Document Title: Horizon - Streamline Application Interface Specification

Document Type: Application Interface Specification (AIS)

Release   BI3 or later

Abstract: This document defines the interface between Fujitsu Services (Pathway) Ltd and Streamline Merchant Services to support EFTPoS Transactions.

It also covers the interface from Fujitsu Services (Pathway) Ltd to Post Office Ltd to define the mapping of counters onto MIDs and TIDs.

Document Status: Approved

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[1] Descriptions of internal processing provided as background material (which are highlighted as described in section 1.1) are not covered by the Streamline sign-off. In particular, Chapter 6 describes the interface between Fujitsu Services (Pathway) Ltd and Post Office Ltd and so is also not covered by the Streamline sign-off.

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Chapter 0 - Document Control

0.1 DOCUMENT HISTORY

Version	Date	Reason for Issue	Associated CP/ PinICL Nos.
0.1	25/03/2002	First Draft issued for comment and input to a number of outstanding questions.	None
0.2	08/04/2002	Incorporating initial comments from internal distribution	None
0.3	17/05/2002	Incorporating further comments from internal distribution and external distribution	None
0.4	14/06/2002	Incorporating further comments from internal distribution and external distribution	None
0.5	27/06/2002	Incorporating comments from review on 21/06/2002	None
0.6	29/07/2002	Incorporating further comments from internal distribution and external distribution	None
1.0	02/08/2002	Re-issued for Approval	None
1.1	08/08/2002	Comment removed as a result of late commercial feedback within Fujitsu Services	None
2.0	12/08/2002	Re-issued for Approval	None

0.2 REVIEW DETAILS

Review Comments by:	
Review Comments to:	Originator & Klaus Loffler, Programme Directorate

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Streamline	Annie Roberts

(*) = Reviewers that returned comments

0.3　ASSOCIATED DOCUMENTS

Reference	Doc	Vers-ion	Date	Title	Source
[APACS]		17	1/3/02	Standard 30- Specification for an Authorisation Terminal	APACS
[BR]	CR/FSP/010			EFTPoS Statement of Business Requirements	Pathway
[CDMV]	SU/SPE/021	3	Oct 2001	Card Details Specification – MasterCard, Visa Cards (including Maestro & Electron)	Streamline
[CDSS]	SU/SPE/022	11	Oct 2001	Card Details Specification – Switch, Solo Cards	Streamline
[DC]	SU/SPE/028	13	Sep 2000	Technical Specification for the Delivery of Transaction Data via Direct Communication	Streamline
[DTO]	SU/PRP/005	1.2	11/6/02	Proposal for the Data Take On Approach for The Post Office Limited	Streamline
[EMIS]	SU/SPE/024	10	Aug 2001	Technical specification for Electronic Management Information Service (EMIS)	Streamline
[MFMV]	SU/SPE/027	2.1	Jan 2002	Merchant Functional Specification - MasterCard, Visa, Switch Cards	Streamline
[MFS]	SU/SPE/023	1.0	April 1997	Merchant Functional Specification – Solo Cards	Streamline
[OLA]				Operational Level Agreements	TBS
[POTIS]	TI/IFS/008			Pathway to Post Office Technical Interface Specification	Pathway
[RECREP]	NB/PRO/002	3.0	10/5/02	Network Banking Reconciliation and Incident Management	Pathway
[SDS]	EF/SDS/001			System Design specification for the Debit Card Service (DCS)	Pathway
[TIS]	EF/IFS/001			Technical Interface Specification Horizon to Streamline	Pathway
[TS]	SU/SPE/029	2.3	29/07/02	Technical Schedule for implementation as Bulking Retailer Phase 1 - POS Functionality / auto authorisation / data delivery	Streamline

Unless a specific version is referred to above, reference should be made to the current approved versions of the documents.

0.4　ABBREVIATIONS & DEFINITIONS

0.4.1　Abbreviations

Abbreviation	Definition
[A]	Authorisation request returned from the MA 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)

[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
DCS	Debit Card System. The functionality to be provided by Horizon to support EFTPoS Transactions
DCSM	DCS Management (Server) [was EFT Management Server]
DRS	Data Reconciliation Service
EFTPoS	Electronic Funds Transfer at Point of Sale; new Horizon Method of Payment likely to be introduced during the same development timescale as NBS. Now referred to as DCS (qv)
EMIS	Electronic Management Information Service
FAD	Finance Accounts Division, part of Post Office Ltd
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
ITU	International Telecommunication Union. Standards body responsible for the X.25 protocol (among many others)
MA	Merchant Acquirer
MID	Merchant ID
MSU	Management Support Unit (within Fujitsu Services Pathway Customer Services)
OBC	Operational Business Change (procedures for change to Post Office Ltd Reference Data)
OTR	Originator's Transaction Reference
PIN	Personal Identification Number
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.
SOLVE / PFG	Solution for On Line Verification / Payment File Generator A Retail Logic application that takes transaction files that have accumulated over a certain period (normally a day) and converts them into a Merchant-Acquirer-specific format, and prepares them to be sent to the MA for settlement.
SOLVE / SE	Solution for On Line Verification / Stores Environment A Retail Logic application that processes credit / debit card-based transactions initiated at an Electronic Point of Sale terminal
TID	Terminal ID
TIP	(Post Office Ltd's) Transaction Information Processing system
X.25	ITU recommendation for Packet Switched networks

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 MA to on On-line Request. It can have a value of "Approve", "Decline" or "Refer" A response of "Refer" will be treated as a "Decline"
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 Pathway in Bootle and Wigan. Each can handle the entire Horizon workload
Card Issuer	The institution that issues a payment card to a Cardholder.
Confirmation	Confirmation [C] message sent from the Counter in near time to the Campus stating the outcome of a DCS 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 Pathway to Post Office Ltd which matches transaction flows from Counter and DCSM, and reports on these to Post Office Ltd
DCS Agent Server	Hardware platform on which SOLVE / SE and its controlling processes run
Debit Card	A plastic payment card which is linked to a bank or building society account and used to pay for goods and services by debiting the holder's account. Debit cards are usually combined with other facilities such as ATM and cheque guarantee functions
Decline	Verdict supplied by the FI, CI, MA or by the Counter Clerk, such that a request for a withdrawal (or deposit) of funds or payment by debit card is denied
Electronic Funds Transfer at Point of Sale (EFTPoS)	The technology and practice of making payment for goods and services by means of EFT initiated at the point where the goods or services are purchased. Can utilise Credit, Debit or House Cards for the transfer of funds.
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 Pathway to support the automation requirements of Post Office Outlets
Merchant Acquirer	A financial institution that undertakes the total business and technical relationship with a merchant at any particular outlet on behalf of a card scheme. This includes marketing the card scheme, supporting the merchant and settlement of transactions.
Method of Payment	The form of payment recorded against a Transaction involving a Customer
On-line	Where a system attempts to communicate with another system – typically the Counter seeking immediate authorisation from a FI, MA or CI
Operational Level Agreement	A non-contractual agreement between Fujitsu Services Pathway 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
Payment File	Files produced by collating transaction files for presentation to the Merchant Acquirer for settlement of funds
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
Request	Request message [R] sent On-line from Counter to MA initiating a DCS dialogue
Reversal	This is used in two ways: ♦ At the counter it is a Transaction that nullifies a specific previous Transaction that has been completed (committed) in a previous Customer Session, subject to business rules (e.g. time limits, previous receipt). As far as the interface to the MA is concerned this is treated as a Refund. ♦ At the interface to the MA, it is a transaction that nullifies the previous transaction. It may be generated Implicitly (by reusing the previous transaction's sequence number) or explicitly as a result of a counter not receiving a response or the clerk cancelling the confirmation.
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 a MA where an agreement is made as to the aggregate value of transactions for a given period (probably a day)
Settlement Date	This is set by the MA and is part of the commercial terms. It is based on the day the transaction file is presented for processing. Post Office Ltd will receive the funds on the day of processing as long as the transaction file is delivered by 2am. The Settlement date is not included in authorisations from the MA. It is only known when the EMIS file is received (ie when the [C4] is produced), but can be anticipated following transmission of the Payment file (and hence in the [S] message)

| Stock Unit | Collection of goods and cash that is assigned to a Counter Clerk and for which he or she is responsible while logged-in to the Counter |
| Transaction | A recorded and auditable instance of business activity, involving service provision or Stock movement across organisational or service boundaries |

0.5   CHANGES IN THIS VERSION

0.5.1   Changes in Version 2.0

Change marks removed and status changed to Approved.

0.5.2   Changes in Version 1.1

Comment on system shortfall in section 3.3 removed.

Document classification changed to COMMERCIAL IN CONFIDENCE.

Changes (other than to page headers and footers) are marked in red with deletions ~~in strikeout~~.

0.5.3   Changes in Version 1.0

Minor corrections in light of comments.

- Now reference version 2.3 of [TS] (also section 4.2 updated to reflect the fact that Company Identifier is now included in [TS])
- Internal Horizon Definition of Reversals in section 0.4 now "greyed out".
- Discussion on "greying out" text has been moved from section 2.1 to section 1.1 since it now applies to more than just Chapter 2.
- Footnote added to Table 2 – Setting of standard APACS30 fields.
- Comment added on liability due to system shortfall added to section 3.3
- 2 paragraphs of section 3.4 "greyed out".
- 'cardholders' Financial Institution' replaced with Card Issuer in section 3.5.3
- Spurious "ICL" removed from section 6.5.

They are not specifically marked in the document.

0.5.4   Changes in Version 0.6

This version is provided for a limited informal circulation to confirm that changes are acceptable prior to issuing as version 1.0 for approval.

Changes in response to comments received. All changes are marked in a red font (like this).

Deleted text is highlighted in green like this.

Sections not subject to Streamline sign-off are now highlighted in grey like this.

References to JCB cards removed, since they are not supported by DCS.

DCS redefined as Debit Card System (rather than Debit Card Service) to align with the contractual position.

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All relevant information from [DTO] is now included in this AIS. The role of [DTO] is now purely to define the interface between Post Office Ltd and Streamline (which is outside the scope of this AIS).

0.5.5   Changes in Version 0.5

Changes in response to comments received. All changes are marked in a red font (like this).

Deleted text is highlighted in green like this.

Various minor clarifications of the text.

Chapter 6 has been restructured to clarify the differences between the initial take-on of MIDs and TIDs and ongoing Operational Business Change. It also now includes all the relevant text from [DTO].

A number of changes have been made to Chapter 2 & Chapter 3 to separate the description of the processing within Horizon from the interface to Streamline. All such internal processing descriptions are now in Chapter 2 and may be ignored by Streamline.

0.5.6   Changes in Version 0.4

Changes in response to comments received. All changes are marked in a red font (like this).

Deleted text is highlighted in green like this.

Various minor clarifications of the text.

Table added to section 3.4.2, justifying the setting of the Timeout to 18 seconds.

Section 4.3 restructured to distinguish between fatal and non-fatal errors.

Actual TID values included in section 6.2.

Section 6.3.3 expanded to provide more detail of this interface and to make it clear that it covers both the initial delivery of MID / TID mappings and their ongoing maintenance.

0.5.7   Changes in Version 0.3

Changes in response to comments received. All changes are marked in a red font (like this). The document has been reformatted. Format changes have not been explicitly marked.

The term EFTPoS has in general been replace by DCS to reflect the fact that the service to be provided by Horizon is now the Debit Card Service.

Much of the Terminology in section 0.4 has been removed since it was not actually referred to in the document.

All outstanding drafting notes within the text are now listed in section 0.6.1 with details of how they are to be resolved.

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0.5.8 Changes in Version 0.2

Cross reference to APACS 30 added in 0.3

Timeout values in Section 3.3.2 corrected

Changes to reversal handling logic documented

Various typographical errors corrected and minor clarifications added in response to initial Fujitsu Services Pathway comments

0.6 CHANGES EXPECTED

0.6.1 Outstanding Design Issues

A number of areas of in the document require clarification (marked in yellow highlight in this working draft).

The following is a list of outstanding Issues in the document :-

Section	Issue	Action	On	Date
3.3	Streamline consider the proposed fail-over behaviour to be unacceptable	The behaviour will be as stated for the initial release and will be reviewed later.	FS (KL)	N / A

Table 1 –Outstanding Issues

0.7 CONTENTS

0.7.1 Table of Contents

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0.7.2   Table of Figures

0.7.3   Table of Tables

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Chapter 1 - Introduction

1.1 PURPOSE

As part of the Horizon service capability, EFTPoS functionality is being introduced to support the use of certain debit card schemes as a method of payment for products transacted across the Post Office counter network. The chosen Merchant Acquirer to provide this service for Post Office Ltd is Streamline Merchant Services part of The Royal Bank of Scotland Group (hereafter called Streamline).

The Horizon Debit Card system makes use of the Retail Logic SOLVE product, which has previously been accredited by Streamline for EFTPoS use in accordance with the relevant APACS standards.

This document defines the application level interfaces between the Streamline domain and the Horizon domain to support the Horizon Debit Card system.

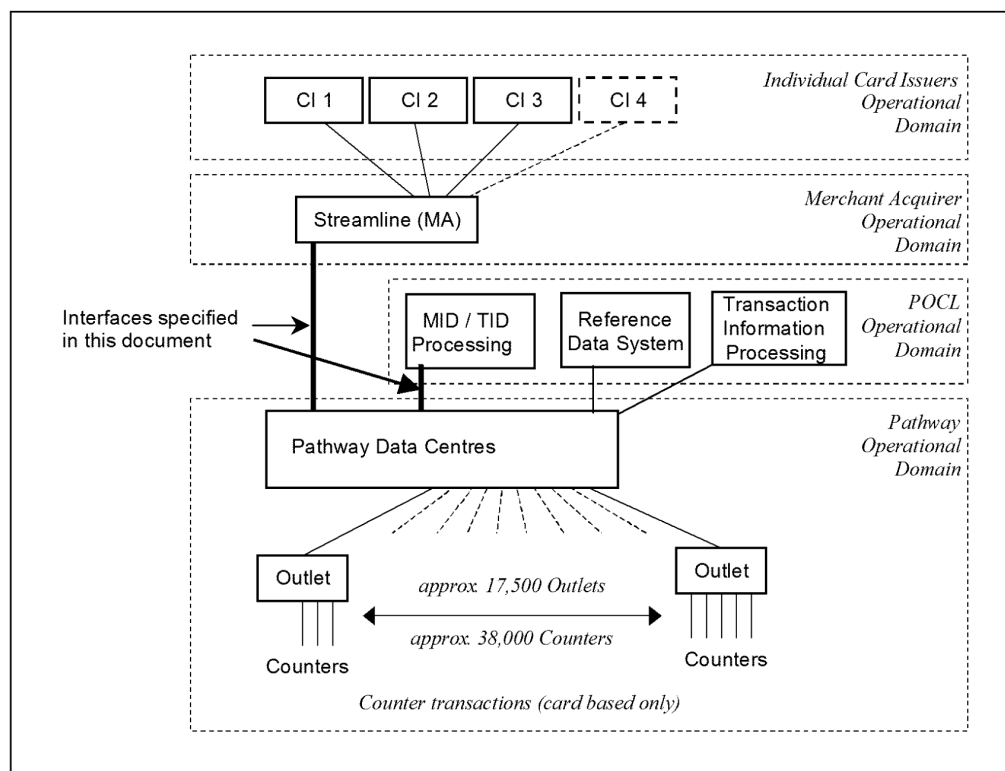An overview of the architecture of the Horizon Debit Card system is given in the diagram below.

Figure 1 – DCS High Level Data Flows

This document provides:

- an overview of the end-end message flows between the major components to provide the context for the Horizon - Streamline interface. This is the subject of Chapter 2.

- a specification of the various application message and file flows between Horizon and Streamline. These are the subject of Chapter 3 - Chapter 6. These Chapters make extensive reference to external industry specifications which are supported by Streamline and the Retail Logic software

This document does not define the physical interconnection arrangements between Horizon and Streamline to support the above application interfaces; this is the subject of [TIS].

The document is written essentially as a commentary on the required interpretation of the cross-referenced specifications. These cross-referenced documents contain the formal specifications to support the application interface between Horizon and Streamline. It also defines the document baseline against which DCS will be built and any exclusions.

Some parts of this document are not part of the formal specification of the interface and so are not subject to sign off by Streamline. Specifically the following parts are excluded from Streamline's sign-off:

- Part of the Definition of Reversals in section 0.4
- 2.1 - Figure 2 – Horizon-Streamline message flows
- 2.1.4
- 2.1.6 'Within the DRS…settlement process with the MA.'
- 2.1.7
- 2.1.8
- 2.2.1
- 2.2.2.3 1st paragraph
- 3.4.2 3rd and 4th Paragraph
- Chapter 6

To make it clear these parts are highlighted in grey (as in this paragraph) to indicate this other than in Chapter 6 which has been left un-highlighted for clarity.

1.2 READERSHIP

This document is intended for application developers concerned with development of the DCS capability between Horizon and Streamline.

1.3 RELATED DOCUMENTS

See section 0.3 for a full list of referenced documents

In addition a number of external specifications from the APACS organisation may be referenced for further information on the interface to the Merchant Acquirer.

Chapter 2 - Scope

2.1 OVERVIEW OF DCS CAPABILITY WITHIN HORIZON

The diagram following illustrates the main components of the end to end message and file flows and in particular how they operate across the Streamline – Horizon interface.
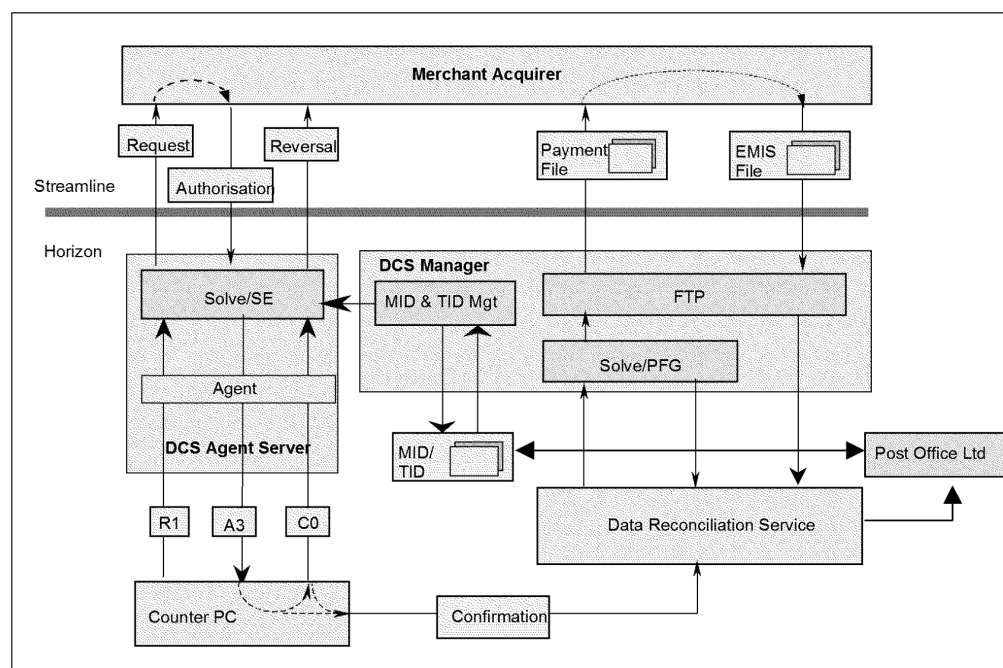
Figure 2 – Horizon-Streamline message flows

2.1.1 Transaction Authorisation

DCS enables Counter Clerks in Outlets to accept debit cards as an additional Method of Payment during a Customer Session. A single card may be used for part or all of the balance outstanding at the Settlement point within the session.

The Customer hands his or her payment card to the Clerk, who swipes it through the standard Counter magnetic swipe card reader. If the card is of a type supported by Post Office Ltd, DCS will seek authorisation from the MA (Streamline). This is done using a Horizon Request [R1] message. Two types of transaction are supported:

- Purchase (customer present), no cashback

- Refund (customer present), when used to settle one of the following Horizon reversal transaction types - Existing Reversal, New Reversal

The authorisation request is passed through to a DCS Agent Server, located within the Horizon Campuses, which supports the Retail Logic SOLVE / SE software. The DCS Agent Server converts the message into APACS 30 message format and communicates with the MA, which may authorise the transaction (or decline it) using its own information, or may refer it to the Customer's Card Issuer. The result of the authorisation is passed back by the MA to the DCS Agent Server and thence to the Counter ([A3] message). The MA may also return a response requesting that the clerk should contact the MA. SOLVE / SE will be configured to treat this as a Decline.

2.1.2 Transaction Confirmation

The final outcome of the transaction is recorded at the counter as a Confirmation [C] message and this is transferred to the Horizon Data Reconciliation Service from whence it is forwarded to the DCSM to support payment file generation (in addition to supporting various reconciliation checks). Payment file generation is done using the SOLVE / PFG product.

2.1.3 Reversal Transactions

If the authorised transaction is not completed at the counter a reversal transaction will be generated at the counter. There are three circumstances under which this will occur:

- A transaction is declined by the counter clerk due to failed signature or card verification

- Transaction timed out at the counter with no response received (due to message loss either internal /external to Horizon, or no response received from the MA)

- During counter recovery after failure, where no completed transaction confirmation exists within the local message log an explicit reversal request is normally generated

  Note that in such a case, although the customer may not be present at the time the reversal is actually generated, it is acceptable to set the "Customer Present" flag in the Reversal request should it eventually be sent to Streamline.

Reversal transactions are generated at the counter by the writing of a Horizon [C0] message. This is passed to the DCS Agent Server, which will then generate an Explicit Reversal Transaction, which is then mapped to the appropriate APACS30 message to reverse the previous authorisation from that terminal.

Note that in many cases such Explicit Reversals will be generated where the original Request that is being reversed had not been passed through to Streamline. However in that case SOLVE / SE will reject the Explicit Reversal resulting in no Reversal being passed across the interface to Streamline.

2.1.3.1 Explicit and Implicit Reversals

There are 2 types of Reversal:

- Implicit Reversal

  This is a standard APACS 30 authorisation request message which is also used to advise the MA that an authorisation response for a previous request has not been

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received by the highest level component which handles the external APACS 30 interface with the MA. An implicit reversal is indicated by reusing the same APACS 30 message sequence number for the current transaction as that used for the previous request (i.e. the next request for the same TID).

■ Explicit Reversal

A specific APACS 30 message type, containing the amount, card number etc. for which an on-line authorisation was requested by the POS terminal, a response received by the POS terminal / store controller / host system, but not actually used.

2.1.4 Card Impound Data Flows

Card impound operations may be initiated by the Card Issuer (or Streamline) in response to a transaction [R] from the counter including card details. The impound instruction will be included as a message element within the [A] message returned by Streamline. The impound instruction received by the DCS Agent Server will be inserted as a field in the [A] messages as a "decline and retain card" response for action by the counter application.

The [C] message written at the counter will include a field for reporting the results of the clerk instruction – normally confirming that the card has been retained, but exceptionally indicating that the clerk has not retained the card. This information is not returned to Streamline but is retained for internal Horizon use.

For DCS, business rules will state that card impounds should only be carried out in response to such an instruction included in the [A] message. (EFTPoS rules additionally permit card impounds as a result of a telephone referral, but telephone referrals are not supported for DCS Release 1 in Horizon and any such request will be interpreted as a "decline".)

Note that a card should not be retained unless the clerk is explicitly instructed to do so.

2.1.5 Payment File Generation & Transfer

Transaction confirmations from the counter are processed by the SOLVE / PFG and this settlement information is passed via FTP to Streamline at intervals. Any reversals generated from the counter will be netted out before they are passed to SOLVE / PFG.

The Payment file is generated by the DCSM system for processing by the MA in accordance with the Streamline formats specified in [DC].

A file level acknowledgement is provided (by return file). (See section 4.2 for details).

2.1.6 Reconciliation

The records from the EMIS files received from Streamline are forwarded to the Horizon Data Reconciliation Service (DRS).

Within the DRS transactions are subjected to a four way matching process, using:

■ Confirmation message from the counter

■ Expected payments sent from DCSM to MA

■ EMIS confirmation record received from the MA

- Transaction Confirmation message generated by Horizon for reporting to the Post Office Ltd TIP system following receipt of the outlet's End of Day message.

Discrepancies are reported to Post Office Ltd and the Pathway MSU by Fujitsu Services for resolution in support of the Post Office Ltd settlement process with the MA. This is described further in [RECREP].

Through the transaction and reconciliation cycle, individual transactions are identified by the unique Horizon Transaction Id allocated at the counter. The Horizon Transaction Id (in a compressed form) is submitted to Streamline within each transaction record included within the Payment File as the Originator's Transaction Reference (OTR). However there is no requirement to be able to look up transactions based on this compressed form.

2.1.7 Reference Data Management

The operation of the system is configured by the use of Reference Data of various types. In particular, Reference Data, provided by the Post Office Ltd RDS service, is used to determine the range of cards supported by the Horizon system and the valid operations supported against the various classes of card.

There are two levels at which card ranges are managed:

- Wide Card Ranges: these are defined in the card scheme documents (ie refs [CDMV] and [CDSS]) and subsequent bulletins roughly every 6 months

  This is primarily a paper-based approach

- Narrow Card Ranges: these are define and updated via EMIS 2 to 3 times per week

  This is an automated approach

To reduce the level of change, Wide Card Ranges will be used.

Note that the same card may be valid for both DCS and Banking transactions and the particular use of the card will be determined by the point in the counter activity dialogue at which the card is swiped (or manual entry selected). Banking transactions cannot be initiated in session settlement, whereas DCS transactions can only be initiated during session settlement.

The card related characteristics of the Card Detail Specification documents require to be reflected in this Reference Data to control the behaviour of the DCS counter application.

Similar Reference Data is also required to configure the SOLVE / SE product, however this will not be automatically updated. This means that the processes for amending card reference data must take this into account. Specifically it is Post Office Ltd's responsibility to raise a Change Request on Horizon at the appropriate time should any changes occur to card schemes that impact the SOLVE / SE configuration.

2.1.8 MID / TID Management

Each DCS transaction carries the identity of the Merchant and the Terminal submitting the request.

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Ranges of Merchant Identifiers (MIDs) and Terminal Identifiers (TIDs) for Horizon use are allocated for use by Pathway during system set-up phase, prior to their use in live system operation.

The allocated MID / TIDs are explicitly mapped to Horizon outlet / counter device identities by the Horizon DCSM and are made available to the DCS Agent Server software for use in individual transactions with the MA. NB a TID is not mapped to a "physical" terminal but effectively to that counter position. Ie when a terminal is changed (for example following a hardware failure), its replacement doesn't use a new TID.

The DCS Agent Server software maps individual Horizon transactions and Horizon device addresses (FAD code and Node within FAD) into the appropriate MID / TID and transaction sequence number in accordance with the APACS specification.

A change management system is operated by Horizon and this supports changes to the MID / TID usage mappings as details of the Horizon estate configuration change (covering new outlets, closed outlets, additional or removed counter positions within outlets).

A set of files specifying the Horizon to MID / TID mappings in use is made available to Post Office Ltd (who are responsible for passing this on to Streamline). This is used to supply the initial set of mappings on commencement of the DCS.

A daily "changes" file will also be produced as a result of the Horizon Operational Business Change process (OBC). If there are no Operational Business changes on a given day, then a NULL file will be produced.

Chapter 6 describes this interface in more detail.

2.2 TRANSACTION SEQUENCING AND LIFECYCLE

The sequencing of operations across the Horizon Streamline Interface is as follows:

2.2.1 MID / TID Set Up

Prior to the operation of DCS at any Horizon outlet counter / MIDs and TIDs are allocated and mapped against the Horizon outlet and counter (node) addresses.

These mappings are notified to Streamline prior to the submission of any DCS transaction from a specific MID / TID source in Horizon and will remain consistent across the transaction lifecycle – authorisation request, payment file, EMIS file.

The Counter application will print the MID on the DCS Outlet and Customer receipts. The MID will be returned to the Counter as part of the authorisation response [A3] originated from the DCS Agent Server.

2.2.2 Authorisation Transaction Operation

2.2.2.1 Request

A DCS transaction across the Horizon - Streamline Interface commences with a Request for Authorisation from Horizon. This is sent as a standard APACS30 message generated by SOLVE / SE.

2.2.2.2 Authorisation

For each request Streamline will respond with an authorisation message, confirming, declining or referring the request. A Referral will be treated as a Decline.

Where a declined authorisation is returned and processed by the counter application the Streamline transaction is complete at this point (i.e. no further message interaction with Streamline will occur). Note that where the declined response is not received at the counter, a reversal may be generated.

2.2.2.3 Confirmation

Horizon always generates an explicit final outcome message [Confirmation] at the counter for the Horizon transaction, irrespective of the type of authorisation response (approve / decline) or whether a counter triggered reversal was required.

When an approved authorisation response is returned three outcomes are possible:

- Where the transaction completes normally this will result in a Payment File Record being generated and sent on the Payment File Interface (see section 2.2.3).

- Where the transaction is locally declined due to signature or card verification failure an explicit transaction reversal request is sent to the DCS Agent Server and then passed on to Streamline. This is triggered by a [C0] message sent from the counter prior to writing the final transaction outcome [Confirmation]. Such messages are sent from the DCS Agent Server to Streamline using normal message sequencing.

- Where the Authorisation message is not received by the counter PC the transaction status at the MA is indeterminate. In this case the counter generates a [C0] message and the DCS Agent server will send an explicit reversal message to SOLVE / SE, which may result in an explicit reversal being sent to Streamline (see section 2.1.3).

2.2.3 Payment File Confirmation Record

Where the transaction result is a completed, authorised (confirmed) transaction an equivalent record is generated within the Payment File sent from Horizon to Streamline. Under normal system operation this will be in the overnight window of the day following the counter transaction.

However, under failure conditions this will be deferred until communications is re-established between the Post Office outlet and the Horizon central systems. Failure to deliver a payment file record for the transaction may result in the authorisation timing out within the MA and removal of the funds ring-fence in the target account. (Ring-fencing of funds lasts a set time – a minimum of 3 working days and usually about 7 - 10 days.)

Acknowledgement of receipt of the payment file is at file level; details are provided in section 4.2

2.1.4   EMIS Reconciliation File Record

Following receipt of the payment file and processing of the transaction record, Streamline will generate an equivalent record in the EMIS file transferred back to Pathway. This EMIS record contains reconciliation information used by the Horizon Data Reconciliation System (DRS).

Failure to return an EMIS record corresponding to a specific payment file record will result in a Horizon reconciliation exception and a manual investigation of transaction status.

This investigation will be initiated by Fujitsu Services Pathway's MSU and carried on in consultation with Post Office Ltd.

Chapter 3 - Transactional Interface – Request / Authorisation

3.1 GENERAL

This interface supports message flows between the SOLVE / SE software and the Streamline Merchant Acquirer transaction authorisation system.

The interface is based upon APACS30 message exchange as defined in [APACS].

The SOLVE / SE product is already certified by Streamline as compliant with this standard and therefore no detailed specification of the APACS30 message formats is required in this AIS.

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

3.2 SUPPORTED TRANSACTION & MESSAGE TYPES

The following diagram identifies the transaction types and message sequence to be used between Horizon and Streamline.
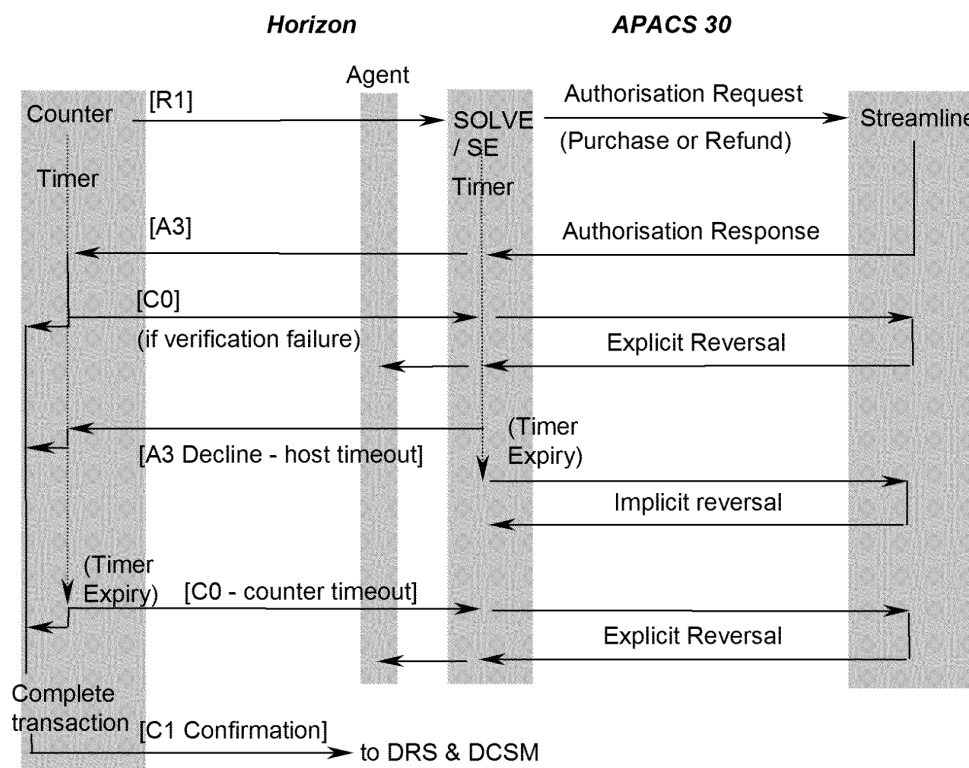
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Figure 3 – Authorisation Request Message Sequence

3.2.1 Authorisation request

The following transaction types are generated by the Horizon system:

- Purchase request (customer present)
- Refund request (customer present)
- Purchase (explicit) reversal
- (Implicit reversal see discussion in section 2.1.3.1)

Transactions are initiated by the presentation at the counter of a magnetic stripe card in conformance with ISO 7810-7813, identified as valid for DCS 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 flag set.

PIN use is not supported and cardholder verification is by signature comparison.

SOLVE/SE will be configured such that the following APACS 30 fields are set as indicated:

APACS30 Field Name	Value	Comment
Dial Indicator	4	"no dial"

Terminal Type / Capabilities	2160	Indicates the following flags: Magnetic Stripe Supported 1 line of Display available Hold Capability Down-line loading of floor-limits and Date₂
Descriptive Data	NULL	Not applicable
EMV Terminal Type	NULL	Not applicable
Reason On-line Code	NULL	Not applicable
Auxiliary Data	NULL	Not applicable

Table 2 – Setting of standard APACS30 fields

The remaining fields in the Authorisation request will be set based on the specific transaction subject to the constraints specified in this AIS and in [TS].

3.2.2 Authoriser response

[TS] describes Streamline's interpretation of the APACS 30 standard and the way response values are to be used in the Authoriser Response. Specifically:

- The authorised amount is always equal to transaction (requested) amount, or zero.

- The only use for the Message field is advisory. It is acceptable for Horizon to ignore it and use its own messages for screen display / receipt print etc.

  However the text of the message field does need to be checked since that is the only way of detecting whether a request for a Card Impound is being made.

- Streamline does not use the Response Additional data fields.

- [TS] defines the full range of Authoriser Response Codes which require to be supported in the Authorisation Response Message.

No special treatment is required for "Hold" messages. Timeouts values override any Hold messages that may be received.

3.3 TRANSACTION & TERMINAL IDENTITY AND SEQUENCING

All transactions are initiated by Horizon.

Each transaction will be allocated a transaction identifier by Horizon at the counter. This full Horizon transaction identifier is not used directly as part of the Request and Authorisation messages to Streamline.

All transactions across the Horizon – Streamline interface will use the MID and TID field in accordance with the valid MID / TID addressing range previously supplied by Streamline and managed by Horizon (as described in Chapter 6).

The DCS Agent Server software maps individual transaction's device addresses (FAD code and counter position within FAD) into the appropriate MID and TID in accordance with the APACS specification.

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2 *Although the physical terminal doesn't have this capability, this is the default value used by SOLVE / SE and is agreed as being acceptable to Streamline.*

SOLVE / SE maintains the current transaction sequence number of each Terminal (TID). Following a fail-over, a different instance of SOLVE / SE will be used. The transaction sequence numbers will not be preserved across such a fail-over.

NB, there is a chance (1 in 10,000 transactions) that the next transaction sequence number to be used following a fail-over will be the same as the one used immediately prior to the fail-over. This will result in the MA interpreting this as an Implicit Reversal. However, this should be a rare occurrence and is therefore considered an acceptable behaviour, since the impact is purely to remove the ring fencing of the funds.

3.4 TRANSACTION DUPLICATES AND TIMEOUTS

3.4.1 Duplicates

There are occasional failure or recovery conditions which can lead to a duplicate instance of a Horizon transaction being presented across the Horizon-Streamline interface (arising from a single transaction at the counter). Such circumstances will result in a second (logically identical) request message being generated to Streamline (and consequently ring-fencing the funds twice) but will result in only a single payment file record being generated.

There are no circumstances which may result in a duplicate [A] message responding to a request being processed at the counter.

3.4.2 Timeouts

Horizon will operate timeouts at the counter PC and across the Horizon-Streamline interface.

At the Horizon-Streamline interface a timeout value will be set on the connection for the receipt of the authorisation message corresponding to request. This is detailed in the [TIS]. After expiration of this value SOLVE / SE will generate an Explicit Reversal to Streamline and transmit a "decline – no authoriser available" response to the counter. The timeout value is set at 18 seconds. Any response received from Streamline after this is discarded.

At the Horizon counter, a counter timeout value is used to bound the duration of the wait for the authorisation request. This value is set globally for the Horizon estate. This value is set at 33 seconds, providing 15 seconds for Horizon system transit, plus the 18 seconds at the Horizon-Streamline interface as controlled by the timeout described above. On timeout, the counter application locally declines to complete the DCS transaction and generates a [C0] message, requesting an explicit reversal.

Under rare conditions this may "cross-over" with a response returned from Streamline or SOLVE / SE, but in such circumstances the local status prevails and the transaction is handled as an explicit reversal (ie a [C0] message is generated at the counter, resulting causing an explicit reversal being sent to Streamline) and any subsequent message from Streamline or SOLVE / SE is discarded.

Note that Streamline recommend that the APACS standards are adhered to regarding timeout value[3]. However that Post Office Ltd requirements are that timeouts are configurable to values agreed between Post Office Ltd and Fujitsu Services.

The following table (supplied by Post Office Ltd) shows some typical response times from Streamline once the transaction is within Streamline's domain. The table does not reflect any network time between Horizon and Streamline.

Seconds	No. Auths[4]	Percentage	Cumulative
0 - 2	6,995,795	91.989185%	91.989185%
2.001 - 5	567,476	7.461862%	99.451047%
5.001 - 8	15,076	0.198238%	99.649284%
8.001 - 10	1,777	0.023366%	99.672650%
10.001 - 15	24,458	0.321603%	99.994254%
15.001 - 20	431	0.005667%	99.999921%
20.001 - 40	6	0.000079%	100.000000%
	7,605,019		

Table 3 –Streamline Response Times

This shows that with a timeout value of 18 seconds, and allowing for the Network time between Horizon and Streamline, a very small number of authorisations that could be responded to would get timed out.

3.4.3   Unsolicited Messages

Unsolicited messages received across the Streamline - Horizon interface are logged and discarded. (Note such messages can only occur on existing open X.25 level 3 circuits, since Horizon will not accept incoming X.25 level 3 virtual circuit establishment).

3.5   SYSTEM QUALITY ATTRIBUTES

3.5.1   Security

The data is sent in clear between two secure Data Centres.

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

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3   *APACS standards recommend a 30-second timeout on the interface to Streamline.*

4   *Sample taken from 15/12/2001.*

- the number of available concurrent X.25 virtual circuits and their re-use policy

These characteristics are specified within the [TIS].

3.1.3 Resilience and Fail-over

Resilience is provided by supporting concurrent operational interfaces between each of the two Pathway host sites and the Streamline operational sites.

Failure of a DCS Agent Server will affect approximately 25% of outstanding request transactions. In these cases outstanding requests are not recovered and the transactions will timeout at the counter.

Any fail-over between processing a request and a subsequent reversal, may well result in the reversal being ignored resulting in the "ring fencing" of the funds not being removed until the "ring fencing" is removed by the Card Issuer.

Failure of the Streamline authorisation host or site will result in all outstanding requests being timed out at the Horizon - Streamline interface (or in some cases at the counter).

Fail-over to the alternative Streamline site is not visible to Horizon.

Chapter 4 - Payment File - Batch Interface

4.1 PAYMENT FILE GENERATION

The Payment File Generator within the DCSM is a software application that takes as input a file or files containing card authorisation transaction records from the Horizon outlets and produces as output a single Payment File for each MA. These Payment Files will be transferred to the MA who will process them for onward transmission to the Card Schemes.

For this interface the DCSM will produce Payment Files in Streamline Standard Format as per [DC] Appendix A.

Any duplicate confirmation records will have been removed (by Horizon) resulting in a payment file with no duplicates. Reversals generated at the counter will also not be included in the Payment File.

The content of the original Horizon Transaction Id will be included in the Originator's Transaction Reference field within the General Transaction Record 2 specified within [DC]. Note that a mapping is required in order to fit this in and so it is not appropriate to use this for manual reconciliation purposes.

4.2 TRANSFER TO THE MA

Details of file conventions and file transfer interface are specified in the [TIS]. Details of file names to be used and the Company Identifier to be used are specified in [TS].

A file level acknowledgement is provided (by return file), which will be available no later than 30 minutes after the transmission of the payment file is completed. The format of this file is defined in [DC] Appendix G. This file will contain details of the name of the file that has been accepted, a count of the number of records contained in the file received and the date and time the file was received. Should this acknowledgement file not be retrieved 30 minutes after sending the Payment File or the file name or count differ from those in the Payment File sent, then the Payment File should be resent. If an acknowledgement file is not available or is incorrect after the second transmission then manual intervention is required. This should be treated as a major incident and will require escalation as described in [OLA].

Should the file be rejected then a FAX is sent from Streamline to Horizon together with a follow 'phone call as defined in [OLA].

This will be a daily transfer process, to an agreed service delivery time [02.00]. However files will not be processed on Saturdays, Sundays or English Bank Holidays.

Note that a maximum of 9 files per day may be sent to Streamline using the same generation date. Specifically, although Streamline do not process Payment Files on

Saturdays, Sundays and English Bank Holidays, they do accept files at all times other than between 07:00 and 22:00 on Sundays.

4.3 ERROR HANDLING

Validation of the Payment File can give rise to two classes of errors:

- Fatal Errors
- Non-Fatal or Transaction Errors

These are discussed below.

There is also a concept of "Transaction Rejection Level" which can be set at Batch, Submission or Transaction level. It is usually set at Transaction level, which indicates the number of non-fatal errors in individual transactions, allowed before the file rejects.

4.3.1 Fatal Errors

Fatal errors will cause the file to fail regardless of the Transaction Rejection Level set. The following are example of Fatal Errors:

- Company no. not recognised – either a Streamline set up issue or an error within the file

- Outlet not recognised - either a Streamline set up issue or an error within the file
- File already processed – a file Streamline believe to be a duplicate
- Sequence error – file id out of sequence
- Batch header invalid – total of file does not equal total in batch header
- Record sequence error – transactions not in order of sequence number

The above covers the majority of reasons for rejection, these are internal descriptions and it cannot be guaranteed that these will be used to inform Horizon of a rejection. The Streamline File Delivery team will inform the nominated contact of a rejection and advise where the error is in the file and the correcting action required. This will not be automated and will require human intervention at both ends.

4.3.2 Transaction Errors

The file may be rejected as a result of accumulated errors at the individual payment transaction record level; a control parameter will be set indicating the acceptable number of record level errors before file rejection. The value to be used (constrained to be between 0 and 50) will be specified in [TS].

Given the overall design of the system and the fact that all Payments in the Payment files will have resulted from a Transaction that has already been authorised, transaction errors in the Payment File should not occur. Any errors that do occur (ie where the Payment in the EMIS file is marked as Rejected) should result in a [D] message being generated for the DRS to process through the manual reconciliation route.

Some records may be marked as "pending" which allows Streamline to attempt to manually amend the transaction so that it can be processed. If the Streamline Exceptions Team cannot do this it moves to the rejected file which will result in the transaction being rejected in the following night's EMIS file.

Note that any records that are successfully manually processed by the Streamline Exceptions Team will result in the transaction being returned without its Originator's Transaction Reference, which in turn will result in it being treated as invalid by Horizon's Data Reconciliation Service. Such a record will be reported in the Reconciliation reports as an exception for manual processing.

4.4 SYSTEM QUALITY ATTRIBUTES

4.1.1 Security

The data is sent encrypted between two secure Data Centres.

4.1.2 Scalability

The maximum size of an individual payment file is constrained only by the maximum record count per file (company identifier) which is 8 digits (ie 99,999,999 records). This is specified in [DC] as 99,999.

Limit of a maximum of 99,999 transactions to one batch (MID). Maximum of 9 files per day to be sent to Streamline using the same header date.

Multiple payment files per day may be submitted in accordance with the file transfer sequencing provisions as specified within [DC].

4.1.3 Resilience and Fail-over

Files are not resilient to in-flight failures during transfer.

Streamline have defined the File Retransmission Procedures as follows :-

- if there is no acknowledgement file after 30 minutes resend the file.
- If there is still no acknowledgement file after 30 minutes contact Streamline.

Chapter 5 -
Reconciliation Reporting - EMIS Batch Interface

5.1 SETTLEMENT REPORTING

Horizon uses the information returned in the Streamline EMIS file for reconciliation reporting to support Post Office Ltd settlement.

The EMIS file contains an individual record for every payment record submitted within the aggregated set of payment files for a specific settlement day.

The data contained within the EMIS file is structured in accordance with the file definition in Appendix B1 of [EMIS].

Records will contain the content of the Horizon Transaction Id submitted as the Originator's Transaction Reference. Note that a mapping is required in order to fit this in and so it is not appropriate to use this for manual reconciliation purposes.

The Settlement Date will be based on the date that the Payment File is processed. It can be assumed, that provided the acknowledgement for delivery of the Payment File is time-stamped with a time earlier than the Streamline processing deadline (02:00 each Monday to Friday other than English Bank Holidays), then settlement will take place on that day. (This will normally be at least a day later than the Payment File was generated, and this must be allowed for when generating the Settlement date for [S] messages from the Payment File.)

There are no other normal circumstances in which the Settlement Date could vary from this (Day B).

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

5.2 SYSTEM QUALITY ATTRIBUTES

5.2.1 Security

The data is sent encrypted between two secure Data Centres.

5.2.2 Scalability

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

The currently forecast worst case (350K transactions) will be 52.44Mb based on 17,000 outlets.

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5.1.3   Resilience and Fail-over

Files are not resilient to in-flight failures during transfer.

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

Chapter 6 -
Management Interface – MIDs & TIDs

6.1   GENERAL

[DTO] defines the formal interface between Post Office Ltd and Streamline. This chapter describes the interface between Fujitsu Services Pathway and Post Office Ltd and is based on [DTO]. Therefore this chapter is not subject to sign-off by Streamline.

> *Strictly the entire chapter should be highlighted in grey, however only this comment has been so highlighted for ease of reading.*

There are two aspects of MID and TID Management:

- Initial Allocation of MIDs and TIDs to Outlets and Terminals
- Changes as part of the OBC process

Due to the number of MIDs and TIDs involved the process for managing the initial allocation will be different from that to be used for ongoing changes. The two processes and the interfaces associated with them are described in the following sections.

> *Note that there are no available mechanisms for us to check that new MIDs and TIDs have been configured in Streamline and so we will assume that if we have informed Post Office Ltd as defined in this AIS, then the change can go ahead.*

6.2   INITIAL MID / TID ALLOCATION & SET-UP

The initial loading of the large number of MIDs and TIDs on both the Streamline service and DCSM will be a joint one-off exercise between Fujitsu Services Pathway, Post Office Ltd and Streamline.

The number of TIDs and MIDs are:

ID	Number	Allocation	Notes
MID	18,750	MA / Fujitsu Services Pathway	Corresponds to number of Outlets, with some spares
TID	50,000	APACS / Post Office Ltd	Corresponds to number of Counters, with some spare

Table 4 –Numbers of TIDs and MIDs

The procedures used for initial MID / TID allocation are as follows:

Streamline will supply Pathway with a range of 18,750 MIDs in advance of live service as defined in the project plan.

The Terminal Identity (TID) is a unique reference, made up of a Registered Identifier (digits 1 to 4), and a Unit Identifier (digits 5 to 8). The Registered Identifier (RID) identifies the organisation to which a range of TID's has been allocated, and the Unit

Identifier (UID) is unique to each terminal within the Registered ID. APACS allocate RIDs as required. The retailer can then allocate the 10,000 TIDs associated with a RID as required. Post Office Ltd has been allocated 5 consecutive RIDs (2250, 2251, 2252, 2253 & 2254) thus providing 50,000 TIDs. Since TIDs may be reused following outlet / counter closure, it is unlikely that further TIDs would be required. However if it is found that further TIDs are required, then Post Office Ltd will need to request further RIDs from APACS via Streamline.

Pathway will undertake the mapping of MIDs and TIDs to outlets (FAD code) and counters (nodes) within the outlet. Note that the range of MIDs will not be contiguous.

> *It is understood that one TID needs to be set aside for a special "default" terminal for use by SOLVE / SE. This TID is not passed to Streamline.*

These mappings will be made available to Post Office Ltd (who are responsible for passing them on to Streamline) in the format specified in section 6.5.

The way in which these initial files are to be delivered to Post Office Ltd is outside the scope of this AIS. The mechanism to be used for ongoing change management will not be available at this time, since it is necessary to deliver the initial set of MIDs and TIDs 6 months before Live operation commences.

6.3 MID / TID CHANGE MANAGEMENT

Support of the MID / TID Change Management process will start when DCS is introduced to the Horizon Data Centres. Since this will be about 6 months after the initial supply of MID / TID information there will be a significant number of changes when the Change Management system process starts to catch-up on changes to the estate over that 6 month period. In particular, this catch-up feed will pass all individual changes and will not summarise 2 or more changes that have taken place for a particular outlet. (Eg 2 separate counter increases for an outlet will be sent as 2 separate increases and will not be summarised as 1 combined counter increase.)

The Horizon mapping of MIDs and TIDs allocated against outlets and nodes will change periodically as a result of Horizon Operational Business Change (OBC).

The OBC change management system is operated by Horizon and supports changes to the MID / TID usage mappings as details of the Horizon estate configuration change (covering new outlets, closed outlets, additional or removed counter positions within outlets).

6.3.1 TID changes

The initial allocation of TIDs (50,000) is intended to be sufficient for Horizon use into the foreseeable future.

TIDs associated with closed outlets or removed counters within an operational outlet will be held available for potential re-use in new outlets or additional counters deployed to an existing outlet. A minimum of 35 days will be allowed before re-allocation of any previously assigned TID to a new counter PC.

Each TID change will be reported to Post Office Ltd (who are responsible for passing them on to Streamline) using the mechanism described in section 6.3.3 below. Such changes (whether involving the use of a new TID or re-assignment of a "used TID" from the re-use pool) will be made a minimum number of working days (as defined in Table 7) before any transaction shall be submitted for that TID.

6.3.2 MID changes

The current working practice by Streamline is not to re-use MIDs.

MIDs associated with outlets which have closed will therefore be discarded. An initial allocation of spare MIDs will be provided at system set-up and mappings from this pool will be used to populate new outlets with MIDs.

Each MID change will be reported to Post Office Ltd (who are responsible for passing them on to Streamline) using the mechanism described in section 6.3.3 below.

Horizon will need to monitor the number of "spare" MIDs available and when this falls below a threshold value, will need to ask Post Office Ltd to apply for additional MIDs from Streamline. A process to support the application for and allocation of new MIDs is included in [DTO].

> *Also need to decide how we manage this within Pathway, however that is outside the scope of this AIS.*

6.3.3 MID / TID Change Reporting

An interface is defined for Fujitsu Services Pathway to report to Post Office Ltd the allocation of MIDs and TIDs against Horizon FAD code and outlet device nodes.

This interface will also be used for reporting changes, for example when new terminals (counters) are added to an outlet, terminals are removed from an outlet, or outlets are opened or closed. In the case of changes to terminals in an existing outlet only details of the changed terminals will be included (ie it is not necessary to include details of unchanged terminals in an outlet).

Table 7 (in section 6.5.2) describes the business triggers for initiating changes to the use of MIDs and TIDs. A file of such changes (in the format defined in section 6.5) will be generated each day. This file will be made available to Post Office Ltd (who are responsible for passing them on to Streamline) and will be delivered via the existing Horizon – Post Office Ltd FTMS system at Huthwaite. The technical interface for this link is specified in [POTIS]. Such files will be delivered each working day (ie Mondays to Fridays excluding English Bank Holidays), with an empty file being generated if there are no changes on a given day. Each file will be delivered in the morning and contain all changes since the last file was delivered. Specifically, the Monday morning file will include any changes implemented on Friday, Saturday and Sunday.

The proposed naming convention for the interface files is:

MTID<*sequence no*>.csv

where <*sequence no*>.is a 6 digit sequence number, allowing missing files to be detected.

> *It is understood that Streamline do not wish to receive any empty files, and so they will not take any notice of missing sequence numbers, however the interface between Post Office Ltd and Streamline is outside of the scope of this AIS. (It is defined in [DTO].)*

Note that the restriction of 1,000 lines in a file still applies. In the unlikely event of more than 1,000 changes being required on a given day, then multiple files will be generated.

Note that [DTO] specifies that email will be used for communication with Streamline. Horizon's responsibility (and hence that of this AIS) is to deliver the information to Post Office Ltd on the FTMS gateway system at Huthwaite.

6.4 SYSTEM QUALITY ATTRIBUTES

6.4.1 Security

No security provisions are implemented at application level for MID / TID management reporting from Horizon to Streamline.

6.4.2 Scalability

Not applicable.

The file is intended to be structured to cater for the maximum size of MID / TID pool. A maximum of 1000 row entries is assumed per spreadsheet; see earlier comment concerning initial set up of TIDs.

6.4.3 Resilience and Failover

Not applicable.

6.5 FILE FORMAT FOR MID / TID ALLOCATION AND CHANGES

This is based on the format specified in [DTO] Appendix 2.

This is based on a series of CSV files, with a maximum of 1,000 lines per CSV file. A separate row is required for each TID leading to the requirement to submit 40,000 rows during initial data set up. Where values in fields may contain commas (for example addresses), then the entire field will be encapsulated in quotes (normal CSV rules).

For initial set-up a row is required for each outlet defining all its details (including the TID of the first terminal for that outlet) using the "Set up new outlet" instruction code. Then a separate row is required for each additional terminal defining its TID using the "Add TID" instruction code. All terminals for a given outlet should be included in the same file, thus it is likely that files will probably contain slightly less than 1,000 entries. The current estate contains nearly 40,000 terminals, hence the estimate of 40,000 rows to be supplied during set up.

Table 5 defines the mapping to be used from existing Post Office Ltd Reference Data transferred to Pathway in setting up the CSV files for MID / TID Management Records. It also defines the structure of each row within the CSV file.

6.5.1   Derivation of MID / TID Data

Streamline Column No. & Name	Contains	Format	From Reference Data	Notes
1 Outlet ID	MID	N(8)	N/A	Sourced from / merged in Horizon
2 Outlet Name	Outlet Name	AN(26)	Office Name	Align Left Truncate to 26
3 Retailers Narrative 1	FAD Code	AN(10)	FAD Code	Align Left, fill blanks right (6 digit FAD code used)
4 Retailers Narrative 2	Town	AN(18)	Address 4 Post Town	Align Left
5 Cardholder narrative2	Outlet Name	AN(13)	Office Name	Align Left
6 Address 1	Address Part 1	AN(30)	Address 1 – 5	Omit Blank Lines, pack towards 3 lines
7 Address 2	Address Part 2	AN(20)	Address 1 – 5	Omit Blank Lines, pack towards 3 lines
8 Address 3	Address Part 3	AN(20)	Address 1 – 5	Omit Blank Lines, pack towards 3 lines
9 Postcode 1	Postcode first part	AN(4)	Postcode	Split Postcode on Break? First part
10 Postcode 2	Postcode second part	AN(4)	Postcode	Split Postcode on Break? Second part
11 Tel. No.	Telephone No.	N(15)	Telephone No.	Truncate, convert Ex Directory to Zeros
12 TID	Terminal ID	N(8)	N/A	Sourced from / merged in Horizon
13 Instruction Code	See Table 6	N(2)	N/A	See section 6.5.2
14 Effective Date	Date	AN(8)	DD/MM/ccYY	DD/MM/YY Time and cc part of date omitted

Table 5 – Mapping of Reference Data for Streamline MID / TID Management Records

Notes:

Code: N – Numeric, AN - Alpha-Numeric, (length)

Instruction Code	Meaning	Columns required
1	Set up new outlet	1 – 14
2	Close outlet	1, 13 & 14
3	Remove TID	1, 12, 13 & 14
4	Add TID	1, 12, 13 & 14
5	Amendment to outlet name	1, 2, 13, & 14
6	Amendment to telephone no.	1, 11, 13 & 14
7	Amendment to address / postcode	1, 4 - 10, 13 & 14
8	Amendment to retailer narrative 1 (FAD code)	1, 3, 13& 14
9	Amendment to retailer narrative 2 (town)	1, 4, 13 & 14
10	Amendment to cardholder narrative 2 (town)	1, 5, 13 & 14

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Table 6 – Meaning of Instruction Codes

Note that there are some circumstances in which amendments to Outlet details (ie use of codes 5, 6, 7, 8, 9 or10) may result in some Null changes being generated (ie where the new value is actually unchanged from the old value).

6.5.2   Business Triggers for MID / TID Management

The table below proposes how the outlet changes requested by Post Office Ltd will be mapped onto the instruction codes required by Streamline (as documented in [DTO] Appendix 2). It also shows when the changes will be triggered within Horizon in relation to a key date and what trigger event will be used to initiate notification of the change. All such changes will be notified to Post Office Ltd on the next working day following the "trigger". It is then Post Office Ltd's responsibility to notify Streamline of such changes in sufficient time before the effective date for the changes to be activated by Streamline.

Business Change Type	Trigger	PO Amendment Instructions	Notification date (days)	Explanatory notes
New Outlet	OBC Change	Set Up New Outlet instruction (IC=1) followed by n-1 Add TID instructions (IC=4), where n = number of counters.	Open date - 11	See note 1. Post Office Ltd must provide details into reference data by open date - 12.
Cancel New Outlet	OBC Change	Close Outlet instruction (IC=2) preceded by n-1 Remove TID instructions (IC=3) if required.	Cancel date + 180.	We will re-use TIDs at cancel date + 195 (see note 2).
Permanent Closure	OBC Change	Close Outlet instruction (IC=2) preceded by n-1 Remove TID instructions (IC=3) if required.	Closure date + 180.	We will re-use TIDs at closure date + 195 (see note 2).
Cancel Permanent Closure	OBC Change	A cancel will be received before the 180 day notification has expired and will prevent closure instructions being sent.	N/A	
Outlet Details Change	Reference Data Change	One or more of: Amendment to Outlet Name (IC=5) Amendment to Telephone Number (IC=6) Amendment to Address/Postcode (IC=7) Amendment to Retailer Narrative 2 (IC=9) Amendment to Cardholder Narrative 2 (IC=10)	Effective date - 3	Post Office Ltd must provide details into reference data by effective date - 4.

Cancel Outlet Details Change	Reference Data Change	One or more of: Amendment to Outlet Name (IC=5) Amendment to Telephone Number (IC=6) Amendment to Address/Postcode (IC=7) Amendment to Retailer Narrative 2 (IC=9) Amendment to Cardholder Narrative 2 (IC=10)	On receipt if original change has been notified	May not actually get cancels, may only get an Outlet Details Change that sets the data back to its previous value.
Counter Increase	OBC Change	Add TID instruction (IC=4) for each additional counter.	Install date - 11	See note 1
Cancel Counter Increase	OBC Change	Remove TID instruction (IC=3) for each cancelled new counter	Cancel date + 20.	We have kept the notification of the cancel at +20 days to make a cancel increase like a counter decrease. We will re-use TIDs at cancel date + 35 (see note 2).
Counter Decrease	OBC Change	Remove TID instruction (IC=3) for each cancelled new counter	Removal date + 20.	We will Re-use TID at removal date + 35 (see note 2). We will not notify Streamline straight away to allow for cancels, where removal didn't occur.
Cancel Counter Decrease	OBC Change	A cancel will be received before the 20 day notification has expired and will prevent closure instructions being sent.	N/A	

Table 7 – OBC Triggers for MID / TID Change Management

Notes:

1. For new outlets, re-opens and counter increases there is a balance in timing to be struck between giving Streamline enough time to configure their systems whilst allowing Post Office Ltd the opportunity to change their mind and cancel the request without the need to undo the changes. Within the existing Operational Business Change framework we commit ourselves to start making changes on target change date -11 and we propose to use this same notification date for Streamline. Cancels of new outlets, re-opens and counter increases that occur before the notification date will simply never be notified to Streamline.

2. We have allowed 15 calendar days from the notification of a TID removal before we would allow the TID to be reused

3. All times are in calendar days (not working days) and are the dates when the interface file will be sent to Post Office Ltd. (All times in [DTO] are in working days.)

4. Temporary Closures (and subsequent re-openings) are not notified to Post Office Ltd, however long they are for.

5. We will never produce an IC code 8 for amendment to retailer narrative 1, since this has been mapped to FAD code. We cannot change the FAD code of an outlet, because this is the unique identifier for a given outlet. In Horizon terms the change of a FAD equates to a closure of the old FAD and the opening of a new outlet.