FUJ00002068

EMV – Banking and Retail

Horizon - Card Account Mapping

ROLE	NAME	AREA OF RESPONSIBILITY	SIGNATURE	DATE
Authors	Chris Bailey on behalf of Post Office Ltd	**Business Architecture**		
		Product Deployment		
FS Architecture	Dave Johns	**Technical Architecture**		
DA Sign-off (Peer Reviewer)	Richard Cowan	**Design Authority**		
Project Manager	James Keenan	**Project Delivery**		

FUJ00002068

1 Document Control

1.1 Document Information

Horizon Release No:	T86
Document Title:	EMV Banking and Retail – Horizon - Card Account Mapping
Document Type:	Application Interface Specification
Abstract:	This document details the mapping of messages between Horizon and Card Account
Document Status:	Approved
Originator & Department:	Richard Cowan Design Authority
Contributors:	
Post Office Distribution:	Design Authority – Richard Cowan POL Document Control – Post Office Programme Office
Supplier Distribution:	EDS: Mark Geldart Fujitsu Services: John Burton
Client Distribution:	N/A

Table 1: Document Information

1.2 Document History

Version	Date	Reason for Issue	Associated WP / CT
0.1	15 March 2004	First working draft. Based on document supplied by IBM, ref [3], but changed to map the messages processed by NBX, and to include ICC fields.	
0.2	1 April 2004	Updated as a result of comments	
0.3	16 April 2004	Minor corrections	
0.4	28 May 2004	Further minor corrections and issued for review within Fujitsu Services	
0.5	19 Oct 2004	Updated as a result of comments and changed to the form of a Post Office document.	
1.0	05 Nov 2004	Incorporation of review comments and minor clarifications. Issued for approval.	
1.1	19 May 2008	Addition of new message variants and new responses to the embedded spreadsheet to reflect changes required by Withdrawal Corrections	Tbs
1.2	29 May 2008	Amended to reflect use of Chip and PIN as per	

FUJ00002068

		requirements of CAPO card.	
1.3	9 Jun 2008	Amended Approvers and Reviewers in light of comments	
1.4	13 Jun 208	Correction to spreadsheet. Amended fields are highlighted in yellow.	
2.0	30 Jun 2008	Issued for Approval Minor corrections in spreadsheet – highlighted in yellow	

Table 2: Document History

1.3 Change Process

Any changes to this issued version of this document will be made, controlled and distributed by: -

Richard Cowan via Post Office Document Management

[IT.Controlled.Document.Review@PostOffice.co.uk]

1.4 Review Details

Review Comments by :	
Review Comments to :	Chris Bailey, Fujitsu Services

Mandatory Review Authority	Name
Post Office Ltd	James Keenan, Richard Cowan
JPMorgan Europe Limited	Mary McMichael
EDS	Mark Geldart
Fujitsu Services Ltd	
Horizon Programme Manager	John Burton
Optional Review / Issued for Information	
Post Office Ltd	Bob Booth, Richard Cowan, Tim Batterbee
JPMorgan Europe Limited	Derek Smallworth
EDS	Keith Peers
Fujitsu Services Ltd	
Design Authority	David Johns
Design	Gareth Jenkins, Andy Williams
Test Design	Peter Robinson

1.5 Changes in this Version

Version	Changes
2.0	Minor corrections:

FUJ00002068

	Corrected reference to amount requested in withdrawal correction to not refer to withdraw limit Amended conditions under which a balance will be returned on deposit correction to include list errors and remove reference to insufficient funds

Table 3: Changes in this Version

1.6 Key Contacts

Name	Position	Phone Number
Bob Booth	Solutions Architect	GRO

Table 4: Key Contacts

1.7 Associated Documents

	Reference	Version	Date	Title	Source
.	ISO8583:1987(E)		Aug 1987	Bank Card Originated Messages	ISO
.	NB/IFS/025			NBX-CAPO Application Interface Specification (AIS)	Post Office
.		2.0	Jan 2003	Network Banking Engine Horizon - POCA Mapping	Post Office
.	NB/IFS/004			Network Banking Message Flows and Interfaces	Fujitsu Services

Table 5: Associated Documents

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

1.8 Abbreviations/Definitions

Abbreviation	Definition
AIS	Application Interface Specification
Authorisation Agent	The part of the NBX which interfaces to FIs and carries out the message mapping.
BCD	Binary Coded Decimal
CAPO	Card Account Post Office
FI	Financial Institution
NBE	Network Banking Engine
NBX	The term used to describe the NBE functionality absorbed into the Horizon domain.

FUJ00002068

POCA	Post Office Card Account

Table 6: Abbreviations/Definitions

In addition, the message names [A1], [R3], [E1], [E2] and the abbreviations for their field formats are used as in ref [2], while the names and field format abbreviations for the messages [R1], [A3], [C0] are as in ref [4]

FUJ00002068

Table of Contents

FUJ00002068

2 Introduction

This document identifies the data mapping between the various message elements of the message sets where NBX acts as the conduit between Horizon and POCA. It should be used in conjunction with the AIS (Ref [2]). Any translations that need to be performed to convert from one particular message format to another are identified, together with how the translation is achieved, where possible. In addition, the data that is required by a message, but which is not present in the source message from another message set, is identified together with an alternative source.

The following sources can be used to populate a message:

Transaction messages	Data is mapped from a message element in one message to a corresponding message element in another, possibly undergoing translation.
Configuration	The exact locations of configuration data will be specified in the design documentation, but the essential property of values that are stated to be configurable is that they can accommodate rapid amendment or extension as required. Note that where a field is common to a number of messages, configurable mappings are based on configuration data that is also common to all the messages. So the mapping of such common fields can be configured only once and applies to all POCA messages, it is not configured individually on a per-message basis.
System Date	The date as held on the NBX Authorisation Agent system.
System Time	The time as held on the NBX Authorisation Agent system.
Fixed Value	Data that always has a fixed value

2.1 Scope

The document considers the following message mappings:

Balance Enquiry	[R1] to [R3] 0100
Financial Transaction	[R1] to [R3] 0200
Pin Change	[R1] to [R3] 0100
Balance Enquiry Response	[A1] 0110 (or [R1]) to [A3]
Financial Transaction Response	[A1] 0210 (or [R1]) to [A3]
Pin Change Response	[A1] 0110 (or [R1]) to [A3]
Reversal Request	[R3],[A1] and possibly [C0] to [E1] 0420/0421
Response Code Mapping	
Reversal Reason Code Mapping	

Reversal Request Response [E2] messages received from POCA are only used internally within the NBX (i.e. they are not mapped to a Horizon message), and so are not within the scope of this document.

2.2 Structure

The message mappings are contained in an Excel spreadsheet, which has been embedded in this document. To open the spreadsheet, double-click on the attachment icon. The first sheet contains a summary of the message mappings that are included in the scope of this document. Subsequent sheets detail each of the mappings in turn.

FUJ00002068

3 Notes on the Spreadsheet

For each message pair, the triggered message is shown on the left, with the triggering (or source) message on the right. The exception to this is the “Reversal Request” [E1] message, which can be triggered either by a [C0] message, or by a late [A1] Approve response from POCA, and is populated from a number of other messages. In this case the right of the sheet contains elements from each of these messages, and an additional column has been included to indicate which message the element comes from.

The “Source” column contains the details of how the message element in the triggered message is populated, including the mapping between message elements in each of the messages where applicable. The “Source” column also includes a description of any translations that need to take place in the NBX.

A greyed out row in the triggering message indicates that there is a field in the triggered message that is not populated from data contained in that source message. In these cases, the triggered message field may be populated from a different message, determined by the NBX or taken from Reference Data. Fields that have been identified as being not required in the NBX – POCA Application Interface Specification document, Reference [2], have not been included in the message.

A greyed out row in the triggered message column indicates that there is a field in the triggering message that has no corresponding field in the triggered message.

For example, fields provided in a POCA message that do not map onto a Horizon field, are not passed on by the NBX, but are logged.

Similarly there are fields provided in a Horizon message that do not map onto a POCA field, and are not passed on. The full list of fields in Horizon messages and their definitions and uses can be found in [4]; the following fields which are not directly mapped to POCA messages are nevertheless relevant to NBX for the following purposes:

Clerk_Identity	Records identity of clerk operating at the outlet workstation (also known as node or counter). This is required for audit purposes.
Client_Id	Identifies a client of POL that is the end bank (card issuer) for a transaction. This element is needed for reconciliation and reports.
Digital Signature	Used in conjunction with Signature_Type to check that the message is valid.
Issuer_Scheme_Id	A code to identify the Issuer Scheme, set from Reference Data at the counter.
Message_Type	Classifies the type of message being sent. e.g. R1 or C0.
Routing_Gateway	Use to route transactions to the correct logical PI
Signature_Type	Used in conjunction with Digital Signature to check that the message is valid.

Transactions are uniquely identified in the system by a combination of the Riposte Group ID and Node ID of the originating counter, together with the receipt transaction date (year and day), and the last 6 digits of the message number component of the Horizon_Txn_Num field of the message which originated the transaction. In messages to POCA this information is held in the form of the Terminal Identification (which is made up from the Riposte Group ID and Node ID) and the Retrieval Reference Number (which includes the receipt transaction date and message number information).

The following point should be noted with regard to the use of binary coded decimal fields in ICC data: in communication with the counter this data is transferred using one character for each decimal digit, but if there is an odd number of digits, an extra padding character, a zero, is included at the start of the number. It follows, for example, that a field shown in the spreadsheet as having 3 BCD digits would actually be transmitted from or to the counter as 4 characters, the first being a zero used for padding. This encoding facilitates the counter's

FUJ00002068

communications with the Pin Pad. The spreadsheet indicates in such cases whether or not the padding is retained when mapping the messages for POCA.
(The spreadsheet also contains some historical information about the mappings performed by the original NBE system, but the rows and columns containing this information are hidden and so are not seen when looking at the spreadsheet. They do not need to be considered with regard to the NBX system.)

FUJ00002068

4 Message Mapping Spreadsheet

Horizon - Card Account Mapping.xls

END OF DOCUMENT