IPE_Fulfilment_Action</i>
****Label	HEX	A single optional PDO containing the IPE label (i.e. DIR entry)
****IIN_Index	HEX	A single mandatory PDO containing a reference to the IPE IIN
****IPE_InstanceID	HEX	A single mandatory PDO containing the IPE instanceID
***Add		<i>One or more optional CDOs containing IPE Data Groups that shall normally be added to this Shell, unless, if present, the content of the IPE_Delivery_Date prohibits this, before proceeding with this IPE_Fulfilment_Action</i>
****IPE_Delivery_Date_Range	DATE	A single optional CDO which if present and If the current date is not in the range IPE_Delivery_Date_Start to IPE_Delivery_Date_End inclusive, then the following Data Group(s) shall not be added to this Shell. Where no IPE_Delivery_Date_End is present then the IPE_Delivery_Date_Range is a single day
*****IPE_Delivery_Date_Start	DATE	A single mandatory PDO Indicating the start date of the IPE_Delivery_Date_Range (within the Fulfilment_Window)
*****IPE_Delivery_Date_End	DATE	A single optional PDO Indicating the end date of the IPE_Delivery_Date_Range (within the Fulfilment_Window)
****IPE_Data_Group	HEX	A single mandatory PDO containing an entire IPE Data Group
****IPE_Value_Record_Data_GroupA	HEX	A single optional PDO containing an entire Value Record Data Group copy A
****IPE_Value_Record_Data_GroupB	HEX	A single optional PDO containing An entire Value Record Data Group copy B

5.4 Data Correction Record, Code 0C04.

Note that this record type is only used between HOPS, not for transmission to POSTs. It is used when a correction to a transaction data record is required. This message would be sent by a Licensed Member (for example a service provider whose POST created the original message in question) to another Licensed Member (such as a Product Owner whose product was used in the Transaction the record of which is being changed).

Table 97 - Data Correction Record, Code 0C04

Name	Format	Size	Comment
StandardData		21	Standard data returned with all transaction records
InitialRecordLength	HEX	2	Length of the InitialRecord structure in bytes (where the count excludes the comma between the InitialRecordLength and InitialRecord data elements, includes commas within the InitialRecord Structure, and excludes the comma between the InitialRecord and AmendedRecordLength data elements. The length shall be calculated of the message in transmission format.)
InitialRecord		Variable	A structure containing a copy or clone of the initial data record before correction, (comprising the whole ITSO transaction data frame including Sequence number, timestamp, data including message code and destinations, and the Seal) as originally transmitted.
AmendedRecordLength	HEX	2	Length of the AmendedRecord structure in bytes (where the count excludes the comma between the AmendedRecordLength and AmendedRecord data elements, and includes commas within the AmendedRecord Structure. The length shall be calculated of the message in transmission format.)
AmendedRecord		Variable	A structure containing the amended record after correction comprising the whole ITSO transaction data frame (including Sequence number, timestamp, data including message code and destinations, and with the original sealer ID (ISAM ID and ISAM sequence number) and Seal.

In this context the standard data shall be written as follows:

- Transaction date and time shall record the date and time of creating the correction message;
- IPE-ID shall be taken from the transaction record being amended;
- StaffID shall identify the member of staff responsible for creating the correction message.

The InitialRecord and AmendedRecord shall contain an entire ITSO message data frame. When transmitted the individual data elements within these data frames shall be separated by commas. These structures shall not be converted to transmission format twice.

The InitialRecord shall contain the complete original message Data Frame including:

- Header;
- Standard data;
- Data;
- Footer & original Seal.

It is sent so that the receiving HOPS can identify the original data.

The AmendedRecord shall contain the complete amended message Data Frame including:

- Original Header;

- Original or Amended Standard data;
- Original or Amended Data;
- Original Footer & original Seal.

For the AmendedRecord the same structure as a class 1 message shall be used, which may simplify the processing required in the receiving HOPS. The Seal will of course be invalid for this data set, and the outcome of the seal check should be ignored

6. ITSO POST Configuration Data.

This clause defines POST operating parameter tables required for inter-operability. These are generated by back office ticketing configuration systems and distributed to POSTs as required.

POSTs are not required to implement ITSO POST Configuration parameter tables if it can be demonstrated that suitable alternative arrangements exist for the integration of Operator Specific configuration data provided from or available in a HOPS for the purposes of achieving interoperability, and furthermore that these alternative arrangements are acceptable to Licensed Members.

6.1 Message format.

The tables defined in this clause may be transmitted from HOPS to POST in accordance with the stated Transmission Methods and Data Formats defined in ITSO TS 1000-3.

For HOPS to HOPS messages then the files shall be formatted as defined in ITSO TS 1000-9. This file structure may optionally be used for HOPS to POST messages.

When messages are sent according to message codes 0A00 to 0AFF, then each item in a list shall be transmitted as a single Data Block as defined in ITSO TS 1000-9.

Messages sent according to message codes 0B01 to 0BFF support the transmission of multiple list items (of the same type) in a single Data Block as defined in ITSO TS 1000-9. Implementation of this type of message is optional in both HOPS and POST.

Messages sent according to message code 0B00 allows multiple records of multiple types to be included within a single data block as defined in ITSO TS 1000-9. Implementation of this type of message is optional in both HOPS and POST.

6.2 ITSO POST Configuration Data Record Format

Direction HOPS to POST

Table 98 - ITSO POST Configuration Data Record Format, HOPS to POST.

ITSO name	Format	Size (bytes)	Comment
ParameterTableIdentifier	HEX	2	Unique identity for this list created by the HOPS
ParameterTableRow	Byte	Variable	A row of a Parameter table as defined below

Note that ParameterTableIdentifier shall be prefixed to every row in the table.

6.3 ITSO POST Configuration Data Message Response.

In response to successful receipt of all ITSO POST configuration data messages, the POST shall respond with the standard ACK2 (acknowledgement to class 2 message) command.

6.4 ParameterTable Message Codes.

Table 99 - ParameterTable Message Codes

Group	Table Type	HEX CODE single record per Data Block	HEX CODE multiple records per data block
Parameter table	RFU	0A00	--
	Multiple records of multiple types	--	0B00
	Term Dates	0A01	0B01
	Peak Times	0A02	0B02
	Day type assignment	0A03	0B03
	Transfers	0A04	0B04
	Rebates	0A05	0B05
	Loyalty Rules	0A06	0B06
	Currency	0A07	0B07
	Zone Table Reference	0A08	0B08
	Zone Table Bitmap	0A09	0B09
	Sale Price Table	0A0A	0B0A
	IIN Table	0A0B	0B0B
	IPE Parameter Tables	0A0C	0B0C
	ISAM Management File Parameters	0A0D	0B0D
	Passback Times	0A0E	0B0E
	RFU	0A0F-0AFE	0B0F-0BFE
Manifest Message	N/A	0AFF	0BFF

6.5 Multi Record Transmission, multiple types (message code 0B00)

A message according to the 0B00 code can be utilised to send multiple list items records, of multiple types, within a single Data Block. Records according to message codes 0A01 to 0AFF and 0C01 to 0CFF can be included in a 0B00 message. These messages also use the hash sealing method defined in ITSO 1000-9 to further improve the efficiency of transmitting large numbers of lists item records.

A multi record message shall always consist of the following data groups, in the order shown

- A header, which defines the message contents; and
- A number of item records, included in the same order as each type of item is identified in the header.

Table 99a - Multi Record (Multi Type) Header Definition

Name	Format	Size	Description
QtyHeaderItems	HEX	3	The number of HeaderItem records within this header.
HeaderItem	HEX	6	Defined in table 99b. As many HeaderItems may be included as necessary.

Table 99b - HeaderItem Definition

Name	Format	Size	Description
RecordType	HEX	2	A Message code in the range 0A00 to 0AFF or 0C00 to 0CFF
QtyRecords	HEX	2	The quantity of records of this type included in the list
Offset	HEX	2	The offset, in bytes, of the first byte in the first record. For the first HeaderItem in the header, this value shall be set to 0.

It is recommended that all records of a single type be grouped together in the message.

6.6 Multi Record Transmission (message codes 0B01 to 0BFF)

Messages according to codes 0B01 to 0BFF can be utilised to send multiple records (of the same type) within a single Data Block. These messages also uses hash sealing method defined in ITSO 1000-9 to further improve the efficiency of transmitting large numbers of records.

A multi record message shall always consist of the following data groups, in the order shown

- A header; and
- A number of item records.

Table 99c - Multi Record (single type) Header Definition

Name	Format	Size	Description
Number of List Item Records	HEX	3	The number of list item records within this data block.

6.7 Parameter table definitions, ListFormatRevision = 1

Note: ListFormatRevision 1 is provided for backwards compatibility only; new implementations shall not use it. POSTs implemented to this Version of the Specification shall use ListFormatRevision = 2.

6.7.1 Peak Times, Code 0A02.

The table defines inclusive Peak Times for the IPE Embodiment identified in the record. It may be used in conjunction with the peak/off-peak flag.

Table 100 - Peak Times, Codes 0A02, 0B02

ITSO name	Format	Size (bytes)	Comment
0A02_ListFormatRevision	HEX	1	For list items formatted according to this definition a value of one (1) shall be assigned to this element
0A02_StartDateTime	BCDN	6	The date and time upon which the validity of this list item commences, formatted as YYYYMMDDHHII
0A02_EndDateTime	BCDN	6	The date and time upon which the validity of this list item ceases, formatted as YYYYMMDDHHII
0A02_IIN	IIN	3	Defines IPE Embodiment (Product type) together with OID, TYP & PTYP
0A02_OID	OID16	2	Defines IPE Embodiment (Product type) together with IIN, TYP & PTYP
0A02_TYP	TYP	1	Defines IPE Embodiment (Product type) together with IIN, OID, & PTYP
0A02_PTYP	PTYP	1	Defines IPE Embodiment (Product type) together with IIN, OID, & TYP
0A02_QualiferCodeRef	HEX	1	A reference to the IPE data element which should be matched against 0A02_QualifierCode, see table 100a, 100b, 100c, 100d, 100e & 100f.
0A02_QualifierCode	UD	4	A qualifier code defined by the Product Owner. This element may be matched to an IPE data element as defined by 0A02_QualiferCodeRef.
0A02_DayType	HEX	1	Code indicating the type of day to which the record applies, defined below in table 101.
0A02_Start	BCDN	2	A time expressed in BCD, for example, 17:34 would be recorded as 1734.
0A02_End	BCDN	2	A time expressed in BCD, for example, 17:34 would be recorded as 1734.

Where more than one peak time band is required for a given IPE, then multiple rows shall be created in the table, one row per IPE / peak time band combination.

A value of FF hex in any of the TYP or PTYP elements, or a value of FFFF hex in the OID element, shall denote a wildcard.

Table 100a – QualiferCodeRef definition

QualiferCodeRef value	TYP 2 data element	TYP 3 data element	TYP 4 data element	TYP 5 data element	TYP 17 data element
0	No matching IPE data element	No matching IPE data element	No matching IPE data element	No matching IPE data element	No matching IPE data element
1-255	RFU	RFU	RFU	RFU	RFU

Table 100b – QualiferCodeRef definition

QualiferCodeRef value	TYP 14 data element	TYP 16 data element
0	No matching IPE data element	No matching IPE data element
1	ConcessionaryPass IssuerCostCentre	ConcessionaryPass IssuerCostCentre
2	EntitlementCode	EntitlementCode
3	ConcessionaryClass	ConcessionaryClass
4	RFU	DateOfBirth
5-255	RFU	RFU

Table 100c – QualiferCodeRef definition

QualiferCodeRef value	TYP 22 data element	TYP 23 data element
0	No matching IPE data element	No matching IPE data element
1	Class	Class
2	PromotionCode	PromotionCode
3	ConcessionaryPass IssuerCostCentre	ConcessionaryPass IssuerCostCentre
4	ValidityCode	ValidityCode
5-255	RFU	RFU

Table 100d – QualiferCodeRef definition

QualiferCodeRef value	TYP 24 data element	TYP 25 data element
0	No matching IPE data element	No matching IPE data element
1	Class	ServiceID
2	JourneyTypeCode	UserDefined
3	ProfileCode	RFU
4	TicketStatusCode	RFU
5	TypeOfTicketCode	RFU
6	ValidityCode	RFU
7	RestrictionCode	RFU
8	RestrictedCode	RFU
9	UserDefined (from the relevant reservation block)	RFU
10	ServiceIdentifier	RFU
11	TravelServiceNumber	RFU
12	AssistanceType	RFU
13-255	RFU	RFU

Table 100e – QualiferCodeRef definition

QualiferCodeRef value	TYP 26 data element	TYP 27 data element
0	No matching IPE data element	No matching IPE data element
1	Typ26Class	RFU
2	UserDefined (least significant 2 bytes only)	RFU
3-255	RFU	RFU

Table 100f – QualiferCodeRef definition

QualiferCodeRef value	TYP 28 data element	TYP 29 data element
0	No matching IPE data element	No matching IPE data element
1-255	RFU	RFU

Day type shall be a 1 byte HEX code defined as follows:

Table 101 - DayType Definition

HEX Code	Day type definition
0	Not used
1	Monday to Friday inclusive
2	Saturday
3	Sunday
4	Saturday+Sunday
5	Bank Holiday
6	Routine abnormal day, Market day for example (A 'special day')
7 - FF	Reserved for future use.

6.7.2 Day type assignment, code 0A03, 0B03.

Defines the day types upon which an IPE Embodiment (Product type) is valid.

Table 102 defines one entry in a table of entries, where each entry shall be transmitted to the POST as a discrete message.

Table 102 - Day type assignment, codes 0A03, 0B03

ITSO name	Format	Size (bytes)	Comment
0A03_ListFormatRevision	HEX	1	For list items formatted according to this definition a value of one (1) shall be assigned to this element
0A03_StartDateTime	BCDN	6	The date and time upon which the validity of this list item commences, formatted as YYYYMMDDHHII
0A03_EndDateTime	BCDN	6	The date and time upon which the validity of this list item ceases, formatted as YYYYMMDDHHII
0A03_IIN	IIN	3	Defines IPE Embodiment (Product type) together with OID, TYP & PTYP
0A03_OID	OID16	2	Defines IPE Embodiment (Product type) together with IIN, TYP & PTYP
0A03_TYP	TYP	1	Defines IPE Embodiment (Product type) together with IIN, OID, & PTYP
0A03_PTYP	PTYP	1	Defines IPE Embodiment (Product type) together with IIN, OID, & TYP
0A03_DayType	BMP	1	Day types upon which this IPE Embodiment is valid, depicted as a bit map which is defined in table 102a.

A value of FF hex in any of the TYP or PTYP elements, or a value of FFFF hex in the OID element, shall denote a wildcard.

Table 102a - DayType Bit Map Definition

Bit	Day type definition
0 (LSB)	When set, indicates that the IPE is valid on Mondays to Fridays inclusive.
1	When set, indicates that the IPE is valid on Saturdays.
2	When set, indicates that the IPE is valid on Sundays.
3	When set, indicates that the IPE is valid on Special Days, Bank Holidays and Public Holidays.
4	Reserved for future use.
5	Reserved for future use.
6	Reserved for future use.
7 (MSB)	Reserved for future use.

6.7.3 Transfers, Codes 0A04, 0B04.

Facilities for defining transfer limit treated as part of overall through journey for fares calculation purposes, together with any fares cap associated with purse payments.

Table 103Table defines one entry in a table of entries, where each entry shall be transmitted to the POST as a discrete message.

Table 103 - Transfers, Codes 0A04, 0B04.

ITSO name	Format	Size (bytes)	Comment
0A04_ListFormatRevision	HEX	1	For list items formatted according to this definition a value of one (1) shall be assigned to this element
0A04_StartDateTime	BCDN	6	The date and time upon which the validity of this list item commences, formatted as YYYYMMDDHHII
0A04_EndDateTime	BCDN	6	The date and time upon which the validity of this list item ceases, formatted as YYYYMMDDHHII
0A04_IIN	IIN	3	Defines IPE Embodiment (Product type) together with OID, TYP & PTYP
0A04_OID	OID16	2	Defines IPE Embodiment (Product type) together with IIN, TYP & PTYP
0A04_TYP	TYP	1	Defines IPE Embodiment (Product type) together with IIN, OID, & PTYP
0A04_PTYP	PTYP	1	Defines IPE Embodiment (Product type) together with IIN, OID, & TYP
0A04_MaxTransfers	HEX	1	Maximum quantity of transfers allowed
0A04_FareCap	VALI	2	Maximum fare which may be charged for a qualifying journey
0A04_FareCapCurrencyCode	VALC	1	
0A04_ValidSameService?	HEX	1	See code list below

A value of FF hex in any of the TYP or PTYP elements, or a value of FFFF hex in the OID element, shall denote a wildcard.

Note that this message is used to transmit parameters needed by the POST to implement multi-leg Journeys. In this context a “qualifying Journey” is any multi-leg Journey which satisfies the rules defining a qualifying Journey, as defined by the IPE owner and/or the Service Operator(s) concerned.

Table 104 - ‘Valid same service’ code definition

Code	Definition
0	RFU
1	No
2	Yes
3-FF	RFU

6.7.4 Rebates, codes 0A05, 0B05.

Fares definition table for allowable fare reduction when transfer criteria for rebates are met. These criteria include use of the IPE Embodiment identified, meeting the transfer ticket rules including making the transfer within the time limit, and transfer from an operator defined by OID1, to an operator defined by OID2, or vice versa.

Table 105 defines one entry in a table of entries, where each entry shall be transmitted to the POST as a discrete message.

Table 105 - Rebates, codes 0A05, 0B05

ITSO name	Format	Size (bytes)	Comment
0A05_ListFormatRevision	HEX	1	For list items formatted according to this definition a value of one (1) shall be assigned to this element
0A05_StartDateTime	BCDN	6	The date and time upon which the validity of this list item commences, formatted as YYYYMMDDHHII
0A05_EndDateTime	BCDN	6	The date and time upon which the validity of this list item ceases, formatted as YYYYMMDDHHII
0A05_IIN	IIN	3	Defines IPE Embodiment (Product type) together with OID, TYP & PTYP
0A05_OID	OID16	2	Defines IPE Embodiment (Product type) together with IIN, TYP & PTYP
0A05_TYP	TYP	1	Defines IPE Embodiment (Product type) together with IIN, OID, & PTYP
0A05_PTYP	PTYP	1	Defines IPE Embodiment (Product type) together with IIN, OID, & TYP
0A05_OID1	OID16	2	Participating operator 1
0A05_OID2	OID16	2	Participating operator 2
0A05_TimePeriod	HEX	1	Transfer time allowable from previous leg, in minutes
0A05_StartFare	VALI	2	Defines range of fares
0A05_EndFare	VALI	2	Defines range of fares
0A05_Rebate	VALI	2	Rebate amount
0A05_FareCurrencyCode	VALC	1	Currency code applicable to rebate amount and fares

A value of FF hex in any of the TYP or PTYP elements, or a value of FFFF hex in the OID element, shall denote a wildcard.

The data elements 0A05_StartFare and 0A05_EndFare define a range of fares which could be applied when calculating the fare for the new journey leg. i.e. to get the rebate the fare for the new (second) journey leg must fall within the defined range.

6.7.5 Loyalty Rules, Codes 0A06, 0B06.

Table 106 defines the loyalty rules for points accumulation.

Table 106 defines one entry in a table of entries, where each entry shall be transmitted to the POST as a discrete message.

Table 106 - Loyalty Rules, Codes 0A06, 0B06.

ITSO name	Format	Size (bytes)	Comment
0A06_ListFormatRevision	HEX	1	For list items formatted according to this definition a value of one (1) shall be assigned to this element
0A06_StartDateTime	BCDN	6	The date and time upon which the validity of this list item commences, formatted as YYYYMMDDHHII
0A06_EndDateTime	BCDN	6	The date and time upon which the validity of this list item ceases, formatted as YYYYMMDDHHII
0A06_IIN	IIN	3	Defines Loyalty IPE Embodiment (Product type) together with OID, TYP & PTYP
0A06_OID	OID16	2	Defines Loyalty IPE Embodiment (Product type) together with IIN, TYP & PTYP
0A06_TYP	TYP	1	Defines Loyalty IPE Embodiment (Product type) together with IIN, OID, & PTYP
0A06_PTYP	PTYP	1	Defines Loyalty IPE Embodiment (Product type) together with IIN, OID, & TYP
0A06_PointsPerUnitCurrency	HEX	1	Defines the quantity of loyalty points which should be awarded per unit of currency.
0A06_CurrencyCode	VALC	1	
0A06_Rounding	ASCII	1	Coded as 'U' indicating round up, 'D' indicating round down. Codes are 'upper case'. All other codes RFU.

A value of FF hex in any of the TYP or PTYP elements, or a value of FFFF hex in the OID element, shall denote a wildcard.

6.7.6 Currency, Codes 0A07, 0B07.

This table defines the currency exchange rate for conversions.

Table 107 defines one entry in a table of entries, where each entry shall be transmitted to the POST as a discrete message.

Table 107 - Currency, Codes 0A07, 0B07

ITSO name	Format	Size (bytes)	Comment
0A07_ListFormatRevision	HEX	1	For list items formatted according to this definition a value of one (1) shall be assigned to this element
0A07_StartDateTime	BCDN	6	The date and time upon which the validity of this list item commences, formatted as YYYYMMDDHHII
0A07_EndDateTime	BCDN	6	The date and time upon which the validity of this list item ceases, formatted as YYYYMMDDHHII
0A07_FromCurrency	VALC	1	
0A07_ToCurrency	VALC	1	
0A07_EffectiveDate	BCDN	4	Date shall be transmitted as 8 characters in the form ddmmyyyy without delimiters, for example, 21/04/00 shall be transmitted as 21042000.
0A07_Factor	Signed floating point number	4	Single Precision Floating Point Notation Defines the ratio which should be multiplied by a FromCurrency amount to determine the equivalent amount in ToCurrency.

6.7.7 Zone Table Reference, Codes 0A08, 0B08.

This table defines the zone table associated with an IPE embodiment.

Table 108 defines one entry in a table of entries, where each entry shall be transmitted to the POST as a discrete message.

Table 108 - Zone Table Reference, Codes 0A08, 0B08

ITSO name	Format	Size (bytes)	Comment
0A08_ListFormatRevision	HEX	1	For list items formatted according to this definition a value of one (1) shall be assigned to this element
0A08_StartDateTime	BCDN	6	The date and time upon which the validity of this list item commences, formatted as YYYYMMDDHHII
0A08_EndDateTime	BCDN	6	The date and time upon which the validity of this list item ceases, formatted as YYYYMMDDHHII
0A08_IIN	IIN	3	Defines IPE Embodiment (Product type) together with OID, TYP & PTYP
0A08_OID	OID16	2	Defines IPE Embodiment (Product type) together with IIN, TYP & PTYP
0A08_TYP	TYP	1	Defines IPE Embodiment (Product type) together with IIN, OID, & PTYP
0A08_PTYP	PTYP	1	Defines IPE Embodiment (Product type) together with IIN, OID, & TYP
0A08_TableID	HEX	1	Pointer to Zone Table Bitmap, code 0A09

A value of FF hex in any of the TYP or PTYP elements, or a value of FFFF hex in the OID element, shall denote a wildcard.

6.7.8 Zone Table Bitmap, Codes 0A09, 0B09.

This table maps local zone identities to the encoded zone number

Table 109 defines one entry in a table of entries, where each entry shall be transmitted to the POST as a discrete message.

Table 109 - Zone Table Bitmap, Codes 0A09, 0B09

ITSO name	Format	Size (bytes)	Comment
0A09_ListFormatRevision	HEX	1	For list items formatted according to this definition a value of one (1) shall be assigned to this element
0A09_StartDateTime	BCDN	6	The date and time upon which the validity of this list item commences, formatted as YYYYMMDDHHII
0A09_EndDateTime	BCDN	6	The date and time upon which the validity of this list item ceases, formatted as YYYYMMDDHHII
0A09_TableID	HEX	1	Table Identity
0A09_Bit	HEX	2	Zone number, encoded as a HEX value , identifying the bit location in bit mapped zone data elements contained within IPEs defined according to LocDefType 204 or 205.
0A09_Zone	HEX	2	Local zone code ⁸

⁸ zone code as printed on ticket and in fares information

6.7.9 Sale Price Table, Codes 0A0A, 0B0A.

Sales parameters where required for interoperability of applications.

Table 110 defines one entry in a table of entries, where each entry shall be transmitted to the POST as a discrete message.

Table 110 - Sale Price Table, Codes 0A0A, 0B0A

ITSO name	Format	Size (bytes)	Comment
0A0A_ListFormatRevision	HEX	1	For list items formatted according to this definition a value of one (1) shall be assigned to this element
0A0A_StartDateTime	BCDN	6	The date and time upon which the validity of this list item commences, formatted as YYYYMMDDHHII
0A0A_EndDateTime	BCDN	6	The date and time upon which the validity of this list item ceases, formatted as YYYYMMDDHHII
0A0A_IIN	IIN	3	
0A0A_OID	OID16	2	
0A0A_TYP	TYP	1	
0A0A_PTYP	PTYP	1	
0A0A_RFU	RFU	1	Reserved for future use by ITSO
0A0A_Class	HEX	1	
0A0A_PromotionCode	HEX	1	
0A0A_EntitlementCode	HEX	1	
0A0A_ConcessionaryClass	HEX	1	
0A0A_DiscountPercentage	HEX	2	Percentage by which fare is discounted, expressed to 2 decimal places. This element may be used when EntitlementCode contains code 3, proportional fare. Values in the range 0 to 9999 (decimal, equivalent to 0x270F hexadecimal) shall be stored as a HEX number, and interpreted such that a value of 1 shall be interpreted to mean 0.01% and a value of 9999 (decimal) shall be interpreted to mean 99.99%.
0A0A_Price	VALI	2	
0A0A_PriceCurrencyCode	VALC	1	
0A0A_ValidityPeriodDays	HEX	2	Count of days.
0A0A_ParameterList	UD	Variable	

A value of FF hex in any of the TYP or PTYP elements, or a value of FFFF hex in the OID element, shall denote a wildcard.

6.7.10 IIN Table, Codes 0A0B, 0B0B

Table used to cross reference IIN_Index used in Hotlist and Actionlists, to actual IIN values.

Table 111 defines one entry in a table of entries, where each entry shall be transmitted to the POST as a discrete message.

Table 111 - IIN Table, Codes 0A0B, 0B0B

ITSO name	Format	Size (bytes)	Comment
0A0B_ListFormatRevision	HEX	1	For list items formatted according to this definition a value of one (1) shall be assigned to this element
0A0B_StartDateTime	BCDN	6	The date and time upon which the validity of this list item commences, formatted as YYYYMMDDHHII
0A0B_EndDateTime	BCDN	6	The date and time upon which the validity of this list item ceases, formatted as YYYYMMDDHHII
0A0B_IIN_Index	HEX	1	
0A0B_IIN	IIN	3	

6.7.11 IPE Parameter Tables, Codes 0A0C, 0B0C

A table containing IPE owner defined parameters according to the IPE embodiment specification. Used for creating IPEs at POSTs.

Table 112 defines one entry in a table of entries, where each entry shall be transmitted to the POST as a discrete message.

Table 112 - IPE Parameter Tables, Codes 0A0C, 0B0C.

Name	Format	Size	Comment
0A0C_ListFormatRevision	HEX	1	For list items formatted according to this definition a value of one (1) shall be assigned to this element
0A0C_StartDateTime	BCDN	6	The date and time upon which the validity of this list item commences, formatted as YYYYMMDDHHII
0A0C_EndDateTime	BCDN	6	The date and time upon which the validity of this list item ceases, formatted as YYYYMMDDHHII
0A0C_Length	HEX	1	Combined Length of the 0A0C_IPE_EmbodimentParameterList and 0A0C_Length elements
0A0C_IPE_EmbodimentParameterList	EmbodimentList	Variable	The Target IPE Embodiment Parameter List as defined herein

6.7.12 ISAM Management File Parameters, Codes 0A0D, 0B0D

A table generated by an AMS that contains ISAM control and status parameters.

Table 112a defines one entry in a table of entries, where each entry shall be transmitted to the POST as a discrete message. Each row in the table defines an ISAM data file.

Table 112a – ISAM Management File Parameters, Codes 0A0D, 0B0D

Name	Format	Size	Comment
0A0D_ListFormatRevision	HEX	1	For list items formatted according to this definition a value of one (1) shall be assigned to this element
0A0D_StartDateTime	BCDN	6	The date and time upon which the validity of this list item commences, formatted as YYYYMMDDHHII
0A0D_EndDateTime	BCDN	6	The date and time upon which the validity of this list item ceases, formatted as YYYYMMDDHHII
0A0D_Type	HEX	1	The File type (see ITSO TS1000 -8)
0A0D_IDentifier	HEX	2	The Identifier of the file as allocated or referenced by the AMS
0A0D_EF_Size	HEX	2	The number of data bytes in the file (see ITSO TS1000 -8)
0A0D_Record_length	HEX	1	The number of Bytes in a record (not relevant if the file type is not record based – in this case set to 0)
0A0D_File_Use	HEX	1	The file use as defined in table 112a1
0A0D_VF_DATE	DATE	2	The date upon which this entry becomes active

Table 112a1– ISAM Management File Parameters File Use Codes

Code	File Use
0	Combined Hotlist and Actionlist file allocation
1	Hotlist file allocation
2	Actionlist file allocation
3	Statistics of the ISAM file referenced by the 0A0D_Identifier Data Element. The use of this code is OPTIONAL where an AMS HOPS wishes to inform the POST of the sizes of ISAM Acceptance and Capability tables
4-255	RFU

6.7.13 Term Dates, Codes 0A01, 0B01

Table 112b Term Dates, codes 0A01, 0B01

ITSO name	Format	Size (bytes)	Comment
0A01_ListFormatRevision	HEX	1	For list items formatted according to this definition a value of one (1) shall be assigned to this element
0A01_StartDateTime	BCDN	6	The date and time upon which the validity of this list item commences, formatted as YYYYMMDDHHII
0A01_EndDateTime	BCDN	6	The date and time upon which the validity of this list item ceases, formatted as YYYYMMDDHHII
0A01_IIN	IIN	3	Defines IPE Embodiment (Product type) together with OID, TYP & PTYP
0A01_OID	OID16	2	Defines IPE Embodiment (Product type) together with IIN, TYP & PTYP
0A01_TYP	TYP	1	Defines IPE Embodiment (Product type) together with IIN, OID, & PTYP
0A01_PTYP	PTYP	1	Defines IPE Embodiment (Product type) together with IIN, OID, & TYP
0A01_EstablishmentCode	ASCII	4	Match to ConcessionaryPassIssuerCostCentre (see note 2). This data element shall be coded as an ASCII representation of a hexadecimal value, padded with leading spaces where appropriate.
0A01_TermDateStart1	Date	2	2 bit padding + DateStamp The Product shall be valid upon this date and upon subsequent dates until Term End Date
0A01_TermDateEnd1	Date	2	2 bit padding + DateStamp The Product shall be valid upon this date but not valid thereafter, excepting where a second term is defined by TermDateStart2 & TermDateEnd2
0A01_TermDateStart2	Date	2	2 bit padding + DateStamp The Product shall be valid upon this date and upon subsequent dates until Term End Date (see note 3)
0A01_TermDateEnd2	Date	2	2 bit padding + DateStamp The Product shall be valid upon this date but not valid thereafter

Note 1: That there may be more than one table entry for each Product Type ID / Establishment Code combination.

Note 2: It is assumed, as this table defines term dates, that it is used for scholars' passes; in which case the establishment code (i.e. the school or college ID code) will always be stored in ConcessionaryPassIssuerCostCentre. This works for IPE TYPs 14, 16, 22, & 23.

Note 3: Including two term ranges in the table has logistical advantages for scheme operators – at half terms and inset days there is very little time between the end of one term and the start of another during which all POSTs can be loaded with the new configuration table. Having two ranges in the table avoids this problem, and significantly reduces the chances of finding two rows in the table for the same product.

6.7.14 Passback times, Codes 0A0E, 0B0E

Table 112c Passback Times, codes 0A0E, 0B0E

ITSO name	Format	Size (bytes)	Comment
0A0E_ListFormatRevision	HEX	1	For list items formatted according to this definition a value of one (1) shall be assigned to this element
0A0E_StartDateTime	BCDN	6	The date and time upon which the validity of this list item commences, formatted as YYYYMMDDHHII
0A0E_EndDateTime	BCDN	6	The date and time upon which the validity of this list item ceases, formatted as YYYYMMDDHHII
0A0E_IIN	IIN	3	Defines IPE Embodiment (Product type) together with OID, TYP & PTYP
0A0E_OID	OID16	2	Defines IPE Embodiment (Product type) together with IIN, TYP & PTYP
0A0E_TYP	TYP	1	Defines IPE Embodiment (Product type) together with IIN, OID, & PTYP
0A0E_PTYP	PTYP	1	Defines IPE Embodiment (Product type) together with IIN, OID, & TYP
0A0E_ConcessionaryClass	HEX	1	Match against the ConcessionaryClass data element found within the Product – if no such element within the Product then assume a match ⁹
0A0E_PassbackTime	HEX	1	Time in minutes

6.8 Parameter table definitions, ListFormatRevision = 2

6.8.1 Peak Times, Code 0A02, ListFormatRevision = 2.

The table defines inclusive Peak Times for the IPE Embodiment identified in the record. It may be used in conjunction with the peak/off-peak flag.

Table 100-2 - Peak Times, Codes 0A02, 0B02

ITSO name	Format	Size (bytes)	Comment
0A02_ListFormatRevision	HEX	1	For list items formatted according to this definition a value of two (2) shall be assigned to this element
0A02_IndexNumber	HEX	2	The IndexNumber shall be assigned by the First Line HOPS that collates the PCD. This number shall be unique in every row of a

⁹ This test is included to further differentiate between products

ITSO name	Format	Size (bytes)	Comment
			particular Parameter table but not necessarily contiguous or sequential within that table.
0A02_StartDateTime	BCDN	6	The date and time upon which the validity of this list item commences, formatted as YYYYMMDDHHII
0A02_EndDateTime	BCDN	6	The date and time upon which the validity of this list item ceases, formatted as YYYYMMDDHHII
0A02_IIN	IIN	3	Defines IPE Embodiment (Product type) together with OID, TYP & PTYP
0A02_OID	OID16	2	Defines IPE Embodiment (Product type) together with IIN, TYP & PTYP
0A02_TYP	TYP	1	Defines IPE Embodiment (Product type) together with IIN, OID, & PTYP
0A02_PTYP	PTYP	1	Defines IPE Embodiment (Product type) together with IIN, OID, & TYP
0A02_QualiferCodeRef	HEX	1	A reference to the IPE data element which should be matched against 0A02_QualifierCode, see table 100a, 100b, 100c, 100d, 100e & 100f.
0A02_QualifierCode	UD	4	A qualifier code defined by the Product Owner. This element may be matched to an IPE data element as defined by 0A02_QualiferCodeRef.
0A02_DayType	HEX	1	Code indicating the type of day to which the record applies, defined below in table 101.
0A02_Start	BCDN	2	A time expressed in BCD, for example, 17:34 would be recorded as 1734.
0A02_End	BCDN	2	A time expressed in BCD, for example, 17:34 would be recorded as 1734.

Where more than one peak time band is required for a given IPE, then multiple rows shall be created in the table, one row per IPE / peak time band combination.

A value of FF hex in any of the TYP or PTYP elements, or a value of FFFF hex in the OID element, shall denote a wildcard.

Table 100a-2 – QualiferCodeRef definition

QualiferCodeRef value	TYP 2 data element	TYP 3 data element	TYP 4 data element	TYP 5 data element	TYP 17 data element
0	No matching IPE data element	No matching IPE data element	No matching IPE data element	No matching IPE data element	No matching IPE data element
1-255	RFU	RFU	RFU	RFU	RFU

Table 100b-2 – QualiferCodeRef definition

QualiferCodeRef value	TYP 14 data element	TYP 16 data element
0	No matching IPE data element	No matching IPE data element
1	ConcessionaryPass IssuerCostCentre	ConcessionaryPass IssuerCostCentre
2	EntitlementCode	EntitlementCode
3	ConcessionaryClass	ConcessionaryClass
4	RFU	DateOfBirth
5-255	RFU	RFU

Table 100c-2 – QualiferCodeRef definition

QualiferCodeRef value	TYP 22 data element	TYP 23 data element
0	No matching IPE data element	No matching IPE data element
1	Class	Class
2	PromotionCode	PromotionCode
3	ConcessionaryPass IssuerCostCentre	ConcessionaryPass IssuerCostCentre
4	ValidityCode	ValidityCode
5-255	RFU	RFU

Table 100d-2 – QualiferCodeRef definition

QualiferCodeRef value	TYP 24 data element	TYP 25 data element
0	No matching IPE data element	No matching IPE data element
1	Class	ServiceID
2	JourneyTypeCode	UserDefined
3	ProfileCode	RFU
4	TicketStatusCode	RFU
5	TypeOfTicketCode	RFU
6	ValidityCode	RFU
7	RestrictionCode	RFU
8	RestrictedCode	RFU
9	UserDefined (from the relevant reservation block)	RFU
10	ServiceIdentifier	RFU
11	TravelServiceNumber	RFU
12	AssistanceType	RFU
13-255	RFU	RFU

Table 100e-2 – QualiferCodeRef definition

QualiferCodeRef value	TYP 26 data element	TYP 27 data element
0	No matching IPE data element	No matching IPE data element
1	Typ26Class	RFU
2	UserDefined (least significant 2 bytes only)	RFU
3-255	RFU	RFU

Table 100f-2 – QualiferCodeRef definition

QualiferCodeRef value	TYP 28 data element	TYP 29 data element
0	No matching IPE data element	No matching IPE data element
1-255	RFU	RFU

Day type shall be a 1 byte HEX code defined as follows:

Table 101-2 - DayType Definition

HEX Code	Day type definition
0	Not used
1	Monday to Friday inclusive
2	Saturday
3	Sunday
4	Saturday+Sunday
5	Bank Holiday
6	Routine abnormal day, Market day for example (A 'special day')
7	All day types, i.e. Monday to Sunday inclusive, and bank holidays and routine abnormal days.
8 – FF	Reserved for future use.

6.8.2 Day type assignment, code 0A03, 0B03, ListFormatRevision = 2.

Defines the day types upon which an IPE Embodiment (Product type) is valid.

Table 102 defines one entry in a table of entries, where each entry shall be transmitted to the POST as a discrete message.

Table 102-2 - Day type assignment, codes 0A03, 0B03

ITSO name	Format	Size (bytes)	Comment
0A03_ListFormatRevision	HEX	1	For list items formatted according to this definition a value of two (2) shall be assigned to this element
0A03_IndexNumber	HEX	2	The IndexNumber shall be assigned by the First Line HOPS that collates the PCD. This number shall be unique in every row of a particular Parameter table but not necessarily contiguous or sequential within that table.
0A03_StartDateTime	BCDN	6	The date and time upon which the validity of this list item commences, formatted as YYYYMMDDHHII
0A03_EndDateTime	BCDN	6	The date and time upon which the validity of this list item ceases, formatted as YYYYMMDDHHII
0A03_IIN	IIN	3	Defines IPE Embodiment (Product type) together with OID, TYP & PTYP
0A03_OID	OID16	2	Defines IPE Embodiment (Product type) together with IIN, TYP & PTYP
0A03_TYP	TYP	1	Defines IPE Embodiment (Product type) together with IIN, OID, & PTYP
0A03_PTYP	PTYP	1	Defines IPE Embodiment (Product type) together with IIN, OID, & TYP
0A03_DayType	BMP	1	Day types upon which this IPE Embodiment is valid, depicted as a bit map which is defined in table 102a.

A value of FF hex in any of the TYP or PTYP elements, or a value of FFFF hex in the OID element, shall denote a wildcard.

Table 102a-2 - DayType Bit Map Definition

Bit	Day type definition
0 (LSB)	When set, indicates that the IPE is valid on Mondays to Fridays inclusive.
1	When set, indicates that the IPE is valid on Saturdays.
2	When set, indicates that the IPE is valid on Sundays.
3	When set, indicates that the IPE is valid on Special Days, Bank Holidays and Public Holidays.
4	Reserved for future use.
5	Reserved for future use.
6	Reserved for future use.
7 (MSB)	Reserved for future use.

6.8.3 Transfers, Codes 0A04, 0B04, ListFormatRevision = 2.

Facilities for defining transfer limit treated as part of overall through journey for fares calculation purposes, together with any fares cap associated with purse payments.

Table 103 defines one entry in a table of entries, where each entry shall be transmitted to the POST as a discrete message.

Table 103-2 - Transfers, Codes 0A04, 0B04.

ITSO name	Format	Size (bytes)	Comment
0A04_ListFormatRevision	HEX	1	For list items formatted according to this definition a value of two (2) shall be assigned to this element
0A04_IndexNumber	HEX	2	The IndexNumber shall be assigned by the First Line HOPS that collates the PCD. This number shall be unique in every row of a particular Parameter table but not necessarily contiguous or sequential within that table.
0A04_StartDateTime	BCDN	6	The date and time upon which the validity of this list item commences, formatted as YYYYMMDDHHII
0A04_EndDateTime	BCDN	6	The date and time upon which the validity of this list item ceases, formatted as YYYYMMDDHHII

ITSO name	Format	Size (bytes)	Comment
0A04_IIN	IIN	3	Defines IPE Embodiment (Product type) together with OID, TYP & PTYP
0A04_OID	OID16	2	Defines IPE Embodiment (Product type) together with IIN, TYP & PTYP
0A04_TYP	TYP	1	Defines IPE Embodiment (Product type) together with IIN, OID, & PTYP
0A04_PTYP	PTYP	1	Defines IPE Embodiment (Product type) together with IIN, OID, & TYP
0A04_MaxTransfers	HEX	1	Maximum quantity of transfers allowed
0A04_FareCap	VALI	2	Maximum fare which may be charged for a qualifying journey
0A04_FareCapCurrencyCode	VALC	1	
0A04_ValidSameService?	HEX	1	See code list below

A value of FF hex in any of the TYP or PTYP elements, or a value of FFFF hex in the OID element, shall denote a wildcard.

Note that this message is used to transmit parameters needed by the POST to implement multi-leg Journeys. In this context a “qualifying Journey” is any multi-leg Journey which satisfies the rules defining a qualifying Journey, as defined by the IPE owner and/or the Service Operator(s) concerned.

Table 104-2 - ‘Valid same service’ code definition

Code	Definition
0	RFU
1	No
2	Yes
3-FF	RFU

6.8.4 Rebates, codes 0A05, 0B05, ListFormatRevision = 2.

Fares definition table for allowable fare reduction when transfer criteria for rebates are met. These criteria include use of the IPE Embodiment identified, meeting the transfer ticket rules including making the transfer within the time limit, and transfer from an operator defined by OID1, to an operator defined by OID2, or vice versa.

Table 105 defines one entry in a table of entries, where each entry shall be transmitted to the POST as a discrete message.

Table 105-2 - Rebates, codes 0A05, 0B05

ITSO name	Format	Size (bytes)	Comment
0A05_ListFormatRevision	HEX	1	For list items formatted according to this definition a value of two (2) shall be assigned to this element
0A05_IndexNumber	HEX	2	The IndexNumber shall be assigned by the First Line HOPS that collates the PCD. This number shall be unique in every row of a particular Parameter table but not necessarily contiguous or sequential within that table.
0A05_StartDateTime	BCDN	6	The date and time upon which the validity of this list item commences, formatted as YYYYMMDDHHII
0A05_EndDateTime	BCDN	6	The date and time upon which the validity of this list item ceases, formatted as YYYYMMDDHHII
0A05_IIN	IIN	3	Defines IPE Embodiment (Product type) together with OID, TYP & PTYP
0A05_OID	OID16	2	Defines IPE Embodiment (Product type) together with IIN, TYP & PTYP
0A05_TYP	TYP	1	Defines IPE Embodiment (Product type) together with IIN, OID, & PTYP
0A05_PTYP	PTYP	1	Defines IPE Embodiment (Product type) together with IIN, OID, & TYP
0A05_OID1	OID16	2	Participating operator 1
0A05_OID2	OID16	2	Participating operator 2
0A05_TimePeriod	HEX	1	Transfer time allowable from previous leg, in minutes
0A05_StartFare	VALI	2	Defines range of fares
0A05_EndFare	VALI	2	Defines range of fares
0A05_Rebate	VALI	2	Rebate amount
0A05_FareCurrencyCode	VALC	1	Currency code applicable to rebate amount and fares

A value of FF hex in any of the TYP or PTYP elements, or a value of FFFF hex in the OID element, shall denote a wildcard.

The data elements 0A05_StartFare and 0A05_EndFare define a range of fares which could be applied when calculating the fare for the new journey leg. i.e. to get the rebate the fare for the new (second) journey leg must fall within the defined range.

6.8.5 Loyalty Rules, Codes 0A06, 0B06, ListFormatRevision = 2.

Table 106 defines the loyalty rules for points accumulation.

Table 106 defines one entry in a table of entries, where each entry shall be transmitted to the POST as a discrete message.

Table 106-2 - Loyalty Rules, Codes 0A06, 0B06.

ITSO name	Format	Size (bytes)	Comment
0A06_ListFormatRevision	HEX	1	For list items formatted according to this definition a value of two (2) shall be assigned to this element
0A06_IndexNumber	HEX	2	The IndexNumber shall be assigned by the First Line HOPS that collates the PCD. This number shall be unique in every row of a particular Parameter table but not necessarily contiguous or sequential within that table.
0A06_StartDateTime	BCDN	6	The date and time upon which the validity of this list item commences, formatted as YYYYMMDDHHII
0A06_EndDateTime	BCDN	6	The date and time upon which the validity of this list item ceases, formatted as YYYYMMDDHHII
0A06_IIN	IIN	3	Defines Loyalty IPE Embodiment (Product type) together with OID, TYP & PTYP
0A06_OID	OID16	2	Defines Loyalty IPE Embodiment (Product type) together with IIN, TYP & PTYP
0A06_TYP	TYP	1	Defines Loyalty IPE Embodiment (Product type) together with IIN, OID, & PTYP
0A06_PTYP	PTYP	1	Defines Loyalty IPE Embodiment (Product type) together with IIN, OID, & TYP
0A06_PointsPerUnitCurrency	HEX	1	Defines the quantity of loyalty points which should be awarded per unit of currency.
0A06_CurrencyCode	VALC	1	
0A06_Rounding	ASCII	1	Coded as 'U' indicating round up, 'D' indicating round down. Codes are 'upper case'. All other codes RFU.

A value of FF hex in any of the TYP or PTYP elements, or a value of FFFF hex in the OID element, shall denote a wildcard.

6.8.6 Currency, Codes 0A07, 0B07, ListFormatRevision = 2.

This table defines the currency exchange rate for conversions.

Table 107 defines one entry in a table of entries, where each entry shall be transmitted to the POST as a discrete message.

Table 107-2 - Currency, Codes 0A07, 0B07

ITSO name	Format	Size (bytes)	Comment
0A07_ListFormatRevision	HEX	1	For list items formatted according to this definition a value of two (2) shall be assigned to this element
0A08_IndexNumber	HEX	2	The IndexNumber shall be assigned by the First Line HOPS that collates the PCD. This number shall be unique in every row of a particular Parameter table but not necessarily contiguous or sequential within that table.
0A07_StartDateTime	BCDN	6	The date and time upon which the validity of this list item commences, formatted as YYYYMMDDHHII
0A07_EndDateTime	BCDN	6	The date and time upon which the validity of this list item ceases, formatted as YYYYMMDDHHII
0A07_FromCurrency	VALC	1	
0A07_ToCurrency	VALC	1	
0A07_EffectiveDate	BCDN	4	Date shall be transmitted as 8 characters in the form ddmmyyyy without delimiters, for example, 21/04/00 shall be transmitted as 21042000.
0A07_Factor	Signed floating point number	4	Single Precision Floating Point Notation Defines the ratio which should be multiplied by a FromCurrency amount to determine the equivalent amount in ToCurrency.

6.8.7 Zone Table Reference, Codes 0A08, 0B08, ListFormatRevision = 2.

This table defines the zone table associated with an IPE embodiment.

Table 108 defines one entry in a table of entries, where each entry shall be transmitted to the POST as a discrete message.

Table 108-2 - Zone Table Reference, Codes 0A08, 0B08

ITSO name	Format	Size (bytes)	Comment
0A08_ListFormatRevision	HEX	1	For list items formatted according to this definition a value of two (2) shall be assigned to this element
0A08_IndexNumber	HEX	2	The IndexNumber shall be assigned by the First Line HOPS that collates the PCD. This number shall be unique in every row of a particular Parameter table but not necessarily contiguous or sequential within that table.
0A08_StartDateTime	BCDN	6	The date and time upon which the validity of this list item commences, formatted as YYYYMMDDHHII
0A08_EndDateTime	BCDN	6	The date and time upon which the validity of this list item ceases, formatted as YYYYMMDDHHII
0A08_IIN	IIN	3	Defines IPE Embodiment (Product type) together with OID, TYP & PTYP
0A08_OID	OID16	2	Defines IPE Embodiment (Product type) together with IIN, TYP & PTYP
0A08_TYP	TYP	1	Defines IPE Embodiment (Product type) together with IIN, OID, & PTYP
0A08_PTYP	PTYP	1	Defines IPE Embodiment (Product type) together with IIN, OID, & TYP
0A08_TableID	HEX	1	Pointer to Zone Table Bitmap, code 0A09

A value of FF hex in any of the TYP or PTYP elements, or a value of FFFF hex in the OID element, shall denote a wildcard.

6.8.8 Zone Table Bitmap, Codes 0A09, 0B09, ListFormatRevision = 2.

This table maps local zone identities to the encoded zone number

Table 109 defines one entry in a table of entries, where each entry shall be transmitted to the POST as a discrete message.

Table 109-2 - Zone Table Bitmap, Codes 0A09, 0B09

ITSO name	Format	Size (bytes)	Comment
0A09_ListFormatRevision	HEX	1	For list items formatted according to this definition a value of two (2) shall be assigned to this element
0A09_IndexNumber	HEX	2	The IndexNumber shall be assigned by the First Line HOPS that collates the PCD. This number shall be unique in every row of a particular Parameter table but not necessarily contiguous or sequential within that table.
0A09_StartDateTime	BCDN	6	The date and time upon which the validity of this list item commences, formatted as YYYYMMDDHHII
0A09_EndDateTime	BCDN	6	The date and time upon which the validity of this list item ceases, formatted as YYYYMMDDHHII
0A09_TableID	HEX	1	Table Identity
0A09_Bit	HEX	2	Zone number, encoded as a HEX value , identifying the bit location in bit mapped zone data elements contained within IPEs defined according to LocDefType 204 or 205.
0A09_Zone	HEX	2	Local zone code ¹⁰

¹⁰ zone code as printed on ticket and in fares information

6.8.9 Sale Price Table, Codes 0A0A, 0B0A, ListFormatRevision = 2.

Sales parameters where required for interoperability of applications.

Table 110 defines one entry in a table of entries, where each entry shall be transmitted to the POST as a discrete message.

Table 110-2 - Sale Price Table, Codes 0A0A, 0B0A

ITSO name	Format	Size (bytes)	Comment
0A0A_ListFormatRevision	HEX	1	For list items formatted according to this definition a value of two (2) shall be assigned to this element
0A0A_IndexNumber	HEX	2	The IndexNumber shall be assigned by the First Line HOPS that collates the PCD. This number shall be unique in every row of a particular Parameter table but not necessarily contiguous or sequential within that table.
0A0A_StartDateTime	BCDN	6	The date and time upon which the validity of this list item commences, formatted as YYYYMMDDHHII
0A0A_EndDateTime	BCDN	6	The date and time upon which the validity of this list item ceases, formatted as YYYYMMDDHHII
0A0A_IIN	IIN	3	
0A0A_OID	OID16	2	
0A0A_TYP	TYP	1	
0A0A_PTYP	PTYP	1	
0A0A_RFU	RFU	1	Reserved for future use by ITSO
0A0A_Class	HEX	1	
0A0A_PromotionCode	HEX	1	
0A0A_EntitlementCode	HEX	1	
0A0A_ConcessionaryClass	HEX	1	
0A0A_DiscountPercentage	HEX	2	Percentage by which fare is discounted, expressed to 2 decimal places. This element may be used when EntitlementCode contains code 3, proportional fare. Values in the range 0 to 9999 (decimal, equivalent to 0x270F hexadecimal) shall be stored as a HEX number, and interpreted such that a value of 1 shall be interpreted to mean 0.01% and a value of 9999 (decimal) shall be interpreted to mean 99.99%.
0A0A_Price	VALI	2	
0A0A_PriceCurrencyCode	VALC	1	
0A0A_ValidityPeriodDays	HEX	2	Count of days defining the period for which the data in this message is valid. This data element shall be set to a value of 0xFFFF. It is recommended that POSTs interpret this value as indicating that the message data is valid until EndDateTime.

ITSO name	Format	Size (bytes)	Comment
0A0A_ParameterList	UD	Variable	

A value of FF hex in any of the TYP or PTYP elements, or a value of FFFF hex in the OID element, shall denote a wildcard.

6.8.10 IIN Table, Codes 0A0B, 0B0B, ListFormatRevision = 2

Table used to cross reference IIN_Index used in Hotlist and Actionlists, to actual IIN values.

Table 111 defines one entry in a table of entries, where each entry shall be transmitted to the POST as a discrete message.

Table 111-2 - IIN Table, Codes 0A0B, 0B0B

ITSO name	Format	Size (bytes)	Comment
0A0B_ListFormatRevision	HEX	1	For list items formatted according to this definition a value of two (2) shall be assigned to this element
0A0B_IndexNumber	HEX	2	The IndexNumber shall be assigned by the First Line HOPS that collates the PCD. This number shall be unique in every row of a particular Parameter table but not necessarily contiguous or sequential within that table.
0A0B_StartDateTime	BCDN	6	The date and time upon which the validity of this list item commences, formatted as YYYYMMDDHHII
0A0B_EndDateTime	BCDN	6	The date and time upon which the validity of this list item ceases, formatted as YYYYMMDDHHII
0A0B_IIN_Index	HEX	1	
0A0B_IIN	IIN	3	

6.8.11 IPE Parameter Tables, Codes 0A0C, 0B0C, ListFormatRevision = 2

A table containing IPE owner defined parameters according to the IPE embodiment specification. Used for creating IPEs at POSTs.

Table 112-2 defines one entry in a table of entries, where each entry shall be transmitted to the POST as a discrete message.

Table 112-2 - IPE Parameter Tables, Codes 0A0C, 0B0C, ListFormatRevision = 2.

Name	Format	Size	Comment
0A0C_ListFormatRevision	HEX	1	For list items formatted according to this definition a value of two (2) shall be assigned to this element.
0A0C_IndexNumber	HEX	2	The IndexNumber shall be assigned by the First Line HOPS that collates the PCD. This number shall be unique in every row of a particular Parameter table but not necessarily contiguous or sequential within that table.
0A0C_StartDateTime	BCDN	6	The date and time upon which the validity of this list item commences, formatted as YYYYMMDDHHII.
0A0C_EndDateTime	BCDN	6	The date and time upon which the validity of this list item ceases, formatted as YYYYMMDDHHII.

Name	Format	Size	Comment
0A0C_Length	HEX	2	Combined Length of the 0A0C_IPE_EmbodimentParameterList and 0A0C_Length elements.
0A0C_IPE_EmbodimentParameterList	EmbodimentList	Variable	The Target IPE Embodiment Parameter List as defined herein.

6.8.12 ISAM Management File Parameters, Codes 0A0D, 0B0D, ListFormatRevision = 2

A table generated by an AMS that contains ISAM control and status parameters.

Table 112a-2 defines one entry in a table of entries, where each entry shall be transmitted to the POST as a discrete message. Each row in the table defines an ISAM data file.

Table 112a-2 – ISAM Management File Parameters, Codes 0A0D, 0B0D

Name	Format	Size	Comment
0A0D_ListFormatRevision	HEX	1	For list items formatted according to this definition a value of two (2) shall be assigned to this element.
0A0D_IndexNumber	HEX	2	The IndexNumber shall be assigned by the First Line HOPS that collates the PCD. This number shall be unique in every row of a particular Parameter table but not necessarily contiguous or sequential within that table.
0A0D_StartDateTime	BCDN	6	The date and time upon which the validity of this list item commences, formatted as YYYYMMDDHHII.
0A0D_EndDateTime	BCDN	6	The date and time upon which the validity of this list item ceases, formatted as YYYYMMDDHHII.
0A0D_Type	HEX	1	The File type (see ITSO TS1000 -8).
0A0D_IDentifier	HEX	2	The Identifier of the file as allocated or referenced by the AMS.
0A0D_EF_Size	HEX	2	The number of data bytes in the file (see ITSO TS1000 -8).
0A0D_Record_length	HEX	1	The number of Bytes in a record (not relevant if the file type is not record based – in this case set to 0).
0A0D_File_Use	HEX	1	The file use as defined in table 112a1-2.
0A0D_VF_DATE	DATE	2	The date upon which this entry becomes active.

Table 112a1-2 – ISAM Management File Parameters File Use Codes

Code	File Use
0	RFU

1	RFU
2	RFU
3	<p>Statistics of the ISAM file referenced by the 0A0D_Identifier Data Element.</p> <p>The use of this code is OPTIONAL where an AMS HOPS wishes to inform the POST of the sizes of ISAM Acceptance and Capability tables</p>
4-255	RFU

6.8.13 Term Dates, Codes 0A01, 0B01, ListFormatRevision = 2

Table 112b-2 Term Dates, codes 0A01, 0B01

ITSO name	Format	Size (bytes)	Comment
0A01_ListFormatRevision	HEX	1	For list items formatted according to this definition a value of two (2) shall be assigned to this element.
0A01_IndexNumber	HEX	2	The IndexNumber shall be assigned by the First Line HOPS that collates the PCD. This number shall be unique in every row of a particular Parameter table but not necessarily contiguous or sequential within that table.
0A01_StartDateTime	BCDN	6	The date and time upon which the validity of this list item commences, formatted as YYYYMMDDHHII.
0A01_EndDateTime	BCDN	6	The date and time upon which the validity of this list item ceases, formatted as YYYYMMDDHHII.
0A01_IIN	IIN	3	Defines IPE Embodiment (Product type) together with OID, TYP & PTYP.
0A01_OID	OID16	2	Defines IPE Embodiment (Product type) together with IIN, TYP & PTYP.
0A01_TYP	TYP	1	Defines IPE Embodiment (Product type) together with IIN, OID, & PTYP.
0A01_PTYP	PTYP	1	Defines IPE Embodiment (Product type) together with IIN, OID, & TYP.
0A01_EstablishmentCode	ASCII	4	Match to ConcessionaryPassIssuerCostCentre (see note 2). This data element shall be coded as an ASCII representation of a hexadecimal value, padded with leading spaces where appropriate.
0A01_TermDateStart1	Date	2	2 bit padding + DateStamp The Product shall be valid upon this date and upon subsequent dates until Term End Date.
0A01_TermDateEnd1	Date	2	2 bit padding + DateStamp The Product shall be valid upon this date but not valid thereafter, excepting where a second term is defined by TermDateStart2 & TermDateEnd2.
0A01_TermDateStart2	Date	2	2 bit padding + DateStamp The Product shall be valid upon this date and upon subsequent dates until Term End Date (see note 3).
0A01_TermDateEnd2	Date	2	2 bit padding + DateStamp The Product shall be valid upon this date but not valid thereafter.

Note 1: That there may be more than one table entry for each Product Type ID / Establishment Code combination.

Note 2: It is assumed, as this table defines term dates, that it is used for scholars' passes; in which case the establishment code (i.e. the school or college ID code) will always be stored in ConcessionaryPassIssuerCostCentre. This works for IPE TYPs 14, 16, 22, & 23.

Note 3: Including two term ranges in the table has logistical advantages for scheme operators – at half terms and inset days there is very little time between the end of one term and the start of another during which all POSTs can be loaded with the new configuration table. Having two ranges in the table avoids this problem, and significantly reduces the chances of finding two rows in the table for the same product.

6.8.14 Passback times, Codes 0A0E, 0B0E, ListFormatRevision = 2

Table 112c-2 Passback Times, codes 0A0E, 0B0E

ITSO name	Format	Size (bytes)	Comment
0A0E_ListFormatRevision	HEX	1	For list items formatted according to this definition a value of two (2) shall be assigned to this element
0A0E_IndexNumber	HEX	2	The IndexNumber shall be assigned by the First Line HOPS that collates the PCD. This number shall be unique in every row of a particular Parameter table but not necessarily contiguous or sequential within that table.
0A0E_StartDateTime	BCDN	6	The date and time upon which the validity of this list item commences, formatted as YYYYMMDDHHII
0A0E_EndDateTime	BCDN	6	The date and time upon which the validity of this list item ceases, formatted as YYYYMMDDHHII
0A0E_IIN	IIN	3	Defines IPE Embodiment (Product type) together with OID, TYP & PTYP
0A0E_OID	OID16	2	Defines IPE Embodiment (Product type) together with IIN, TYP & PTYP
0A0E_TYP	TYP	1	Defines IPE Embodiment (Product type) together with IIN, OID, & PTYP
0A0E_PTYP	PTYP	1	Defines IPE Embodiment (Product type) together with IIN, OID, & TYP
0A0E_ConcessionaryClass	HEX	1	Match against the ConcessionaryClass data element found within the Product – if no such element within the Product then assume a match ¹¹
0A0E_PassbackTime	HEX	1	Time in minutes

¹¹ This test is included to further differentiate between products

6.9 Manifest Message

The new Manifest message shall be made up of a Header Data Structure plus one Table Data Structure for each of the Parameter Tables present in the complete PCD intended for the recipient POST or SET of POSTS followed by a Trailer Data Structure.

The Header shall contain information on the manifest structure, validity and the number of tables present.

This shall be followed by any number of Table Data Structures that contain information about the contents of all the constituent tables in the Post Configuration Data including a Hash value of the contents of each table present.

This shall be followed by a Trailer Data Element containing the hash value computed for the manifest.

6.9.1 Manifest Message code

The message code 0x0AFF (0x0BFF) shall be used for the manifest message. If PCD is used it shall be mandatory for all POSTs to accept the manifest (where present) within an 0600 message.

Note: This allows the manifest message to be transmitted as any one of the following:

- A single data frame
- On its own within an 0600 message using the HASH sealing method
- Within an 0600 message together with all PCD parameter tables
- Within an 0600 mixed with other lists and or PCD parameter tables

PCD updates shall consist of a complete business rule update covered by a single manifest and be sent from a HOPS in accordance with TS1000-4 clause 8.5.15.2 then actioned by a POST in accordance with TS1000-3 clause 6.4.3.

6.9.2 Manifest message Data

The Data Structures and Elements that make up the Data content of a Manifest message are tabulated below and defined in the remainder of this clause.

Data Structure / Element	ITSO name	Format	Offset	Size (bytes)	Comment
Header	FormatRevision	HEX	0	1	The version of the structure and content of the Data Elements in the entire Manifest message
	Manifest_Description	ASCII	1	20	Free text description of this manifest
	Manifest_DTS	DTS	21	3	The date of creation of this manifest
	StartDateTime	DTS	24	3	The indicative date and time upon which this Manifest commences.
	EndDateTime	DTS	27	3	The indicative date and time after which this Manifest ceases.
	NumTables	HEX	30	2	Total number of Table Data Structures present in this Manifest message
Table	Table_Message_Code	HEX	32	2	As defined in TS1000-6 using the 0x0Axx notation
	ParameterTableIdentifier	HEX	34	2	Unique identity for the table identified by the Table_Message_Code
	Table_FormatRevision	HEX	36	1	The version of the structure and content of the table identified by the Table_Message_Code
	TableNumRows	HEX	37	3	Total number of rows present in the table identified by the Table_Message_Code
	TableHash	HEX	40	20	The SHA1 Hash of all the contents of the table identified by the Table_Message_Code
Table	Other instances of the Table Data Structure above as determined by NumTables				
Trailer	ManifestHash	HEX	VAR	20	The SHA1 Hash of the contents of the Manifest

6.9.3 Data Elements comprising the Manifest Header

This shall be the first Data Structure of the manifest message and shall be comprised of the Data Elements defined in this clause.

6.9.3.1 FormatRevision

This Data Element indicates the version of the structure and content of the data following this element in the Manifest.

This Data Element shall be formatted as a single byte binary integer in the range 1-255.

All the subsequent Data Elements and structures in this clause (6.9.3) and all Data Elements in clause 6.9.4 and 6.9.5 are defined for FormatRevision = 1 of the Manifest.

6.9.3.2 Manifest_Description

A text string assigned by the HOPS to identify the PCD currently applicable to the target equipment. This Data Element shall be formatted as up to 20 ASCII characters left justified and padded with spaces if necessary.

Note: This Data Element is also included in Format Revision 2 of the 0803 message as a new Data Element (0803_Manifest_Description)

6.9.3.3 Manifest_DTS

A DTS generated by the HOPS used to identify the date of creation of the PCD described in the Manifest_Description.

This Data Element shall be formatted as Data Type DTS (see TS1000-1).

It shall be used by the POST to determine if this Manifest supersedes any the POST is currently using.

Note: This Data Element is also included in Format Revision 2 of the 0803 message as a new Data Element (0803_Manifest_DTS)

6.9.3.4 StartDateTime

The date and time upon which this Manifest becomes valid.

This Data Element shall be formatted as Data Type DTS (see TS1000-1) and may be used as defined by the POST application.

6.9.3.5 EndDateTime

The date and time after which this Manifest becomes invalid.

This Data Element shall be formatted as Data Type DTS (see TS1000-1) and may be used as defined by the POST application.

6.9.3.6 NumTables

The total number of Manifest Table Data Structures that are present in this Manifest message.

This Data Element shall be formatted as a 2 byte binary integer in the range 1- 65535.

6.9.4 Data Elements comprising the Table Data structures

One or more instances of the Table Data Structure shall follow the Manifest Header Data Structure. The Table Data Structure shall be comprised of the Data Elements defined in this clause.

Each Table Data Structure shall be associated with a table present in the PCD. Thus if there are 5 tables in the PCD there will be 5 Table Data structures in the Manifest message.

6.9.4.1 Table_Message_Code

This Data Element contains the Parameter Table Message Code using the 0AXX format of the message code as defined for one of the tables in TS1000-6 that is present in the PCD.

6.9.4.2 ParameterTableIdentifier

This Data Element is a copy of the value of the ParameterTableIdentifier that is defined in TS1000-6 and found in the Parameter Table pointed to by the Table_Message_Code in this Data Structure.

6.9.4.3 Table_FormatRevision

This Data Element is a copy of the 0AXX_FormatRevision that is defined in TS1000-6 and found in the Parameter Table pointed to by the Table_Message_Code in this Data Structure.

6.9.4.4 TableNumRows

The total number of rows present in the Parameter Table pointed to by the Table_Message_Code in this Data Structure.

This Data Element shall be formatted as a 2 byte binary integer in the range 1- 65535.

6.9.4.5 TableHash

This Data Element shall be a Hash value derived from the contents of every element in all rows of the Parameter Table pointed to by the Table_Message_Code in this Table Data Structure of the manifest.

The Hash value shall be calculated over the native format version of the Data Elements as defined in clause 6.8 of TS1000-6 for every row of the Parameter Table concatenated in ascending row order.

This Data Element shall be formatted as a 20 byte binary string and shall be generated using the SHA1 algorithm.

6.9.5 Manifest Trailer Data Element

This is single data element following the last Table Data Structure in the Manifest message.

6.9.5.1 ManifestHash

This Data Element shall be a Hash value derived from the contents of every other Data Element in the message in the order received but not including the ManifestHash Data Element itself. The Hash value shall be calculated over the native format version of all the preceding content in the Data Element of the message.

This Data Element shall be formatted as a 20 byte binary string and shall be generated using the SHA1 algorithm.

Note: The ManifestHash Data Element is purely related to the Manifest message and should not be confused with the HASH Data Element used when generating the Seal in a Data Frame Trailer of long messages.

7. POST to HOPS queries.

This group of messages constitutes a query generated by a POST followed by a response from the HOPS.

7.1 Message Codes.

Table 113 - POST to HOPS queries, Message Codes.

Group	Transaction Type	HEX CODE
POST to HOPS queries	Customer Media holder ID information	0500
	Stored Travel Rights details	0501
	Loyalty details	0502
	CTA details	0503
	Request deposit refund rules	0504
	RFU	0505-05FF
	POST to HOPS query responses	Customer Media holder ID information
Stored Travel Rights details		0D01
Loyalty details type 1		0D02
Loyalty details type 2		0D03
CTA details (TYP 4)		0D04
CTA details (TYP 5)		0D05
Deposit refund rules		0D06
RFU		0D07-0DFE
Response: No data available		0DFF

7.2 Request Messages.

All the data elements in request messages shall be used in the HOPS search of Shell and Product Accounts.

7.2.1 Customer Media holder ID information Code 0500

Table 114 - Customer Media holder ID information Code 0500

Name	Format	Size	Comment
MessageFormatRevisionNumber	HEX	1	For messages formatted according to this version of the specification, this element shall be set to one (1)
ITSOShell Reference Number	ISRN	9	
IPEID	IPEIDM	7	
IPE_ISAMID	ISAM ID	4	Included for IPE instance identification. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was use to create the IPE. The IPE instance data from a value group shall not be used here.
IPE_SAMSequenceNumber	ISAM S#	3	Included for IPE instance identification This value shall be taken from the IPE data group instance information, and identifies the ISAM which was use to create the IPE. The IPE instance data from a value group shall not be used here.

7.2.2. Stored Travel Rights details Code 0501

Table 115 - Stored Travel Rights details Code 0501

Name	Format	Size	Comment
MessageFormatRevisionNumber	HEX	1	For messages formatted according to this version of the specification, this element shall be set to one (1)
ITSOShell Reference Number	ISRN	9	
IPEID	IPEIDM	7	
IPE_ISAMID	ISAM ID	4	Included for IPE instance identification. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was use to create the IPE. The IPE instance data from a value group shall not be used here.
IPE_SAMSequenceNumber	ISAM S#	3	Included for IPE instance identification This value shall be taken from the IPE data group instance information, and identifies the ISAM which was use to create the IPE. The IPE instance data from a value group shall not be used here.

7.2.3 Loyalty details, code 0502

Table 116 - Loyalty details, code 0502

Name	Format	Size	Comment
MessageFormatRevisionNumber	HEX	1	For messages formatted according to this version of the specification, this element shall be set to one (1)
ITSOShell Reference Number	ISRN	9	
IPEID	IPEIDM	7	
IPE_ISAMID	ISAM ID	4	Included for IPE instance identification. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was use to create the IPE. The IPE instance data from a value group shall not be used here.
IPE_SAMSequenceNumber	ISAM S#	3	Included for IPE instance identification This value shall be taken from the IPE data group instance information, and identifies the ISAM which was use to create the IPE. The IPE instance data from a value group shall not be used here.

7.2.4 CTA details, code 0503.

Table 117 - CTA details, code 0503

Name	Format	Size	Comment
MessageFormatRevisionNumber	HEX	1	For messages formatted according to this version of the specification, this element shall be set to one (1)
ITSOShellReferenceNumber	ISRN	9	
IPEID	IPEIDM	7	
IPE_ISAMID	ISAM ID	4	Included for IPE instance identification. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was use to create the IPE. The IPE instance data from a value group shall not be used here.
IPE_SAMSequenceNumber	ISAM S#	3	Included for IPE instance identification This value shall be taken from the IPE data group instance information, and identifies the ISAM which was use to create the IPE. The IPE instance data from a value group shall not be used here.

7.2.5 Request Deposit Refund Rules, Code 0504.

When the deposit is for an ITSO Shell, then the IPE-ID element in this message shall identify the Shell so that IIN and OID are those of the Shell owner, TYP shall be set to 32, and PTYP shall be set to indicate the shell version. In these circumstances the IPE_ISAMID and IPE_SAMSequenceNumber may be set to zero (0).

Table 118 - Request Deposit Refund Rules, Code 0504

Name	Format	Size	Comment
MessageFormatRevisionNumber	HEX	1	For messages formatted according to this version of the specification, this element shall be set to one (1)
ITSOShellReferenceNumber	ISRN	9	
IPEID	IPEIDM	7	
IPE_ISAMID	ISAM ID	4	Included for IPE instance identification. This value shall be taken from the IPE data group instance information, and identifies the ISAM which was use to create the IPE. The IPE instance data from a value group shall not be used here.
IPE_SAMSequenceNumber	ISAM S#	3	Included for IPE instance identification This value shall be taken from the IPE data group instance information, and identifies the ISAM which was use to create the IPE. The IPE instance data from a value group shall not be used here.
0504_Flags		1	Bit 0 when set to zero (0) shall signify that the request applies to a deposit for the ITSO ID Bit 0 when set to one (1) shall signify that the request applies to a deposit for the ITSO Shell Bits 1-7 RFU

7.3 Response Messages.

Transmission of Response messages may be restricted according to any security policy instituted by the data owner.

7.3.1 Customer Media holder ID information, Code 0D00.

All data elements shall be included. Where no data is available for a specific message element then that element shall be handled according to clause 2.3.2, excepting that any message element of format LOC1, LOC2, LOC3 or LOC4 shall not be set to zero, but shall contain a NULL location definition in the form of LocDefType 255, and with the minimum permissible structure length.

Table 119 - Customer Media holder ID information, Code 0D00

The entire table as shown shall be included in a message. Where an optional IPE data element is not included in an IPE instance then the element shall be handled according to clause 2.3.2.

Name	Format	Size	Comment
MessageFormatRevisionNumber	HEX	1	For messages formatted according to this version of the specification, this element shall be set to one (1)
IPEID	IPEIDM	7	Identifies the IPE involved in the transaction, taken from the ITSO Shells directory entry. It is a concatenation of IIN, OID, TYP and PTYP in that order.
Shell_IterationNumber	INS#	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
Amount	VALI	2	Amount of any remittance by the Customer Media holder, excluding a deposit.
AmountCurrencyCode	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
HolderTitle	ASCII	4	Where necessary, this element shall be padded with trailing spaces
HolderSurname	ASCII	20	Where necessary, this element shall be padded with trailing spaces
HolderOtherNames	ASCII	30	Where necessary, this element shall be padded with trailing spaces
HolderAddress1	ASCII	30	Where necessary, this element shall be padded with trailing spaces
HolderAddress2	ASCII	30	Where necessary, this element shall be padded with trailing spaces
HolderAddress3	ASCII	30	Where necessary, this element shall be padded with trailing spaces
HolderAddress4	ASCII	30	Where necessary, this element shall be padded with trailing spaces
HolderPostcode	ASCII	10	Where necessary, this element shall be padded with trailing spaces
HolderPhoneDay	ASCII	20	Where necessary, this element shall be padded with trailing spaces
HolderPhoneHome	ASCII	20	Where necessary, this element shall be padded with trailing spaces
HolderPhoneMobile	ASCII	20	Where necessary, this element shall be padded with trailing spaces
HolderEmail	ASCII	40	Where necessary, this element shall be padded with trailing spaces
IPE-TYP	TYP	1	This element indicates the TYP of IPE to which a message instance refers, and also indicates the type of optional data which may be found within a message instance

Name	Format	Size	Comment
			in this instance it will be used to identify whether the IPE is of TYP 14 or TYP 16.
IPELength	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
IPEBitMap	BMP	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0. In this message instance bitmap defines what optional data is included in the IPE.
IPEFormatRevision	HEX	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
RemoveDate	RDATE	1	
ConcessionaryPassIssuerCostCentre	HEX	2	
IDFlags	BMP	1	
RoundingFlagsEnable	FLAG	1	A 0.125 byte value, occupying bit 0 of the byte. Bits 1-7 of the byte shall be set to 0.
PassbackTime	HEX	1	A 0.75 byte value, occupying bits 0 to 5, bits 6 to 7 shall be set to 0.
DateOfBirth	DOB	4	
Language	HEX	1	
HolderID	HEX	4	
RoundingFlag	BMP	1	A 0.125 byte value, occupying bit 0 of the byte. Bits 1-7 of the byte shall be set to 0.
RoundingValueFlag	BMP	1	A 0.125 byte value, occupying bit 0 of the byte. Bits 1-7 of the byte shall be set to 0.
EntitlementExpiryDate	DATE	2	A 1.75 byte value, occupying bits 0-7 of the least significant byte, and bits 0-5 of the most significant byte. Bits 6-7 of the most significant byte shall be set to 0.
DepositMethodOfPayment	MOP	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
DepositVATSalesTax	VAT	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0.
ShellDepositMethodOfPayment	MOP	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
ShellDepositVATSalesTax	VAT	2	A 1.5 byte value occupying bits 0-7 of the least significant byte and bits 0-3 of the most significant byte. Bits 4-7 of the most significant byte shall be set to 0.

Name	Format	Size	Comment
DepositCurrencyCode	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
ShellDepositCurrencyCode	VALC	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
DepositAmount	VALI	2	
ShellDeposit	VALI	2	
ConcessionaryClass	HEX	1	
EntitlementCode	HEX	1	
IPE_IterationNumber	INP#	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
IPE_ISAMID	ISAM ID	4	Included for IPE instance identification. A copy of the data element of the same name contained within the original query which can be used to aid matching of responses and queries in the POST.
IPE_SAMSequenceNumber	ISAM S#	3	Included for IPE instance identification. A copy of the data element of the same name contained within the original query which can be used to aid matching of responses and queries in the POST.
QuerySealerID	ISAM ID	4	Copy of the ISAM ID of the ISAM sealing the original query, included for query identification.
QueryDFSeq#	HEX	3	Copy of the data frame sequence number contained in the data frame trailer of the original query, included for query identification. Note that for class 2 messages this data is generated by the POST, and it is therefore up to query originating POSTs to ensure uniqueness.
ITSOShellReferenceNumberNonEncrypted	uISRN	16	Not encrypted.
SecondaryHolderID	HEX	4	
ForenameLength	HEX	1	Length of Forename, in bytes Set to zero if no Forename stored
Forename	ASCII	Variable, maximum 78	A variable length element, actual length is determined by ForenameLength. Length may exceed 39, but combined length of Forename plus Surname shall not exceed 78 bytes.
SurnameLength	HEX	1	Length of Surname, in bytes

Name	Format	Size	Comment
			Set to zero if no Surname stored
Surname	ASCII	Variable, maximum 78	A variable length element, actual length is determined by SurnameLength. Length may exceed 39, but combined length of Forename plus Surname shall not exceed 78 bytes.
HalfDayOfWeek	BMP	2	
ValidAtOrFrom	LOC1	Variable, maximum 17	
ValidTo	LOC1	Variable, maximum 17	

IDFlags are as defined for the ITSO ID IPE.

7.3.2 Stored Travel Rights details, Code 0D01.

The data returned shall consist of details of the last load, and all subsequent payment transactions, which are available at the time of processing the request. The data sent shall be organised as follows:

Table 120 - Stored Travel Rights details, Code 0D01, Structure

Header data
Number of records following (including the last load)
Last load details
Payment transaction details, in transaction time order, most recent transaction first.

Table 121 - Stored Travel Rights details, Code 0D01, Header

ITSO Name	Format	Size bytes	Comment
MessageFormatRevisionNumber	HEX	1	For messages formatted according to this version of the specification, this element shall be set to one (1)
ITSOShellReferenceNumber	ISRN	9	
IPEID	IPEIDM	7	
IPE_ISAMID	ISAM ID	4	Included for IPE instance identification. A copy of the data element of the same name contained within the original query which can be used to aid matching of responses and queries in the POST.
IPE_SAMSequenceNumber	ISAM S#	3	Included for IPE instance identification. A copy of the data element of the same name contained within the original query which can be used to aid matching of responses and queries in the POST.
QuerySealerID	ISAM ID	4	Copy of the ISAM ID of the ISAM sealing the original query, included for query identification.
QueryDFSeq#	HEX	3	Copy of the data frame sequence number contained in the data frame trailer of the original query, included for query identification. Note that for class 2 messages this data is generated by the POST, and it is therefore up to query originating POSTs to ensure uniqueness.
DepositAmount	HEX	2	Original Deposit
DepositAmountCurrencyCode	VALC	1	
DepositAmountMethodOfPayment	MOP	1	
DepositAmountVATSalesTax	VATM	2	
NumberOfRecords	HEX	1	Count of number of transaction details records sent, including the last load transaction record

Table 122 - Stored Travel Rights details, Code 0D01, Transaction details record

Used for the last load and payment transaction records. Where there is no record of a value load, because the account is new, then the appropriate record shall be included and the Amount element and other transaction details elements shall be handled according to clause 2.3.2. Where there have been no transactions since the last value load, or since the account was opened in the case of a new account, then the NumberOfRecords element shall be set to zero, and no transaction data records appended to the message.

ITSO Name	Format	Size bytes
TransactionSequenceNumber	TS#	2
TransactionDateTimeStamp	DTS	3
ISAMIdModifier	HEX	4
TransactionType	HEX	1
Value	VALI	2
ValueCurrencyCode	VALC	1
ActionSequenceNumber	HEX	1
IPEFormatRevision	HEX	1
RemoveDate	RDATE	1
ProductRetailer	OID	2
TYP2Flags	BMP	1
TYP2ValueFlags	BMP	1
Threshold	HEX	2
TopUpAmount	HEX	2
MaxValue2	HEX	2
StartDateAutoTopUp	DATE	2

Parameter flag definitions are as defined for Stored Travel Rights IPEs.

Transaction type codes are as defined for Stored Travel Rights IPEs.

7.3.3 Loyalty details type 1, Code 0D02 and type 2, Code 0D03.

Table 123 - Loyalty details type 1, Code 0D02 and type 2, Code 0D03

Name	Format	Size	Comment
MessageFormatRevisionNumber	HEX	1	For messages formatted according to this version of the specification, this element shall be set to three (3)
IPEID	IPEIDM	7	Identifies the IPE involved in the transaction, taken from the ITSO Shells directory entry. It is a concatenation of IIN, OID, TYP and PTYP in that order.
Shell_IterationNumber	INS#	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
HolderTitle	ASCII	4	
HolderName	ASCII	50	
HolderAddress	ASCII	100	
HolderPostcode	ASCII	8	
HolderPhoneDay	ASCII	20	
HolderPhoneHome	ASCII	20	
HolderEmail	ASCII	40	
IPE-TYP	TYP	1	This element indicates the TYP of IPE to which a message instance refers, and also indicates the type of optional data which may be found within a message instance in this instance it will be used to identify whether the IPE is of TYP 3 or TYP 17.
ProductRetailer	OID16	2	
IPE_IterationNumber	INP#	1	A 0.5 byte value, occupying bits 0 to 3, bits 4 to 7 shall be set to 0.
IPE_ISAMID	ISAM ID	4	Included for IPE instance identification. A copy of the data element of the same name contained within the original query which can be used to aid matching of responses and queries in the POST.
IPE_SAMSequenceNumber	ISAM S#	3	Included for IPE instance identification. A copy of the data element of the same name contained within the original query which can be used to aid matching of responses and queries in the POST.
QuerySealerID	ISAM ID	4	Copy of the ISAM ID of the ISAM sealing the original query, included for query identification.

Name	Format	Size	Comment
QueryDFSeq#	HEX	3	Copy of the data frame sequence number contained in the data frame trailer of the original query, included for query identification. Note that for class 2 messages this data is generated by the POST, and it is therefore up to query originating POSTs to ensure uniqueness.
ITSOShellReferenceNumberNonEncrypted	uISRN	16	Not encrypted.

7.3.5 CTA details, Code 0D04, 0D05.

The data returned shall consist of details of the last payment into the account (settlement), and all subsequent payment transactions, which are available at the time of processing the request. The data sent shall be organised as follows:

Table 124 - CTA details, Code 0D04, 0D05, Structure

Header data
Number of records following (including the last load)
Details of last payment into account
Payment transaction details, in transaction time order, most recent transaction first.

Table 125 - CTA details, Code 0D04, 0D05, Header

ITSO Name	Format	Size bytes	Comment
MessageFormatRevisionNumber	HEX	1	For messages formatted according to this version of the specification, this element shall be set to one (1)
ITSOShellReferenceNumber	ISRN	9	
IPEID	IPEIDM	7	
IPE_ISAMID	ISAM ID	4	Included for IPE instance identification. A copy of the data element of the same name contained within the original query which can be used to aid matching of responses and queries in the POST.
IPE_SAMSequenceNumber	ISAM S#	3	Included for IPE instance identification. A copy of the data element of the same name contained within the original query which can be used to aid matching of responses and queries in the POST.
QuerySealerID	ISAM ID	4	Copy of the ISAM ID of the ISAM sealing the original query, included for query identification.

ITSO Name	Format	Size bytes	Comment
QueryDFSeq#	HEX	3	Copy of the data frame sequence number contained in the data frame trailer of the original query, included for query identification. Note that for class 2 messages this data is generated by the POST, and it is therefore up to query originating POSTs to ensure uniqueness.
DepositAmount	HEX	2	Original Deposit
DepositAmountCurrencyCode	VALC	1	
DepositAmountMethodOfPayment	MOP	1	
DepositAmountVATSalesTax	VATM	2	
NumberOfRecords	HEX	1	Count of number of transaction details records sent, including the last load transaction record

Table 126 - CTA details, Code 0D04, 0D05, Transaction details record

Used for the last payment into account and payment transaction records. Where there was no previous payment into the account, because the account is new, then the appropriate record shall be included and the Amount element and other transaction details elements shall be handled according to clause 2.3.2. Where there are have been no transactions since the last payment into the account, or since the account was opened in the case of a new account, then the NumberOfRecords element shall be set to zero, and no transaction data records appended to the message.

ITSO Name	Format	Size bytes	Comment
TransactionSequenceNumber	TS#	2	
TransactionDateTimeStamp	DTS	3	
ISAMIDModifier	HEX	4	ISAMID (of the Terminal which last changed this record)
TransactionType	HEX	1	
CumulativeAmount	VALI	2	Set to zero (0) for a 0D05 message
ActionSequenceNumber	HEX	1	
IPEFormatRevision	HEX	1	
RemoveDate	RDATE	1	
ProductRetailer	OID	2	
TYP4Flags	BMP	1	Set to zero (0) for a 0D05 message
TYP4ValueFlags	BMP	1	Set to zero (0) for a 0D05 message
TYP5Flags	BMP	1	Set to zero (0) for a 0D04 message
TYP5ValueFlags	BMP	1	Set to zero (0) for a 0D04 message
CountOfTransactions	HEX	1	Set to zero (0) for a 0D04 message
LastResetDate	DATE	2	Set to zero (0) for a 0D04 message
WeeksPerPeriod	HEX	1	Set to zero (0) for a 0D04 message
QuantityTransactions	HEX	1	Set to zero (0) for a 0D04 message
MaxValue	VALI	2	Insert MaxValue4 contents in a 0D04 message Insert MaxValue5 contents in a 0D05 message
StartDateCTA	DATE	2	
EndDate	DATE	2	
CurrencyCode	VALC	1	
Amount	VAL	2	Amount paid into the account in settlement, or value of the transaction, as appropriate.

7.3.6 Deposit Refund Rules, Code 0D06.

When the deposit is for an ITSO Shell, then the IPE-ID element in this message shall identify the Shell so that IIN and OID are those of the Shell owner, TYP shall be set to 32, and PTYP shall be set to indicate the shell version. In these circumstances the IPE_ISAMID and IPE_SAMSequenceNumber shall be set to the values contained in element of the same name within the matching 0504 message.

Table 127 - Deposit Refund Rules, Code 0D06

Name	Format	Size	Comment
MessageFormatRevisionNumber	HEX	1	For messages formatted according to this version of the specification, this element shall be set to one (1)
ITSOShellReferenceNumber	ISRN	9	
IPEID	IPEIDM	7	
IPE_ISAMID	ISAM ID	4	Included for IPE instance identification. A copy of the data element of the same name contained within the original query which can be used to aid matching of responses and queries in the POST.
IPE_SAMSequenceNumber	ISAM S#	3	Included for IPE instance identification. A copy of the data element of the same name contained within the original query which can be used to aid matching of responses and queries in the POST.
QuerySealerID	ISAM ID	4	Copy of the ISAM ID of the ISAM sealing the original query, included for query identification.
QueryDFSeq#	HEX	3	Copy of the data frame sequence number contained in the data frame trailer of the original query, included for query identification. Note that for class 2 messages this data is generated by the POST, and it is therefore up to query originating POSTs to ensure uniqueness.
0D06_Flags	BMP	1	Bit 0 when set to zero (0) shall signify that the rules apply to a deposit for the ITSO ID Bit 0 when set to one (1) shall signify that the rules apply to a deposit for the ITSO shell Bits 1-7 RFU
0D06_RefundRule	HEX	1	Refer to Table 128
0D06_RefundValue	VALI	2	Value to be refunded, subject to RefundRule. If no value specified then this element shall be set to zero (0).
0D06_RefundPercentage	HEX	1	Percentage of deposit to be refunded, subject to RefundRule. If no value specified then this element shall be set to zero (0).

Table 128 – Deposit Refund Rules, 0D06_RefundRule, Definition

Code	Refund Rule
0	RFU
1	Refund not permitted
2	Refund full deposit amount stored in IPE
3	Refund part of deposit amount stored in IPE, where the amount refunded is determined by the RefundPercent element in this response
4	Refund value returned in this response (RefundValue)
5	Cancel Product, refund will be made in due course by back office
6	Refund determined according to rules stored in the POST. (POSTs which do not contain these rules shall not cancel the relevant Product or refund the deposit)
7 – 255	RFU

7.3.7 Response: No data available, Code 0DFF.

This response shall be used when there is no data available to answer a query.

Table 128a – Response: No data available, Code 0DFF

Name	Format	Size	Comment
MessageFormatRevisionNumber	HEX	1	For messages formatted according to this version of the specification, this element shall be set to one (1)
IPE_ISAMID	ISAM ID	4	Included for IPE instance identification. A copy of the data element of the same name contained within the original query which can be used to aid matching of responses and queries in the POST.
IPE_SAMSequenceNumber	ISAM S#	3	Included for IPE instance identification. A copy of the data element of the same name contained within the original query which can be used to aid matching of responses and queries in the POST.
QuerySealerID	ISAM ID	4	Copy of the ISAM ID of the ISAM sealing the original query, included for query identification.
QueryDFSeq#	HEX	3	Copy of the data frame sequence number contained in the data frame trailer of the original query, included for query identification. Note that for class 2 messages this data is generated by the POST, and it is therefore up to query originating POSTs to ensure uniqueness.
DenialCode	HEX	1	Refer to table 128b

Table 128b – DenialCode listing

DenialCode value	DenialCode meaning
0	This code shall not be used
1	No data available
2	Data withheld because transmission would result in violation of the Data owner's security policy
3-255	RFU

8. IPE Embodiment Parameters.

8.1 Introduction

For an IPE instance to be created, various parameters must be defined by the IPE owner. These definitions will vary from one IPE embodiment to another, and therefore a specification of these parameters is required for each embodiment. The nature of these specifications will also vary by IPE TYP.

The following tables define the Embodiment parameters for each IPE TYP, in a form which may be transmitted electronically. Embodiment parameters determine the rules for creating values for loading into IPE instances, and may also constrain POST operation.

For the majority of Elements, actual values included in list instances shall be determined by the target IPE owner. For the remaining elements, actual values are determined in the following clauses.

Note that for certain IPE elements there is no data to send. Affected elements are indicated within the tables, by a ListDataSize of 0.

Where the ListDataSize = 0 and where only one rule code is defined, then the element shall be omitted from the embodiment list.

Where more than one rule code is defined but where only one has a ListDataSize = 0, then the element shall be omitted from the embodiment list if the selected rule code has a ListDataSize = 0.

Where an IPE contains optional data, and where the presence or absence of that data is indicated by a bit map included within the IPE, then the optional data elements:

- shall be included in the Embodiment list when they are required to be included in the target IPE, i.e. when the relevant bit map bit(s) is(are) set.
- shall be omitted from the Embodiment list when they are not required to be included in the target IPE, i.e. when the relevant bit map bit(s) is(are) not set.

Where there are multiple rule codes possible and more than one rule code that could be used has a ListDataSize = 0, the element record is sent with ListDataSize = 0 and ListData is empty [null].

Where an element is not included in the Embodiment parameter list for this reason, the POST shall be programmed to populate the matching IPE instance element with the correct data.

IPE Embodiment Parameter lists may be transmitted to POSTs as parameter tables, or in Actionlists.

8.2 File Structure

All IPE Embodiment Parameters files shall comprise the requisite number of records, where a single record is structured as follows:

Table 129 – Embodiment Parameter List Record Structure

ITSO Name	Offset	Format	Size bytes	Comment
ElementNumber	0	HEX	1	The identity number of each parameter, obtained from the following definition tables
RuleCode	1	HEX	1	The rule code for each element, obtained from the following definition tables
ListDataSize	2	HEX	1	The data size for each element, obtained from the following definition tables. This is the size of the element stored in the list. A size of 0 is permissible, in which case there shall not be a ListData element.
ListData	3	Hex	variable	For those elements where a value is required, it shall be stored here. ListData shall be treated as HEX for the purposes of conversion to Transmission Format, irrespective of the data type defined for each individual element in the embodiment lists.

The first three records in each list shall have special meaning, and together with IIN shall be used to identify the IPE Embodiment. This information shall be used both to identify the target IPE embodiment, and to create the directory entry for IPE instances created.

The ListData element format will vary, and will follow the format of the target IPE element.

8.2.1 List Creation Rules

Each Embodiment parameter list shall be based upon the entire table as defined below and shall be created as a single list containing the requisite number of records as defined above, and transmitted as a single message according to ITSO TS 1000-9.

All data elements in the Embodiment parameter list shall occupy a whole number of bytes. Where a target data element does not occupy a whole number of bytes, then the data shall be arranged in the list element such that bit 0 contains the data that shall be loaded to bit 0 of the target element, bit 1 contains the data that shall be loaded to bit 1 of the target element, and so on.

Elements shall be included in the list in the order shown in the following tables.

Whilst OID is shown here as a single element for the convenience of Embodiment Parameter List creators, POST implementers should note that it is stored in more complex form in the directory, please refer to ITSO TS 1000-2.

Lists contain for each element a Content Generation Rule Code which defines the action a POST shall take when creating an IPE according to the list. RuleCodes are defined in Table 130.

Table 130 – Embodiment parameter list RuleCode definition

RuleCode	Content Generation Rule
1	IPE element value determined upon IPE creation
2	IPE element value set to the value contained within the Embodiment parameter list
3	IPE element value set to one (1)
4	IPE element value set to zero (0)
5	IPE element value set to today's date plus the value contained within the Embodiment parameter list
6	IPE element value set to current date and time

8.3 List Format Revision 1, IPE Format Revision 1.

Definition of IPE Embodiment Parameters for IPEs formatted according to format version code 1.

Note that in the following tables, extra columns are included for the information of users. Only those columns marked LD shall be included in transmitted Embodiment parameter lists.

Note that, for guidance, values for elements where the rule is marked with a * would normally be determined at the issuing POST except in circumstances where the embodiment specification is included in an Actionlist.

Note that in element 9, the most significant 4 bits shall contain ListFormatRevision, and the least significant 4 bits shall contain IPEFormatRevision. Only IPEFormatRevision shall be programmed into IPE instances.

Elements 1 to 9 of each list shall retain their current sizes for future format versions.

Table 131 - IPE TYP 2, Format Version 1

LD	Information only					LD	LD	LD
Element Number	Target IPE Group	Target IPE ITSO Name	Target IPE Data Type	Included in target IPE?	Content generation rule	Rule Code	List Data Size	List Data
1	DIR	OID	EF + OID13	Dir Entry	set to value in embodiment spec	2	2	value
2	DIR	TYP	TYP	Dir Entry	set to value in embodiment spec	2	1	2
3	DIR	PTYP	PTYP	Dir Entry	set to value in embodiment spec	2	1	value
4	DIR	VGP	FLAG	Dir Entry	set to one (1)	3	0	-----
5	DIR	IINL	FLAG	Dir Entry	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
6	DIR	EXP (Expiry Date)	DATE	Dir Entry	set to value in embodiment spec or set to value determined upon creation or set to today's date plus the value in embodiment spec	1 or 2 or 5	0 or 2	null or value
7	H	IPELength	HEX	Always	determined upon IPE creation	1	0	-----
8	H	IPEBitMap	BMP	Always	Set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
9	H	ListFormatRevision + IPEFormatRevision	HEX	Always	set to value in embodiment spec	2	1	0x11
10	IPE	RemoveDate	RDATE	Always	set to value in embodiment spec	2	1	value
11	IPE	ProductRetailer	OID16	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value
12	IPE	TYP2Flags - 0	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
13	IPE	TYP2Flags – 1	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
14	IPE	TYP2Flags – 2	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value

15	IPE	TYP2Flags – 3	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
16	IPE	TYP2Flags – 4	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
17	IPE	TYP2Flags – PrintTicket	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
18	IPE	TYP2Flags - PrintReceipt	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
19	IPE	TYP2Flags - 7	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
20	IPE	Threshold	VALI	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 2	null or value
21	IPE	TopUpAmount	VALI	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 2	null or value
22	IPE	MaxValue2	VALI	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 2	null or value
23	IPE	MaximumNegativeAmount	VALI	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 2	null or value
24	IPE	DepositAmount	VALI	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 2	null or value
25	IPE	StartDateAutoTopUp	DATE	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 2	null or value
26	IPE	RFU	RFU	Always	set to zero (0)	4	0	-----
27	IPE	DepositMethodOfPayment	MOP	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
28	IPE	DepositCurrencyCode	VALC	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
29	IPE	DepositVATSalesTax	VAT	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 2	null or value
30	IPE	Padding	PAD	If Required	set to zero (0)	4	0	-----
31	IPE O	IIN	IIN	If Required	set to value in embodiment spec	2	3	value
32	INS	KID	HEX	Always	determined upon IPE creation	1	0	-----

33	INS	INP#	HEX	Always	set to zero (0)	4	0	-----
34	INS	ISAMIDCreator	HEX	Always	determined upon IPE creation	1	0	-----
35	INS	ISAMS#	HEX	Always	determined upon IPE creation	1	0	-----
36	INS	SEAL	BIN	Always	determined upon IPE creation	1	0	-----
37	VH	VGLength	HEX	Always	determined upon IPE creation	1	0	-----
38	VH	VGBitMap	BMP	Always	Set to value in embodiment spec or determined upon IPE creation	1 or 2	0 or 1	Null or value
39	VH	VGFormatRevision	HEX	Always	set to value in embodiment spec	2	1	9
40	V	TransactionType	HEX	Always	Set to value in embodiment spec, or set to value determined upon IPE creation, or set to zero (0)	1 or 2 or 4	0 or 1	Null or value
41	V	TransactionSequenceNumber	TS#	Always	Set to value in embodiment spec, or set to value determined upon IPE creation, or set to zero (0)	1 or 2 or 4	0 or 2	Null or value
42	V	DateTimeStamp	DTS	Always	determined upon IPE creation	1	0	-----
43	V	ISAMIDModifier	HEX	Always	determined upon IPE creation	1	0	-----
44	V	ActionSequenceNumber	HEX	Always	set to zero (0)	4	0	-----
45	V	Value	VALS	Always	Set to value in embodiment spec, or set to value determined upon IPE creation, or set to zero (0)	1 or 2 or 4	0 or 2	Null or value
46	V	ValueCurrencyCode	VALC	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
47	V	CountJourneyLegs	HEX	Always	set to zero (0)	4	0	-----
48	V	CumulativeFare	VALI	Always	set to zero (0)	4	0	-----
49	V	TYP2ValueFlags - AutoTopUp	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
50	V	TYP2ValueFlags - IPEPriorityOverride	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
51	V	TYP2ValueFlags - AutoTopUpInternal	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value

52	V	Padding	PAD	If Required	set to zero (0)	4	0	-----
53	INS	KID	HEX	Always	determined upon IPE creation	1	0	-----
54	INS	INP#	HEX	Always	set to zero (0)	4	0	-----
55	INS	ISAMIDCreator	HEX	Always	determined upon IPE creation	1	0	-----
56	INS	ISAMS#	HEX	Always	determined upon IPE creation	1	0	-----
57	INS	SEAL	BIN	Always	determined upon IPE creation	1	0	-----

Table 132 - IPE TYP 3, Format Version 1

LD	Information only					LD	LD	LD
Element Number	Target IPE Group	Target IPE ITSO Name	Target IPE Data Type	Included in target IPE?	Content generation rule	Rule Code	List Data Size	List Data
1	DIR	OID	EF + OID13	Dir Entry	set to value in embodiment spec	2	2	value
2	DIR	TYP	TYP	Dir Entry	set to value in embodiment spec	2	1	3
3	DIR	PTYP	PTYP	Dir Entry	set to value in embodiment spec	2	1	value
4	DIR	VGP	FLAG	Dir Entry	set to one (1)	3	0	-----
5	DIR	IINL	FLAG	Dir Entry	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
6	DIR	EXP (Expiry Date)	DATE	Dir Entry	set to value in embodiment spec or set to value determined upon creation or set to today's date plus the value in embodiment spec	1 or 2 or 5	0 or 2	null or value
7	H	IPELength	HEX	Always	determined upon IPE creation	1	0	-----
8	H	IPEBitMap	BMP	Always	Set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
9	H	ListFormatRevision + IPEFormatRevision	HEX	Always	set to value in embodiment spec	2	1	0x11
10	IPE	RemoveDate	RDATE	Always	set to value in embodiment spec	2	1	Value
11	IPE	ProductRetailer	OID16	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value
12	IPE	Padding	PAD	If Required	set to zero (0)	4	0	-----
13	IPE O	IIN	IIN	If Required	set to value in embodiment spec	2	3	Value
14	INS	KID	HEX	Always	determined upon IPE creation	1	0	-----
15	INS	INP#	HEX	Always	set to zero (0)	4	0	-----

16	INS	ISAMIDCreator	HEX	Always	determined upon IPE creation	1	0	-----
17	INS	ISAMS#	HEX	Always	determined upon IPE creation	1	0	-----
18	INS	SEAL	BIN	Always	determined upon IPE creation	1	0	-----
19	VH	VGLength	HEX	Always	determined upon IPE creation	1	0	-----
20	VH	VGBitMap	BMP	Always	Set to value in embodiment spec or determined upon IPE creation	1 or 2	0 or 1	Null or value
21	VH	VGFormatRevision	HEX	Always	set to value in embodiment spec	2	1	9
22	V	TransactionType	HEX	Always	Set to value in embodiment spec, or set to value determined upon IPE creation, or set to zero (0)	1 or 2 or 4	0 or 1	Null or Value
23	V	TransactionSequenceNumber	TS#	Always	Set to value in embodiment spec, or set to value determined upon IPE creation, or set to zero (0)	1 or 2 or 4	0 or 2	Null or Value
24	V	DateTimeStamp	DTS	Always	determined upon IPE creation	1	0	-----
25	V	ISAMIDModifier	HEX	Always	determined upon IPE creation	1	0	-----
26	V	ActionSequenceNumber	HEX	Always	set to zero (0)	4	0	-----
27	V	LoyaltyPoints	HEX	Always	Set to value in embodiment spec, or set to value determined upon IPE creation, or set to zero (0)	1 or 2 or 4	0 or 2	Null or Value
28	V	UserDefined	UD	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 2	null or value
29	V	Padding	PAD	If Required	set to zero (0)	4	0	-----
30	INS	KID	HEX	Always	determined upon IPE creation	1	0	-----
31	INS	INP#	HEX	Always	set to zero (0)	4	0	-----
32	INS	ISAMIDCreator	HEX	Always	determined upon IPE creation	1	0	-----
33	INS	ISAMS#	HEX	Always	determined upon IPE creation	1	0	-----
34	INS	SEAL	BIN	Always	determined upon IPE creation	1	0	-----

Table 133 - IPE TYP 4, Format Version 1

LD	Information only					LD	LD	LD
Element Number	Target IPE Group	Target IPE ITSO Name	Target IPE Data Type	Included in target IPE?	Content generation rule	Rule Code	List Data Size	List Data
1	DIR	OID	EF + OID13	Dir Entry	set to value in embodiment spec	2	2	Value
2	DIR	TYP	TYP	Dir Entry	set to value in embodiment spec	2	1	4
3	DIR	PTYP	PTYP	Dir Entry	set to value in embodiment spec	2	1	Value
4	DIR	VGP	FLAG	Dir Entry	set to one (1)	3	0	-----
5	DIR	IINL	FLAG	Dir Entry	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
6	DIR	EXP (Expiry Date)	DATE	Dir Entry	set to value in embodiment spec or set to value determined upon creation or set to today's date plus the value in embodiment spec	1 or 2 or 5	0 or 2	null or value
7	H	IPELength	HEX	Always	determined upon IPE creation	1	0	-----
8	H	IPEBitMap	BMP	Always	Set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
9	H	ListFormatRevision + IPEFormatRevision	HEX	Always	set to value in embodiment spec	2	1	0x11
10	IPE	RemoveDate	RDATE	Always	set to value in embodiment spec	2	1	value
11	IPE	ProductRetailer	OID16	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value
12	IPE	TYP4Flags - 0	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
13	IPE	TYP4Flags – 1	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
14	IPE	TYP4Flags – 2	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value

15	IPE	TYP4Flags – 3	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
16	IPE	TYP4Flags – 4	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
17	IPE	TYP4Flags – PrintTicket	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
18	IPE	TYP4Flags - PrintReceipt	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
19	IPE	TYP4Flags - 7	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
20	IPE	MaxValue4	VALI	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 2	null or value
21	IPE	DepositAmount	VALI	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 2	null or value
22	IPE	StartDateCTA	DATE	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value
23	IPE	EndDate	DATE	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value
24	IPE	DepositMethodOfPayment	MOP	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
25	IPE	DepositCurrencyCode	VALC	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
26	IPE	DepositVATSalesTax	VAT	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value
27	IPE	Padding	PAD	If Required	set to zero (0)	4	0	-----
28	IPE O	IIN	IIN	If Required	set to value in embodiment spec	2	3	value

29	INS	KID	HEX	Always	determined upon IPE creation	1	0	-----
30	INS	INP#	HEX	Always	set to zero (0)	4	0	-----
31	INS	ISAMIDCreator	HEX	Always	determined upon IPE creation	1	0	-----
32	INS	ISAMS#	HEX	Always	determined upon IPE creation	1	0	-----
33	INS	SEAL	BIN	Always	determined upon IPE creation	1	0	-----
34	VH	VGLength	HEX	Always	determined upon IPE creation	1	0	-----
35	VH	VGBitMap	BMP	Always	Set to value in embodiment spec or determined upon IPE creation	1 or 2	0 or 1	Null or value
36	VH	VGFormatRevision	HEX	Always	set to value in embodiment spec	2	1	9
37	V	TransactionType	HEX	Always	set to zero (0)	4	0	-----
38	V	TransactionSequenceNumber	TS#	Always	set to zero (0)	4	0	-----
39	V	DateTimeStamp	DTS	Always	determined upon IPE creation	1	0	-----
40	V	ISAMIDModifier	HEX	Always	determined upon IPE creation	1	0	-----
41	V	ActionSequenceNumber	HEX	Always	set to zero (0)	4	0	-----
42	V	CumulativeAmount	VALI	Always	set to zero (0)	4	0	-----
43	V	ValueCurrencyCode	VALC	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
44	V	CountJourneyLegs	HEX	Always	set to zero (0)	4	0	-----
45	V	CumulativeFare	VALI	Always	set to zero (0)	4	0	-----
46	V	TYP4ValueFlags - 0	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
47	V	TYP4ValueFlags - IPEPriorityOverride	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
48	V	TYP4ValueFlags – 2	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value

49	V	TYP4ValueFlags - 3	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
50	V	Padding	PAD	If Required	set to zero (0)	4	0	-----
51	INS	KID	HEX	Always	determined upon IPE creation	1	0	-----
52	INS	INP#	HEX	Always	set to zero (0)	4	0	-----
53	INS	ISAMIDCreator	HEX	Always	determined upon IPE creation	1	0	-----
54	INS	ISAMS#	HEX	Always	determined upon IPE creation	1	0	-----
55	INS	SEAL	BIN	Always	determined upon IPE creation	1	0	-----

Table 134 - IPE TYP 5, Format Version 1

LD	Information only					LD	LD	LD
Element Number	Target IPE Group	Target IPE ITSO Name	Target IPE Data Type	Included in target IPE?	Content generation rule	Rule Code	List Data Size	List Data
1	DIR	OID	EF + OID13	Dir Entry	set to value in embodiment spec	2	2	value
2	DIR	TYP	TYP	Dir Entry	set to value in embodiment spec	2	1	5
3	DIR	PTYP	PTYP	Dir Entry	set to value in embodiment spec	2	1	value
4	DIR	VGP	FLAG	Dir Entry	set to one (1)	3	0	-----
5	DIR	IINL	FLAG	Dir Entry	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
6	DIR	EXP (Expiry Date)	DATE	Dir Entry	set to value in embodiment spec or set to value determined upon creation or set to today's date plus the value in embodiment spec	1 or 2 or 5	0 or 2	null or value
7	H	IPELength	HEX	Always	determined upon IPE creation	1	0	-----
8	H	IPEBitMap	BMP	Always	Set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
9	H	ListFormatRevision + IPEFormatRevision	HEX	Always	set to value in embodiment spec	2	1	0x11
10	IPE	RemoveDate	RDATE	Always	set to value in embodiment spec	2	1	Value
11	IPE	ProductRetailer	OID16	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value
12	IPE	TYP5Flags - 0	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
13	IPE	TYP5Flags - 1	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
14	IPE	TYP5Flags - 2	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value

15	IPE	TYP5Flags – 3	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
16	IPE	TYP5Flags – 4	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
17	IPE	TYP5Flags – PrintTicket	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
18	IPE	TYP5Flags - PrintReceipt	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
19	IPE	TYP5Flags - 7	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
20	IPE	WeeksPerPeriod	HEX	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
21	IPE	QuantityTransactions	HEX	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
22	IPE	MaxValue5	VALI	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 2	null or value
23	IPE	DepositAmount	VALI	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 2	null or value
24	IPE	StartDateCTA	DATE	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value
25	IPE	EndDate	DATE	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value
26	IPE	DepositMethodOfPayment	MOP	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
27	IPE	DepositCurrencyCode	VALC	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
28	IPE	DepositVATSalesTax	VAT	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value
29	IPE	Padding	PAD	If Required	set to zero (0)	4	0	-----
30	IPE O	IIN	IIN	If Required	set to value in embodiment spec	2	3	Value

31	INS	KID	HEX	Always	determined upon IPE creation	1	0	-----
32	INS	INP#	HEX	Always	set to zero (0)	4	0	-----
33	INS	ISAMIDCreator	HEX	Always	determined upon IPE creation	1	0	-----
34	INS	ISAMS#	HEX	Always	determined upon IPE creation	1	0	-----
35	INS	SEAL	BIN	Always	determined upon IPE creation	1	0	-----
36	VH	VGLength	HEX	Always	determined upon IPE creation	1	0	-----
37	VH	VGBitMap	BMP	Always	Set to value in embodiment spec or determined upon IPE creation	1 or 2	0 or 1	Null or value
38	VH	VGFormatRevision	HEX	Always	set to value in embodiment spec	2	1	9
39	V	TransactionType	HEX	Always	set to zero (0)	4	0	-----
40	V	TransactionSequenceNumber	TS#	Always	set to zero (0)	4	0	-----
41	V	DateTimeStamp	DTS	Always	determined upon IPE creation	1	0	-----
42	V	ISAMIDModifier	HEX	Always	determined upon IPE creation	1	0	-----
43	V	ActionSequenceNumber	HEX	Always	set to zero (0)	4	0	-----
44	V	CountOfTransactions	HEX	Always	set to zero (0)	4	0	-----
45	V	RFU	RFU	Always	set to zero (0)	4	0	-----
46	V	LastResetDate	DATE	Always	set to current date and time	6	0	-----
47	V	ValueCurrencyCode	VALC	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
48	V	TYP5ValueFlags - 0	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
49	V	TYP5ValueFlags - IPEPriorityOverride	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
50	V	TYP5ValueFlags - 2	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value

51	V	TYP5ValueFlags - 3	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
52	V	RFU	RFU	Always	set to zero (0)	4	0	-----
53	V	CountJourneyLegs	HEX	Always	set to zero (0)	4	0	-----
54	V	Padding	PAD	If Required	set to zero (0)	4	0	-----
55	INS	KID	HEX	Always	determined upon IPE creation	1	0	-----
56	INS	INP#	HEX	Always	set to zero (0)	4	0	-----
57	INS	ISAMIDCreator	HEX	Always	determined upon IPE creation	1	0	-----
58	INS	ISAMS#	HEX	Always	determined upon IPE creation	1	0	-----
59	INS	SEAL	BIN	Always	determined upon IPE creation	1	0	-----

Table 135 – IPE TYP 14, Format Version 1

LD	Information only					LD	LD	LD
Element Number	Target IPE Group	Target IPE ITSO Name	Target IPE Data Type	Included in target IPE?	Content generation rule	Rule Code	List Data Size	List Data
1	DIR	OID	EF + OID13	Dir Entry	set to value in embodiment spec	2	2	value
2	DIR	TYP	TYP	Dir Entry	set to value in embodiment spec	2	1	14
3	DIR	PTYP	PTYP	Dir Entry	set to value in embodiment spec	2	1	value
4	DIR	VGP	FLAG	Dir Entry	set to zero (0)	4	0	-----
5	DIR	IINL	FLAG	Dir Entry	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
6	DIR	EXP (Expiry Date)	DATE	Dir Entry	set to value in embodiment spec or set to value determined upon creation or set to today's date plus the value in embodiment spec	1 or 2 or 5	0 or 2	null or value
7	H	IPELength	HEX	Always	determined upon IPE creation	1	0	-----
8	H	IPEBitMap	BMP	Always	Set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
9	H	ListFormatRevision + IPEFormatRevision	HEX	Always	set to value in embodiment spec	2	1	0x11
10	IPE	RemoveDate	RDATE	Always	set to value in embodiment spec	2	1	Value
11	IPE	ConcessionaryPassIssuerCostCentre	HEX	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 2	null or value
12	IPE	IDFlags - Personalised	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
13	IPE	IDFlags – Gender	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
14	IPE	IDFlags – URI	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
15	IPE	IDFlags – CompanionAllowed	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value

16	IPE	IDFlags – PrintTicket	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
17	IPE	IDFlags – DepositRefundable?	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
18	IPE	IDFlags – ShellDepositRefundable?	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
19	IPE	RoundingFlagsEnable	FLAG	Always	set to value in embodiment spec	2	1	Value
20	IPE	RFU	RFU	Always	set to zero (0)	4	0	----
21	IPE	PassbackTime	HEX	Always	set to value in embodiment spec	2	1	Value
22	IPE	HolderID	HEX	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 4	null or value
23	IPE	RoundingFlag	FLAG	Always	set to value in embodiment spec	2	1	Value
24	IPE	RoundingValueFlag	FLAG	Always	set to value in embodiment spec	2	1	value
25	IPE	EntitlementExpiryDate	DATE	Always	Set to value in embodiment spec or set to value determined upon creation or set to today's date plus the value in embodiment spec	1 or 2 or 5	0 or 2	Null or date value or date offset value
26	IPE	RFU	RFU	Always	set to zero (0)	4	0	-----
27	IPE	DepositCurrencyCode	VALC	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
28	IPE	DepositMethodOfPayment	MOP	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
29	IPE	DepositVATSalesTax	VAT	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value
30	IPE	DepositAmount	VALI	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 2	null or value
31	IPE	EntitlementCode	HEX	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
32	IPE	ConcessionaryClass	HEX	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value

33	IPE O	SecondaryHolderID	HEX	according to bit map	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 4	null or value
34	IPE O	HalfDayOfWeek	BMP	according to bit map	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value
35	IPE O	ValidAtOrFrom	LOC1	according to bit map	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or variable, maximum 17	null or value
36	IPE O	ValidTo	LOC1	according to bit map	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or variable, maximum 17	null or value
37	IPE	Padding	PAD	If Required	set to zero (0)	4	0	-----
38	IPE O	IIN	IIN	If Required	set to value in embodiment spec	2	3	value
39	INS	KID	HEX	Always	determined upon IPE creation	1	0	-----
40	INS	INP#	HEX	Always	set to zero (0)	4	0	-----
41	INS	ISAMIDCreator	HEX	Always	determined upon IPE creation	1	0	-----
42	INS	ISAMS#	HEX	Always	determined upon IPE creation	1	0	-----
43	INS	SEAL	BIN	Always	determined upon IPE creation	1	0	-----

Table 136 - IPE TYP 16, Format Version 1

LD	Information only					LD	LD	LD
Element Number	Target IPE Group	Target IPE ITSO Name	Target IPE Data Type	Included in target IPE?	Content generation rule	Rule Code	List Data Size	List Data
1	DIR	OID	EF + OID13	Dir Entry	set to value in embodiment spec	2	2	value
2	DIR	TYP	TYP	Dir Entry	set to value in embodiment spec	2	1	16
3	DIR	PTYP	PTYP	Dir Entry	set to value in embodiment spec	2	1	value
4	DIR	VGP	FLAG	Dir Entry	set to zero (0)	4	0	-----
5	DIR	IINL	FLAG	Dir Entry	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
6	DIR	EXP (Expiry Date)	DATE	Dir Entry	set to value in embodiment spec or set to value determined upon creation or set to today's date plus the value in embodiment spec	1 or 2 or 5	0 or 2	null or value
7	H	IPELength	HEX	Always	determined upon IPE creation	1	0	-----
8	H	IPEBitMap	BMP	Always	Set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
9	H	ListFormatRevision + IPEFormatRevision	HEX	Always	set to value in embodiment spec	2	1	0x11
10	IPE	RemoveDate	RDATE	Always	set to value in embodiment spec	2	1	Value
11	IPE	ConcessionaryPassIs suserCostCentre	HEX	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 2	null or value
12	IPE	IDFlags - Personalised	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
13	IPE	IDFlags – Gender	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
14	IPE	IDFlags – URI	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
15	IPE	IDFlags – CompanionAllowed	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value

16	IPE	IDFlags – PrintTicket	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
17	IPE	IDFlags – DepositRefundable?	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
18	IPE	IDFlags – ShellDepositRefundable?	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
19	IPE	RoundingFlagsEnable	FLAG	Always	set to value in embodiment spec	2	1	Value
20	IPE	RFU	RFU	Always	set to zero (0)	4	0	----
21	IPE	PassbackTime	HEX	Always	set to value in embodiment spec	2	1	Value
22	IPE	DateOfBirth	DOB	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 4	null or value
23	IPE	Language	HEX	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
24	IPE	HolderID	HEX	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 4	null or value
25	IPE	RoundingFlag	FLAG	Always	set to value in embodiment spec	2	1	value
26	IPE	RoundingValueFlag	FLAG	Always	set to value in embodiment spec	2	1	value
27	IPE	EntitlementExpiryDate	DATE	Always	Set to value in embodiment spec or set to value determined upon creation or set to today's date plus the value in embodiment spec	1 or 2 or 5	0 or 2	Null or date value or date offset value
28	IPE	DepositMethodOfPayment	MOP	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
29	IPE	DepositVATSalesTax	VAT	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value
30	IPE	ShellDepositMethodOfPayment	MOP	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value

31	IPE	ShellDepositVATSalesTax	VAT	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value
32	IPE	DepositCurrencyCode	VALC	Always	set to value in embodiment spec or set to value determined upon IPE creation ¹²	1 or 2	0 or 1	Null or value
33	IPE	ShellDepositCurrencyCode	VALC	Always	set to value in embodiment spec or set to value determined upon IPE creation ¹³	1 or 2	0 or 1	Null or value
34	IPE	DepositAmount	VALI	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 2	null or value
35	IPE	ShellDeposit	VALI	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 2	null or value
36	IPE	EntitlementCode	HEX	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
37	IPE	ConcessionaryClass	HEX	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
38	IPE O	SecondaryHolderID	HEX	according to bit map	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 4	null or value
39	IPE O	ForenameLength	HEX	according to bit map	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
40	IPE O	Forename	ASCII	according to bit map	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or variable, maximum 39	null or value
41	IPE O	SurnameLength	HEX	according to bit map	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
42	IPE O	Surname	ASCII	according to bit map	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or variable, maximum 39	null or value

¹² (Note that the Rule Code used shall match the Rule Code used for the Deposit Value)

¹³ (Note that the Rule Code used shall match the Rule Code used for the Shell Deposit Value)

43	IPE O	HalfDayOfWeek	BMP	according to bit map	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value
44	IPE O	ValidAtOrFrom	LOC1	according to bit map	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or variable, maximum 17	null or value
45	IPE O	ValidTo	LOC1	according to bit map	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or variable, maximum 17	null or value
46	IPE	Padding	PAD	If Required	set to zero (0)	4	0	-----
47	IPE O	IIN	IIN	If Required	set to value in embodiment spec	2	3	value
48	INS	KID	HEX	Always	determined upon IPE creation	1	0	-----
49	INS	INP#	HEX	Always	set to zero (0)	4	0	-----
50	INS	ISAMIDCreator	HEX	Always	determined upon IPE creation	1	0	-----
51	INS	ISAMS#	HEX	Always	determined upon IPE creation	1	0	-----
52	INS	SEAL	BIN	Always	determined upon IPE creation	1	0	-----

Table 137 - IPE TYP 17, Format Version 1

LD	Information only					LD	LD	LD
Element Number	Target IPE Group	Target IPE ITSO Name	Target IPE Data Type	Included in target IPE?	Content generation rule	Rule Code	List Data Size	List Data
1	DIR	OID	EF + OID13	Dir Entry	set to value in embodiment spec	2	2	value
2	DIR	TYP	TYP	Dir Entry	set to value in embodiment spec	2	1	17
3	DIR	PTYP	PTYP	Dir Entry	set to value in embodiment spec	2	1	value
4	DIR	VGP	FLAG	Dir Entry	set to zero (0)	4	0	-----
5	DIR	IINL	FLAG	Dir Entry	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
6	DIR	EXP (Expiry Date)	DATE	Dir Entry	set to value in embodiment spec or set to value determined upon creation or set to today's date plus the value in embodiment spec	1 or 2 or 5	0 or 2	null or value
7	H	IPELength	HEX	Always	determined upon IPE creation	1	0	-----
8	H	IPEBitMap	BMP	Always	Set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
9	H	ListFormatRevision + IPEFormatRevision	HEX	Always	set to value in embodiment spec	2	1	0x11
10	IPE	RemoveDate	RDATE	Always	set to value in embodiment spec	2	1	Value
11	IPE	ProductRetailer	OID16	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value
12	IPE	Padding	PAD	If Required	set to zero (0)	4	0	-----
13	IPE O	IIN	IIN	If Required	set to value in embodiment spec	2	3	Value
14	INS	KID	HEX	Always	determined upon IPE creation	1	0	-----
15	INS	INP#	HEX	Always	set to zero (0)	4	0	-----
16	INS	ISAMIDCreator	HEX	Always	determined upon IPE creation	1	0	-----

17	INS	ISAMS#	HEX	Always	determined upon IPE creation	1	0	-----
18	INS	SEAL	BIN	Always	determined upon IPE creation	1	0	-----

Table 138 – IPE TYP 22, Format Version 1

LD	Information only	Information only	Information only	Information only	Information only	LD	LD	LD
Element Number	Target IPE Group	Target IPE ITSO Name	Target IPE Data Type	Included in target IPE?	Content generation rule	Rule Code	List Data Size	List Data
1	DIR	OID	EF + OID13	Dir Entry	set to value in embodiment spec	2	2	value
2	DIR	TYP	TYP	Dir Entry	set to value in embodiment spec	2	1	22
3	DIR	PTYP	PTYP	Dir Entry	set to value in embodiment spec	2	1	value
4	DIR	VGP	FLAG	Dir Entry	set to one (1) or set to zero (0) or determined upon IPE creation	3 or 4 or 1	0	-----
5	DIR	IINL	FLAG	Dir Entry	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
6	DIR	EXP (Expiry Date)	DATE	Dir Entry	set to value in embodiment spec or set to value determined upon creation or set to today's date plus the value in embodiment spec	1 or 2 or 5	0 or 2	null or value
7	H	IPELength	HEX	Always	determined upon IPE creation	1	0	-----
8	H	IPEBitMap	BMP	Always	Set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
9	H	ListFormatRevision + IPEFormatRevision	HEX	Always	set to value in embodiment spec	2	1	0x11
10	IPE	RemoveDate	RDATE	Always	set to value in embodiment spec	2	1	Value
11	IPE	ProductRetailer	OID16	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value
12	IPE	TYP22Flags - Transferable	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
13	IPE	TYP22Flags - 1	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value

14	IPE	TYP22Flags - 2	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
15	IPE	TYP22Flags - 3	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
16	IPE	TYP22Flags - 4	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
17	IPE	TYP22Flags – PrintTicket	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
18	IPE	TYP22Flags – PrintReceipt	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
19	IPE	TYP22Flags - 7	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
20	IPE	TYP22Flags - OffPeakOnly	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
21	IPE	TYP22Flags - ValidAMWeekdays	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
22	IPE	TYP22Flags - ValidPMWeekdays	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
23	IPE	TYP22Flags - ValidAMSaturdays	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
24	IPE	TYP22Flags - ValidPMSaturdays	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
25	IPE	TYP22Flags - ValidAMSundays	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
26	IPE	TYP22Flags - ValidPMSundays	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
27	IPE	TYP22Flags - ValidPublicHoliday	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
28	IPE	RFU	RFU	Always	set to zero (0)	4	0	----
29	IPE	PassbackTime	HEX	Always	set to value in embodiment spec	2	1	Value
30	IPE	IssueDate	DATE	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value

31	IPE	ExpiryTime	TIME	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value
32	IPE	RFU	RFU	Always	set to zero (0)	4	0	-----
33	IPE	AutoRenewQuantity 1	HEX	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
34	IPE	Class	HEX	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
35	IPE	ValidityCode	UD	Always	set to value in embodiment specification or set to value determined upon creation	1 or 2	0 or 1	Null or value
36	IPE	ValidityStartDTS	DTS	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 3	null or value
37	IPE	PromotionCode	UD	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
38	IPE	ValidOnDayCode	DOW	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
39	IPE	PartySizeAdult	HEX	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
40	IPE	PartySizeChild	HEX	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
41	IPE	PartySizeConcession	HEX	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
42	IPE	RFU	RFU	Always	set to zero (0)	4	0	-----
43	IPE	AmountPaidCurrencyCode	VALC	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
44	IPE	AmountPaid	VALI	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value
45	IPE	AmountPaidMethodOfPayment	MOP	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value

46	IPE	AmountPaidVATSalesTax	VAT	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value
47	IPE O	ConcessionaryPassIssuerCostCentre	HEX	according to bit map	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 2	null or value
48	IPE O	ValidAtOrFrom	LOC1	according to bit map	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or variable, maximum 17	null or value
49	IPE O	ValidTo	LOC1	according to bit map	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or variable, maximum 17	null or value
50	IPE O	PassDuration	HEX	according to bit map	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
51	IPE	Padding	PAD	If Required	set to zero (0)	4	0	-----
52	IPE O	IIN	IIN	If Required	set to value in embodiment spec	2	3	value
53	INS	KID	HEX	Always	determined upon IPE creation	1	0	-----
54	INS	INP#	HEX	Always	set to zero (0)	4	0	-----
55	INS	ISAMIDCreator	HEX	Always	determined upon IPE creation	1	0	-----
56	INS	ISAMS#	HEX	Always	determined upon IPE creation	1	0	-----
57	INS	SEAL	BIN	Always	determined upon IPE creation	1	0	-----
58	VH	VGLength	HEX	if value group present	determined upon IPE creation	1	0	-----
59	VH	VGBitMap	BMP	if value group present	Set to value in embodiment spec or determined upon IPE creation	1 or 2	0 or 1	Null or value
60	VH	VGFormatRevision	HEX	if value group present	set to value in embodiment spec	2	1	9
61	V	TransactionType	HEX	if value group present	Set to value in embodiment spec, or set to value determined upon IPE creation, or set to zero (0)	1 or 2 or 4	0 or 1	Null or value

62	V	TransactionSequenceNumber	TS#	Always	Set to value in embodiment spec, or set to value determined upon IPE creation, or set to zero (0)	1 or 2 or 4	0 or 2	Null or value
63	V	DateTimeStamp	DTS	Always	determined upon IPE creation	1	0	-----
64	V	ISAMIDModifier	HEX	Always	determined upon IPE creation	1	0	-----
65	V	ActionSequenceNumber	HEX	Always	set to zero (0)	4	0	-----
66	V	NumberRemainingPasses	HEX	Always	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
67	V	TYP22ValueFlags - Auto-Renew	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
68	V	TYP22ValueFlags - Stored Tickets	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
69	V	TYP22ValueFlags - 2	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
70	V	TYP22ValueFlags - 3	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
71	V	TYP22ValueFlags - 4	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
72	V	TYP22ValueFlags - 5	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
73	V	ExpiryDateSP	DATE	if value group present	Set to today's date plus the value in embodiment spec	5	2	Date offset value
74	V	ExpiryDateCurrent	DATE	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value
75	V	RFU	RFU	Always	set to zero (0)	4	0	-----
76	V	Padding	PAD	If Required	set to zero (0)	4	0	-----
77	INS	KID	HEX	Always	determined upon IPE creation	1	0	-----
78	INS	INP#	HEX	Always	set to zero (0)	4	0	-----
79	INS	ISAMIDCreator	HEX	Always	determined upon IPE creation	1	0	-----

80	INS	ISAMS#	HEX	Always	determined upon IPE creation	1	0	-----
81	INS	SEAL	BIN	Always	determined upon IPE creation	1	0	-----

Table 139 - IPE TYP 23, Format Version 1

LD	Information only					LD	LD	LD
Element Number	Target IPE Group	Target IPE ITSO Name	Target IPE Data Type	Included in target IPE?	Content generation rule	Rule Code	List Data Size	List Data
1	DIR	OID	EF + OID13	Dir Entry	set to value in embodiment spec	2	2	value
2	DIR	TYP	TYP	Dir Entry	set to value in embodiment spec	2	1	23
3	DIR	PTYP	PTYP	Dir Entry	set to value in embodiment spec	2	1	value
4	DIR	VGP	FLAG	Dir Entry	set to one (1) or set to zero (0) or determined upon IPE creation	3 or 4 or 1	0	-----
5	DIR	IINL	FLAG	Dir Entry	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
6	DIR	EXP (Expiry Date)	DATE	Dir Entry	set to value in embodiment spec or set to value determined upon creation or set to today's date plus the value in embodiment spec	1 or 2 or 5	0 or 2	null or value
7	H	IPELength	HEX	Always	determined upon IPE creation	1	0	-----
8	H	IPEBitMap	BMP	Always	Set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
9	H	ListFormatRevision + IPEFormatRevision	HEX	Always	set to value in embodiment spec	2	1	0x11
10	IPE	RemoveDate	RDATE	Always	set to value in embodiment spec	2	1	Value

11	IPE	ProductRetailer	OID16	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value
12	IPE	TYP23Flags - RFU	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
13	IPE	TYP23Flags - UsedChecked	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
14	IPE	TYP23Flags - RFU	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
15	IPE	TYP23Flags - RFU	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
16	IPE	TYP23Flags - RFU	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
17	IPE	TYP23Flags - PrintTicket	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
18	IPE	TYP23Flags - PrintReceipt	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
19	IPE	TYP23Flags - RFU	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
20	IPE	RFU	RFU	Always	set to zero (0)	4	0	----
21	IPE	PassbackTime	HEX	Always	set to value in embodiment spec	2	1	Value
22	IPE	RFU	RFU	Always	set to zero (0)	4	0	-----
23	IPE	IssueDate	DATE	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value

24	IPE	ValidityCode	UD	Always	Set to value in embodiment specification or set to value determined upon creation	1 or 2	0 or 1	Null or value
25	IPE	ExpiryTime	TIME	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value
26	IPE	RFU	RFU	Always	set to zero (0)	4	0	-----
27	IPE	Class	HEX	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
28	IPE	PartySizeAdult	HEX	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
29	IPE	PartySizeChild	HEX	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
30	IPE	PartySizeConcession	HEX	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
31	IPE	RFU	RFU	Always	set to zero (0)	4	0	-----
32	IPE	AmountPaidCurrencyCode	VALC	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
33	IPE	AmountPaid	VALI	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value
34	IPE	AmountPaidMethodOfPayment	MOP	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
35	IPE	AmountPaidVATSalesTax	VAT	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value

36	IPE	PhotocardNumber	UD	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 4	null or value
37	IPE	PromotionCode	UD	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
38	IPE	ConcessionaryPassIssuerCostCentre	HEX	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 2 3	null or value
39	IPE O	RFU	RFU	according to bit map	set to zero (0)	4	0	-----
40	IPE O	TYP23Mode	HEX	according to bit map	set to value in embodiment spec	2	1	value
41	IPE O	MaxTransfers	HEX	according to bit map	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
42	IPE O	TimeLimit	HEX	according to bit map	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
43	IPE O	ValueOfRideJourney	VALI	according to bit map	set to value in embodiment spec	2	2	value
44	IPE O	RFU	RFU	according to bit map	set to zero (0)	4	0	-----
45	IPE O	ValueOfRideJourneyCurrencyCode	VALC	according to bit map	set to value in embodiment spec	2	1	value
46	IPE O	Origin1	LOC1	according to bit map	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or variable, maximum 17	null or value
47	IPE O	Destination1	LOC1	according to bit map	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or variable, maximum 17	null or value
48	IPE	Padding	PAD	If Required	set to zero (0)	4	0	-----
49	IPE O	IIN	IIN	If Required	set to value in embodiment spec	2	3	value
50	INS	KID	HEX	Always	determined upon IPE creation	1	0	-----
51	INS	INP#	HEX	Always	set to zero (0)	4	0	-----

52	INS	ISAMIDCreator	HEX	Always	determined upon IPE creation	1	0	-----
53	INS	ISAMS#	HEX	Always	determined upon IPE creation	1	0	-----
54	INS	SEAL	BIN	Always	determined upon IPE creation	1	0	-----
55	VH	VGLength	HEX	if value group present	determined upon IPE creation	1	0	-----
56	VH	VGBitMap	BMP	if value group present	Set to value in embodiment spec or determined upon IPE creation	1 or 2	0 or 1	Null or value
57	VH	VGFormatRevision	HEX	if value group present	set to value in embodiment spec	2	1	9
58	V	TransactionType	HEX	if value group present	Set to value in embodiment spec, or set to value determined upon IPE creation, or set to zero (0)	1 or 2 or 4	0 or 1	Null or value
59	V	TransactionSequenceNumber	TS#	Always	Set to value in embodiment spec, or set to value determined upon IPE creation, or set to zero (0)	1 or 2 or 4	0 or 2	Null or value
60	V	DateTimeStamp	DTS	Always	determined upon IPE creation	1	0	-----
61	V	ISAMIDModifier	HEX	Always	determined upon IPE creation	1	0	-----
62	V	ActionSequenceNumber	HEX	Always	set to zero (0)	4	0	-----
63	V	CountRemainingRidesJourneys	HEX	if value group present	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
64	V	CountTransfers	HEX	if value group present	set to zero (0)	4	0	-----
65	V	TYP23ValueFlags – Auto-Renew	FLAG	If value group present	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
66	V	TYP23ValueFlags – UsedChecked	FLAG	If value group present	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value

67	V	TYP23ValueFlags - RFU	FLAG	If value group present	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
68	V	TYP23ValueFlags – RFU	FLAG	If value group present	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
69	V	TYP23ValueFlags – RFU	FLAG	If value group present	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
70	V	TYP23ValueFlags – RFU	FLAG	If value group present	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
71	V	TYP23ValueFlags – RFU	FLAG	If value group present	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
72	V	TYP23ValueFlags – RFU	FLAG	If value group present	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
73	V	RFU	RFU	Always	set to zero (0)	4	0	-----
74	V	Padding	PAD	If Required	set to zero (0)	4	0	-----
75	INS	KID	HEX	Always	determined upon IPE creation	1	0	-----
76	INS	INP#	HEX	Always	set to zero (0)	4	0	-----
77	INS	ISAMIDCreator	HEX	Always	determined upon IPE creation	1	0	-----
78	INS	ISAMS#	HEX	Always	determined upon IPE creation	1	0	-----
79	INS	SEAL	BIN	Always	determined upon IPE creation	1	0	-----

Editors note, there is no table 140.

Table 141 - IPE TYP 25, Format Version 1

LD	Information only					LD	LD	LD
Element Number	Target IPE Group	Target IPE ITSO Name	Target IPE Data Type	Included in target IPE?	Content generation rule	Rule Code	List Data Size	List Data
1	DIR	OID	EF + OID13	Dir Entry	set to value in embodiment spec	2	2	value
2	DIR	TYP	TYP	Dir Entry	set to value in embodiment spec	2	1	25
3	DIR	PTYP	PTYP	Dir Entry	set to value in embodiment spec	2	1	value
4	DIR	VGP	FLAG	Dir Entry	set to one (1) or set to zero (0) or determined upon IPE creation	3 or 4 or 1	0	-----
5	DIR	IINL	FLAG	Dir Entry	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
6	DIR	EXP (Expiry Date)	DATE	Dir Entry	set to value in embodiment spec or set to value determined upon creation or set to today's date plus the value in embodiment spec	1 or 2 or 5	0 or 2	null or value
7	H	IPELength	HEX	Always	determined upon IPE creation	1	0	-----
8	H	IPEBitMap	BMP	Always	Set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
9	H	ListFormatRevision + IPEFormatRevision	HEX	Always	set to value in embodiment spec	2	1	0x11
10	IPE	RemoveDate	RDATE	Always	set to value in embodiment spec	2	1	Value
11	IPE	ProductRetailer	OID16	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value
12	IPE	TYP25Flags- RFU	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
13	IPE	TYP25Flags- RFU	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value

14	IPE	TYP25Flags- RFU	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
15	IPE	TYP25Flags- RFU	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
16	IPE	TYP25Flags- RFU	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
17	IPE	TYP25Flags – PrintTicket	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
18	IPE	TYP25Flags - PrintReceipt	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
19	IPE	TYP25Flags - RFU	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
20	IPE	RFU	RFU	Always	set to zero (0)	4	0	----
21	IPE	PassbackTime	HEX	Always	set to value in embodiment spec	2	1	value
22	IPE	RFU	RFU	Always	set to zero (0)	4	0	-----
23	IPE	IssueDate	DATE	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value
24	IPE	ValidityStartDTS	DTS	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 3	null or value
25	IPE	RFU	RFU	Always	set to zero (0)	4	0	-----
26	IPE	ExpiryTime	TIME	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value
27	IPE	ServiceID	UD	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 2	null or value
28	IPE	MaxValue25	VALI	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 2	null or value
29	IPE	MaxValueCurrencyCode	VALC	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
30	IPE	AmountPaidCurrency Code	VALC	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value

31	IPE	AmountPaid	VALI	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value
32	IPE	AmountPaidMethodOfPayment	MOP	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
33	IPE	AmountPaidVATSalesTax	VAT	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value
34	IPE	UserDefined	UD	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
35	IPE O	AutoRenewQuantity2	HEX	according to bit map	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
36	IPE	Padding	PAD	If Required	set to zero (0)	4	0	-----
37	IPE O	IIN	IIN	If Required	set to value in embodiment spec	2	3	value
38	INS	KID	HEX	Always	determined upon IPE creation	1	0	-----
39	INS	INP#	HEX	Always	set to zero (0)	4	0	-----
40	INS	ISAMIDCreator	HEX	Always	determined upon IPE creation	1	0	-----
41	INS	ISAMS#	HEX	Always	determined upon IPE creation	1	0	-----
42	INS	SEAL	BIN	Always	determined upon IPE creation	1	0	-----
43	VH	VGLength	HEX	if value group present	determined upon IPE creation	1	0	-----
44	VH	VGBitMap	BMP	if value group present	Set to value in embodiment spec or determined upon IPE creation	1 or 2	0 or 1	Null or value
45	VH	VGFormatRevision	HEX	if value group present	set to value in embodiment spec	2	1	9
46	V	TransactionType	HEX	if value group present	Set to value in embodiment spec, or set to value determined upon IPE creation, or set to zero (0)	1 or 2 or 4	0 or 1	Null or value
47	V	TransactionSequenceNumber	TS#	Always	Set to value in embodiment spec, or set to value determined upon IPE creation, or set to zero (0)	1 or 2 or 4	0 or 2	Null or value

48	V	DateTimeStamp	DTS	Always	determined upon IPE creation	1	0	-----
49	V	ISAMIDModifier	HEX	Always	determined upon IPE creation	1	0	-----
50	V	ActionSequenceNumber	HEX	Always	set to zero (0)	4	0	-----
51	V	CountUsesAvailable	HEX	if value group present	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
52	V	TYP25ValueFlags – Auto-Renew	FLAG	If value group present	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
53	V	TYP25ValueFlags - RFU	FLAG	If value group present	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
54	V	TYP25ValueFlags – RFU	FLAG	If value group present	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
55	V	TYP25ValueFlags – RFU	FLAG	If value group present	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
56	V	TYP25ValueFlags – RFU	FLAG	If value group present	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
57	V	TYP25ValueFlags – RFU	FLAG	If value group present	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
58	V	TYP25ValueFlags – RFU	FLAG	If value group present	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
59	V	TYP25ValueFlags – RFU	FLAG	If value group present	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
60	V	RFU	RFU	Always	set to zero (0)	4	0	-----
61	V	Padding	PAD	If Required	set to zero (0)	4	0	-----
62	INS	KID	HEX	Always	determined upon IPE creation	1	0	-----
63	INS	INP#	HEX	Always	set to zero (0)	4	0	-----
64	INS	ISAMIDCreator	HEX	Always	determined upon IPE creation	1	0	-----
65	INS	ISAMS#	HEX	Always	determined upon IPE creation	1	0	-----
66	INS	SEAL	BIN	Always	determined upon IPE creation	1	0	-----

Table 142 - IPE TYP 26, Format Version 1

LD	Information only					LD	LD	LD
Element Number	Target IPE Group	Target IPE ITSO Name	Target IPE Data Type	Included in target IPE?	Content generation rule	Rule Code	List Data Size	List Data
1	DIR	OID	EF + OID13	Dir Entry	set to value in embodiment spec	2	2	value
2	DIR	TYP	TYP	Dir Entry	set to value in embodiment spec	2	1	26
3	DIR	PTYP	PTYP	Dir Entry	set to value in embodiment spec	2	1	value
4	DIR	VGP	FLAG	Dir Entry	set to one (1) or set to zero (0) or determined upon IPE creation	1 or 3 or 4	0	-----
5	DIR	IINL	FLAG	Dir Entry	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
6	DIR	EXP (Expiry Date)	DATE	Dir Entry	set to value in embodiment spec or set to value determined upon creation or set to today's date plus the value in embodiment spec	1 or 2 or 5	0 or 2	null or value
7	H	IPELength	HEX	Always	determined upon IPE creation	1	0	-----
8	H	IPEBitMap	BMP	Always	Set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
9	H	ListFormatRevision + IPEFormatRevision	HEX	Always	set to value in embodiment spec	2	1	0x11
10	IPE	RemoveDate	RDATE	Always	set to value in embodiment spec	2	1	Value
11	IPE	ProductRetailer	OID16	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value
12	IPE	RFU	RFU	Always	set to zero (0)	4	0	-----
13	IPE	PassbackTime	HEX	Always	set to value in embodiment spec	2	1	Value
14	IPE	TYP26Flags - RFU	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
15	IPE	TYP26Flags – RFU	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value

16	IPE	TYP26Flags – RFU	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
17	IPE	TYP26Flags – RFU	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
18	IPE	TYP26Flags – RFU	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
19	IPE	TYP26Flags – PrintTicket	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
20	IPE	TYP26Flags - PrintReceipt	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
21	IPE	TYP26Flags - RFU	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
22	IPE	TYP26Class	UD	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
23	IPE	RFU	RFU	Always	set to zero (0)	4	0	-----
24	IPE	IssueDate	DATE	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value
25	IPE	ValidityStartDTS	DTS	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 3	null or value
26	IPE	UserDefined	UD	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 7	null or value
27	IPE O	AutoRenewQuantity3	HEX	according to bit map	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
28	IPE	Padding	PAD	If Required	set to zero (0)	4	0	-----
29	IPE O	IIN	IIN	If Required	set to value in embodiment spec	2	3	value
30	INS	KID	HEX	Always	determined upon IPE creation	1	0	-----
31	INS	INP#	HEX	Always	set to zero (0)	4	0	-----
32	INS	ISAMIDCreator	HEX	Always	determined upon IPE creation	1	0	-----
33	INS	ISAMS#	HEX	Always	determined upon IPE creation	1	0	-----

34	INS	SEAL	BIN	Always	determined upon IPE creation	1	0	-----
35	VH	VGLength	HEX	if value group present	determined upon IPE creation	1	0	-----
36	VH	VGBitMap	BMP	if value group present	Set to value in embodiment spec or determined upon IPE creation	1 or 2	0 or 1	Null or value
37	VH	VGFormatRevision	HEX	if value group present	set to value in embodiment spec	2	1	9
38	V	TransactionType	HEX	if value group present	Set to value in embodiment spec, or set to value determined upon IPE creation, or set to zero (0)	1 or 2 or 4	0 or 1	Null or value
39	V	TransactionSequenceNumber	TS#	Always	Set to value in embodiment spec, or set to value determined upon IPE creation, or set to zero (0)	1 or 2 or 4	0 or 2	Null or value
40	V	DateTimeStamp	DTS	Always	determined upon IPE creation	1	0	-----
41	V	ISAMIDModifier	HEX	if value group present	determined upon IPE creation	1	0	-----
42	V	ActionSequenceNumber	HEX	if value group present	set to zero (0)	4	0	-----
43	V	CountRemainingRidesJourneys	HEX	if value group present	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
44	V	TYP26ValueFlags – Auto-Renew	FLAG	If value group present	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
45	V	TYP26ValueFlags - RFU	FLAG	If value group present	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
46	V	TYP26ValueFlags – RFU	FLAG	If value group present	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
47	V	TYP26ValueFlags – RFU	FLAG	If value group present	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
48	V	TYP26ValueFlags – RFU	FLAG	If value group present	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
49	V	TYP26ValueFlags – RFU	FLAG	If value group present	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value

50	V	TYP26ValueFlags – RFU	FLAG	If value group present	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
51	V	TYP26ValueFlags – RFU	FLAG	If value group present	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
52	V	RFU	RFU	if value group present	set to zero (0)	4	0	-----
53	V	Padding	PAD	If Required	set to zero (0)	4	0	-----
54	INS	KID	HEX	Always	determined upon IPE creation	1	0	-----
55	INS	INP#	HEX	Always	set to zero (0)	4	0	-----
56	INS	ISAMIDCreator	HEX	Always	determined upon IPE creation	1	0	-----
57	INS	ISAMS#	HEX	Always	determined upon IPE creation	1	0	-----
58	INS	SEAL	BIN	Always	determined upon IPE creation	1	0	-----

Table 143 – IPE TYP 27, Format Version 1

LD	Information only					LD	LD	LD
Element #	Target IPE Group	Target IPE ITSO Name	Target IPE Data Type	Included in target IPE?	Content generation rule	Rule Code	List Data Size	List Data
1	DIR	OID	EF + OID13	Dir Entry	set to value in embodiment spec	2	2	value
2	DIR	TYP	TYP	Dir Entry	set to value in embodiment spec	2	1	27
3	DIR	PTYP	PTYP	Dir Entry	set to value in embodiment spec	2	1	value
4	DIR	VGP	FLAG	Dir Entry	set to zero (0)	4	0	-----
5	DIR	IINL	FLAG	Dir Entry	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
6	DIR	EXP (Expiry Date)	DATE	Dir Entry	set to value in embodiment spec or set to value determined upon creation or set to today's date plus the value in embodiment spec	1 or 2 or 5	0 or 2	null or value
7	IPE	IPELength	HEX	Always	determined upon IPE creation	1	0	-----
8	IPE	IPEBitMap	HEX	Always	Set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
9	IPE	ListFormatRevision + IPEFormatRevision	HEX	Always	set to value in embodiment spec	2	1	0x11
10	IPE	IssueDate	DATE	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value
11	IPE	Sterling/Euro	FLAG	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
12	IPE	Child	FLAG	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
13	IPE	PassbackTime	HEX	Always	set to value in embodiment spec	2	1	Value
14	IPE	AmountPaidMethodOfPayment	MOP	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
15	IPE	AmountPaid	VALI	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value
16	IPE	TYP27PassFlags - OffPeakOnly	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value

17	IPE	TYP27PassFlags - WeekdayOnly	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
18	IPE	TYP27PassFlags - Class	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
19	IPE	TYP27PassFlags - ExpiryTimeFlag	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
20	IPE	GeoValidity / AreaValidity	LOC4/LOC 3	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 13	null or value
21	IPE	Event1	HEX	Always	set to zero (0)	4	0	----
22	IPE	Event2	HEX	Always	set to zero (0)	4	0	-----
23	IPE	LastUseDTS	DTS	Always	set to zero (0)	4	0	-----
24	IPE	PhotocardNumber	HEX	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 4	null or value
25	IPE	TYP27ExpiryDate	HEX	Always	Determined upon IPE creation, or Set to today's date plus the value in embodiment spec	1 or 5	0 or 2	null or Date offset value
26	IPE	Seq#	HEX	according to bit map	Set to zero (0)	4	0	----
27	IPE	KID	HEX	Always	determined upon IPE creation	1	0	-----
28	IPE	INP#	HEX	Always	set to zero (0)	4	0	-----
29	IPE	ISAMIDCreator	HEX	Always	determined upon IPE creation	1	0	-----
30	IPE	ISAMS#	HEX	Always	determined upon IPE creation	1	0	-----
31	IPE	SEAL	BIN	Always	determined upon IPE creation	1	0	-----

Note: Where Event1 and Event2 are used to store entry and exit information Event1 shall store the check in code and Event2 the check out code.

Table 144 – IPE TYP 28, Format Version 1

LD	Information only					LD	LD	LD
Element #	Target IPE Group	Target IPE ITSO Name	Target IPE Data Type	Included in target IPE?	Content generation rule	Rule Code	List Data Size	List Data
1	DIR	OID	EF + OID13	Dir Entry	set to value in embodiment spec	2	2	value
2	DIR	TYP	TYP	Dir Entry	set to value in embodiment spec	2	1	28
3	DIR	PTYP	PTYP	Dir Entry	set to value in embodiment spec	2	1	value
4	DIR	VGP	FLAG	Dir Entry	set to zero (0)	4	0	-----
5	DIR	IINL	FLAG	Dir Entry	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
6	DIR	EXP (Expiry Date)	DATE	Dir Entry	set to value in embodiment spec or set to value determined upon creation or set to today's date plus the value in embodiment spec	1 or 2 or 5	0 or 2	null or value
7	IPE	IPELength	HEX	Always	determined upon IPE creation	1	0	-----
8	IPE	IPEBitMap	HEX	Always	Set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
9	IPE	ListFormatRevision + IPEFormatRevision	HEX	Always	set to value in embodiment spec	2	1	0x11
10	IPE	IssueDate	DATE	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value
11	IPE	Sterling/Euro	FLAG	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
12	IPE	RFU	FLAG	Always	set to zero (0)	4	0	-----
13	IPE	PassbackTime	HEX	Always	set to value in embodiment spec	2	1	value
14	IPE	AmountPaidMethodOfPayment	MOP	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
15	IPE	AmountPaid	VALI	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value

16	IPE	TYP28PassFlags - OffPeakOnly	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
17	IPE	TYP28PassFlags - WeekdayOnly	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
18	IPE	TYP28PassFlags - Class	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
19	IPE	TYP28PassFlags - ExpiryTimeFlag	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
20	IPE	AreaValidity	LOC3	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 9	null or value
21	IPE	RFU	HEX	Always	set to zero (0)	4	0	-----
22	IPE	LastUseDTS	DTS	Always	set to zero (0)	4	0	-----
23	IPE	ExpiryTick1	HEX	Always	Determined upon IPE creation, or Set to today's date plus the value in embodiment spec	1 or 5	0 or 2	null or Date offset value
24	IPE	ExpiryTick2	HEX	Always	Determined upon IPE creation, or Set to today's date plus the value in embodiment spec	1 or 5	0 or 2	null or Date offset value
25	IPE	ExpiryTick3	HEX	Always	Determined upon IPE creation, or Set to today's date plus the value in embodiment spec	1 or 5	0 or 2	null or Date offset value
26	IPE	ExpiryTick4	HEX	Always	Determined upon IPE creation, or Set to today's date plus the value in embodiment spec	1 or 5	0 or 2	null or Date offset value
27	IPE	ExpiryTick5	HEX	Always	Determined upon IPE creation, or Set to today's date plus the value in embodiment spec	1 or 5	0 or 2	null or Date offset value
28	IPE	ExpiryTick6	HEX	Always	Determined upon IPE creation, or Set to today's date plus the value in embodiment spec	1 or 5	0 or 2	null or Date offset value
29	IPE	NDoIE	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
30	IPE	NDoEE	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
31	IPE	Seq#	HEX	according to bit map	Set to zero (0)	4	0	-----
32	IPE	KID	HEX	Always	determined upon IPE creation	1	0	-----
33	IPE	INP#	HEX	Always	set to zero (0)	4	0	-----

LD	Information only					LD	LD	LD
Element #	Target IPE Group	Target IPE ITSO Name	Target IPE Data Type	Include d in target IPE?	Content generation rule	Rule Code	List Data Size	List Data
34	IPE	ISAMIDCreator	HEX	Always	determined upon IPE creation	1	0	-----
35	IPE	ISAMS#	HEX	Always	determined upon IPE creation	1	0	-----
36	IPE	SEAL	BIN	Always	determined upon IPE creation	1	0	-----

Table 145 – IPE TYP 29, Format Version 1

LD	Information only					LD	LD	LD
Element #	Target IPE Group	Target IPE ITSO Name	Target IPE Data Type	Included in target IPE?	Content generation rule	Rule Code	List Data Size	List Data
1	DIR	OID	EF + OID13	Dir Entry	set to value in embodiment spec	2	2	value
2	DIR	TYP	TYP	Dir Entry	set to value in embodiment spec	2	1	29
3	DIR	PTYP	PTYP	Dir Entry	set to value in embodiment spec	2	1	value
4	DIR	VGP	FLAG	Dir Entry	set to zero (0)	4	0	-----
5	DIR	IINL	FLAG	Dir Entry	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
6	DIR	EXP (Expiry Date)	DATE	Dir Entry	set to value in embodiment spec or set to value determined upon creation or set to today's date plus the value in embodiment spec	1 or 2 or 5	0 or 2	null or value
7	IPE	IPELength	HEX	Always	determined upon IPE creation	1	0	-----
8	IPE	IPEBitMap	HEX	Always	Set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
9	IPE	ListFormatRevision + IPEFormatRevision	HEX	Always	set to value in embodiment spec	2	1	0x11
10	IPE	IssueDate	DATE	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value
11	IPE	Sterling/Euro	FLAG	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
12	IPE	Ticket/Coupon	FLAG	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
13	IPE	ScalingFactor	HEX	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
14	IPE	AmountPaidMethodOfPayment	MOP	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
15	IPE	AmountPaid	VALI	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value

16	IPE	TYP29PassFlags - OffPeakOnly	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
17	IPE	TYP29PassFlags - WeekdayOnly	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
18	IPE	TYP29PassFlags - Class	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
19	IPE	TYP29PassFlags - ExpiryTimeFlag	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
20	IPE	AreaValidity	LOC3	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 9	null or value
21	IPE	RFU	RFU	Always	set to zero (0)	4	0	-----
22	IPE	TYP29UsageRec Code	HEX	Always	set to zero (0)	4	0	-----
23	IPE	QtyRemaining	HEX	Always	set to value in embodiment spec or set to value determined upon creation Note: the POST computes the #of bits that may need to be set in the ScaledQtyBackup BitMap depending the target platform and the IPEBitMap setting	1 or 2	0 or 2	null or value
24	IPE	UsageRec	LOCE	Always	set to zero (0)	4	0	-----
25	IPE	ScaledQtyBackup	HEX	according to bit map	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 4	null or value
26	IPE	Seq#	HEX	according to bit map	set to zero (0)	4	0	-----
27	IPE	KID	HEX	Always	determined upon IPE creation	1	0	-----
28	IPE	INP#	HEX	Always	set to zero (0)	4	0	-----
29	IPE	ISAMIDCreator	HEX	Always	determined upon IPE creation	1	0	-----
30	IPE	ISAMS#	HEX	Always	determined upon IPE creation	1	0	-----
31	IPE	SEAL	BIN	Always	determined upon IPE creation	1	0	-----

8.4 List Format Revision 1, IPE Format Revision 2.

Definition of IPE Embodiment Parameters for IPEs formatted according to format version code 2.

Note that in the following tables, extra columns are included for the information of users. Only those columns marked LD shall be included in transmitted Embodiment parameter lists.

Note that values for elements where the rule is marked with a * would normally be determined at the issuing POST except in circumstances where the embodiment specification is included in an Actionlist.

Note that in element 9, the most significant 4 bits shall contain ListFormatRevision, and the least significant 4 bits shall contain IPEFormatRevision. Only IPEFormatRevision shall be programmed into IPE instances.

Elements 1 to 9 of each list shall retain their current meanings for future format versions.

Table 2.138 – IPE TYP 22, Format Version 2

LD	Information only					LD	LD	LD
Element Number	Target IPE Group	Target IPE ITSO Name	Target IPE Data Type	Included in target IPE?	Content generation rule	Rule Code	List Data Size	List Data
1	DIR	OID	EF + OID13	Dir Entry	set to value in embodiment spec	2	2	value
2	DIR	TYP	TYP	Dir Entry	set to value in embodiment spec	2	1	22
3	DIR	PTYP	PTYP	Dir Entry	set to value in embodiment spec	2	1	value
4	DIR	VGP	FLAG	Dir Entry	set to one (1) or set to zero (0) or determined upon IPE creation	3 or 4 or 1	0	-----
5	DIR	IINL	FLAG	Dir Entry	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
6	DIR	EXP (Expiry Date)	DATE	Dir Entry	set to value in embodiment spec or set to value determined upon creation or set to today's date plus the value in embodiment spec	1 or 2 or 5	0 or 2	null or value
7	H	IPELength	HEX	Always	determined upon IPE creation	1	0	-----
8	H	IPEBitMap	BMP	Always	Set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
9	H	ListFormatRevision + IPEFormatRevision	HEX	Always	set to value in embodiment spec	2	1	0x12

10	IPE	RemoveDate	RDATE	Always	set to value in embodiment spec	2	1	Value
11	IPE	ProductRetailer	OID16	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value
12	IPE	TYP22Flags - Transferable	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
13	IPE	TYP22Flags - 1	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
14	IPE	TYP22Flags - 2	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
15	IPE	TYP22Flags - 3	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
16	IPE	TYP22Flags - 4	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
17	IPE	TYP22Flags – PrintTicket	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
18	IPE	TYP22Flags – PrintReceipt	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
19	IPE	TYP22Flags - 7	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
20	IPE	TYP22Flags - OffPeakOnly	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
21	IPE	TYP22Flags - ValidAMWeekdays	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
22	IPE	TYP22Flags - ValidPMWeekdays	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
23	IPE	TYP22Flags - ValidAMSaturdays	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
24	IPE	TYP22Flags - ValidPMSaturdays	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
25	IPE	TYP22Flags - ValidAMSundays	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value

26	IPE	TYP22Flags - ValidPMSundays	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
27	IPE	TYP22Flags - ValidPublicHoliday	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
28	IPE	RFU	RFU	Always	set to zero (0)	4	0	----
29	IPE	PassbackTime	HEX	Always	set to value in embodiment spec	2	1	Value
30	IPE	IssueDate	DATE	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value
31	IPE	ExpiryTime	TIME	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value
32	IPE	RFU	RFU	Always	set to zero (0)	4	0	-----
33	IPE	AutoRenewQuantity 1	HEX	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
34	IPE	Class	HEX	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
35	IPE	ValidityCode	UD	Always	set to value in embodiment specification or set to value determined upon creation	1 or 2	0 or 1	Null or value
36	IPE	ValidityStartDTS	DTS	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 3	null or value
37	IPE	PromotionCode	UD	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
38	IPE	ValidOnDayCode	DOW	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
39	IPE	PartySizeAdult	HEX	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
40	IPE	PartySizeChild	HEX	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
41	IPE	PartySizeConcession	HEX	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value

42	IPE	RFU	RFU	Always	set to zero (0)	4	0	-----
43	IPE	AmountPaidCurrencyCode	VALC	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
44	IPE	AmountPaid	VALI	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 4	null or value
45	IPE	AmountPaidMethodOfPayment	MOP	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
46	IPE	AmountPaidVATSalesTax	VAT	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value
47	IPE O	ConcessionaryPassIssuerCostCentre	HEX	according to bit map	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 2	null or value
48	IPE O	PassDuration	HEX	according to bit map	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
49	IPE O	RouteCode	UD	according to bit map	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 5	null or value
50	IPE O	ValidAtOrFrom	LOC1	according to bit map	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or variable, maximum 17	null or value
51	IPE O	ValidTo	LOC1	according to bit map	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or variable, maximum 17	null or value
52	IPE	Padding	PAD	If Required	set to zero (0)	4	0	-----
53	IPE O	IIN	IIN	If Required	set to value in embodiment spec	2	3	value
54	INS	KID	HEX	Always	determined upon IPE creation	1	0	-----
55	INS	INP#	HEX	Always	set to zero (0)	4	0	-----
56	INS	ISAMIDCreator	HEX	Always	determined upon IPE creation	1	0	-----
57	INS	ISAMS#	HEX	Always	determined upon IPE creation	1	0	-----
58	INS	SEAL	BIN	Always	determined upon IPE creation	1	0	-----

59	VH	VGLength	HEX	if value group present	determined upon IPE creation	1	0	-----
60	VH	VGBitMap	BMP	if value group present	Set to value in embodiment spec or determined upon IPE creation	1 or 2	0 or 1	Null or value
61	VH	VGFormatRevision	HEX	if value group present	set to value in embodiment spec	2	1	0x0A
62	V	TransactionType	HEX	if value group present	Set to value in embodiment spec, or set to value determined upon IPE creation, or set to zero (0)	1 or 2 or 4	0 or 1	Null or value
63	V	TransactionSequenceNumber	TS#	Always	Set to value in embodiment spec, or set to value determined upon IPE creation, or set to zero (0)	1 or 2 or 4	0 or 2	Null or value
64	V	DateTimeStamp	DTS	Always	determined upon IPE creation	1	0	-----
65	V	ISAMIDModifier	HEX	Always	determined upon IPE creation	1	0	-----
66	V	ActionSequenceNumber	HEX	Always	set to zero (0)	4	0	-----
67	V	NumberRemainingPasses	HEX	Always	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
68	V	TYP22ValueFlags - Auto-Renew	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
69	V	TYP22ValueFlags - Stored Tickets	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
70	V	TYP22ValueFlags - 2	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
71	V	TYP22ValueFlags - 3	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
72	V	TYP22ValueFlags - 4	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
73	V	TYP22ValueFlags - 5	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
74	V	ExpiryDateSP	DATE	if value group present	Set to today's date plus the value in embodiment spec	5	2	Date offset value

75	V	ExpiryDateCurrent	DATE	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value
76	V	RFU	RFU	Always	set to zero (0)	4	0	-----
77	V	Padding	PAD	If Required	set to zero (0)	4	0	-----
78	INS	KID	HEX	Always	determined upon IPE creation	1	0	-----
79	INS	INP#	HEX	Always	set to zero (0)	4	0	-----
80	INS	ISAMIDCreator	HEX	Always	determined upon IPE creation	1	0	-----
81	INS	ISAMS#	HEX	Always	determined upon IPE creation	1	0	-----
82	INS	SEAL	BIN	Always	determined upon IPE creation	1	0	-----

Table 2.139 - IPE TYP 23, Format Version 2

LD	Information only					LD	LD	LD
Element Number	Target IPE Group	Target IPE ITSO Name	Target IPE Data Type	Included in target IPE?	Content generation rule	Rule Code	List Data Size	List Data
1	DIR	OID	EF + OID13	Dir Entry	set to value in embodiment spec	2	2	value
2	DIR	TYP	TYP	Dir Entry	set to value in embodiment spec	2	1	23
3	DIR	PTYP	PTYP	Dir Entry	set to value in embodiment spec	2	1	value
4	DIR	VGP	FLAG	Dir Entry	set to one (1) or set to zero (0) or determined upon IPE creation	3 or 4 or 1	0	-----
5	DIR	IINL	FLAG	Dir Entry	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
6	DIR	EXP (Expiry Date)	DATE	Dir Entry	set to value in embodiment spec or set to value determined upon creation or set to today's date plus the value in embodiment spec	1 or 2 or 5	0 or 2	null or value
7	H	IPELength	HEX	Always	determined upon IPE creation	1	0	-----
8	H	IPEBitMap	BMP	Always	Set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
9	H	ListFormatRevision + IPEFormatRevision	HEX	Always	set to value in embodiment spec	2	1	0x12
10	IPE	RemoveDate	RDATE	Always	set to value in embodiment spec	2	1	Value
11	IPE	ProductRetailer	OID16	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value
12	IPE	TYP23Flags - RFU	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
13	IPE	TYP23Flags - UsedChecked	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
14	IPE	TYP23Flags - RFU	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value

15	IPE	TYP23Flags - RFU	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
16	IPE	TYP23Flags - RFU	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
17	IPE	TYP23Flags - PrintTicket	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
18	IPE	TYP23Flags - PrintReceipt	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
19	IPE	TYP23Flags - RFU	Flag	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
20	IPE	RFU	RFU	Always	set to zero (0)	4	0	----
21	IPE	PassbackTime	HEX	Always	set to value in embodiment spec	2	1	Value
22	IPE	RFU	RFU	Always	set to zero (0)	4	0	-----
23	IPE	IssueDate	DATE	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value
24	IPE	ValidityCode	UD	Always	Set to value in embodiment specification or set to value determined upon creation	1 or 2	0 or 1	Null or value
25	IPE	ExpiryTime	TIME	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value
26	IPE	RFU	RFU	Always	set to zero (0)	4	0	-----
27	IPE	Class	HEX	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
28	IPE	PartySizeAdult	HEX	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
29	IPE	PartySizeChild	HEX	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
30	IPE	PartySizeConcession	HEX	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
31	IPE	RFU	RFU	Always	set to zero (0)	4	0	-----

32	IPE	AmountPaidCurrencyCode	VALC	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
33	IPE	AmountPaid	VALI	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 4	null or value
34	IPE	AmountPaidMethodOfPayment	MOP	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
35	IPE	AmountPaidVATSalesTax	VAT	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value
36	IPE	PhotocardNumber	UD	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 4	null or value
37	IPE	PromotionCode	UD	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
38	IPE	ConcessionaryPassIssuedCostCentre	HEX	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 2	null or value
39	IPE O	RFU	RFU	according to bit map	set to zero (0)	4	0	-----
40	IPE O	TYP23Mode	HEX	according to bit map	set to value in embodiment spec	2	1	value
41	IPE O	MaxTransfers	HEX	according to bit map	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
42	IPE O	TimeLimit	HEX	according to bit map	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
43	IPE O	ValueOfRideJourney	VALI	according to bit map	set to value in embodiment spec	2	2	value
44	IPE O	RFU	RFU	according to bit map	set to zero (0)	4	0	-----
45	IPE O	ValueOfRideJourneyCurrencyCode	VALC	according to bit map	set to value in embodiment spec	2	1	value
46	IPE O	RouteCode	UD	according to bit map	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 5	null or value
47	IPE O	Origin1	LOC1	according to bit map	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or variable, maximum 17	null or value

48	IPE O	Destination1	LOC1	according to bit map	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or variable, maximum 17	null or value
49	IPE	Padding	PAD	If Required	set to zero (0)	4	0	-----
50	IPE O	IIN	IIN	If Required	set to value in embodiment spec	2	3	value
51	INS	KID	HEX	Always	determined upon IPE creation	1	0	-----
52	INS	INP#	HEX	Always	set to zero (0)	4	0	-----
53	INS	ISAMIDCreator	HEX	Always	determined upon IPE creation	1	0	-----
54	INS	ISAMS#	HEX	Always	determined upon IPE creation	1	0	-----
55	INS	SEAL	BIN	Always	determined upon IPE creation	1	0	-----
56	VH	VGLength	HEX	if value group present	determined upon IPE creation	1	0	-----
57	VH	VGBitMap	BMP	if value group present	Set to value in embodiment spec or determined upon IPE creation	1 or 2	0 or 1	Null or value
58	VH	VGFormatRevision	HEX	if value group present	set to value in embodiment spec	2	1	0x0A
59	V	TransactionType	HEX	if value group present	Set to value in embodiment spec, or set to value determined upon IPE creation, or set to zero (0)	1 or 2 or 4	0 or 1	Null or value
60	V	TransactionSequenceNumber	TS#	Always	Set to value in embodiment spec, or set to value determined upon IPE creation, or set to zero (0)	1 or 2 or 4	0 or 2	Null or value
61	V	DateTimeStamp	DTS	Always	determined upon IPE creation	1	0	-----
62	V	ISAMIDModifier	HEX	Always	determined upon IPE creation	1	0	-----
63	V	ActionSequenceNumber	HEX	Always	set to zero (0)	4	0	-----
64	V	CountRemainingRidesJourneys	HEX	if value group present	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
65	V	CountTransfers	HEX	if value group present	set to zero (0)	4	0	-----

66	V	TYP23ValueFlags – Auto-Renew	FLAG	If value group present	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
67	V	TYP23ValueFlags – UsedChecked	FLAG	If value group present	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
68	V	TYP23ValueFlags - RFU	FLAG	If value group present	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
69	V	TYP23ValueFlags – RFU	FLAG	If value group present	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
70	V	TYP23ValueFlags – RFU	FLAG	If value group present	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
71	V	TYP23ValueFlags – RFU	FLAG	If value group present	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
72	V	TYP23ValueFlags – RFU	FLAG	If value group present	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
73	V	TYP23ValueFlags – RFU	FLAG	If value group present	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
74	V	RFU	RFU	Always	set to zero (0)	4	0	-----
75	V	Padding	PAD	If Required	set to zero (0)	4	0	-----
76	INS	KID	HEX	Always	determined upon IPE creation	1	0	-----
77	INS	INP#	HEX	Always	set to zero (0)	4	0	-----
78	INS	ISAMIDCreator	HEX	Always	determined upon IPE creation	1	0	-----
79	INS	ISAMS#	HEX	Always	determined upon IPE creation	1	0	-----
80	INS	SEAL	BIN	Always	determined upon IPE creation	1	0	-----

Table 2.140 - IPE TYP 24, Format Version 2

LD	Information only					LD	LD	LD
Element Number	Target IPE Group	Target IPE ITSO Name	Target IPE Data Type	Included in target IPE?	Content generation rule	Rule Code	List Data Size	List Data
1	DIR	OID	EF + OID13	Dir Entry	set to value in embodiment spec	2	2	Value
2	DIR	TYP	TYP	Dir Entry	set to value in embodiment spec	2	1	24
3	DIR	PTYP	PTYP	Dir Entry	set to value in embodiment spec	2	1	Value
4	DIR	VGP	FLAG	Dir Entry	set to one (1) or set to zero (0) or determined upon IPE creation	3 or 4 or 1	0	-----
5	DIR	IINL	FLAG	Dir Entry	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	Null or value
6	DIR	EXP (Expiry Date)	DATE	Dir Entry	set to value in embodiment spec or set to value determined upon creation or set to today's date plus the value in embodiment spec	1 or 2 or 5	0 or 2	Null or value
7	H	IPELength	HEX	Always	determined upon IPE creation	1	0	-----
8	H	IPEBitMap	BMP	Always	Set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	Null or value
9	H	ListFormatRevision + IPEFormatRevision	HEX	Always	set to value in embodiment spec	2	1	0x12
10	IPE	RemoveDate	RDATE	Always	set to value in embodiment spec	2	1	Value
11	IPE	ProductRetailer	OID16	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	Null or value
12	IPE	TYP24Flags	BMP	Always	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	Null or Value
13	IPE	ProductTypeEncoding	HEX	Always	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	Null or Value
14	IPE	TicketNumber	UD	Always	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 4	Null or Value
15	IPE	NumberOfAssociatedIPEs	HEX	Always	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	Null or Value
16	IPE	NumberOfDiscounts	HEX	Always	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	Null or Value
17	IPE	NumberOfSupplements	HEX	Always	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	Null or Value
18	IPE	NumberOfTransferTypes	HEX	Always	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	Null or Value

19	IPE	NumberOfInterchanges	HEX	Always	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	Null or Value
20	IPE	NumberOfRestrictionTime Bands	HEX	Always	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	Null or Value
21	IPE	NumberOfVehicleSpecific Restrictions	HEX	Always	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	Null or Value
22	IPE	NumberOfRoutingPoints	HEX	Always	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	Null or Value
23	IPE	Class	HEX	Always	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	Null or Value
24	IPE	AutoRenewTimeAfterExpiry	HEX	Always	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	Null or Value
25	IPE	NumberOfJourneysSold	HEX	Always	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	Null or Value
26	IPE	OutPortionPeriodOfValidity	HEX	Always	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	Null or Value
27	IPE	RtnPortionPeriodOfValidity	HEX	Always	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	Null or Value
28	IPE	OperatorSpecificity	UD	Always	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	Null or Value
29	IPE	FaresTypeOfTicket	UD	Always	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 3	Null or Value
30	IPE	PartySizeAdult	HEX	Always	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	Null or Value
31	IPE	PartySizeChild	HEX	Always	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	Null or Value
32	IPE	PartySizeConcession	HEX	Always	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	Null or Value
33	IPE	IdDocumentReference	UD	Always	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 4	Null or Value
34	IPE	Origin	LOC1	Always	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or variable 17 max	Null or Value
35	IPE	Destination	LOC1	Always	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or variable 17 max	Null or Value
36	IPE	AlternativeOrigin	LOC1	Always	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or variable 17 max	Null or Value

37	IPE	AlternativeDestination	LOC1	Always	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or variable 17 max	Null or Value
38	IPE	Route	UD	Always	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 5	Null or Value
39	IPE	OutPortionValidFrom	DTS	Always	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 3	Null or Value
40	IPE	RtnPortionValidFrom	DTS	Always	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 3	Null or Value
41	IPE	RestrictionCode	UD	Always	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	Null or Value
42	IPE	DaysTravelPermitted	DOW	Always	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	Null or Value
43	IPE	DaysRestrictionApplies	DOW	Always	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	Null or Value
44	IPE	AmountPaidCurrencyCode	VALC	Always	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	Null or Value
45	IPE	AmountPaidMOP	MOP	Always	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	Null or Value
46	IPE	AmountPaid	VALI	Always	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 4	Null or Value
47	IPE	VendorLoc	LOC1	Always	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or variable 17 max	Null or Value
48	Associated-IPE	IPEInstanceID	HEX	according to bit map	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	Null or Value
49	Discounts	DiscountCode	UD	according to bit map	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 5	Null or Value
50	Discounts	DiscountAmount	VALI	according to bit map	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 4	Null or Value
51	Discounts	DiscountPercentage	HEX	according to bit map	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	Null or Value
52	Discounts	DiscountCodeType	UD	according to bit map	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	Null or Value
53	Discounts	RFU	RFU	according to bit map	Set to zero (0)	4	0	-----
54	Supplement	AssociatedSupplementCode	ASCII	according to bit map	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 3	Null or Value

55	Interchange	OutOfLocationInterchangeExit	LOC1	according to bit map	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or variable 17 max	Null or Value
56	Interchange	OutOfLocationInterchangeEntry	LOC1	according to bit map	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or variable 17 max	Null or Value
57	Interchange	PermittedInterchangeTime	HEX	according to bit map	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	Null or Value
58	Interchange	RFU	RFU	according to bit map	Set to zero (0)	4	0	-----
59	Transfers	TransferEntitlementType	HEX	according to bit map	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	Null or Value
60	Transfers	NumberOfTransfers	HEX	according to bit map	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	Null or Value
61	Transfers	RFU	RFU	according to bit map	Set to zero (0)	4	0	-----
62	Transfers	ExtendedValidityPeriod	HEX	according to bit map	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	Null or Value
63	Restriction1	OperatorApplicability	UD	according to bit map	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	Null or Value
64	Restriction1	SpecificLocationApplicability	LOC1	according to bit map	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or variable 17 max	Null or Value
65	Restriction1	TimeBandOnOutOrReturn	BMP	according to bit map	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	Null or Value
66	Restriction1	TimeBandStart	TIME	according to bit map	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	Null or Value
67	Restriction1	TimeBandEnd	TIME	according to bit map	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	Null or Value
68	Restriction1	TimeBandOnArriveOrDepart	FLAG	according to bit map	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	Null or Value
69	Restriction1	TimeBandIncludeExcludeFlag	FLAG	according to bit map	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	Null or Value
70	Restriction1	RFU	RFU	according to bit map	Set to zero (0)	4	0	-----
71	Restriction2	SpecificVehicleDepartureLocation	LOC1	according to bit map	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or variable 17 max	Null or Value
72	Restriction2	SpecificServiceId	UD	according to bit map	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 6	Null or Value

73	Restriction2	SpecificVehicleDeparture Time	TIME	according to bit map	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	Null or Value
74	Restriction2	RestrictionOrEasementFlag	FLAG	According to bit map	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	Null or Value
75	Restriction2	RFU	RFU	According to bit map	Set to zero (0)	4	0	-----
76	Route	RoutingLocation	LOC1	According to bit map	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or variable 17 max	Null or Value
77	Route	ViaNotVia	UD	According to bit map	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	Null or Value
78	Route	RFU	RFU	According to bit map	Set to zero (0)	4	0	-----
79	PaxDetail	Name	ASCII	According to bit map	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 20	Null or Value
80	PaxDetail	Gender	BMP	According to bit map	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	Null or Value
81	PaxDetail	RFU	RFU	According to bit map	set to zero (0)	4	0	-----
82	IPE	Padding	PAD	if required	set to zero (0)	4	0	-----
83	IPE	IIN	IIN	if required	set to value in embodiment spec	2	3	Value
84	INS	KID	HEX	Always	determined upon IPE creation	1	0	-----
85	INS	INP#	HEX	Always	set to zero (0)	4	0	-----
86	INS	ISAMIDCreator	HEX	Always	determined upon IPE creation	1	0	-----
87	INS	ISAMS#	HEX	Always	determined upon IPE creation	1	0	-----
88	INS	SEAL	BIN	Always	determined upon IPE creation	1	0	-----
89	VH	VGLength	HEX	Always	determined upon IPE creation	1	0	-----
90	VH	VGBitMap	BMP	Always	Set to value in embodiment spec or determined upon IPE creation	1 or 2	0 or 1	Null or value
91	VH	VGFormatRevision	HEX	Always	set to value in embodiment spec	2	1	0x0A
92	V	TransactionType	HEX	Always	Set to value in embodiment spec, or set to value determined upon IPE creation, or set to zero (0)	1 or 2 or 4	0 or 1	Null or value
93	V	TransactionSequence Number	TS#	Always	Set to value in embodiment spec, or set to value determined upon IPE creation, or set to zero (0)	1 or 2 or 4	0 or 2	Null or value
94	V	DateTimeStamp	DTS	Always	determined upon IPE creation	1	0	-----
95	V	ISAMIDModifier	HEX	Always	determined upon IPE creation	1	0	-----
96	V	ActionSequenceNumber	HEX	Always	set to zero (0)	4	0	-----
97	V	JourneysRemaining	HEX	Always	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	Null or Value

98	V	TransfersRemaining	BMP	Always	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	Null or Value
99	V	JourneyPartUsedFlag	FLAG	Always	set to zero (0)	4	0	-----
100	V	NumberOfReservations	HEX	Always	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	Null or Value
101	V	RFU	RFU	Always	Set to zero (0)	4	0	-----
102	VXH	VGXLength	HEX	Always	determined upon IPE creation	1	0	-----
103	VXH	VGXRef (Bit9; Bit8)	BMP	Always	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	Value
104	VXH	VGXRef (Bit7 – Bit0)	HEX	Always	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	Value
105	VX	DTSOfLastValidation	DTS	Always	Set to zero (0)	4	0	-----
106	VX	LocationOfLastValidation	LOC1	Always	set to zero (0)	4	0	-----
107	VX	BookingReference	ASCII	Always	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 8	Null or Value
108	VXO	LegDepartureDateTime	DTS	according to bit map	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 3	Null or Value
109	VXO	LegServiceId	ASCII	according to bit map	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 6	Null or Value
110	VXO	LegOrigin	LOC1	according to bit map	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or variable 17 max	Null or Value
111	VXO	LegDestination	LOC1	according to bit map	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or variable 17 max	Null or Value
112	VXO	Coach	ASCII	according to bit map	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	Null or Value
113	VXO	SeatNumber	ASCII	according to bit map	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 3	Null or Value
114	VXO	AccommodationAttribute	ASCII	according to bit map	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 4	Null or Value
115	VXO	SeatDirection	BMP	according to bit map	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	Null or Value
116	VXO	BerthUpperLower	BMP	according to bit map	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	Null or Value
117	VXO	ReservationType	UD	according to bit map	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	Null or Value
118	VXO	TogetherFlag	FLAG	according to bit map	set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	Null or Value

119	VXO	RFU	RFU	according to bit map	set to zero (0)	4	0	-----
120	VX	VGX_Padding	PAD	If Required	set to zero (0)	4	0	-----
121	V	Padding	PAD	If Required	set to zero (0)	4	0	-----
122	INS	KID	HEX	Always	determined upon IPE creation	1	0	-----
123	INS	INP#	HEX	Always	set to zero (0)	4	0	-----
124	INS	ISAMIDCreator	HEX	Always	determined upon IPE creation	1	0	-----
125	INS	ISAMS#	HEX	Always	determined upon IPE creation	1	0	-----
126	INS	SEAL	BIN	Always	determined upon IPE creation	1	0	-----

Table 2.145 – IPE TYP 29, Format Version 2

LD	Information only					LD	LD	LD
Element #	Target IPE Group	Target IPE ITSO Name	Target IPE Data Type	Included in target IPE?	Content generation rule	Rule Code	List Data Size	List Data
1	DIR	OID	EF + OID13	Dir Entry	set to value in embodiment spec	2	2	value
2	DIR	TYP	TYP	Dir Entry	set to value in embodiment spec	2	1	29
3	DIR	PTYP	PTYP	Dir Entry	set to value in embodiment spec	2	1	value
4	DIR	VGP	FLAG	Dir Entry	set to zero (0)	4	0	-----
5	DIR	IINL	FLAG	Dir Entry	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
6	DIR	EXP (Expiry Date)	DATE	Dir Entry	set to value in embodiment spec or set to value determined upon creation or set to today's date plus the value in embodiment spec	1 or 2 or 5	0 or 2	null or value
7	IPE	IPELength	HEX	Always	determined upon IPE creation	1	0	-----
8	IPE	IPEBitMap	HEX	Always	Set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
9	IPE	ListFormatRevision + IPEFormatRevision	HEX	Always	set to value in embodiment spec	2	1	0x12
10	IPE	IssueDate	DATE	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value
11	IPE	Sterling/Euro	FLAG	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
12	IPE	RFU	RFU	Always	set to zero (0)	4	0	-----
13	IPE	PassbackTime	HEX	Always	set to value in embodiment spec	2	1	value
14	IPE	MaxDailyJourneys	HEX	Always	set to value in embodiment spec	2	1	value
15	IPE	MaxTransfers	HEX	Always	set to value in embodiment spec	2	1	value
16	IPE	ScalingFactor	HEX	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
17	IPE	RFU	RFU	Always	set to zero (0)	4	0	-----

18	IPE	TYP29PassFlags - OffPeakOnly	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
19	IPE	TYP29PassFlags - WeekdayOnly	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
20	IPE	TYP29PassFlags - Class	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
21	IPE	TYP29PassFlags - ExpiryTimeFlag	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
22	IPE	AreaValidity	LOC3	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 9	null or value
23	IPE	JnyComDTS	DTS	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 3	null or value
24	IPE	QtyRemaining	HEX	Always	set to value in embodiment spec or set to value determined upon creation Note: the POST computes the #of bits that may need to be set in the ScaledQtyBackup BitMap depending the target platform and the IPEBitMap setting	1 or 2	0 or 2	null or value
25	IPE	TransferCounter	HEX	Always	set to zero (0)	4	0	-----
26	IPE	DailyJnyCounter	HEX	Always	set to zero (0)	4	0	-----
27	IPE	LastUseDTS	DTS	Always	set to zero (0)	4	0	-----
28	IPE	ScaledQtyBackup	HEX	according to bit map	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 4	null or value
29	IPE	Seq#	HEX	according to bit map	set to zero (0)	4	0	-----
30	IPE	KID	HEX	Always	determined upon IPE creation	1	0	-----
31	IPE	INP#	HEX	Always	set to zero (0)	4	0	-----
32	IPE	ISAMIDCreator	HEX	Always	determined upon IPE creation	1	0	-----
33	IPE	ISAMS#	HEX	Always	determined upon IPE creation	1	0	-----
34	IPE	SEAL	BIN	Always	Determined upon IPE creation	1	0	-----

8.5 List Format Revision 2, IPE Format Revision 1.

Definition of IPE Embodiment Parameters for IPEs formatted according to format version code 1.

Note that in the following tables, extra columns are included for the information of users. Only those columns marked LD shall be included in transmitted Embodiment parameter lists.

Note that, for guidance, values for elements where the rule is marked with a * would normally be determined at the issuing POST except in circumstances where the embodiment specification is included in an Actionlist.

Note that in element 9, the most significant 4 bits shall contain ListFormatRevision, and the least significant 4 bits shall contain IPEFormatRevision. Only IPEFormatRevision shall be programmed into IPE instances.

Elements 1 to 9 of each list shall retain their current sizes for future format versions.

Table 3.131 – List Format Revision 2, IPE TYP 2, Format Revision 1

Implementation of this version is optional in both HOPS and POSTs.

LD	Information only					LD	LD	LD
Element Number	Target IPE Group	Target IPE ITSO Name	Target IPE Data Type	Included in target IPE?	Content generation rule	Rule Code	List Data Size	List Data
1	DIR	OID	EF + OID13	Dir Entry	set to value in embodiment spec	2	2	Value
2	DIR	TYP	TYP	Dir Entry	set to value in embodiment spec	2	1	2
3	DIR	PTYP	PTYP	Dir Entry	set to value in embodiment spec	2	1	Value
4	DIR	VGP	FLAG	Dir Entry	set to one (1)	3	0	-----
5	DIR	IINL	FLAG	Dir Entry	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
6	DIR	EXP (Expiry Date)	DATE	Dir Entry	set to value in embodiment spec or set to value determined upon creation or set to today's date plus the value in embodiment spec	1 or 2 or 5	0 or 2	null or value
7	H	IPELength	HEX	Always	determined upon IPE creation	1	0	-----
8	H	IPEBitMap	BMP	Always	Set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	Null or value
9	H	ListFormatRevision + IPEFormatRevision	HEX	Always	set to value in embodiment spec	2	1	0x21
10	IPE	RemoveDate	RDATE	Always	set to value in embodiment spec	2	1	Value

11	IPE	ProductRetailer	OID16	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value
12	IPE	TYP2Flags - 0	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
13	IPE	TYP2Flags – 1	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
14	IPE	TYP2Flags – 2	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
15	IPE	TYP2Flags – 3	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
16	IPE	TYP2Flags – 4	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
17	IPE	TYP2Flags – PrintTicket	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
18	IPE	TYP2Flags - PrintReceipt	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
19	IPE	TYP2Flags - 7	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
20	IPE	Threshold	VALI	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 2	null or value
21	IPE	TopUpAmount	VALI	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 2	null or value
22	IPE	MaxValue2	VALI	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 2	null or value
23	IPE	MaximumNegativeAmount	VALI	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 2	null or value

24	IPE	DepositAmount	VALI	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 2	null or value
25	IPE	StartDateAutoTopUp	DATE	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 2	null or value
26	IPE	RFU	RFU	Always	set to zero (0)	4	0	-----
27	IPE	DepositMethodOfPayment	MOP	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
28	IPE	DepositCurrencyCode	VALC	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
29	IPE	DepositVATSalesTax	VAT	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 2	null or value
30	IPE	Padding	PAD	If Required	set to zero (0)	4	0	-----
31	IPE O	IIN	IIN	If Required	set to value in embodiment spec	2	3	Value
32	INS	KID	HEX	Always	determined upon IPE creation	1	0	-----
33	INS	INP#	HEX	Always	set to zero (0)	4	0	-----
34	INS	ISAMIDCreator	HEX	Always	determined upon IPE creation	1	0	-----
35	INS	ISAMS#	HEX	Always	determined upon IPE creation	1	0	-----
36	INS	SEAL	BIN	Always	determined upon IPE creation	1	0	-----
37	VH	VGLength	HEX	Always	determined upon IPE creation	1	0	-----
38	VH	VGBitMap	BMP	Always	Set to value in embodiment spec or determined upon IPE creation	1 or 2	0 or 1	Null or value
39	VH	VGFormatRevision	HEX	Always	set to value in embodiment spec	2	1	9
40	V	TransactionType	HEX	Always	Set to value in embodiment spec or set to value determined upon creation or set to zero (0)	1 or 2 or 4	0 or 1	Null or value
41	V	TransactionSequenceNumber	TS#	Always	Set to value in embodiment spec or set to value determined upon creation or set to zero (0)	1 or 2 or 4	0 or 2	Null or value

42	V	DateTimeStamp	DTS	Always	determined upon IPE creation	1	0	-----
43	V	ISAMIDModifier	HEX	Always	determined upon IPE creation	1	0	-----
44	V	ActionSequenceNumber	HEX	Always	set to zero (0)	4	0	-----
45	V	Value	VALS	Always	Set to value in embodiment spec or set to value determined upon creation or set to zero (0)	1 or 2 or 4	0 or 2	Null or value
46	V	ValueCurrencyCode	VALC	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
47	V	CountJourneyLegs	HEX	Always	set to zero (0)	4	0	-----
48	V	CumulativeFare	VALI	Always	set to zero (0)	4	0	-----
49	V	TYP2ValueFlags - AutoTopUp	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
50	V	TYP2ValueFlags - IPEPriorityOverride	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
51	V	TYP2ValueFlags - AutoTopUpInternal	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
52	VXH	VGXLength	HEX	Always	determined upon IPE creation	1	0	-----
53	VXH	VGXRef (Bit9; Bit8)	BMP	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	Value
54	VXH	VGXRef (Bit7 – Bit0)	HEX	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	Value
55	VX	CapStrategyCode	HEX	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 2	Value
56	VX	CapAccumulator1Rule	HEX	Always	set to zero (0)	4	0	-----
57	VX	LastFarePaid1	HEX	Always	set to zero (0)	4	0	-----
58	VX	LastFarePaid1TransactionType	HEX	Always	set to zero (0)	4	0	-----
59	VX	UncappedAccumulator1	VALI	Always	set to zero (0)	4	0	-----
60	VX	DayCapAccumulator1	VALI	Always	set to zero (0)	4	0	-----
61	VX	MultidayCapAccumulator1	VALI	Always	set to zero (0)	4	0	-----
62	VX	Cap1DayCount	HEX	Always	set to zero (0)	4	0	-----
63	VX	CapAccumulator2Rule	HEX	Always	set to zero (0)	4	0	-----
64	VX	LastFarePaid2	HEX	Always	set to zero (0)	4	0	-----

65	VX	LastFarePaid2TransactionType	HEX	Always	set to zero (0)	4	0	-----
66	VX	UncappedAccumulator2	VALI	Always	set to zero (0)	4	0	-----
67	VX	DayCapAccumulator2	VALI	Always	set to zero (0)	4	0	-----
68	VX	MultidayCapAccumulator2	VALI	Always	set to zero (0)	4	0	-----
69	VX	Cap2DayCount	HEX	Always	set to zero (0)	4	0	-----
70	VX	CapAccumulator3Rule	HEX	Always	set to zero (0)	4	0	-----
71	VX	LastFarePaid3	HEX	Always	set to zero (0)	4	0	-----
72	VX	LastFarePaid3TransactionType	HEX	Always	set to zero (0)	4	0	-----
73	VX	UncappedAccumulator3	VALI	Always	set to zero (0)	4	0	-----
74	VX	DayCapAccumulator3	VALI	Always	set to zero (0)	4	0	-----
75	VX	MultidayCapAccumulator3	VALI	Always	set to zero (0)	4	0	-----
76	VX	Cap3DayCount	HEX	Always	set to zero (0)	4	0	-----
77	VX	CapAccumulator4Rule	HEX	Always	set to zero (0)	4	0	-----
78	VX	LastFarePaid4	HEX	Always	set to zero (0)	4	0	-----
79	VX	LastFarePaid4TransactionType	HEX	Always	set to zero (0)	4	0	-----
80	VX	UncappedAccumulator4	VALI	Always	set to zero (0)	4	0	-----
81	VX	DayCapAccumulator4	VALI	Always	set to zero (0)	4	0	-----
82	VX	MultidayCapAccumulator4	VALI	Always	set to zero (0)	4	0	-----
83	VX	Cap4DayCount	HEX	Always	set to zero (0)	4	0	-----
84	VX	Location	LOC1	Always	set to zero (0)	4	0	-----
85	VX	Location1	LOC1	Always	set to zero (0)	4	0	-----
86	VX	DateTimeStamp1	DTS	Always	set to zero (0)	4	0	-----
87	VX	Location2	LOC1	Always	set to zero (0)	4	0	-----
88	VX	DateTimeStamp2	DTS	Always	set to zero (0)	4	0	-----
89	VX	Location3	LOC1	Always	set to zero (0)	4	0	-----
90	VX	DateTimeStamp3	DTS	Always	set to zero (0)	4	0	-----
91	VX	Location4	LOC1	Always	set to zero (0)	4	0	-----
92	VX	DateTimeStamp4	DTS	Always	set to zero (0)	4	0	-----
93	VX	VGX_Padding	PAD	If Required	set to zero (0)	4	0	-----
94	V	Padding	PAD	If Required	set to zero (0)	4	0	-----
95	INS	KID	HEX	Always	determined upon IPE creation	1	0	-----
96	INS	INP#	HEX	Always	set to zero (0)	4	0	-----
97	INS	ISAMIDCreator	HEX	Always	determined upon IPE creation	1	0	-----
98	INS	ISAMS#	HEX	Always	determined upon IPE creation	1	0	-----
99	INS	SEAL	BIN	Always	determined upon IPE creation	1	0	-----

Table 3.133 - List Format Revision 2, IPE TYP 4, Format Version Revision 1

Implementation of this version is optional in both HOPS and POSTs

LD	Information only					LD	LD	LD
Element Number	Target IPE Group	Target IPE ITSO Name	Target IPE Data Type	Included in target IPE?	Content generation rule	Rule Code	List Data Size	List Data
1	DIR	OID	EF + OID13	Dir Entry	set to value in embodiment spec	2	2	Value
2	DIR	TYP	TYP	Dir Entry	set to value in embodiment spec	2	1	4
3	DIR	PTYP	PTYP	Dir Entry	set to value in embodiment spec	2	1	Value
4	DIR	VGP	FLAG	Dir Entry	set to one (1)	3	0	-----
5	DIR	IINL	FLAG	Dir Entry	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
6	DIR	EXP (Expiry Date)	DATE	Dir Entry	set to value in embodiment spec or set to value determined upon creation or set to today's date plus the value in embodiment spec	1 or 2 or 5	0 or 2	null or value
7	H	IPELength	HEX	Always	determined upon IPE creation	1	0	-----
8	H	IPEBitMap	BMP	Always	Set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	Null or value
9	H	ListFormatRevision + IPEFormatRevision	HEX	Always	set to value in embodiment spec	2	1	0x21
10	IPE	RemoveDate	RDATE	Always	set to value in embodiment spec	2	1	value
11	IPE	ProductRetailer	OID16	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value
12	IPE	TYP4Flags - 0	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
13	IPE	TYP4Flags – 1	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value

14	IPE	TYP4Flags – 2	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
15	IPE	TYP4Flags – 3	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
16	IPE	TYP4Flags – 4	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
17	IPE	TYP4Flags – PrintTicket	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
18	IPE	TYP4Flags - PrintReceipt	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
19	IPE	TYP4Flags - 7	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
20	IPE	MaxValue4	VALI	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 2	null or value
21	IPE	DepositAmount	VALI	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 2	null or value
22	IPE	StartDateCTA	DATE	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value
23	IPE	EndDate	DATE	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value
24	IPE	DepositMethodOfPayment	MOP	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
25	IPE	DepositCurrencyCode	VALC	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
26	IPE	DepositVATSalesTax	VAT	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value
27	IPE	Padding	PAD	If Required	set to zero (0)	4	0	-----

28	IPE O	IIN	IIN	If Required	set to value in embodiment spec	2	3	value
29	INS	KID	HEX	Always	determined upon IPE creation	1	0	-----
30	INS	INP#	HEX	Always	set to zero (0)	4	0	-----
31	INS	ISAMIDCreator	HEX	Always	determined upon IPE creation	1	0	-----
32	INS	ISAMS#	HEX	Always	determined upon IPE creation	1	0	-----
33	INS	SEAL	BIN	Always	determined upon IPE creation	1	0	-----
34	VH	VGLength	HEX	Always	determined upon IPE creation	1	0	-----
35	VH	VGBitMap	BMP	Always	Set to value in embodiment spec or determined upon IPE creation	1 or 2	0 or 1	Null or value
36	VH	VGFormatRevision	HEX	Always	set to value in embodiment spec	2	1	9
37	V	TransactionType	HEX	Always	Set to value in embodiment spec or set to value determined upon creation or set to zero (0)	1 or 2 or 4	0 or 1	Null or value
38	V	TransactionSequenceNumber	TS#	Always	Set to value in embodiment spec or set to value determined upon creation or set to zero (0)	1 or 2 or 4	0 or 2	Null or value
39	V	DateTimeStamp	DTS	Always	determined upon IPE creation	1	0	-----
40	V	ISAMIDModifier	HEX	Always	determined upon IPE creation	1	0	-----
41	V	ActionSequenceNumber	HEX	Always	set to zero (0)	4	0	-----
42	V	CumulativeAmount	VALI	Always	Set to value in embodiment spec or set to value determined upon creation or set to zero (0)	1 or 2 or 4	0 or 2	Null or value
43	V	ValueCurrencyCode	VALC	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
44	V	CountJourneyLegs	HEX	Always	set to zero (0)	4	0	-----
45	V	CumulativeFare	VALI	Always	set to zero (0)	4	0	-----
46	V	TYP4ValueFlags - 0	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value

47	V	TYP4ValueFlags - IPEPriorityOverride	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
48	V	TYP4ValueFlags – 2	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
49	V	TYP4ValueFlags - 3	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
50	VXH	VGXLength	HEX	Always	determined upon IPE creation	1	0	----
51	VXH	VGXRef (Bit9; Bit8)	BMP	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	Value
52	VXH	VGXRef (Bit7 – Bit0)	HEX	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	Value
53	VX	CapStrategyCode	HEX	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 2	Value
54	VX	CapAccumulator1Rule	HEX	Always	set to zero (0)	4	0	-----
55	VX	LastFarePaid1	HEX	Always	set to zero (0)	4	0	-----
56	VX	LastFarePaid1TransactionType	HEX	Always	set to zero (0)	4	0	-----
57	VX	UncappedAccumulator1	VALI	Always	set to zero (0)	4	0	-----
58	VX	DayCapAccumulator1	VALI	Always	set to zero (0)	4	0	-----
59	VX	MultidayCapAccumulator1	VALI	Always	set to zero (0)	4	0	-----
60	VX	Cap1DayCount	HEX	Always	set to zero (0)	4	0	-----
61	VX	CapAccumulator2Rule	HEX	Always	set to zero (0)	4	0	-----
62	VX	LastFarePaid2	HEX	Always	set to zero (0)	4	0	-----
63	VX	LastFarePaid2TransactionType	HEX	Always	set to zero (0)	4	0	-----
64	VX	UncappedAccumulator2	VALI	Always	set to zero (0)	4	0	-----
65	VX	DayCapAccumulator2	VALI	Always	set to zero (0)	4	0	-----
66	VX	MultidayCapAccumulator2	VALI	Always	set to zero (0)	4	0	-----
67	VX	Cap2DayCount	HEX	Always	set to zero (0)	4	0	-----
68	VX	CapAccumulator3Rule	HEX	Always	set to zero (0)	4	0	-----
69	VX	LastFarePaid3	HEX	Always	set to zero (0)	4	0	-----
70	VX	LastFarePaid3TransactionType	HEX	Always	set to zero (0)	4	0	-----
71	VX	UncappedAccumulator3	VALI	Always	set to zero (0)	4	0	-----
72	VX	DayCapAccumulator3	VALI	Always	set to zero (0)	4	0	-----
73	VX	MultidayCapAccumulator3	VALI	Always	set to zero (0)	4	0	-----
74	VX	Cap3DayCount	HEX	Always	set to zero (0)	4	0	-----
75	VX	CapAccumulator4Rule	HEX	Always	set to zero (0)	4	0	-----

76	VX	LastFarePaid4	HEX	Always	set to zero (0)	4	0	-----
77	VX	LastFarePaid4TransactionType	HEX	Always	set to zero (0)	4	0	-----
78	VX	UncappedAccumulator4	VALI	Always	set to zero (0)	4	0	-----
79	VX	DayCapAccumulator4	VALI	Always	set to zero (0)	4	0	-----
80	VX	MultidayCapAccumulator4	VALI	Always	set to zero (0)	4	0	-----
81	VX	Cap4DayCount	HEX	Always	set to zero (0)	4	0	-----
82	VX	Location	LOC1	Always	set to zero (0)	4	0	-----
83	VX	Location1	LOC1	Always	set to zero (0)	4	0	-----
84	VX	DateTimeStamp1	DTS	Always	set to zero (0)	4	0	-----
85	VX	Location2	LOC1	Always	set to zero (0)	4	0	-----
86	VX	DateTimeStamp2	DTS	Always	set to zero (0)	4	0	-----
87	VX	Location3	LOC1	Always	set to zero (0)	4	0	-----
88	VX	DateTimeStamp3	DTS	Always	set to zero (0)	4	0	-----
89	VX	Location4	LOC1	Always	set to zero (0)	4	0	-----
90	VX	DateTimeStamp4	DTS	Always	set to zero (0)	4	0	-----
91	VX	VGX_Padding	PAD	If Required	set to zero (0)	4	0	-----
92	V	Padding	PAD	If Required	set to zero (0)	4	0	-----
93	INS	KID	HEX	Always	determined upon IPE creation	1	0	-----
94	INS	INP#	HEX	Always	set to zero (0)	4	0	-----
95	INS	ISAMIDCreator	HEX	Always	determined upon IPE creation	1	0	-----
96	INS	ISAMS#	HEX	Always	determined upon IPE creation	1	0	-----
97	INS	SEAL	BIN	Always	determined upon IPE creation	1	0	-----

Table 3.134 - List Format Revision 2, IPE TYP 5, Format Version Revision 1

Implementation of this version is optional in both HOPS and POSTs

LD	Information only					LD	LD	LD
Element Number	Target IPE Group	Target IPE ITSO Name	Target IPE Data Type	Included in target IPE?	Content generation rule	Rule Code	List Data Size	List Data
1	DIR	OID	EF + OID13	Dir Entry	set to value in embodiment spec	2	2	value
2	DIR	TYP	TYP	Dir Entry	set to value in embodiment spec	2	1	5
3	DIR	PTYP	PTYP	Dir Entry	set to value in embodiment spec	2	1	value
4	DIR	VGP	FLAG	Dir Entry	set to one (1)	3	0	-----
5	DIR	IINL	FLAG	Dir Entry	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
6	DIR	EXP (Expiry Date)	DATE	Dir Entry	set to value in embodiment spec or set to value determined upon creation or set to today's date plus the value in embodiment spec	1 or 2 or 5	0 or 2	null or value
7	H	IPELength	HEX	Always	determined upon IPE creation	1	0	-----
8	H	IPEBitMap	BMP	Always	Set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	Null or value
9	H	ListFormatRevision + IPEFormatRevision	HEX	Always	set to value in embodiment spec	2	1	0x21
10	IPE	RemoveDate	RDATE	Always	set to value in embodiment spec	2	1	Value
11	IPE	ProductRetailer	OID16	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value
12	IPE	TYP5Flags - 0	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
13	IPE	TYP5Flags – 1	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value

14	IPE	TYP5Flags – 2	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
15	IPE	TYP5Flags – 3	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
16	IPE	TYP5Flags – 4	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
17	IPE	TYP5Flags – PrintTicket	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
18	IPE	TYP5Flags - PrintReceipt	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
19	IPE	TYP5Flags - 7	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
20	IPE	WeeksPerPeriod	HEX	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
21	IPE	QuantityTransactions	HEX	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
22	IPE	MaxValue5	VALI	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 2	null or value
23	IPE	DepositAmount	VALI	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 2	null or value
24	IPE	StartDateCTA	DATE	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value
25	IPE	EndDate	DATE	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value
26	IPE	DepositMethodOfPayment	MOP	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value

27	IPE	DepositCurrencyCode	VALC	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
28	IPE	DepositVATSalesTax	VAT	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 2	null or value
29	IPE	Padding	PAD	If Required	set to zero (0)	4	0	-----
30	IPE O	IIN	IIN	If Required	set to value in embodiment spec	2	3	Value
31	INS	KID	HEX	Always	determined upon IPE creation	1	0	-----
32	INS	INP#	HEX	Always	set to zero (0)	4	0	-----
33	INS	ISAMIDCreator	HEX	Always	determined upon IPE creation	1	0	-----
34	INS	ISAMS#	HEX	Always	determined upon IPE creation	1	0	-----
35	INS	SEAL	BIN	Always	determined upon IPE creation	1	0	-----
36	VH	VGLength	HEX	Always	determined upon IPE creation	1	0	-----
37	VH	VGBitMap	BMP	Always	Set to value in embodiment spec or determined upon IPE creation	1 or 2	0 or 1	Null or value
38	VH	VGFormatRevision	HEX	Always	set to value in embodiment spec	2	1	9
39	V	TransactionType	HEX	Always	Set to value in embodiment spec or set to value determined upon creation or set to zero (0)	1 or 2 or 4	0 or 1	Null or value
40	V	TransactionSequence Number	TS#	Always	Set to value in embodiment spec or set to value determined upon creation or set to zero (0)	1 or 2 or 4	0 or 2	Null or value
41	V	DateTimeStamp	DTS	Always	determined upon IPE creation	1	0	-----
42	V	ISAMIDModifier	HEX	Always	determined upon IPE creation	1	0	-----
43	V	ActionSequenceNumber	HEX	Always	set to zero (0)	4	0	-----
44	V	CountOfTransactions	HEX	Always	Set to value in embodiment spec or set to value determined upon creation or set to zero (0)	1 or 2 or 4	0 or 1	Null or value
45	V	RFU	RFU	Always	set to zero (0)	4	0	-----

46	V	LastResetDate	DATE	Always	set to current date and time	6	0	-----
47	V	ValueCurrencyCode	VALC	Always	*set to value in embodiment spec or set to value determined upon IPE creation	1 or 2	0 or 1	null or value
48	V	TYP5ValueFlags - 0	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
49	V	TYP5ValueFlags - IPEPriorityOverride	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
50	V	TYP5ValueFlags - 2	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
51	V	TYP5ValueFlags - 3	FLAG	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	null or value
52	V	RFU	RFU	Always	set to zero (0)	4	0	-----
53	V	CountJourneyLegs	HEX	Always	set to zero (0)	4	0	-----
54	VXH	VGXLength	HEX	Always	determined upon IPE creation	1	0	-----
55	VXH	VGXRef (Bit9; Bit8)	BMP	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	Value
56	VXH	VGXRef (Bit7 – Bit0)	HEX	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 1	Value
57	VX	CapStrategyCode	HEX	Always	set to value in embodiment spec or set to value determined upon creation	1 or 2	0 or 2	Value
58	VX	CapAccumulator1Rule	HEX	Always	set to zero (0)	4	0	-----
59	VX	LastFarePaid1	HEX	Always	set to zero (0)	4	0	-----
60	VX	LastFarePaid1TransactionType	HEX	Always	set to zero (0)	4	0	-----
61	VX	UncappedAccumulator1	VALI	Always	set to zero (0)	4	0	-----
62	VX	DayCapAccumulator1	VALI	Always	set to zero (0)	4	0	-----
63	VX	MultidayCapAccumulator1	VALI	Always	set to zero (0)	4	0	-----
64	VX	Cap1DayCount	HEX	Always	set to zero (0)	4	0	-----
65	VX	CapAccumulator2Rule	HEX	Always	set to zero (0)	4	0	-----
66	VX	LastFarePaid2	HEX	Always	set to zero (0)	4	0	-----
67	VX	LastFarePaid2TransactionType	HEX	Always	set to zero (0)	4	0	-----
68	VX	UncappedAccumulator2	VALI	Always	set to zero (0)	4	0	-----
69	VX	DayCapAccumulator2	VALI	Always	set to zero (0)	4	0	-----
70	VX	MultidayCapAccumulator2	VALI	Always	set to zero (0)	4	0	-----

71	VX	Cap2DayCount	HEX	Always	set to zero (0)	4	0	-----
72	VX	CapAccumulator3Rule	HEX	Always	set to zero (0)	4	0	-----
73	VX	LastFarePaid3	HEX	Always	set to zero (0)	4	0	-----
74	VX	LastFarePaid3TransactionType	HEX	Always	set to zero (0)	4	0	-----
75	VX	UncappedAccumulator3	VALI	Always	set to zero (0)	4	0	-----
76	VX	DayCapAccumulator3	VALI	Always	set to zero (0)	4	0	-----
77	VX	MultidayCapAccumulator3	VALI	Always	set to zero (0)	4	0	-----
78	VX	Cap3DayCount	HEX	Always	set to zero (0)	4	0	-----
79	VX	CapAccumulator4Rule	HEX	Always	set to zero (0)	4	0	-----
80	VX	LastFarePaid4	HEX	Always	set to zero (0)	4	0	-----
81	VX	LastFarePaid4TransactionType	HEX	Always	set to zero (0)	4	0	-----
82	VX	UncappedAccumulator4	VALI	Always	set to zero (0)	4	0	-----
83	VX	DayCapAccumulator4	VALI	Always	set to zero (0)	4	0	-----
84	VX	MultidayCapAccumulator4	VALI	Always	set to zero (0)	4	0	-----
85	VX	Cap4DayCount	HEX	Always	set to zero (0)	4	0	-----
86	VX	Location	LOC1	Always	set to zero (0)	4	0	-----
87	VX	Location1	LOC1	Always	set to zero (0)	4	0	-----
88	VX	DateTimeStamp1	DTS	Always	set to zero (0)	4	0	-----
89	VX	Location2	LOC1	Always	set to zero (0)	4	0	-----
90	VX	DateTimeStamp2	DTS	Always	set to zero (0)	4	0	-----
91	VX	Location3	LOC1	Always	set to zero (0)	4	0	-----
92	VX	DateTimeStamp3	DTS	Always	set to zero (0)	4	0	-----
93	VX	Location4	LOC1	Always	set to zero (0)	4	0	-----
94	VX	DateTimeStamp4	DTS	Always	set to zero (0)	4	0	-----
95	VX	VGX_Padding	PAD	If Required	set to zero (0)	4	0	-----
96	V	Padding	PAD	If Required	set to zero (0)	4	0	-----
97	INS	KID	HEX	Always	determined upon IPE creation	1	0	-----
98	INS	INP#	HEX	Always	set to zero (0)	4	0	-----
99	INS	ISAMIDCreator	HEX	Always	determined upon IPE creation	1	0	-----
100	INS	ISAMS#	HEX	Always	determined upon IPE creation	1	0	-----
101	INS	SEAL	BIN	Always	determined upon IPE creation	1	0	-----

9. HOPS to POST, POST to HOPS and HOPS to HOPS messages, Miscellaneous Messages, Code 08xx.

9.1. Message Codes 08xx.

Table 146 - Miscellaneous Messages

Group	Table Type	HEX CODE	Hashed Message?
Miscellaneous Messages	Embodiment Parameter Request Message	0800	No
	Supplementary Data Message (Hash/Mac)	0801	Yes
	CM or Shell status advisory message	0802	No
	Physical ISAM Installation Notification	0803	No
	Customer Media Holder Details request	0804	Yes
	Customer Media Holder Details response	0805	Yes
	IPE Fulfilment Action notification	0806	Yes
	Additional Shell Data	0807	No
	Embodiment Parameter Request Message	0808	No
	RFU	0809 – 08FF	----

Note 1: Data in messages shown shaded in Table 146 are coded using ASN.1 notation.

9.2. Embodiment Parameter Request Message, code 0800.

The message is sent from one HOPS to another HOPS when the first wishes to create IPEs owned by the second. For example, the first HOPS would typically be a Product Retailer and the second a Product Owner. The Embodiment Parameter Message is returned and passed on the POSTs.

Note that the IPE creating POST must also have access to the relevant keys and ISAM configuration data, methods for acquiring these are defined in ITSO TS 1000-4, ITSO TS 1000-7 and ITSO TS 1000-8.

The values in the request message shall identify the owner and IPE Embodiment that the requesting HOPS owner wishes to create instances of.

A HOPS may also send other POST Configuration Data messages in addition to the Embodiment Parameters, where the Product Owner wishes to do this, for the purposes of fullyconfiguring POSTs to create IPE Instances.

This message is provided for backwards compatibility only, new implementations shall not use it.

Table 147 - Embodiment Parameter Request Message, code 0800

Name	Format	Size	Comment
0800_IPEOwnerIIN	IIN	3	IIN Pertinent to the Owner of the target IPE
0800_IPEOwnerOID	OID	2	Target IPE Owner Identity
0800_TYP	TYP	1	Target IPE TYP
0800_PTYP	PTYP	1	Target IPE PTYP

9.3. Supplementary Data Message (Hash/Mac), code 0801

Implementation of the 0801 message is optional in POSTs.

Supplementary data messages are created by a POST and transmitted to a HOPS.

Supplementary data messages are always subservient to another message, known as the primary message. This primary message is identified by including the message code, signing ISAM ID and signing ISAM sequence number appropriate to the primary message within the supplementary data message.

Table 148 – Supplementary Data Message, code 0801 – RecordFormatRevision = 1.

Name	Source	Format	Size	Comment
PrimaryMessageMessageCode	POST	HEX	2	Used to match this message to the relevant primary message
PrimaryMessageSealerID	POST	HEX	7	Used to match this message to the relevant primary message (the value is found in the DF Trailer)
PrimaryMessageSeq#	POST	HEX	3	Used to match this message to the relevant primary message (the value is found in the DF Trailer)
DataArea	POST	Variable	Variable	One or more elements encoded according to asn.1 using basic encoding rules. Allowable data elements and associated tag values are defined in ITSO Developers Guide DG0009.

Table 149 - 0801 message DataArea structure

Elements shall be included in the DataArea in the order shown in this table.

All characters are an ASCII representation of hexadecimal values. Note that when ASCII characters are stored, then the hexadecimal value of each ASCII code shall be stored. For example, the string "A123" shall be stored as 41 31 32 33 (HEX).

Tag name	Tag value	Length	Description
ITSO root	0xE0	Calculated – the length of the DataArea, excluding the length of the ITSO root tag and this length element	
ITSO data group	<i>Tag value</i>	Calculated – the length of the elements in this group, excluding the length of this tag and this length element	There may be none or one ITSO defined data groups in the message
ITSO defined-sub group (s)	<i>Tag value</i>	Calculated – the length of the elements in this group, excluding the length of this tag and this length element	There may be no, one or more than one ITSO defined sub-groups in the message
ITSO defined element (s)	<i>Tag value</i>	Calculated	There may be one or more than one ITSO defined elements in the sub-group
Private data group (s)	<i>Tag value</i>	Calculated – the length of the elements in this group, excluding the length of this tag and this length element	There may be no, one or more than one user defined sub-groups in the message
ITSO OID	<i>Tag value</i>	Calculated	The OID of the entity responsible for the message should be recorded here
User defined element (s)	<i>Tag value</i>	Calculated	User defined data, identified by the OID of the originator included in the user defined sub-group data

9.4 CM or Shell status advisory message, code 0802

It is strongly recommended that when a Shell Owner is aware that a CM or a Shell has been blocked, destroyed or is otherwise unavailable, this advisory message should be sent to all Product Owners who are recorded in the ISA as having current loaded products in the affected Shell.

When received by a HOPS, this message triggers a change in IPA Statusto “Host Unavailable”.

Table 150 – CM or Shell status advisory message, code 0802 – RecordFormatRevision = 1.

Name	Source	Format	Size	Comment
ITSOShellReferenceNumberNonEncrypted	HOPS	uISRN	16	Not encrypted.
0802ReasonCode	HOPS	HEX	1	Refer to table 151 below. May be set to zero (0) when reason codes are not sent.

Table 151 0802 ReasonCode code list

ReasonCode	Code value
Not used	0
CM destroyed (i.e. physically destroyed and cannot be resurrected)	1
CM returned and faulty	2
CM blocked	3
Shell deleted from CM	4
Shell blocked	5
Other reason	6
Shell has been placed on a Hotlist	7
RFU	8 - 255

9.5 POST Information Notification, code 0803

Implementation of the code 0803 message is mandatory in POSTs and HOPS. The message shall be created by a POST and transmitted to a HOPS.

The current Format Revision 1 is now superseded by Format Revision 2 of this message which shall be used in all new and updated POST designs. To maintain interoperability HOPS shall support all Format Revisions until earlier versions are no longer in use by POSTs.

Note 1:

Normally the POST would set the destination of the code 0803 message to that of the AMS HOPS for the ISAM in question however if this information is unavailable at the particular POST the ISAM is placed in it shall set the destination of the code 0803 message to the OID of its own physical ISAMID (i.e. the ISAM's owner).

Tables 152 and 153 define the structure and content of the versions of this message.

Table 152 POST Information Notification, code 0803 (RecordFormatRevision = 1)

Name	Format	Size (bytes)	Comment
0803_RecordFormatRevision	Hex	1	Defines the format revision of this message. For messages formatted according to this version of the specification this value shall be set to 1 (one).
0803_POSTIdentifier	ASCII	MS 6	The POST Manufacturer ID shall be a unique reference Issued by the ITSO Registrar
	ASCII	LS 6	POST Manufacturer hardware identifier / serial number (guaranteed unique by the POST manufacturer)
0803_ServiceOperatorOID	OID16	2	Service operator OID
0803_ServiceOperator	UD	4	User defined service operator identifier
0803_TypeofPOST	UD	30	User defined description of the type of POST
0803_FixtureIdentifier	UD	16	User defined The identification code of the fixture to which the POST is currently attached, shall be set to all 0's where no FixtureIdentifier is available
0803_PreviousISAMIRN	BCD	9	IRN of the ISAM that was previously installed in the POST device, shall be set to all 0's if no ISAM previously installed
0803_NewISAMIRN	BCD	9	IRN of the ISAM that has just been or currently is installed in the POST device.
0803_TimeZone	ASCII	5	The current time zone of the POST device in the format: <sign><offset from UTC> i.e. "-1000"; "+0000", "+1230" Where the offset consists of two digits for the number of hours and two digits for the number of minutes (HHMM). NB: This is not necessarily the time zone the POST is currently being used in and does not necessarily enable transaction versus time zone reconciliation
0803_ListStorageSpace	HEX	3	The combined amount of storage space available for Hotlist, Actionlist and PCD items.
0803_HotlistStorage	HEX	3	The amount of space (in Kbytes) available on the POST device to store Hotlist items. Set to all zeros if no separate area is defined.
0803_ActionlistStorage	HEX	3	The amount of space (in Kbytes) available on the POST device to store Actionlist items. Set to all zeros if no separate area is defined.
0803_PCDListStorage	HEX	3	The amount of space (in Kbytes) available on the POST device to store POST Configuration Data items. Set to all zeros if no separate area is defined
0803_MaximumITSOMessageSize	HEX	3	Maximum size of ITSO messages (in native format) that this POST can accommodate (in Kbytes).
0803_InfoFlags	BMP	1	Shall be a bitmapped field, encoded as follows: Bit 0 shall be set to one if the POST acts as a server for POST/HOPS messaging if not then set to 0. Bit 1 shall be set to one if the POST uses the full XML tagset if it uses the reduced tagset then set to 0. Bit 2 shall be set to one if the POST uses the ISAM for list storage Bits 3-7 shall be RFU

Table 153 POST Information Notification, code 0803 - RecordFormatRevision = 2

Name	Format	Size (bytes)	Comment
0803_RecordFormatRevision	Hex	1	Defines the format revision of this message. For messages formatted according to this version of the specification this value shall be set to 2.
0803_POSTIdentifier	ASCII	MS 6	The POST Manufacturer ID shall be a unique reference Issued by the ITSO Registrar
	ASCII	LS 6	POST Manufacturer hardware identifier / serial number (guaranteed unique by the POST manufacturer)
0803_ServiceOperatorOID	OID16	2	Service operator OID
0803_ServiceOperator	UD	4	User defined service operator identifier
0803_TypeofPOST	UD	30	User defined description of the type of POST
0803_FixtureIdentifier	UD	16	User defined The identification code of the fixture to which the POST is currently attached, shall be set to all 0's where no FixtureIdentifier is available
0803_PreviousISAMIRN	BCD	9	IRN of the ISAM that was previously installed in the POST device, shall be set to all 0's if no ISAM previously installed
0803_NewISAMIRN	BCD	9	IRN of the ISAM that has just been or currently is installed in the POST device
0803_TimeZone	ASCII	5	The current time zone of the POST device in the format: <sign><offset from UTC> i.e. "-1000"; "+0000", "+1230" Where the offset consists of two digits for the number of hours and two digits for the number of minutes (HHMM). NB: This is not necessarily the time zone the POST is currently being used in and does not necessarily enable transaction versus time zone reconciliation
0803_ListStorageSpace	HEX	3	The combined amount of storage space available for Hotlist, Actionlist and PCD items.
0803_HotlistStorage	HEX	3	The amount of space (in Kbytes) available on the POST device to store Hotlist items. Set to all zeros if no separate area is defined.
0803_ActionlistStorage	HEX	3	The amount of space (in Kbytes) available on the POST device to store Actionlist items. Set to all zeros if no separate area is defined.
0803_PCDListStorage	HEX	3	The amount of space (in Kbytes) available on the POST device to store post configuration data items. Set to all zeros if no separate area is defined
0803_HotlistSetID	SETID	7	POST-SET Identifier the POST is currently allocated to for Hotlist purposes. Set to zeros if the POST is not part of a POST-SET.
0803_ActionlistSetID	SETID	7	POST-SET Identifier the POST is currently allocated to for Actionlist purposes. Set to zeros if the POST is not part of a POST-SET.

0803_PCDSerID	SETID	7	POST-SET Identifier the POST is currently allocated to for Post Configuration Data purposes. Set to zeros if the POST is not part of a POST-SET.
0803_Manifest_Description	ASCII	20	A text string assigned by the HOPS to identify the PCD currently installed in this POST. This Data Element shall be formatted as up to 20 ASCII characters left justified and padded with spaces if necessary. If the 0803_Manifest_description is not known then the POST shall return all nulls for this Data Element.
0803_Manifest_DTS	DTS	3	A DTS assigned by the HOPS used to identify the date of creation of the PCD described in the 0803_Manifest_Description. If the 0803_Manifest_DTS is not known then the POST shall return all Zeros for this Data Element.
0803_MaximumITSOMessageSize	HEX	3	Maximum size of ITSO messages (in native format) that this POST can accommodate (in Kbytes).
0803_InfoFlags	BMP	1	<p>Shall be a bitmapped field, encoded as follows:</p> <p>Bit 0 shall be set to one if the POST acts as a server for POST/HOPS messaging if not then set to 0.</p> <p>Bit 1 shall be set to one if the POST uses the full XML tagset if it uses the reduced tagset then set to 0.</p> <p>Bit 2 shall be set to one if the POST uses the ISAM for storage</p> <p>Bit 3 shall be set to 1 if the POST does not support the sending of standalone messaging.</p> <p>Bit 4 shall be set to 1 to indicate that the POST shall ignore any DOCTYPE element in a received message and use its own stored version of the relevant DTD.</p> <p>Bits 5-7 shall be RFU by ITSO and shall be set to 0.</p>

Note 2:

SETID found in table 153 is as defined as the concatenation of IIN, OID and SET as found for Recipient_Type = 0x02 in Table 3a of TS1000-9.

Note 3:

The shaded area in tables 152 and 153 denote the POST's memory utilisation for list storage. It is recognised that POSTs may have a fixed allocation for each type of list or dynamically allocate available memory among all or some lists as appropriate to usage.

The ListStorageSpace element is known to the POST and shall always be specified.

The proportion of the ListStorageSpace allocated for each type of list may also be fixed and if so shall be specified.

The proportion of space allocated for any of the list types specified may also be determined by the first line HOPS, in this case its associated amount of space indication shall be set to 0xFFFFFFFF.

9.6 Customer Media Holder Details request, code 0804

Implementation of this message is required where a HOPS supports a Virtual Store and provides, verification of certain customer details where possible and the ability to create Detached IPEs (see also the associated response returned to the requesting HOPS in clause 9.7).

This request shall be used to enable the Requesting HOPS to verify the customer details when first registering a customer.

The same request shall also be used to elicit additional data required when continuing to support the customer.

Each Customer Media Holder Details request in the message is targeted at single instance of a Customer Media.

Normally this request would be made to a Shell owner HOPS. The request is formed in such a way that the requestor supplies as many details given to it or already known and expects responses that confirm or otherwise the efficacy of the details revealed.

The CustomerMediaHolder_Details_Req is defined in Table 154. The message is made up of constructed and primitive Data Objects (CDOs and PDOs) in accordance with ASN.1 the tags and syntax, for which are defined in DG0009.

Table 154 shows:

- Primitive Data Objects in plain text
- Constructed Data Objects in bold
- Objects that are optional as shaded
- Objects that may be repeated more than once in italics
- The *'s prefixing the DO names indicate the nesting level of the DO

Note: A mandatory Primitive Data Object will not be present if it is contained in an optional Constructed Data Object that is not present.

Table 154 Customer Media Holder Details request, Code 0804

ASN.1 Constructed DO names	Data Type	Description
ASN.1 Primitive DO names		
ITSO_Root_Group		
*ITSO_Data_Group		
**CustomerMediaHolder_Details_Req		<i>One or more CDOs containing a complete Customer Media Holder Details request</i>
***Source_Reference		A single mandatory CDO forming a unique reference for this CustomerMediaHolder_Details_Req
****ISAMID	HEX	A single mandatory PDO containing the ISAMID of the H/ISAM used in the creation of this CustomerMediaHolder_Details_Req
****Ref#	HEX	A single mandatory PDO containing a 4 Byte binary integer. Added by the source to uniquely identify this CustomerMediaHolder_Details_Req. This shall be incremented by 1 for every different CustomerMediaHolder_Details_Req generated. Rollover is not permitted for the same value of H/ISAMID
***Request_Purpose	HEX	A single mandatory PDO containing the description of the purpose of this request. A single byte binary integer coded in accordance with Table 153
***Media_Number	ASCII	A single optional PDO containing the media reference number given by the customer or by the HOPS on behalf of the customer. NB: it is recommended that any IIN and Luhn check digits present are verified before this value is populated The media reference number represented as a text string in ASCII MS Character first

ASN.1 Constructed DO names	Data Type	Description
ASN.1 Primitive DO names		
***Shell_Reference	ISRN	A single optional PDO containing the reference of the ITSO Shell (ISRN) given by the customer or by the HOPS on behalf of the customer NB: it is recommended that the IIN, embedded OID and Lühn check digit of this number are verified before this value is populated
***DOB	DOB	A single optional PDO containing the date of birth given by the Customer coded according to prEN1545 BirthDate
***Expiry_Date	BCDN	A single optional PDO containing the (media) expiry date given by the Customer
*** CustomerMediaHolder_Information		An optional CDO containing details of the Customer Media Holder given by the Customer using as many primitive DOs as required selected from those following and as defined elsewhere in this part of TS1000.
****HolderTitle	ASCII	A single optional PDO
****HolderSurname	ASCII	A single optional PDO
****HolderOtherNames	ASCII	A single optional PDO
****HolderPhoneDay	ASCII	A single optional PDO
****HolderPhoneHome	ASCII	A single optional PDO
****HolderPhoneMobile	ASCII	A single optional PDO
****HolderAddress1	ASCII	A single optional PDO
****HolderAddress2	ASCII	A single optional PDO
****HolderAddress3	ASCII	A single optional PDO
****HolderAddress4	ASCII	A single optional PDO
****HolderPostCode	ASCII	A single optional PDO
****HolderEmail	ASCII	A single optional PDO
****BankName	ASCII	A single optional PDO
****BankACNumber	BCDS	A single optional PDO
****BankCardExpiryDate	BCDN	A single optional PDO
****BankCardStartDate	BCDN	A single optional PDO
****BankCardIssueNumber	BCDN	A single optional PDO
**** Product_Information		A single optional CDO given by the Customer (i.e. CTA, ENCTS.....) and or as requested by the Source of this message containing as many TYP_PTYT Constructed DOs needed for requesting information on a collection of IPEs
***** TYP_PTYT		<i>One or more mandatory CDOs containing TYP and optionally OID, PTYP information. This CDO shall only be used when relating to IPEs of TYP = 2,3,4,5,14, 16 and 17</i>
*****TYP	TYP	A single mandatory PDO containing the TYP code (padded right)
*****IIN_Index	HEX	A single optional PDO containing a reference to the IPE IIN
*****OID	OID16	A single optional PDO containing the OID of the TYP owner
*****PTYT	PTYT	A single optional PDO containing the PTYP code (left padded).
*****IPEFormatRevision	HEX	A single optional PDO containing the IPEFormatRevision code (left padded).

Table 155 Coding of Request_Purpose PDO

Value	Description
0x01	The request is for initial customer media holder registration
0x02	The request is for additional data
0x03 – 0xFF	All other values RFU

9.7 Customer Media Holder Details response, Code 0805

Implementation of this message is required where a HOPS or a POST responds to the code 0804 Customer Media Holder Details request.

The CustomerMediaholder_Details_Response is defined in Table 156. The message is made up of constructed and primitive Data Objects (CDOs and PDOs) in accordance with ASN.1 the tags and syntax, for which are defined in DG0009.

Table 156 shows:

- Primitive Data Objects in plain text
- Constructed Data Objects in bold
- Objects that are optional as shaded
- Objects that may be repeated more than once in italics

The *'s prefixing the DO names indicate the nesting level of the DO

Table 156 Customer Media Holder Details response, Code 0805

ASN.1 Constructed DO names	Data Type	Description
ASN.1 Primitive DO names		
ITSO_Root_Group		
*ITSO_Data_Group		
**CustomerMediaHolder_Details_Response		<i>One or more CDOs containing the complete Customer Media Holder details response</i>
***Source_Reference		A single mandatory CDO containing a copy of the Source_Reference from the CustomerMediaHolder_Details_Req
****ISAMID	HEX	A single mandatory PDO Copied from the CustomerMediaHolder_Details_Req
****Ref#	HEX	A single mandatory PDO Copied from the CustomerMediaHolder_Details_Req
***Conditions	HEX	One or more mandatory PDOs containing the conditions applicable to this response. A single byte binary integer coded in accordance with Table 155
***Shell_Reference_Reply	HEX	A single optional PDO containing the entire contents of the ITSO Shell Environment Data Group Dataset relating to the Shell reference present in the request
***MID	HEX	A single optional PDO containing the MID relating to the CM carrying the Shell reference present in the request
***Directory_Data_Group	HEX	A single optional PDO containing the entire contents of the ITSO Directory Data Group Dataset relating to the Shell reference present in the request. All Data Elements indicating the OID of the IPE owner shall be set to null (all zeros).
***Estimated_Space	HEX	A single optional CDO only present where the responder is aware of one

ASN.1 Constructed DO names ASN.1 Primitive DO names	Data Type	Description
		or more outstanding IPE Fulfilment Actions that have not yet been executed on this Shell and thus not covered by the contents of the Directory_Data_Group PDO.
****Num_Sectors	HEX	A single mandatory PDO containing the estimated number of vacant sectors remaining empty in the Shell assuming all outstanding IPE Fulfilment Actions have taken place. Coded as a single byte binary integer
****Num_DIR_Entries	HEX	A single mandatory PDO containing the estimated number of vacant Directory Entries remaining unused in the Shell assuming all outstanding IPE Fulfilment Actions have taken place. Coded as a single byte binary integer
***DOB_Reply	HEX	A single optional PDO containing confirmation of the DOB present in the request. A single byte binary integer coded as follows: Value 0x01 = request confirmed accurate Value 0x02 = request not accurate All other values RFU
***Expiry_Date_Reply	HEX	A single optional PDO containing the confirmation of the expiry date present in the request. A single byte binary integer coded as follows: Value 0x01 = request confirmed accurate Value 0x02 = request not accurate All other values RFU
***CustomerMediaHolder_Information_Reply		A single optional CDO which is a list of single byte responses to each element present in the CustomerMediaHolder_Information CDO found in the CustomerMediaHolder_Details_Req All PDOs in this CDO are a single byte binary integer coded as follows: Value 0x01 = Element content confirmed accurate Value 0x02 = Element content not accurate Value 0x03 = Response denied Value 0x04 = Content cannot be confirmed All other values RFU
****HolderTitleReply	HEX	A single optional PDO
****HolderSurnameReply	HEX	A single optional PDO
****HolderOtherNamesReply	HEX	A single optional PDO
****HolderPhoneDayReply	HEX	A single optional PDO
****HolderPhoneHomeReply	HEX	A single optional PDO
****HolderPhoneMobileReply	HEX	A single optional PDO
****HolderAddress1Reply	HEX	A single optional PDO
****HolderAddress2Reply	HEX	A single optional PDO
****HolderAddress3Reply	HEX	A single optional PDO
****HolderAddress4Reply	HEX	A single optional PDO
****HolderPostCodeReply	HEX	A single optional PDO
****HolderEmailReply	HEX	A single optional PDO
****BankNameReply	HEX	A single optional PDO
****BankACNumberReply	HEX	A single optional PDO

ASN.1 Constructed DO names	Data Type	Description
ASN.1 Primitive DO names		
****BankCardExpiryDateReply	HEX	A single optional PDO
****BankCardStartDateReply	HEX	A single optional PDO
****BankCardIssueNumberReply	HEX	A single optional PDO
*** Product_Information_reply		<i>One or more CDOs responding with details of any prequalification IPEs present in the CustomerMediaHolder_Information_Req</i>
****Label	HEX	A single mandatory PDO containing the IPE label (i.e. DIR entry)
****IIN_Index	HEX	A single mandatory PDO containing the cross reference to the IPE IIN
****IPE_InstanceID	HEX	A single mandatory PDO containing the IPE instanceID

Table 157 Coding of Conditions PDO

Value	Description
0x00	Processed successfully
0x01	No Media reference identified
0x02	No Shell reference indentified
0x03	This CM is expired
0x04	This Shell is expired
0x05	This CM is blocked
0x06	This Shell is blocked
0x07	This CM is hotlisted
0x08	This Shell is hotlisted
0x09	Response denied
0x0A	No Media or Shell references present in the request
0x0B	Media and Shell references conflict
0x0C	Media reference no longer valid
0x0D	Shell reference no longer valid
0x0E – 0xFF	All other values RFU

9.8 IPE Fulfilment Action Notification, code 0806

This notification shall be sent from the HOPS sourcing an IPE_Fulfilment_Action to the HOPS of any Shell owners and Product owners that will be affected by the successful execution of an IPE_Fulfilment_Action.

The Data Content of the Code 0806 message shall be identical to that defined for the IPE_Fulfilment_Action (see Table 96a).

This message shall be sent concurrently with the sending of the Code 0C03, Optional IPE_Fulfilment_Action.

9.9 Additional Shell Data, code 0807

This notification may optionally, by arrangement with a retailing HOPS and as a precursor to offering remote fulfilment, be sent by a POST to that HOPS. The message contains only data that may be freely determined by any CM reader but has, in this case, been captured from CM presented at a POST.

The Additional_Shell_Data is defined in Table 158. The message is made up of constructed and primitive Data Objects (CDOs and PDOs) in accordance with ASN.1 the tags and syntax, for which are defined in DG0009.

Table 158 shows:

- Primitive Data Objects in plain text
- Constructed Data Objects in bold
- Objects that are optional as shaded
- Objects that may be repeated more than once in italics
- The *'s prefixing the DO names indicate the nesting level of the DO

Table 158 Additional Shell Data, Code 0807

ASN.1 Constructed DO names	Data Type	Description
ASN.1 Primitive DO names		
ITSO_Root_Group		
*ITSO_Data_Group		
**Additional_Shell_Data		<i>One or more CDOs containing the additional Shell data required for Detached IPE creation.</i>
***Shell_Reference_Reply	HEX	A mandatory PDO containing the entire contents of the ITSO Shell Environment Data Group Dataset or Compact ITSO Shell Environment Dataset read from the presented ITSO Shell.
***MID	HEX	A mandatory PDO containing the MID relating to the Shell_Reference_Reply
***Media_Reference_Number	MCRN	An optional PDO containing the Identity number of a host Customer Media (MCRN) relating to the Shell_Reference_Reply. Note: This DO is only not required if there is no host CM or this number is present in the ITSO Shell Environment Data Group Dataset.
***Directory_Data_Group	HEX	A mandatory PDO containing the entire contents of the ITSO Directory Data Group relating to the Shell_Reference_Reply.
***Anti_Tear_Type	HEX	A mandatory PDO indicating the type of anti-tear protection used. A single byte binary integer coded as follows: 0x01 Software anti-tear is used 0x02 Hardware anti-tear is used 0x03 No anti-tear, OTP areas may be used All other values RFU

9.10 Embodiment Parameter Request Message, code 0808 - RecordFormatRevision = 2.

This message is sent from one HOPS to another HOPS when the Licensee operating the first HOPS wishes to create IPEs of a type owned by the Licensee operating the second HOPS. For example, the first HOPS would typically be a Product Retailer and the second a Product Owner. The Embodiment Parameter Message is returned and passed on to the POSTs.

Note that the IPE creating POST must also have access to the relevant keys and ISAM configuration data. Methods for acquiring these are defined in ITSO TS 1000-4, ITSO TS 1000-7 and ITSO TS 1000-8.

The values in the request message shall identify the owner and IPE Embodiment that the requesting HOPS owner wishes to create instances of.

A HOPS may also send other POST Configuration Data messages in addition to the Embodiment Parameters, where the Product Owner wishes to do this, for the purposes of fully configuring POSTs to create IPE Instances.

Table 159 - Embodiment Parameter Request Message, code 0808 - RecordFormatRevision = 2

Name	Format	Size	Comment
0808_FormatRevision	HEX	1	Defines format revision of this message. For messages formatted according to this version of the specification this value shall be set to 2 (two).
0808_IPEOwnerIIN	IIN	3	IIN Pertinent to the Owner of the target IPE
0808_IPEOwnerOID	OID	2	Target IPE Owner Identity
0808_TYP	TYP	1	Target IPE TYP
0808_PTYP	PTYP	1	Target IPE PTYP
0808_IPEFormatRevision	HEX	1	Target IPE format revision where values between 0 and 0x0F indicate that a specific format revision requested, a value of 0xFF indicates that the latest available revision is requested, and values between 0x10 and 0xFE are RFU.

---00o---