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FUJ00002238

Chapter 0 - Document Control

0.1 Document History

Version	Date	Reason for Issue	Associated CP/ PinICL Nos.
0.1	24/02/03	First Draft issued for comment and input to a number of outstanding questions.	None
0.2	07/03/03	Changes following review with Post Office Ltd and e-pay on 27/02/03	
0.3	10/03/03	Minor changes following internal comments	
0.4	11/04/03	Changes following review with Post Office Ltd and e-pay on 28/03/03	
0.5	18/06/03	Changes following review with Post Office Ltd and e-pay	
1.0	10/07/03	Released for approval	
1.1	31/07/03	Changes following review with Post Office Ltd	
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2.1	25/09/03	Minor change to reflect delayed reversal generation	
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3.2	02/03/05	Issued for formal review following comments	
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4.1	23/03/06	Changes to support failed reversal detection and relaxation of reversal throttle	CP4180 CP4191
5.0	16/05/06	Minor changes from formal review	
5.1	03/08/10	Minor revisions to reflect ETU solution changes introduced at HNG-X Release 1	
5.2	20/08/10	Minor changes to address Fujitsu comments	
6.0	24/08/10	Issued for approval.	

0.2 Review Details

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Review Comments to:	Originator & Document Management

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FUJ00002238

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0.3 ASSOCIATED DOCUMENTS

Reference	Doc	Vers-ion	Date	Title	Source
[CD]	CR/CDE/002	1.0	11/03/03	Electronic Top Up – Conceptual Design	Fujitsu Services
[EPAY_DTF]	SU/IFS/046	1.13	01/11/04	e-pay: Retailer Transaction reconciliation: Daily Transaction Feed	e-pay
[EPAY_ERR]	SU/IFS/049	1.5	22/07/03	e-pay: Error Codes	e-pay
[EPAY_TS]	SU/IFS/045	1.22	02/06/04	e-pay: Electronic Top-Up Technical Specification	e-pay
[POTIS]	TI/IFS/008			Pathway to Post Office Technical Interface Specification	Fujitsu Services
[RCPT_TXT]	ET/IFS/005			Electronic Top-Up Response Code and Receipt Text Definitions	Fujitsu Services
[TIS]	ET/IFS/003			Technical Interface Specification Horizon to e-pay	Fujitsu Services
[EPAY_REV]	SU/IFS/054	1.1	28/11/05	e-pay: Post Office Failed Reversals	e-pay

Unless a specific version is referred to above, reference should be made to the current approved versions of the documents. In particular later versions of some of these documents do exist; however, it is the versions indicated that have been used for the development of this interface.

All document references above relate to the PVCS document repository.

0.4 ABBREVIATIONS & DEFINITIONS

0.4.1 Abbreviations

Abbreviation	Definition
[A]	Authorisation Response message returned from e-pay to the Horizon Counter
[C]	Confirmation message
[C0]	Confirmation message indicating that the Outcome of a Transaction differs from that in the [A] received by the Counter (or that no [A] was received)
[C1]	Confirmation message written by the counter and harvested into the DRS to record the outcome of an ETS transaction
[R]	Request message
AIS	Application Interface Specification; standard document type required for each external interface to the Horizon system
APACS	Association for Payment Clearing Services
ASCII	American Standard Code for Information Interchange
CR	Change Request
DRS	Data Reconciliation Service
DTF	Daily Transaction Feed

FUJ00002238

ETS	Electronic Top-Up Service
ETSM	ETS Management (Server) [same platform as the DCS Management Server]
ETX	End of Text: ASCII control character (0x03)
ETU	Electronic Top-Up
FAD	Finance Accounts Division, part of Post Office Ltd
FS	Field Separator in APACS-format messages (hex 1C)
FTMS	File Transfer Management Service; Horizon process that provides configurable file transfer services between Horizon and Post Office Ltd's Clients. Services available include data compression and encryption
FTP	File Transfer Protocol
IIN	Issuer Identification Number
MAC	Message Authentication Code
MID	Merchant ID
MSU	Management Support Unit (within Fujitsu Services POA Customer Services)
NO	Network Operator
NPS	Network Banking Persistent Store
OBC	Operational Business Change (procedures for change to Post Office Ltd Reference Data)
PAN	Primary Account Number
PIN	Product Identification Number (*not Personal identification Number in the context of this document*) also referred to as 'activation code'
PVA	Pin Voucher Activation
RDS	Reference Data System; Post Office Ltd system that provides a Reference Data feed to Horizon and other systems
RID	Registered Identifier: identifies the organisation to which a range of TIDs has been allocated.
STX	Start of Text: ASCII control character, (0x02)
TID	Terminal Identity
US	Unit Separator (hex 1F)

0.4.2 Definitions

The following terms, when capitalised as here, have specific meanings as indicated.

Term	Definition
Authorisation	On-line Authorisation [A] response by e-pay to on On-line Request. It can have a value of "Approve" or "Decline"
Authorisation Agent	Software provided by Fujitsu Services POA used to interface from Horizon to e-pay in real-time
Business Rules	Rules governing the conduct of a Transaction which are contained within Reference Data
Campus	One of two data centres installed by Fujitsu Services POA in IRE11 and IRE19 . Each can handle the entire Horizon workload
Confirmation	Confirmation [C] message sent from the Counter in near time to the Campus stating the outcome of an ETS Transaction
Counter	Counter PC installed in a Post Office Outlet
Counter Application	An application resident within the Counter that contains the business logic controlling the dialogue with the Clerk, or other business specific functions on the Counter (such as End of Day processing)
Counter Clerk	Person working in an Outlet and operating a Counter
Customer	A member of the public transacting, or seeking to transact, business with Post Office Ltd through any of the Services
Data Reconciliation Service (DRS)	Service provided by Fujitsu Services POA to Post Office Ltd which matches Transaction flows from Counter and ETSM, and reports on these to Post Office Ltd
e-pay Retailer Account Number	Value used by e-pay to identify Post Office Ltd DTF files. The value to be used is 921133
ETS Agent Server	Hardware platform on which the Authorisation Agent and its controlling processes run
ETS Transaction	A Transaction in the Electronic Top-Up Service: either an ETU Transaction or a PIN Transaction

FUJ00002238

ETU Product	An airtime sale using a card supplied by the Customer's Network Operator
ETU Transaction	A Transaction for an ETU Product
e-voucher Product	A PIN Product which is an 'anonymous' airtime or content sale with an activation code printed on the Receipt
e-voucher Transaction	A Transaction for an e-voucher Product
Fallback	Where a system has attempted to go On-line but failed and has the ability to proceed with the Transaction in an Off-line manner – typically with limits on the Transaction value
Horizon	Name that encompasses the totality of the systems provided by Fujitsu Services Post Office Account to support the automation requirements of Post Office Outlets
Merchant Number	Outlet specific identifier used by e-pay to identify Post Office Ltd transaction requests – in this context the FAD value will be used
Network Operator	The provider of mobile phone services to a Customer
On-line	Where a system attempts to communicate with another system – in this context the Counter seeking immediate authorisation from a Network Operator
Operational Level Agreement	A non-contractual agreement between Fujitsu Services and Post Office Ltd on the nature and quality of specific elements of a service (e.g., Interface Agreement for Problem Management (CS/IFS/009))
Outlet	Post Office location with one or more Counter PCs installed as part of the Horizon programme
PIN Product	Either an e-voucher Product or a PVA Product
PIN Transaction	A Transaction for a PIN Product
PVA Product	Physical Voucher Activation Product. A PIN Product where the activation code is contained on an associated magnetic stripe card rather than being printed on the Receipt
PVA Transaction	A Transaction for a PVA Product
Receipt	A printed record of the Transaction at the Outlet
Reconciliation	Ensuring the financial integrity of Transactions across service boundaries
Reference Data	Configuration data and parameters for use by the rest of the system, within the Horizon Programme
Refund	A stand alone transaction separate to the original sale transaction which negates the original sale and where the customer has their money returned to them
Request	Authorisation Request message [R] sent On-line from Counter to e-pay
Reversal	At the interface to e-pay, it is a Transaction that nullifies the previous Transaction. It is generated by the Counter application, never at the instigation of the Clerk. Reversals can also be initiated by e-pay where the response cannot be delivered back to Horizon
Settlement	This is used in two different ways: • Settling a Customer Session where the balance of the session is reduced to zero and the appropriate cash (and other items such as cheques, tokens, stamps etc) is exchanged between the Customer and the Clerk • Settlement between Post Office Ltd and an Acquirer where an agreement is made as to the aggregate value of Transactions for a given period (in this case a day)
Transaction	A recorded and auditable instance of business activity, involving service provision or Stock movement across organisational or service boundaries
Vanilla Card	A vanilla card has no association with a customer's mobile phone until a registration procedure is performed, usually by the customer
Vanilla ETU Transaction	An ETU Transaction performed using a vanilla card

0.5 CHANGES IN THIS VERSION

0.5.1 Changes in Version 0.2

FUJ00002238

Changes to Approval Authorities, Reviewers and Associated Documents Changes following informal review with Post Office Ltd and e-pay. Change to include all relevant interface specification rather than cross-references to e-pay docs Removal of background information which will appear in the ETU Design Proposal

0.5.2 Changes in Version 0.3

Changes following informal internal review: Defined means of receipt text change mechanism as being via CR Defined DTF 'empty' file requirement when no transactions to report Minor textual revisions

0.5.3 Changes in Version 0.4

Changes to Approval Authorities, Reviewers and Associated Documents Minor textual changes following review comments Defined Reversal to e-pay time limit – section 2.2 Defined Horizon Receipt text and mappings – section 3.2.2, Table 13, Table 17 Reworded unique transaction identifier definition – section 3.3.1 Reworded Reversal duplication wording – section 3.4.1 Revised Reversal retry approach – section 3.4.4 Revised Settlement Reporting section to reflect revised DTF file specification – section 4.1 Revised DTF Record Processing Rules - Table 1 Added new table defining rules for Reversals - Table 2 DTF file specification revised to include liability code – Appendix B DTF record to C4/D mapping definitions added - Table 12, Appendix D

0.5.4 Changes in Version 0.5

Minor textual changes throughout to improve clarity and correct errors Renamed Confirmation Interface to DTF Interface to improve document clarity Added definition of PVA product Added STX/ETX delimiter information to section 3.1 Detail added to section 3.3.1 defining that the Retailer Transaction Reference identifier should only contain uppercase characters Detail added to section 3.3.2 regarding e-pay returning Unique Transaction Identifiers to Horizon Reworded section 3.4 regarding Duplicate Authorisation and Reversal Requests Reworded section 3.5.1 detailing security Revised section 3.5.3 detailing Resilience and Fail-over The Retailer Account Number has been defined by e-pay and is detailed in the Definitions table, section 0.4.2 Estimated peak day DTF file size estimate revised in section 4.2.2. Revised Appendix C to reflect: • Horizon Receipt Text Code used for Refund successes. • Receipt Text Code to be used for 'Transaction Already Refunded' (Response Code 17) and 'Refund Already Processed' (Response Code 91) e-pay refund transaction responses. • Welsh Translations provided by Post Office Ltd. • Horizon Receipt Text Code 319 not being used. • Correction of 'Refund Disable' (Response Code 89) Horizon Receipt Text Code to RT317 • Horizon Receipt Text Code reference on reversal responses (Response Codes 16, 18, 93,94) being not applicable.

0.5.5 Changes in Version 1.1

e-pay response code and receipt text definitions (Appendix C) moved to new document [RCPT_TXT]. Minor modifications following Post Office Ltd comments. Modified section 3.2.2 to indicate that response codes and receipt text changes for new and revised

FUJ00002238

ETS products will be notified to Fujitsu Services via OBC.
Revised Table 12 – DTF Record to C4/D Mapping Rules to reflect impact of reversals w
Authorisation Request is declined.

0.5.6 Changes in Version 2.1

Modified section 3.4.2 to reflect new delay period with regard to duplicate Reversal generation.

0.5.7 Changes in Version 3.1

Revised to reflect revised 20 digit transaction ID's & released for informal review.

0.5.8 Changes in Version 3.2

Minor text revisions & released for formal review.

0.5.9 Changes in Version 4.1

Revised to reflect details of new reversal failure file generated by e-pay and revised reversal throttle rate.

0.5.10 Changes in Version 5.1

Revised to reflect minor changes related to the introduction of the HNG-X Release 1 solution

0.6 CHANGES EXPECTED

None

0.7 CONTENTS

FUJ00002238

FUJ00002238

FUJ00002238

FUJ00002238

0.8 TABLE OF FIGURES

0.9 TABLE OF TABLES

FUJ00002238

Chapter 1 - Introduction

1.1 PURPOSE

As part of the Horizon service capability, Electronic Top-Up functionality has been introduced. This is a method of applying credit to pay-as-you-go mobile phone accounts and of selling specific type of 'content' or PIN products.

Post Office Ltd has appointed e-pay as their Electronic Top-Up 'acquirer' interfacing to the appropriate Network Operator.

This document defines the application level interfaces between the e-pay domain and the Horizon domain to support the Horizon Electronic Top-Up Service (ETS).

The specification for the e-pay interfaces is derived from the following e-pay documents:

- Technical Specification [EPAY_TS]
- Daily Transaction Feed Specification [EPAY_DTF]
- Error Code Specification [EPAY_ERR]
- Post Office Failed Reversals [EPAY_REV]

The e-pay documents are not contract controlled. This document is the definitive contractual definition of the Horizon – e-pay application interfaces.

1.2 SCOPE

This document provides a specification of the various application messages and file flows between Horizon and e-pay and forms part of the requirements baseline against which the Horizon ETS will be built; it also states any exclusions.

An overview of the architecture of the Horizon ETS is given in Figure 1.

FUJ00002238

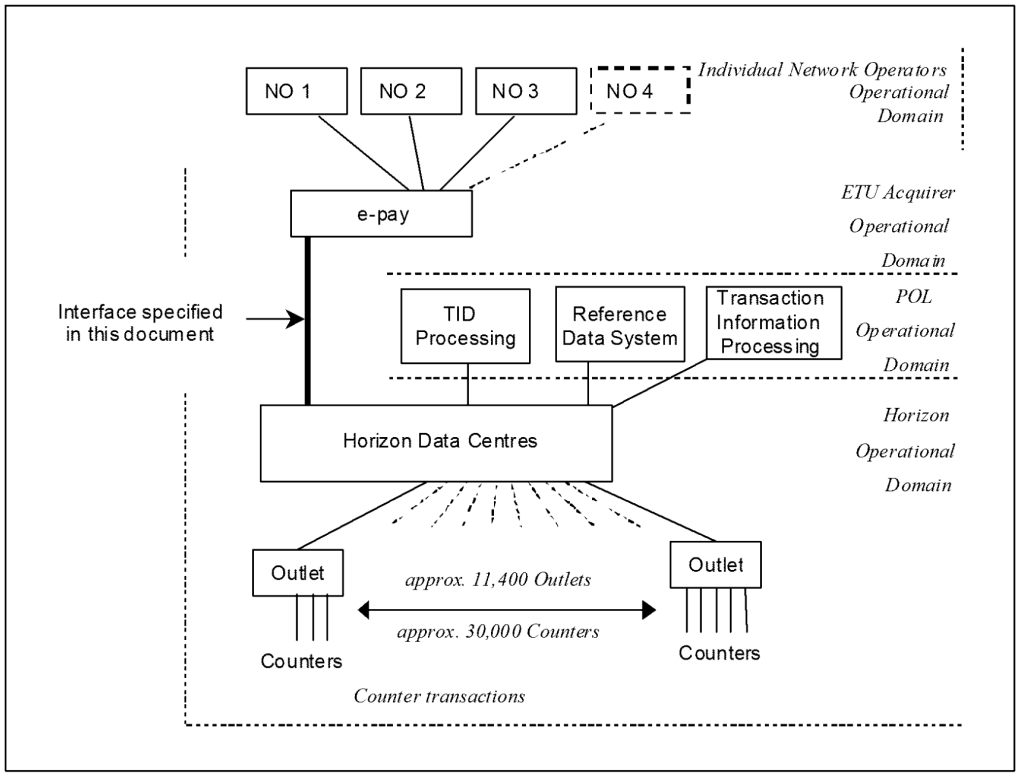

Figure 1 – ETS Architecture

1.3 EXCLUSIONS

The following subjects are not covered within this document:

- MID/TID Management
- The physical interconnection arrangements between Horizon and e-pay to support the above application interfaces; these are the subject of the Technical Interface Specification [TIS]
- e-pay Short Code values and corresponding receipt text definitions; these are the subject of a separate document [RCPT_TXT]

1.4 STRUCTURE

This document is composed of the following chapters:

- Chapter 2 contains a high level overview of the Horizon – e-pay interface and its context.
- Chapter 3 contains a detailed description of the Authorisation Interface.
- Chapter 4 contains a detailed description of the DTF interface.

FUJ00002238

- Appendix A contains a detailed breakdown of the e-pay Authorisation Interface message contents.
- Appendix B contains a detailed breakdown of the e-pay Daily Transaction Feed file contents.
- Appendix C contains the rules used to map DTF records to DRS message types for the purpose of reconciliation.

1.5 READERSHIP

This document is intended for application developers concerned with development of the ETS capability between Horizon and e-pay.

1.6 RELATED DOCUMENTS

See section 0.3 for a full list of referenced documents

FUJ00002238

Chapter 2 - Architecture

2.1 INTERFACE COMPONENTS

The following diagram illustrates the main components of the end-to-end message and file flows.

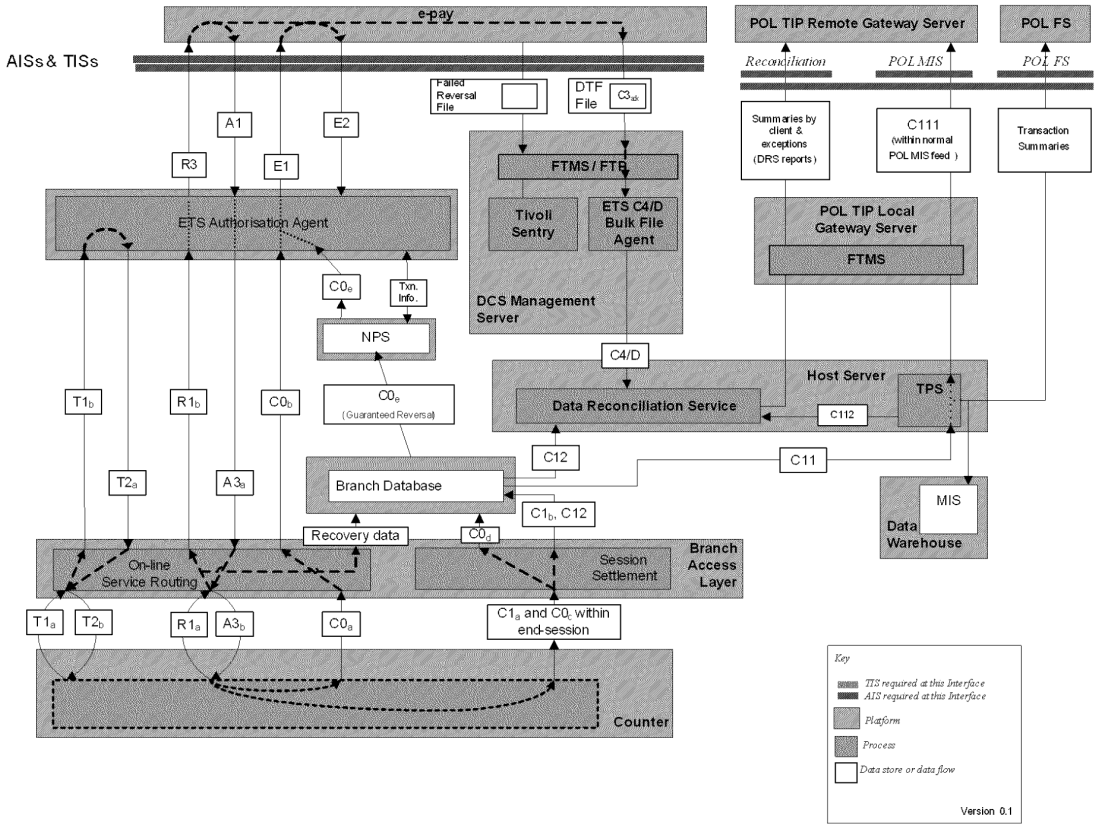

Figure 2 – Horizon – e-pay message flows

2.2 AUTHORISATION INTERFACE

To support ETS at the counter, e-pay provides a real-time authorisation interface which supports the following message types:

- Sale
- Refund
- Reversal

FUJ00002238

There are three types of ETS product available at the counter that utilise the authorisation interface:

- ETU Product- An airtime sale using a card supplied by the Customer's Network Operator
- e-voucher Product - A PIN Product which is an 'anonymous' airtime or content sale with an activation code printed on the Receipt
- PVA Product - A PIN Product where the activation code is contained on an associated magnetic stripe card rather than being printed on the Receipt

All ETS product types require authorisation from e-pay when being purchased or refunded.

An ETS product sale at the counter will result in an ETS Agent Server presenting a Sale Request across the e-pay authorisation interface. An ETS product refund will result in an ETS Agent Server presenting a Refund request across the e-pay authorisation interface.

When a Sale or Refund request has been presented to e-pay, e-pay will respond with an Authorisation Response indicating success or otherwise. The ETS Agent Server will pass this response back to the counter application and the product Sale/Refund will complete or be abandoned depending on the Authorisation Response.

In the event that the Authorisation Response times out at the counter, the Transaction's status at e-pay is indeterminate. This may be due the Response from e-pay arriving at the counter after the counter time-out has expired or to message loss either internally or externally to Horizon. Similarly, during Counter recovery after failure, the status of an ETS Transaction at e-pay may be indeterminate.

In both cases, a [C0] message is generated automatically by the ETS Counter application without intervention from the Counter Clerk, and is passed to the Agent which in turn generates a Reversal Request. Reversals are generated only for Sale Requests, not for Refund Requests. This Reversal is presented across the e-pay authorisation interface and the Authorisation Response captured. This is then stored for audit purposes.

Reversals will only be presented to e-pay if the time elapsed since the authorisation request is less than 50 minutes. All Reversals older than 50 minutes will not be forwarded to e-pay.

2.3 DTF INTERFACE

Once a day, e-pay generates a single Daily Transaction Feed (DTF) file that is retrieved by Horizon systems. The DTF records the outcome of each transaction from e-pay's perspective. It contains reconciliation information to be used by the Horizon Data Reconciliation Service. The file is generated and transferred every day of the year, weekends and bank holidays included.

The DTF contains one record for each Transaction, with Sales and Refunds being treated as separate Transactions. The outcome of a reversal request will be reflected in the Sale Request record provided that e-pay can match it with the original request. Where e-pay cannot match the reversal with the original Sale Request, the reversal

FUJ00002238

outcome will be reflected in the DTF as a separate Transaction in addition to the original transaction record.

The DTF is interpreted by Horizon for reconciliation purposes using the rules defined in Table 12, Appendix D.

2.4 MONITORING INTERFACE

To facilitate timely warning of scenarios where reversals are not being successful, e-pay generate failed reversal summary files on a periodic basis (initially 5 minutes) that summarise reversal information for transactions processed in the preceding time interval.

The files contain information relating to reversals that have been generated by the Horizon system but have failed at e-pay or at the network operator either because they have been received too late for action to be taken by e-pay or the network operator, or because the e-pay host cannot match reversals to their original sales.

These files are collected by Horizon on a periodic basis using FTP. A Tivoli Sentry monitor will then parse the file and will raise an alert if a threshold of reversal failures is exceeded.

The files will be generated 7 days a week, 24 hours a day.

Each file's summary will be based on the 5 minutes of transactions preceding the latest time stamped transaction (which may not be a Horizon transaction).

Further details including the file formatting are defined in Chapter 5.

FUJ00002238

Chapter 3 - Authorisation Interface

3.1 GENERAL

This interface supports message flows between Horizon Agents on ETS Agent Servers and the e-pay host system.

Messages are conveyed on a TCP byte stream interface as defined in [TIS]. Each message is delimited by a leading STX message (0x02) and a trailing ETX character (0x03); these two characters are not considered to be part of the message.

The commentary following identifies how the interface is operated in the context of the Horizon system.

3.2 SUPPORTED TRANSACTION & MESSAGE TYPES

Figure 3 and Figure 4 identify the Transaction Types and message sequence to be used between Horizon and e-pay. All messages exchanged with e-pay are stored by the Agent in the NPS for audit purposes.

Figure 3 is a composite figure that illustrates two scenarios:

- Authorisation Response received by the Agent and Counter without a timeout occurring
- The Counter times out the Authorisation Response and generates a [C0]. The Agent receives the Exception and generates a Reversal Request.

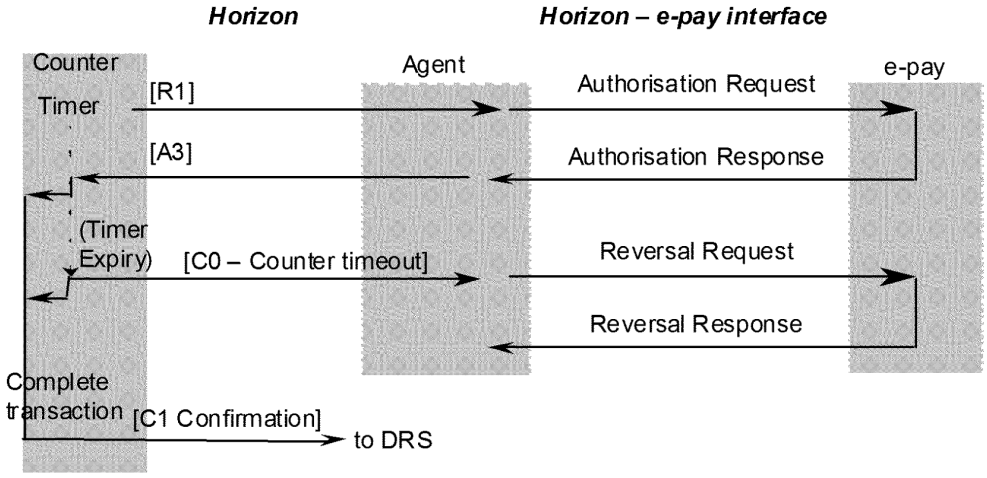

Figure 3 – Authorisation Request Message Sequence Includes Counter Timeout

FUJ00002238

Figure 4 illustrates the scenario when the Horizon Agent times outs the Authorisation Response from e-pay. The Counter will generate a [C0] which is passed to the Agent, which in turn generates a Reversal Request. When the Agent eventually receives the late Authorisation Response it generates an NPS journal entry for audit purposes only. The figure shows the case where e-pay sends the Authorisation Response before it receives the reversal Request, but it could happen the other way round or they could overlap – they are independent messages.

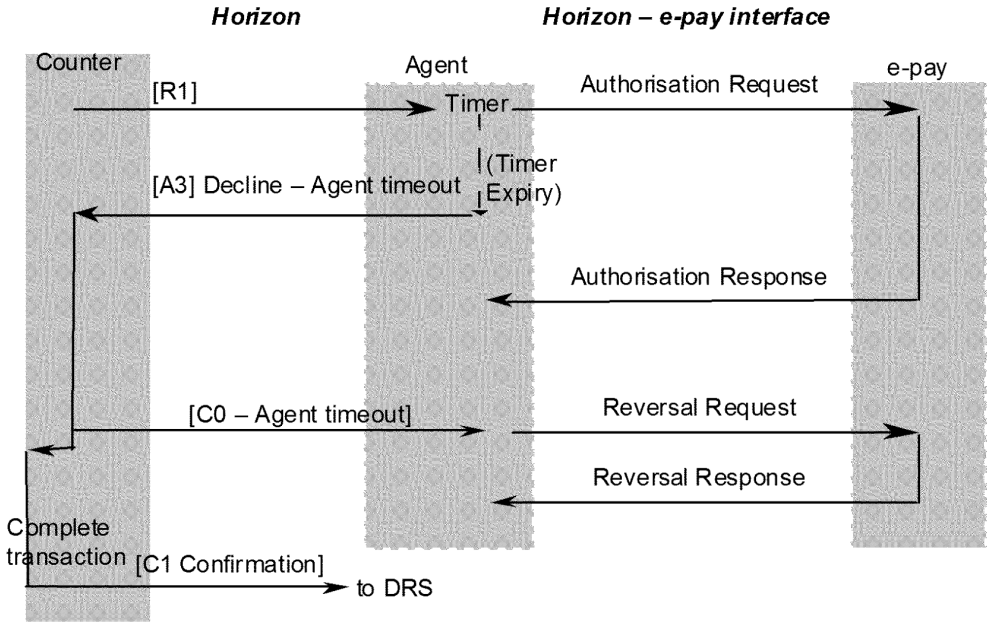

Figure 4 – Authorisation Response Timeout Message Sequence includes Agent Timeout

Note that it is also possible that a Reversal Request will be generated where the original Sale Request has not reached e-pay.

Reversals will not be transferred across the Authorisation Interface under any circumstances for Refund transactions.

3.2.1 Authorisation Request

ETU Transactions and PVA Transactions are initiated by the presentation at the Counter of a magnetic stripe card in conformance with ISO 7810-7813, identified as valid for such Transactions within the Post Office Ltd supplied Reference Data. The normal mode of use will be swipe-captured data. The use of manually entered card data is supported (if allowed by the Reference Data), with an appropriate Message Type used.

For these Transactions, manual entry may not be used for Refunds. This is controlled by Post Office Ltd supplied Reference Data. Swipe-captured data must be used for a Refund even when the original Transaction was entered manually.

e-voucher Transactions are initiated by the Counter Clerk by selecting the requested product. The Post Office Ltd supplied Reference Data for the product contains the

FUJ00002238

"card number" (PAN) to be used. The Sale Request is treated as though a card has been manually keyed. The Refund will also be treated as manually keyed.

Table 5 in Appendix A documents the message types that will be generated by Horizon.

Table 4 in Appendix A documents the complete Authorisation Request message format and data content.

3.2.2 Authorisation Response

The Authorisation Response message will always include the Transaction Amount field. If the Request is authorised, then the authorised amount will always be equal to the requested amount.

A Response Code of '00' indicates successful authorisation/reversal. e-pay will also return a Short Code value. This Short Code along with the IIN and Product code is used by the counter to look up the Horizon receipt text. The Short Code definitions and accompanying receipt texts are detailed in [RCPT_TXT].

[RCPT_TXT] defines the failure Response Codes that are supported across the Horizon – e-pay interface and the corresponding receipt texts.

Table 6 in Appendix A documents the Authorisation Response message format and data content.

3.3 TRANSACTION IDENTIFIERS AND MESSAGE NUMBERS

All Sale Request, Refund Request and Reversal Transactions are initiated by Horizon at a Counter PC. Reversal Transactions are generated by the ETS counter application only, never by the action of a Clerk.

3.3.1 Retailer Transaction Reference

Each Sale or Refund Transaction will be allocated a Horizon Transaction Identifier by Horizon at the Counter. The Retailer Transaction Reference used as part of the Authorisation Request and Response messages across the Horizon to e-pay interface will be constructed from the Horizon Transaction Identifier and the counter receipt date and time. This will provide a unique reference value for each ETS transaction across the Horizon estate.

The Retailer Transaction Reference as defined in Appendix A, is an alphanumeric field however e-pay convert any lowercase characters present to uppercase prior to processing. Therefore only uppercase characters should be used in this field.

A Reversal Transaction quotes the same Retailer Transaction Reference as the original Transaction.

3.3.2 Unique Transaction ID

For each Transaction a product specific Unique Transaction ID (for a PIN Transaction this is known as the PIN Serial Number) is returned in the Authorisation Response from e-pay.

FUJ00002238

For a Refund Request, Horizon returns the Unique Transaction ID in the Original Transaction ID field.

When the ETS counter application generates a [C0] (leading to a Reversal Request to e-pay), the Authorisation Response from e-pay will not be available. Therefore, the Reversal Transaction will not contain the Unique Transaction ID – the original Transaction is identified by the Retailer Transaction Reference.

In certain cases where e-pay responds to reversal requests with an error response, e-pay will not return a unique transaction ID because e-pay has not generated a reversal request to the network. This will happen for example when e-pay cannot match the reversal request to the original transaction.

3.3.3 Message Number

The Message (sequence) Number on the Request message is generated by the ETS Agent starting at 0000 and incrementing by one for each ETS Transaction. A Refund Request has a different Message Number from the original Sale Request. Once 9999 has been reached the Message Number is reset to 0000 on the next transaction.

For a Reversal, e-pay allows either a new Message Number or the same Message Number as used on the original transaction. This AIS does not constrain Fujitsu Services as to which option to adopt.

3.4 TRANSACTION DUPLICATES AND TIMEOUTS

3.4.1 Duplicate Authorisation Requests

The HNG-X Release 1 architecture changes preclude the possibility of duplicate authorisation requests being generated by the Horizon Agents.

However, prior to HNG-X Release 1, in rare instances duplicate authorisation requests could occur. In this scenario, e-pay will process each authorisation request independently which will result in funds being credited twice to the Customer's account with his/her Network Operator. Horizon will react to the first Authorisation Response it receives. Any subsequent Authorisation Response will not be processed.

The ETS will not match a duplicate Response message from e-pay against the Request, so there are no circumstances that may result in a duplicate [A] message being processed at the Counter.

3.4.2 Duplicate Reversal Requests

All Reversal attempts including duplicates and the consequent outcome in the DTF, are determined using the rules defined in Table 2.

To protect the e-pay systems, the maximum rate of Reversals across the Horizon/e-pay boundary will be throttled to a maximum of 20 a second.

Where duplicate Reversals match an ETS transaction, the final reversal outcome will be recorded in the appropriate fields of the Message Type 01 record for the transaction in the DTF. e-pay will reverse the relevant transaction once and once only.

FUJ00002238

If the first reversal matches against the top-up and is successful then the second (or any subsequent reversals) will fail with "Void already processed" because the reversal has already been processed. However, if e-pay receive duplicate Reversals within a very short duration of time (within several milliseconds of one another) it is possible that the second duplicate Reversal will also be processed.

Where duplicate Reversals are received for a declined ETS transaction, e-pay will not be able to match the Reversals to the transaction, therefore each Reversal will be represented in the DTF file as a separate failed Reversal record.

3.4.3 Authorisation Request Timeouts

The ETS will operate timeouts at the Counter PC and across the Horizon to e-pay interface.

At the Horizon to e-pay interface, a timeout value will be applied against the period between generating an Authorisation Request and receipt of the Authorisation Response message. The timeout value is set at 18 seconds. Any response received from e-pay after the timeout period has expired is discarded. When the timeout period is exceeded, the Horizon system informs the Counter application, which immediately generates a [C0] message.

To maximise the likelihood of the reversal being successful, an additional 'guaranteed' reversal route is implemented using reversal information committed to the Branch Database as part of counter session settlement. A near real-time batch process copies these reversals to the NPS where the ETS Agent evaluates whether the reversal has been sent to e-pay and a response received and resends if required. In certain scenarios, e-pay may receive one or more Reversal Requests before having timed out the response from the Network Operator. In these circumstances e-pay will reverse any authorisation subsequently returned by the Network Operator. No Authorisation Request retries will be implemented by the Horizon system.

In the scenario above e-pay will respond to the reversal request with an error code indicating 'void pending' which means that e-pay has received the reversal request and subsequently will go on to execute a reversal with the network if necessary. This means the reversal may eventually be successful even though an error code was returned in the reversal response. This will be represented in the DTF file as a successful reversal within the original Sale Request record.

If the Sale Request failed at the network, e-pay would have no need to subsequently send a reversal and this will be represented in the DTF as a failed Sale Request transaction.

If the Authorisation Request is declined and the Authorisation Response times out, e-pay will not match the two Reversal Requests with the original Authorisation Request. This will result in three records in the DTF file, one for the original declined Sale Request and one of each of the Reversal Requests.

3.4.4 Reversal Request Timeouts

Where a Reversal Request message is generated, the timeout used for reading the Reversal Response is much longer and on e-pay's advice will be set to 60 seconds. (Horizon uses the Reversal Response simply as an acknowledgement that the Reversal

FUJ00002238

Request has been received by e-pay, no interpretation of the Reversal Response will be performed.)

In certain failure scenarios, for example following a network problem across the interface, Horizon will retry the reversals. These Reversal retries will only occur if less than 50 minutes has elapsed since the authorisation request.

Reversal retries will use Message Type 25 as identified in Table 5.

3.5 SYSTEM QUALITY ATTRIBUTES

3.5.1 Security

No application level encryption or signing (MAC check) is used on the Authorisation Request or Authorisation Response messages including PIN values. However, all ETU transactions are carried using standard Horizon data transport facilities, which includes encryption for some network segments. Additionally, the WAN connections used to connect Horizon and e-pay data centres are protected by encryption. For further details see [TIS].

3.5.2 Scalability

There are no scalability implications at application level. The concurrency of the application level interface is bounded by

- the speed of the physical communications interface(s) and
- the number of available concurrent circuits and their re-use policy

These characteristics are specified within the [TIS].

3.5.3 Resilience and Fail-over

Resilience is provided by having two ETS Agents operating in an Active/Standby configuration from the primary Horizon Data Centre. The active Agent will direct authorisation & reversal requests to both e-pay operational sites.

Failure of an ETS Agent Server will affect all outstanding Request Transactions. In these cases outstanding requests are not recovered and the Requests for authorisation will time out at the Counter. Normally, a standby ETS Agent Server will become active within a minute, at which point all subsequent Request Transactions will be passed to e-pay. Reversal Requests will not be lost but may be delayed and duplicates may occur. The use of an independent 'guaranteed' near real-time reversal route based on session settlement increases the likelihood of the Reversal Request being received within 10 minutes of the original transaction in the event of an ETS Agent failure.

In the event of Disaster Recovery being invoked and the live service fail-over to the secondary Horizon Data Centre occurring, all outstanding Request Transactions will be affected. Depending on the nature of the incident causing the invocation of Disaster Recovery, Reversal Requests for these transactions may be lost or delayed.

FUJ00002238

Failure of the e-pay authorisation host or site will result in all outstanding Requests being timed out at the Horizon to e-pay interface (or in some cases at the Counter). Subsequent requests will be routed to e-pay's alternative site.

Fail-over to the alternative e-pay site will only affect any outstanding requests (which will be timed out), provided immediate connection is possible to the alternative e-pay site.

Failure of communications between an ETS Agent Server and e-pay will result in any outstanding Requests failing (timing out). The ETS Agent Server will route all subsequent authorisation requests to the alternative e-pay site.

Failure of Outlet communications will result in all outstanding Transaction Requests failing. All subsequent Transaction Requests generated at the affected Outlet will fail until communications have been restored.

FUJ00002238

Chapter 4 - DTF Interface

4.1 SETTLEMENT REPORTING

Horizon uses the information obtained from the e-pay Daily Transaction Feed (DTF) for reconciliation reporting to support Post Office Ltd settlement. The data contained within the DTF is formatted and structured in accordance with the file definition in Appendix B.

A DTF is generated every day of the year, weekends and bank holidays included. A single DTF file includes all correctly formatted Top-Up[1] (Message Type 01) and Refund (Message Type 02) transactions processed by e-pay between 00:00:00 to 23:59:59 based on the e-pay host system clock. Reversals will be matched against these transactions until 00:59:59. Any Top-Up and Refund transactions received after 23:59:59 will go into the following day's file.

The Settlement Date will be the day to which the DTF file relates, as recorded in both the file's name and in its File Header record.

The file handling conventions to support the file flow are defined within the [TIS]. Details of file names to be used are specified in Appendix B.

If no transactions occur on any given day, e-pay will generate an 'empty' file at the end of day that contains only a header and footer record.

4.1.1 File Availability

DTF files will be made available to Horizon by 02:00:00 the day following the day to which the file relates.

4.1.2 Detail Records

The DTF file contains an individual detail record for every ETS Transaction. Records contain the Retailer Transaction Reference to identify the Transaction.

When a Transaction has been reversed, the record contains the net outcome. If e-pay receives more than one Reversal in a day, the duplicates are ignored in the net outcome. An "orphan" Reversal record (Record Type 03) is included in the file if, and only if, a reversal cannot be matched to the Top-Up transaction.

The e-pay Success/Error Code will be '0000' if and only if the e-Pay Returned Success/Failure Code is '00', meaning Success.

Message Type Identification	e-pay Success / Error code	Success / Failure Code for e-pay Reversal	Payment Liability Indicator	Effect on Retailer Billing total

1 The term 'Top-Up' and 'Sale Request' can be used interchangeably

FUJ00002238

Position 25 – 26	Position 152 – 155	Position 171 – 174	Position 190 – 191	
01	= '0000'	Spaces	Spaces	Add value
01	= '0000'	= '0000'	'00'	None
01	= '0000'	< > '0000'	'00'	None[2]
01	= '0000'	< > '0000'	'01'	Add value
01	< > '0000'	Spaces	Spaces	None
02	= '0000'	Spaces	Spaces	Subtract value
02	< > '0000'	Spaces	Spaces	None
03	Any	Spaces	Spaces	None

Table 1 – DTF Record Processing Rules

Table 1 is a matrix of the different combinations of success and failure of the original Sale or Refund Request and success or failure of any associated Reversal Request. The ETS uses this matrix when transforming the DTF into a form suitable for input into the DRS. The processing rules use the e-pay Success/Error Code, e-Pay Returned Success/Failure Code and Payment Liability Indicator fields when determining the effect on reconciliation and billing.

Table 2 shows the rules for the inclusion of Reversal Transactions in the DTF file.

No.	Condition	Message Type Identification	Comments
1	Top-Up	01	
2	Top-Up + Reversal within 10 minutes on the same day	01+	Reversal is matched to Top-Up.
3	Top-Up + Reversal within 1 hour on the same day	01+	Reversal likely to be unsuccessful at network if > 10 minutes after Top-Up. Reversal is matched to Top-Up.
4	Top-Up + Reversal later than 1 hour on the same day	01 & 03	Reversal is unmatched at e-pay. Message Types 01 and 03 are written to the same feed file.
5	Top-Up + Reversal within 10 minutes on the next day	01+	Reversal is matched to Top-Up.
6	Top-Up + Reversal within 1 hour on the next day	01+	Reversal likely to be unsuccessful at network if > 10 minutes after Top-Up. Reversal is matched to Top-Up.
7	Top-Up + Reversal within 10 minutes on next day but reconciliation processing has started		N/A – Reconciliation processing does not start until after 01:00.
8	Top-Up + Reversal within 1 hour on next day but reconciliation processing has started		N/A – Reconciliation processing does not start until after 01:00.
9	Top-Up + Reversal received more than 1 hour after the 'cut-off'	01 03 (next day's file)	The Reversal is unmatched by e-pay. The 01 Top-Up record is written to the feed file for the 'cut-off' period. The 03 orphan Reversal is written to the feed file for the next day.
10	Refund	02	
11	Unmatched Reversal	03	

2 Where a reversal fails and the Network is liable, the Top-Up may appear as a billed item between e-pay and PO Ltd but will be deducted from the final settlement total.

FUJ00002238

Table 2 – Rules for Authorised Transaction Reversals[3]

In Table 2 the following notation is used:

- '01' is a Top-Up Message Type 01 with no matching Reversal hence the last 3 fields are space filled
- '01+' is a Top-Up Message Type 01 which has been matched to a Reversal and hence the last 3 fields are filled with the results of the Reversal

4.2 SYSTEM QUALITY ATTRIBUTES

4.1.1 Security

No application level encryption or signing (MAC check) is used on the DTF file or data within it. However, the WAN connections used to connect Horizon and e-pay data centres are protected by encryption. For further details see [TIS].

As [TIS] does not provide any verification of the integrity of the file received from e-pay, the application on the Horizon system will verify the contents of the file as best it can. In particular, it will:

- verify that the File Identifier field in both the File Name and in the File Header record is "EPAY921133" where 921133 is the Retailer Account Number that e-pay has allocated to Post Office Ltd.
- check the value of the Number of Detail Records in the File Footer record against the number of Detail Records present in the file

4.1.2 Scalability

There is no limit to the size of a generated DTF file.

Based on the design limit peak day maximum volumes documented in [CD], the maximum DTF file size will be 26.77Mb based on 17,500 outlets.

4.1.3 Resilience and Fail-over

Files are not resilient to in-flight failures during transfer. However FTMS has the ability to retry file retrievals. See [TIS] for further details.

No specific measures are provided at application level. [TIS] includes procedures for fail-over to alternative host sites.

3 It is possible that Horizon will generate Reversal Requests where the Authorisation Request was declined. See section 3.4.3 for further details.

FUJ00002238

Chapter 5 – Monitoring Interface

5.1 Reversal File Summary Data

The following summary data is provided in each file:

1. The date and time of the latest transaction on the replication database (which may not be a Horizon transaction).
2. The total number of sale transaction requests during the interval period. This means all sales transactions including successes and failures.
3. The number and value of reversal transactions during the interval period that have been rejected by the network because they are outside the network reversal period i.e. more than 10 minutes after the original sale transaction. Other network failure conditions are not considered.
4. The number and value of reversal transactions during the interval period that have failed at e-pay because the e-pay host cannot match the reversal to the original sale transaction, i.e. the failure reason is 'Unmatched Transaction'. This includes any reversals received more than 1 hour after the original sale transaction and reversals where the original sale transactions could not be identified on the e-pay host, e.g. where the e-pay host has not seen the original sale transactions.
5. The total number and value of reversal transactions in the interval period, both successes and failures (except 'Void already processed').
6. The total number and value of failed reversal transactions during the interval period. This means all reversals that have been failed by the e-pay host (except 'Void already processed') or rejected by the network for what ever reason.

If there are no transactions for an interval period, a file is still produced with the totals being zero. It is likely that many files produced overnight will have zero totals.

Due to the summary file being produced from an e-pay replication database which can lag by varying amounts the e-pay production database during the day, it is possible that the transaction count across all files produced on a given day may not be accurate.

5.2 System Quality Attributes

5.2.1 Security

The summary file is formatted in plain ASCII text. No application level encryption or signing (MAC check) is used on the Failed Reversal Summary file or data within it. However, the WAN connections used to connect Horizon and e-pay data centres are protected by encryption. For further details see [TIS].

FUJ00002238

5.2.2 Scalability

The file only contains a single record therefore file size is not an issue.

The file is generated from a replication database whose view of transactions may lag the production database by a period of time depending on a number of factors. Therefore the transaction set used to generate a summary file for a given interval may differ from that transaction set on the production database. For example, if there are two minutes of latency between the production and replication database, the 11:30 file may report on transactions between 11:23 and 11:28. As latency increases or decreases, a small number of transactions may be included in more than 1 file or may be excluded altogether.

5.2.3 Resilience and Fail-over

The summary file is only retrieved to Horizon's Primary Data Centre. In the event of Horizon Data Centre fail-over, the monitoring would be suspended until operations resumed at the Primary Data Centre.

FUJ00002238

Appendix A - Authorisation Request/Response Format

The Authorisation Request and Response definitions exchanged between Horizon and e-pay are defined in Table 4 and Table 5. The following data types will be used:

Data Type	Description
A	Text/numeric, Fixed or Variable length
N	Integer, characters (0-9). Fixed or Variable length
Date/Time	Fixed length YYMMDDHHMM
FS	Field Separator (0x1C)

Table 3 – Authorisation Request/Response Data Types

No	Size	Fixed or Variable	Mandatory or Optional	NAME	Data type	Value	NOTES
0	1	F	M	Dial Indicator	N	4	No dial
1	8	F	M	Terminal Identity	N		Looked up by agent
2	4	F	M	Message Number	N		Maintained at the ETS Agent and incremented by one for each ETS Transaction. A Refund Request has a different Message Number from the original Sale Request. A Reversal has the same Message Number as the original Sale Request
3	4	F	M	Terminal Type / Capabilities	N	2000	Magnetic Stripe Reader only
4	2	F	M	Message Type Identification	A		See Table 5 for values
5	15	V	M	Merchant Number (numeric part of Store ID)	N		The Counter's 6-digit FAD Code, with its leading zeroes
6	1	F	M	FS	FS		Field Separator character (0x1C)

FUJ00002238

7	40	V	M	Card Details	A		For a swiped card: Track2 including start and end sentinels and LRC. For manually entered card details: US, PAN, US. Expiry Date is omitted. For a PIN transaction the format is US, PAN, US with expiry date omitted On a Refund, only the PAN must match the Sale, e.g. the Sale Request may be manually keyed and the Refund Request swiped Individual PIN e-voucher products are defined within the first 12 digits of the PAN, which is structured as follows: • Digits 1-6 '633654'. The e-pay IIN • Digits 7-8 '10', signifying an e-voucher product • Digits 9-12, internal e-pay structure Digits 13-18 are filled with 1's followed by the Luhn digit.
8	1	F	M	FS	FS		Field Separator character (0x1C)
9	11	V	M	Transaction Amount	N		Variable field, maximum 11 digits, in the currency minor denomination, minimum 2 digits must be transmitted, i.e. 1 pence is sent as 01 For a Sale Request, as determined at the Counter. For a Refund or Reversal, as on original Sale Request
10	1	F	M	FS	FS		Field Separator character (0x1C)
19	10	F	M	Timestamp	Date/ Time		YYMMDDHHMM Date and time to be written on Receipt (from Counter) rounded down to the complete minute – the seconds are omitted
20	1	F	M	FS	FS		Field Separator character (0x1C)
21	20	V	O	Cashier ID	A		Identity of Counter Clerk (from Counter login)
22	1	F	M	FS	FS		Field Separator character (0x1C)
23	40	V	M	Retailer Transaction Reference	A		Constructed from the Horizon Transaction Number and Receipt Date and Time. All text characters must be in uppercase.
24	1	F	M	FS	FS		Field Separator character (0x1C)
25	3	F	M	Currency	N	826	GBP Code
26	1	F	M	FS	N		Field Separator character (0x1C)
27	20	V	O	Original Transaction ID	A		On a Refund, copied from the Unique Transaction ID value in the Authorisation Response for the original Sale. Otherwise omitted (including for a Reversal)
28	1	F	M	FS	FS		Field Separator character (0x1C)
29	8	F	M	Message Authentication Code	A	00000000	Set to "00000000" where MACing is not implemented.

Table 4 – Authorisation Request Fields

FUJ00002238

Message	Message Type Identification	Used for
Sale Request, 1st try, card swiped	10	ETU & PVA Transactions
Sale Request, 1st try, manually keyed	20	ETU & PIN Transactions
Refund Request, 1st try, card swiped	58	ETU & PVA Transactions
Refund Request, 1st try, manually keyed	61	PIN/e-voucher Transactions
Sale Reversal Request	25	ETU & PIN Transactions

Table 5 – Message Types from Horizon to e-pay

No	Size	Fixed or Variable	Mandatory or Optional	NAME	Data type	Value	NOTES
0	1	F	M	Dial Indicator	N		Ignored by Horizon
1	8	F	M	Terminal Identity	N	From original request	
2	4	F	M	Message Number	N	From original request	
3	2	F	M	Message Type identification	A	'12'	Same value for Sale Response, Refund Response and Reversal Response
4	2	F	M	Response Code	N		See [RCPT_TXT] for values
5	1	F	M	Confirmation Request	N	0	UNUSED
6	9	V	O	Authorisation Code	A		UNUSED
7	1	F	M	FS	FS		Field Separator character (0x1C)
8	11	V	M	Transaction Amount	N		Always present - if request authorised then will be equal to requested amount
9	1	F	M	FS	FS		Field Separator character (0x1C)
10	20	V	M	Unique Transaction ID (or PIN Serial Number)	A		e-pay's identifier for the Transaction. Also known as PIN Serial Number for a PIN Transaction. Omitted in some reversal failure scenarios.
11	1	F	M	FS	FS		Field Separator character (0x1C)
12	15	V	O	Mobile Number	A		Customer's mobile number. Conditionally present for ETU depending on network and Response Code. This field will be omitted for PIN
13	1	F	M	FS	FS		Field Separator character (0x1C)
14	48	V	O	PIN	A		Only present for PIN transactions
15	1	F	M	FS	FS		Field Separator character (0x1C)
16	6	F	O	PIN Expiry Date	N		YYMMDD; Present for some PIN transactions. Omitted on ETU transactions.
17	1	F	M	FS	FS		Field Separator character (0x1c)
18	80	V	M	Short Code	A		[RCPT_TXT] defines the mapping of Short Codes to receipt texts
19	1	F	M	FS	FS		Field Separator character (0x1C)
20	8	F	M	Message Authentication Code	A	00000000	Set to "00000000" where MACing is not implemented.

Table 6 – Authorisation Response Fields

FUJ00002238

Appendix B - Daily Transaction Feed Specification

B.1 FILE FORMAT

The file will consist of ASCII characters, fixed width without field separators. Records will be space padded up to the maximum record length and terminated with <CR> <LF>. Variable length fields will be not be permitted. The following data types will be used:

Data Type	Description
Alphanumeric (n)	Text/numeric, Length n characters left aligned and padded with trailing spaces.
Numeric (n)	Integer, characters (0-9). Length n characters, right aligned with leading zeros
Spaces(n)	Spaces used for padding
Date	Fixed length YYYYMMDD
Date/Time	Fixed length YYYYMMDDHHMMSS

Table 7 – DTF File Data Types

B.2 FILE NAMING CONVENTION

The file name will be formatted as follows, fixed width without separators:

Field	Position	Type(Size)	Description
File Identifier	1 – 10	Alphanumeric (10)	Constant value 'EPAY921133 Where 921133 is e-pay's retailer account number
File Type	11 – 12	Alphanumeric (2)	'DT' = constant value (Daily Transaction feed)
Transactions Date	13 - 20	Date (8) YYYYMMDD	Date of transactions

Table 8 – DTF File Naming Convention

B.3 FILE HEADER

The file header will be formatted as follows:

Field	Position	Type (Size)	Description
Record Type	1	Numeric (1)	Constant value '1' - Header
File Identifier	2 – 11	Alphanumeric (10)	Constant value 'EPAY921133' Where 921133 is e-pay's retailer account number
File Type	12 – 13	Alphanumeric (2)	Constant Value 'DT' - Daily Transaction feed
Transactions Date	14 – 21	Date (8)	Date of transactions
File Date/Time	22 – 35	Date/Time (14)	Date and Time file was produced

FUJ00002238

Space Padded Filler	36 – 201	Spaces (166)	Constant value (166) spaces - to fill to fixed record length

Table 9 – DTF File Header Record Format

B.4 DETAIL RECORD

The detail records will be formatted as follows, one line for each transaction including refund status if applicable.

The records will be ordered chronologically (ascending) using the date/time received at e-pay.

Fields 1 to 15 of the Authorisation Response message will always be present. Fields 16, 17 and 18 will ONLY be present if a reversal is processed (and matched) by e-pay. The optional fields are padded with spaces when not used.

No	Field	Position	Datatype	Description
1	Record Type	1	Numeric (1)	Constant value '2' – Transaction Detail
2	APACS TID	2 – 9	Numeric (8)	APACS Terminal ID
3	Store ID	10 – 24	Numeric (15)	Identifier for each physical store
4	Message Type Identification	25 – 26	Numeric (2)	Top-Up – '01' Refund – '02' Reversal – '03'
5	Last Attempt No.	27 – 28	Numeric (2)	Last Attempt No. received by e-pay
6	Transaction Date/Time	29 – 42	Date/Time (14)	EPOS / Terminal Date and time of last transaction attempt
7	Cashier ID	43 – 62	Alphanumeric (20)	ID/Name of till operator (if available)
8	PAN	63 – 81	Numeric (19)	PAN from customer's swipe card
9	Retailer Transaction Reference	82 – 121	Alphanumeric (40)	Retailer's transaction reference (if available – EPOS systems only)
10	Currency	122–124	Numeric (3)	APACS Currency code
11	Value	125–135	Numeric (11)	Transaction amount in pence. e.g. £10 Top-Up – '00000001000'
12	e-pay Returned Date/Time	136–149	Date/Time (14)	Date and Time of last transaction attempt on e-pay's host system
13	e-pay Returned Success/Failure Code	150–151	Numeric (2)	e-pay Response Code sent back in Authorisation Response
14	e-pay Success/Error Code	152–155	Numeric (4)	Full e-pay error code
15	e-pay Returned Network Transaction ID	156–175	Alphanumeric (20)	Network Transaction ID
16	Success/Failure code for e-pay Reversal (where applicable)	176–179	Numeric (4)	Full e-pay error code

FUJ00002238

17	Network Transaction ID for e-pay Reversal (where applicable)	180–199	Alphanumeric (20)	Network Transaction ID
18	Payment Liability indicator	200-201	Alphanumeric (2)	"00' = the Retailer has no payment liability because either: (1) the reversal was successful, or (2) the reversal failed but the Network is liable for the failed transaction. '01' = the Retailer is liable for this transaction. The reversal failed (most likely because it was received more than 10 minutes after the original Top-Up).

Table 10 – DTF Detail Record Format

B.5 FILE FOOTER

File Field	Position	Datatype	e-pay Field/Description
Record Type	1	Numeric (1)	Constant value '9' – Footer
File Identifier	2 – 11	Alphanumeric (10)	Constant value 'EPAY921133' where 921133 is e-pay's retailer account number
File Type	12 – 13	Alphanumeric (2)	Constant Value 'DT' – Daily Transaction feed
Transactions Date	14 – 21	Date (8)	Date of transactions
File Date/Time	22 – 35	Date/Time (14)	Date and Time file was produced
Number of detail records	36 – 43	Numeric (8)	number of transactions
Space Padded Filler	44 – 201	Spaces (158)	Constant value (158) spaces – to fill to fixed record length

Table 11 – File Footer Record Format

FUJ00002238

Appendix C - DTF Record to C4/D Mapping

If in any one (logical) day e-pay receive:		e-pay outcome	Liability	DRS
[R]: Sale Request	[C0]: Sale Reversal	returned in Daily Txn File	Indicator	Receives
yes: success response	no	Top-Up Success	-	[C4] value
yes: fail response	no	Top-Up Fail	-	[C4] zero value
Yes: fail response	yes	Top-Up Fail, Unmatched Reversal	-	3 x [C4] zero value
yes: success response	yes: success response	Top-Up Success, Reversal Success: net value zero	00	[C4] zero value
yes: success response	yes: fail response	Top-Up Success, Reversal Fail	00	[C4] zero value
yes: success response	yes: fail response	Top-Up Success, Reversal Fail	01	[D] discrepancy code 011
no	yes: fail	Unmatched Reversal	-	2 x [C4] zero value

Table 12 – DTF Record to C4/D Mapping Rules

FUJ00002238

Appendix D – Failed Reversal Summary File Specification

D.1 FILE FORMAT

The file is plain ASCII text with a fixed length record - variable length fields are not used. There are no field separators. The record is terminated with <cr> <lf>.

The following data types are used:

Data Type	Description
Alphanumeric (n)	Text/numeric, length n characters, left aligned and padded with trailing spaces.
Numeric (n)	Integer, characters (0-9), length n characters, right aligned with leading zeros.
Date/Time	Fixed length YYYYMMDDHHMMSS

Table 13 – Failed Reversal Summary File Data Types

D.2 FILE NAMING CONVENTION

The File Name is formatted as follows:

Field	Position	Data Type	Description
File Identifier	1 – 10	Alphanumeric (10)	Constant value 'EPAY921133' where 921133 is the Post Office account number at e-pay
File Type	11 – 12	Alphanumeric (2)	Constant value 'FR' (**F**ailed **R**eversals)
Date and time the file was generated	13 – 26	Date/Time (14) YYYYMMDDHHMMSS	

Table 14 – Failed Reversal Summary File Naming Convention

FUJ00002238

D.3 DETAIL RECORD

The file contains a single detail record.

No.	Field	Position	Data Type	Description
1	Most recent transaction date and time	1 – 14	Date/Time (14)	Date and time of the latest transaction on the replication database (may not be an Horizon transaction)
2	Total number of sale transaction requests in the interval period	15 – 20	Numeric (6)	Total number of all sale transaction requests in the interval period both successful and unsuccessful
3	Number of reversals rejected by the networks in the interval period	21 - 26	Numeric (6)	Number of reversals in the interval period that have been rejected by the networks because the network reversal period has expired
4	Value of reversals in 3 above	27 - 35	Numeric (9)	In pence – i.e. £100 is expressed as 10000
5	Number of reversals that have failed at e-pay in the interval period	36 - 41	Numeric (6)	Number of reversals that have failed at e-pay in the interval period either because they are outside the 1 hour matching window or because the e-pay host has not seen the original sale transaction request
6	Value of reversals in 5 above	42 - 50	Numeric (9)	In pence – i.e. £100 is expressed as 10000
7	Total number of reversals in interval period	51 – 56	Numeric (6)	Total number of reversals in the interval period regardless of success or failure
8	Value of reversals in 7 above	57 – 65	Numeric (9)	In pence – i.e. £100 is expressed as 10000
9	Total number of failed reversals in interval period	66 – 71	Numeric (6)	Total number of failed reversals in the interval period regardless of failure condition (except 'Void already processed').
10	Value of reversals in 9 above	72 – 80	Numeric (9)	In pence – i.e. £100 is expressed as 10000

Table 15 – Failed Reversal Summary File Detail Record Format