



**Nigeria Inter-Bank Settlement System Plc**

*...improving the Nigeria Payments System*

## **NIBSS Bill Payments**

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# 1 Introduction

## 1.1 Document Objective

The aim of this document is to provide a detailed description of the Bill Payment process flow between the POS, the HOST server and the VAS Providers during Bill Payment operations in NIBSS environment. Additionally, it specifies the Web Service Interface that connects the HOST to the VAS Provider. It expresses in detail the behavioral and technical functions that apply during these operations.

## 1.2 Organization

This document is organized into the following sections:

- **Section 1. Introduction:** Introduces the objectives of the document.
- **Section 2. NIBSS Bill Payments Overview:** This section identifies the components involved in Bill Payments operations.
- **Section 3. Bill Payment Operation Flow:** This section identifies the components that must be present to perform a Bill Payment Operation.
- **Section 4. Bill Payment Process Diagram:** This section identifies the processes that must be present to perform a Bill Payment Operation.
- **Section 5. Host Data Model:** This section describes the Host Data Model.
- **Section 6. POS Data Model:** This section describes the POS Data Model.
- **Section 7. POS-Host Transactions:** This section identifies and describes all the transactions that can be done between the POS terminal and the Host.
- **Section 8. Host-VAS Provider Interface – Web Services:** This section describes in details the interface between the HOST and the VAS Provider.
- **Section 9. Host-NCS:** This section identifies and describes all the transactions that can be done between the Host and the NCS related to the Bill Payment operation.
- **Annex A – POS-Host:** This section shows the Payment Validation operation between the POS Terminal and the Host.
- **Annex B – Data Dictionary:** This section defines in detail all fields involved in the request and response format of the Web Service operations.

## 1.3 Definitions

The following are definitions applicable to this document.

**Table 1 - Terms and Definitions**

Term	Definition
Biller	The entity that sells products or services using the Bill Payment Operation.
Biller Aggregators	The entity that provides one or more payment solutions.
Bill Payment	The purchase of a product or service through electronic means that involves the interaction with a VAS Provider in order to provide the product or service
HOST	Electronic Payment Management System
NCS	Nigeria Central Switch
NIBSS	Nigeria Interbank Settlement System
POS	Point of Sale
Processor	Payment Processor (issuer/acquirer processor)
PTSP	Payment Terminal System Provider
SECURITY MODULE	Software Security Module
VAS	Value Added Services
VAS Provider	The system that manages the delivery of a product or service once payment is performed

## 1.4 Data Elements Format

In this document the following data elements definition are used.

**Table 1-2 – Data Element Format**

Format	Description	Hexadecimal Contents	Binary Contents
<b>C</b>	Character range <sup>i</sup>	20h up to 7Eh and 80h and A0h up to FFh	<b>0010 0000</b> up to <b>0111 1110</b> and <b>1000 0000</b> and <b>1010 0000</b> up to <b>1111 1111</b>
<b>N</b>	Numeric range	30h up to 39h	<b>0011 0000</b> up to <b>0011 1001</b>
<b>LLVAR</b>	2 decimal digits length + Data		
<b>LLLVAR</b>	3 decimal digits length + Data		

## 1.5 References

- [1] POS Interface Specifications ISO8583 (1987) version 1.12, November, 2016.
- [2] Nigeria Central Switch Interface Specifications ISO8583 (1987)
- [3] VAS CTMS Technical Specification, version 1.2, 02 March 2015.

## 2 NIBSS Bill Payments Overview

This chapter describes generically the components involved in NIBSS Bill Payments operations as well as some of its peculiarities.

### 2.1 Components involved in Bill Payments

The next figure depicts the components involved in a Bill Payment Operation.

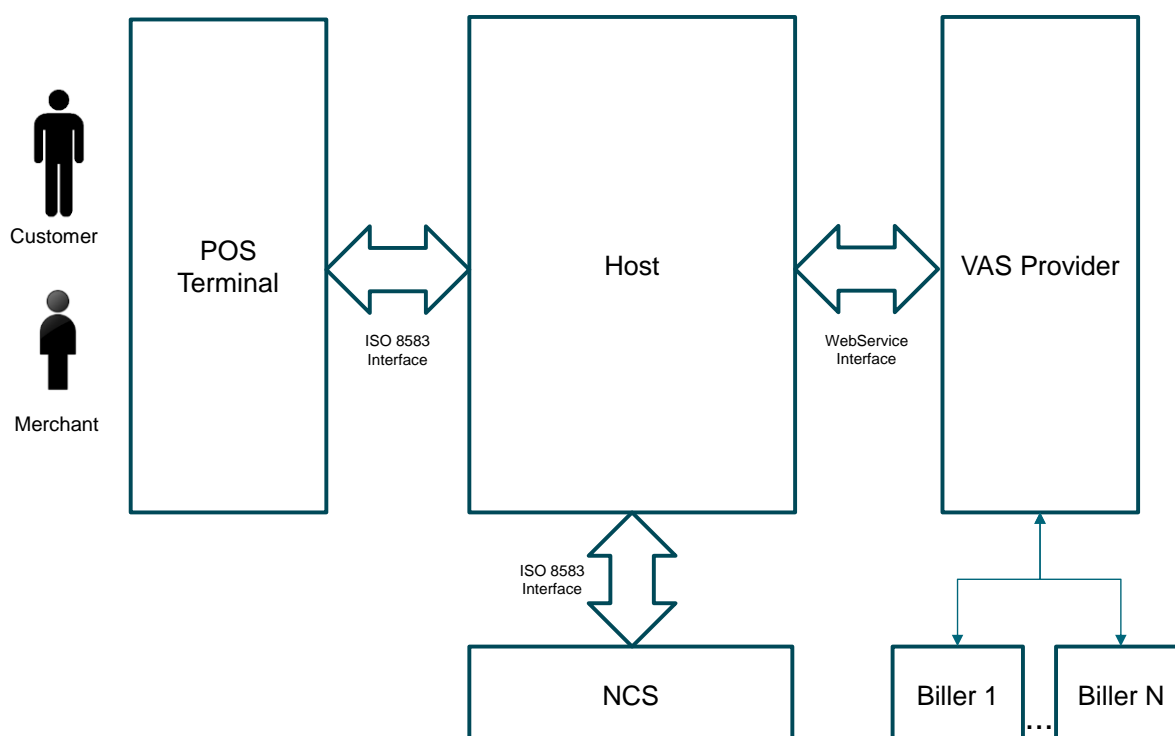


Figure 1 – Components involved in a Bill Payments operation

#### 2.1.1 Customer

The cardholder willing to pay for a product/service at a merchant location.

#### 2.1.2 Merchant

The person that has a commercial agreement with a Bank and is able to accept payments on POS.

#### 2.1.3 POS Terminal

The POS Terminal implements a POS functional specification [1] that allows customers to pay for bills or services using specific operations.

## 2.1.4 HOST

The HOST is the front end processor that drives the POS terminal.

The HOST interacts with the NCS and the VAS Providers to perform Bill Payment operations.

## 2.1.5 VAS Provider

The VAS Provider manages the delivery of a product or service once payment is performed. It acts on behalf of the Biller when the Biller has no capability to expose an interface that implements the required Web Service functionalities.

## 2.1.6 Biller

The entity that provides the service or product acquired through bill payments. It may act as a VAS Provider if the Biller has the capability to implement the required Web Service functionalities.

## 2.1.7 NCS

The NCS is responsible to forward payment messages for processing to the appropriate Processor (omitted from the figure).

# 2.2 Types of Bill Payments

The POS functional specification [1] defines two types of Bill Payment transactions:

- **Subscription Type Bill Payment**

In this kind of Bill Payment the customer subscribed to a service and is paying for the subscription.

- **Product Type Bill Payment**

In this kind of Bill Payment the customer will pay for a service or product and as a result of the payment a token is produced that will be used to gain access to the product or service (e.g. imputing the token an electricity meter to give electricity credit);

The POS distinguishes the processing between the two Bill Payment types depending on the Biller Identification Code (see next section).

## 2.3 Biller Identification Code

The Biller Identification Code is a char field with length 15, composed by the following items:

- Type of Bill Payment to process (position 1):
  - 4 - Token;
  - 5 - Bill Payment.
- The VAS Provider Code ( 3 characters – position 2-4 );
- Merchant Category Code ( a valid MCC – position 5-8 );
- Biller ID ( number – position 9-15 ).

**Biller Identification Code** (char 15) identifies uniquely the Biller.

Examples:

- 4V01599900000001
- 5V01599900000001
- 4V02599900000001
- 5V02599900000001
- 4V02599900000002
- 4V02481400000001

## 2.4 NIBSS Bill Payment Peculiarities

The role of NIBSS in respect to POS terminals in the Nigeria Payment System is limited to act as a Payment Terminal System Aggregator (PTSA). The PTSA role was mandated very recently and NIBSS had very little power to change the status quo of the payment industry. In order for NIBSS to offer the Bill Payment services it needed to adapt and implement what was already a common practice in the industry.

The above context produced the following peculiarities of NIBSS Bill Payment operations:

- **Replacement of field #3 in request message from the Host to NCS**

To perform a Bill Payment, the POS sends to the Host a Bill Payment request message. When sending the message to NCS, the Host replaces the Bill Payment transaction type with purchase transaction type (field #3);
- **Replacement of fields #41, #42 and #43 in request message from the Host to NCS**

In a Bill Payment operation it is supposed that money is moved from the Customer's account to the Billers Account. However, if the financial transaction is performed using field #41 Card Acceptor Terminal ID belonging to the Merchant actually the money is going to be moved from the Customer's account to the Merchant's account. The workaround made in NIBSS was such



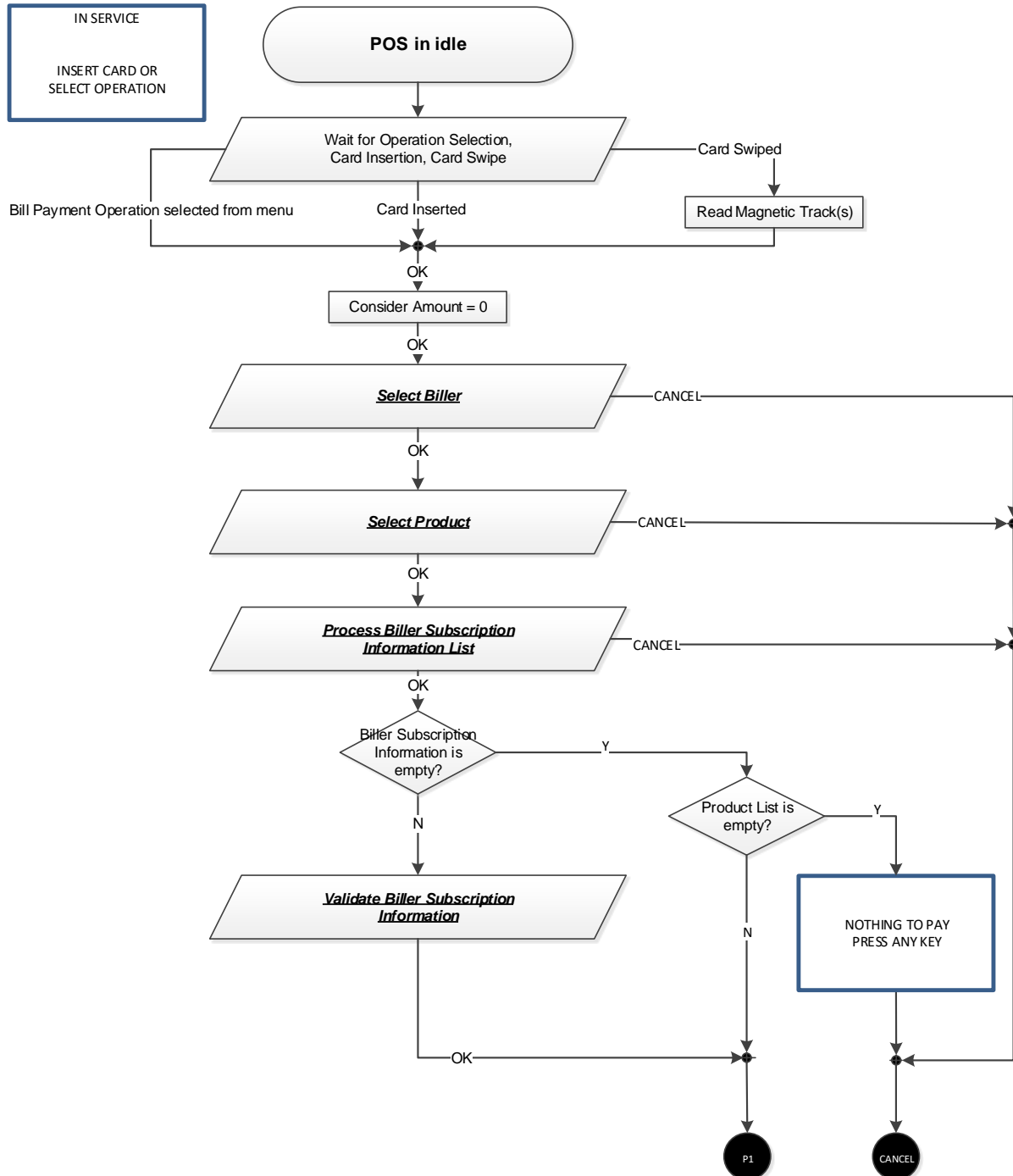
that when the Host receives the Bill Payment request message from the POS, the Host forwards a Purchase request (see previous bullet) to NCS.

Regarding the value in field #41 Card Acceptor Terminal ID, field #42 Card Acceptor Identification and field #43 Card Acceptor Name / Location must happen one of the following options:

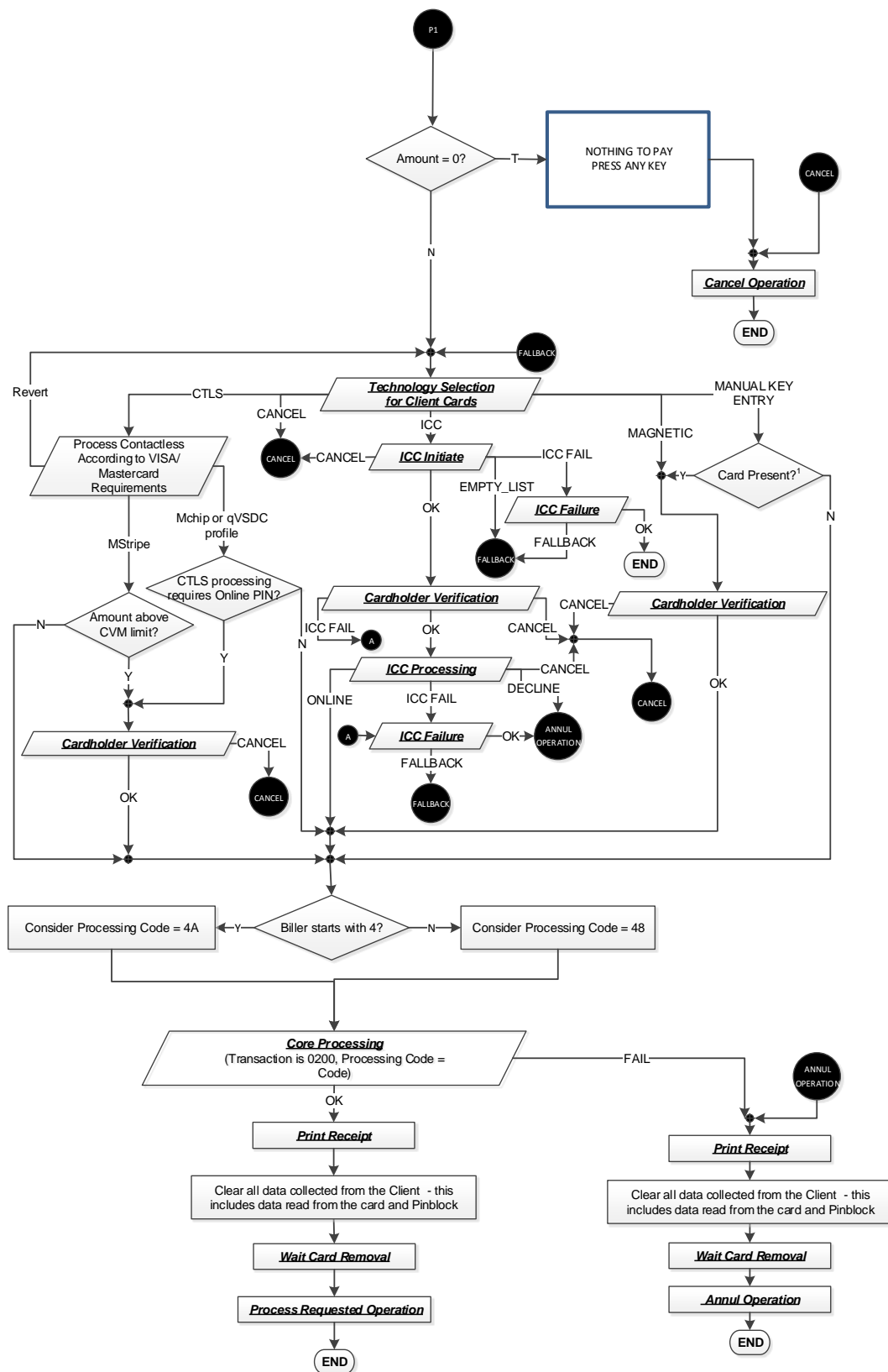
1. If there is no information for mapped DE#41, DE#42 and DE#43 for billers, we should use the original DE#41, DE#42 and DE#43, which comes from the terminal.
2. If there is information for mapped DE#41, DE#42 and DE#43 for billers, we should use the mapped DE#41, DE#42 and DE#43, which are present in billers table.

### 3 Bill Payment Functional Diagram (POS)

The next diagram depicts the functional diagram of the Bill Payment operation.



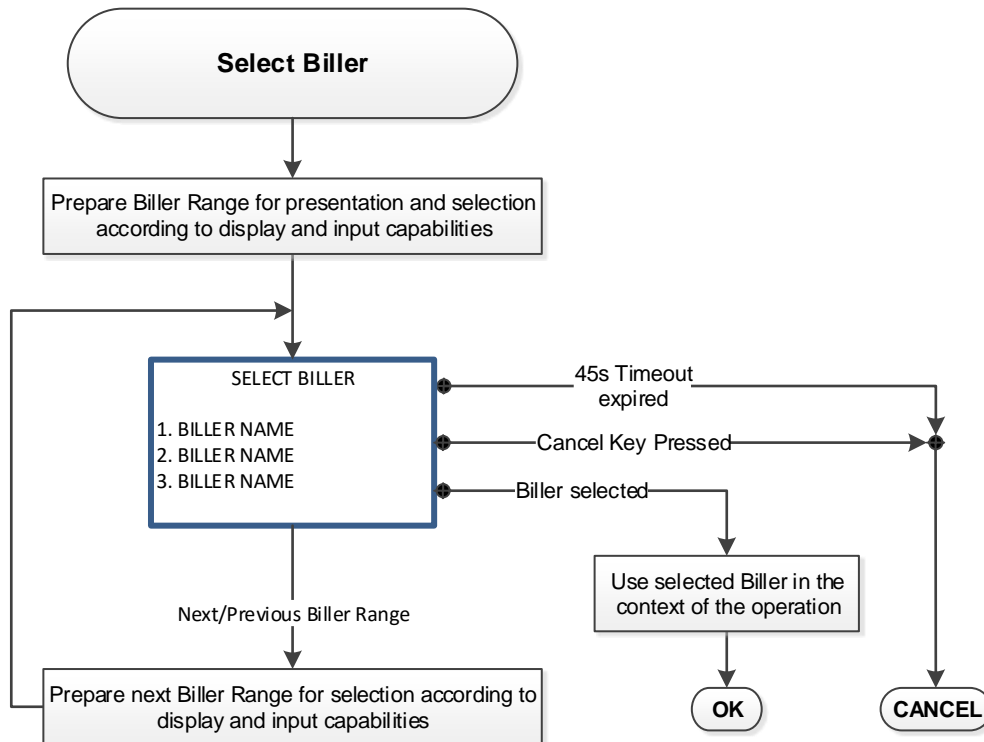




<sup>1</sup> Data origin selected/inserted in **Manual Client Identification** set to 9 (Card Present)

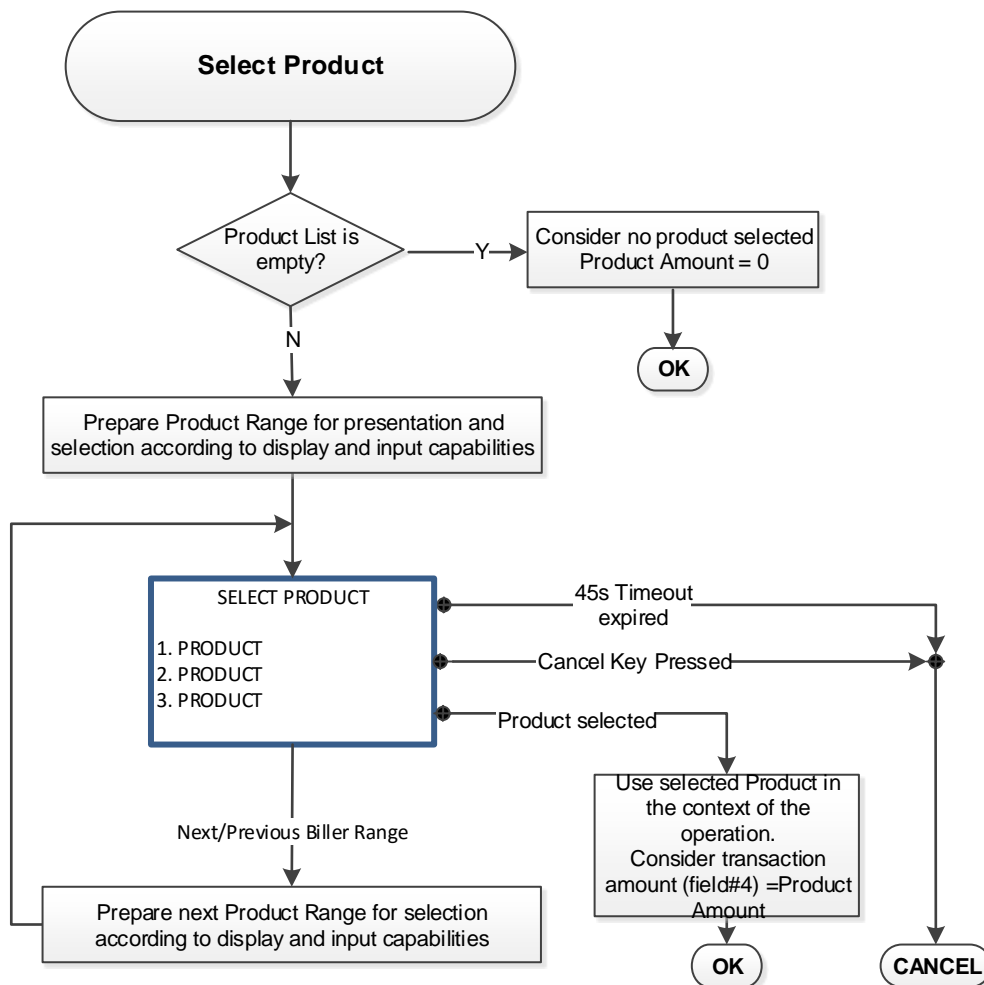
## 3.1 Auxiliary Functions

### 3.1.1 Select Biller



**Figure 2 – Biller Selection Process**

### 3.1.2 Select Product



**Figure 3 – Product Selection Process**

### 3.1.3 Process Biller Subscription Information List

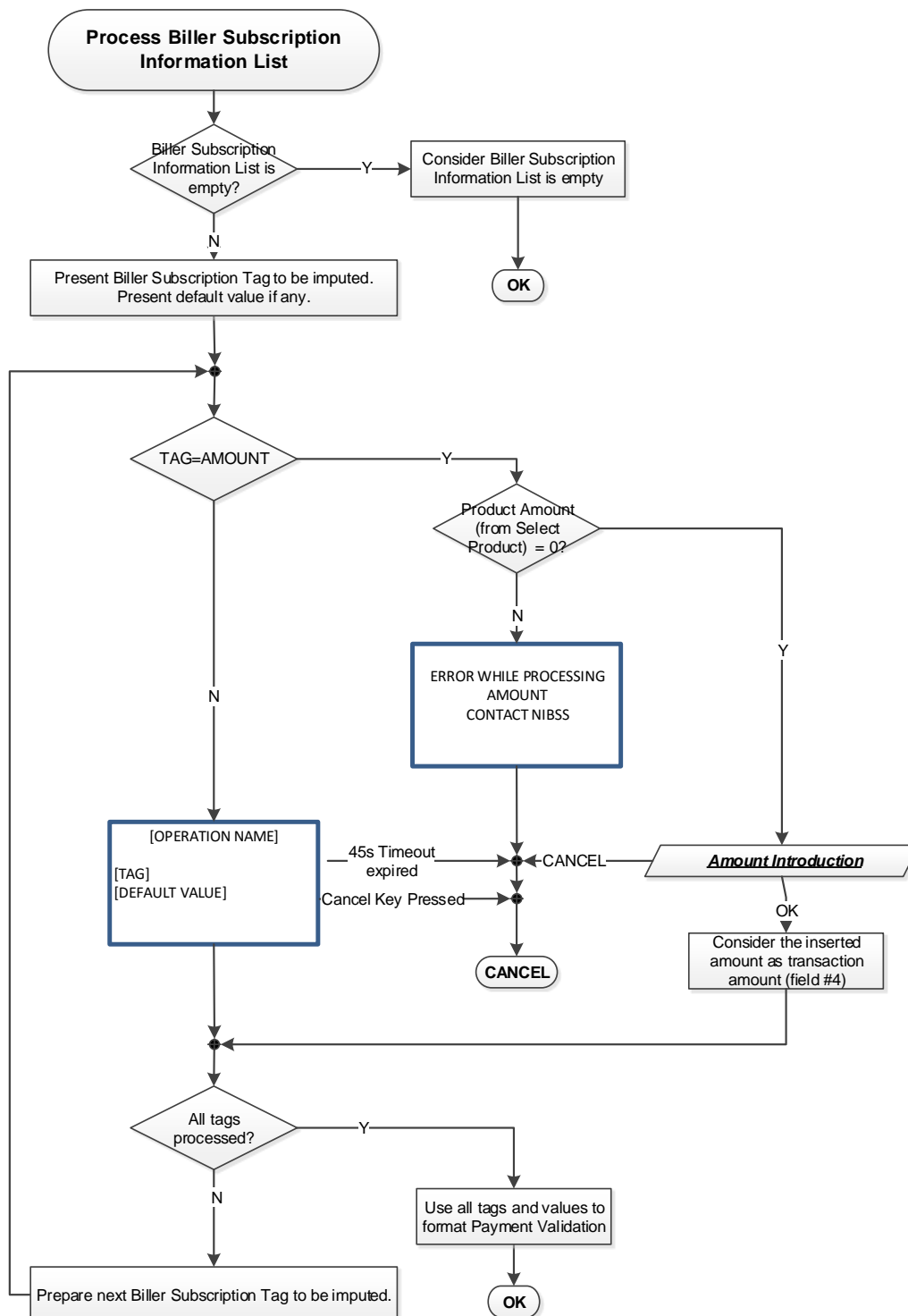


Figure 4 – Biller Subscription Information Process

### 3.1.4 Validate Biller Subscription Information

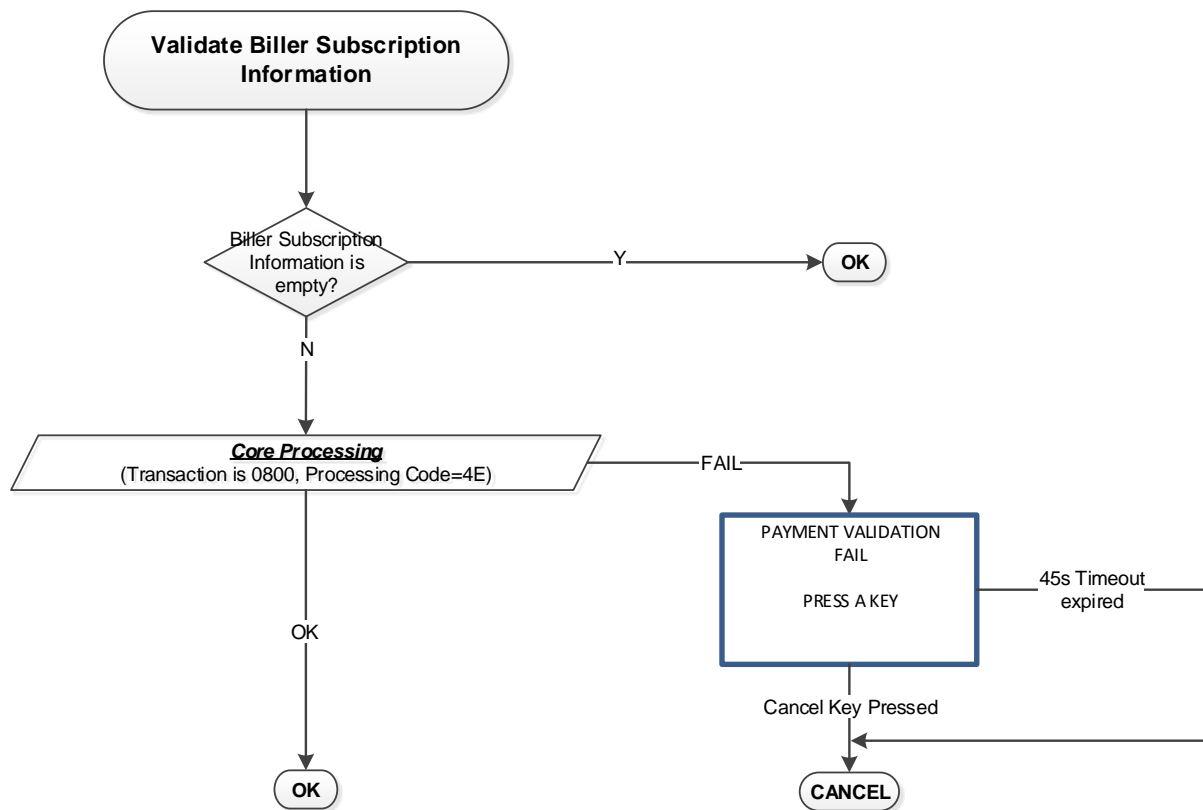


Figure 5 – Biller Subscription Information Validation Process

## 4 Bill Payment Process Diagram

This section describes the Bill Payment operation flow to help to better understand how the Bill Payment Operations work, what are the steps involved and the interactions between the POS and the Host, the Host and NCS and the Host and the VAS Provider.

The description may not contain all details related with the processing of each step (e.g. validations performed by the Host regarding message fields, Hash, etc.). The steps are focused on explaining the details regarding the Bill Payments processing aspects.

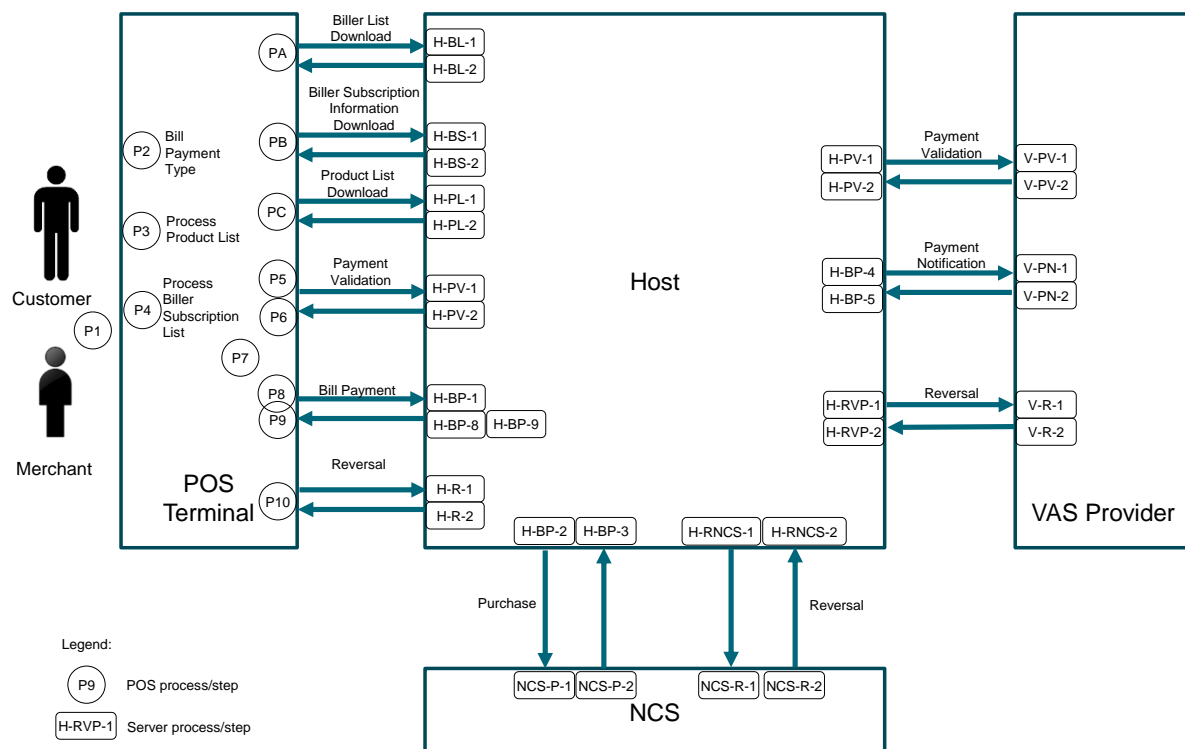
In the following example the customer intends to pay for a bill at a merchant location.

In the example it is assumed that the Customer knows:

- The Biller;
- What it intends to pay;
- The required information requested by the POS during the operation execution (if any).

Figure 6 represents the major intervenient in a Bill Payment operation.

**Figure 6 – Bill Payment Diagram**



## 4.1 Processes at the POS

The following are the steps and processes that exist at the POS.

Before a Bill Payment operation starts, it is assumed that the POS already performed the steps: PA, PB and PC. Nowadays the responsibility of triggering the download of the Biller List, Product List and Biller Subscription List is a responsibility of the PTSP. In some POS applications, these downloads are triggered every time the POS powers up and in others when the POS real-time clock reaches midnight.

### 4.1.1 Download of Biller List, Biller Subscription List and Product List

#### Step PA – POS Downloads the Biller List

- The POS downloads the Biller List.

#### Step PB – POS Downloads the Biller Subscription List

- The POS downloads the Biller Subscription List for all billers.

#### Step PC – POS Downloads the Product List

- The POS downloads the Product List information for all billers.

### 4.1.2 Bill Payment

#### Step P1 – Bill Payment initiation

- The Customer approaches the merchant to pay for a Bill. It informs the merchant about the Biller that he which's to pay bills for;
- The Merchant selects a Bill Payment operation and selects the Biller from the Biller List (previously downloaded by the POS terminal) for the payment that is about to be performed. The process continues at **Step P2**
- If the Merchant cancels the operation, **the process ends**.

#### Step P2 – POS determines the type of Bill Payment to process

- Once the Biller is chosen from the Biller List, the POS determines what type of Bill Payment to process based on the first byte of the Biller Identification Code:
  - If the Biller Identification Code starts with 4 the POS processes a Token Sales (e.g. Recharge Card);
  - If the Biller Identification Code starts with 5 the POS processes a Bill Payment (e.g. DSTV Payment);

**Step P3 – Processing of the Product List**

- The POS uses the information contained in the Product List to present a list of products available for the selected Biller. If the Merchant selects the product from the Product List based on the information provided by the Customer the process continues at **Step P4**;
- If the list of Products is empty, the process continues at **Step P4**;
- If the Merchant cancels the operation, **the process ends**.

**Step P4 - Processing of the Biller Subscription List**

- The POS uses the information contained in the Biller Subscription List to query the merchant for the required information. The Merchant using the information provided by the Customer imputes the requested information by the POS until all elements from the Biller Subscription List are exhausted. The process continues at **Step P5**;
- If the POS finds a TAG 'amount', and if the Product Amount is different from 0 in the Biller Subscription Information, the process ends with an error (It cannot exist 2 amounts per product);
- If the POS finds a TAG 'amount', and if the Product Amount is 0 in the Biller Subscription Information, the POS asks for the amount introduction;
- If there is no information to collect from the Biller Subscription List (the list is empty):
  - The process continues at **Step P7**;
  - If the Merchant cancels the operation, **the process ends**.

**Step P5 – POS sends a Payment (Information) Validation request message**

- After collecting the information required in the Biller Subscription List the POS formats a Payment Validation request message and sends to the Host;
- The process continues at **Step P6**.



**Step P6 – POS processes Payment Validation response from the Host**

- Declined or failed Payment Validation Request:
  - As a result of a declined or failed Payment Validation response, **the process ends**.
- Approved:
  - When receiving an approved Payment Validation from the Host, the POS formats field #60 of the Bill Payment request message with the following contents:
    - Tag 41 contains the Biller selected at **Step P1**;
    - Tag 50 contains the Customer Subscription information processed at **Step P4**.
  - The process continues at **Step P7**.

**Step P7 – Payment Conditions**

- If the Transaction amount is 0, **the process ends**;
- If the Transaction amount is different from 0, the process continues at **Step P8**.

**Step P8 – Bill Payment request**

- If the Biller Identification Code starts with 4 the POS sends a Payment of Token to the Host;
- If the Biller Identification Code starts with 5 the POS sends a Bill Payment to the Host;
- The process continues at **Step P9**.

**Step P9 – Bill Payment reply**

- If the Host replies with an approval the POS prints the receipt and the **operation ends**;
- If the Host replies with a refusal the POS prints the receipt with the result of the operation and the **operation ends**;
- If the POS does not receive a reply from the Host, the POS initiates a reversal. The process continues at **Step P10**;
- If the POS receives a Host reply but containing errors the POS initiates a reversal. The process continues at **Step P10**.



#### Step P10 – Reversal

- The POS sends a Reversal to the Host and waits for a reply;
- If a reply is received the POS prints a receipt with the result of the operation and the **operation ends**;
- The POS keeps the Reversal if it did not receive a reply from the Host or if the Host response is incorrect (Reversal will be sent in a next opportunity and before the next Customer operation);
- The **operation ends**.

## 4.2 Processes at the Host

### 4.2.1 Biller List Download

#### Step H-BL-1 – Host processing of the Biller List download request message

- After receiving a Biller List download request message from the POS, the Host queries the internal database to format the Biller List download reply message.
- The process continues at **Step H-BL-2**.

#### Step H-BL-2 – Host processing of the Biller List reply message

- If the Host was able to find Billers for the POS the Host replies with error code equal to 00 (approved) and sends the list of Billers for the particular POS;
- The Host replies with an error code different from 00 otherwise.

### 4.2.2 Biller Subscription Information Download

#### Step H-BS-1 – Host processing of the Biller Subscription Information download request message

- After receiving a Biller Subscription Information download request message from the POS, the Host queries the internal database to format the Biller Subscription Information download reply message.
- The process continues at **Step H-BS-2**.

#### Step H-BS-2 – Host processing of the Biller Subscription Information download reply message

- The Host should be able to find Biller Subscription Information for the POS and send that information to the POS
- The Host should not decline a Biller Subscription Information request due to the absence of Biller Subscription Information for the POS, and in that case the Host should reply, in the 0810 message, with error code equal to 00 (approved) and DE62 must be empty, meaning that the bit corresponding to DE62 should not be present in the bitmap.

## 4.2.3 Product List Download

### Step H-PL-1 – Host processing of the Product List download request message

- After receiving a Product List download request message from the POS, the Host queries the internal database to format the Product List download reply message.
- The process continues at **Step H-PL-2**.

### Step H-PL-2 – Host processing of the Product List download reply message

- The Host should be able to find a list of Products for the POS and send that information to the POS
- The Host should not decline a list of Product request due to the absence of a list of Products for the POS, and in that case the Host should reply, in the 0810 message, with error code equal to 00 (approved) and DE62 must be empty, meaning that the bit corresponding to DE62 should not be present in the bitmap.

## 4.2.4 Payment Validation

### Step H-PV-1 – Host processing of the Payment (Information) Validation request message

- After receiving the Payment Validation request message from the POS, the Host sends a Web Service request to the VAS Provider requiring validation for the information imputed by the Merchant;
- The process continues at **Step H-PV-2**.

### Step H-PV-2 – Host processing of the Payment Validation Web Service reply

- If the reply from the VAS Provider was received with error code equal to 00 (approved) the Host sends an approved Payment Validation reply to the POS;
- If the reply from the VAS Provider was received with error code different from 00 (declined):
  - The Host sends a declined Payment Validation reply to the POS.
- If the reply from the VAS Provider was not received:
  - The Host sends a declined Payment Validation reply to the POS.

## 4.2.5 Payment Notification

The Payment Notification is described inside of the Bill Payment Process but replicated here for convenience as a separated process in the Host

### Step H-BP-4 – Host processing of the Payment Notification Web Service request message

- After receiving an approved Purchase from the NCS, the Host sends a Payment Notification to the VAS Provider;
- The process continues at **Step H-BP-5**.

### Step H-BP-5 – Host processing of the Payment Notification Web Service reply message

- If the reply from the VAS Provider was received with error code equal to 00 (approved) the Host continues the processing of the Bill Payment (will send an approved reply to the POS) (H-BP-9);
- If the reply from the VAS Provider was received with error code different from 00 (declined):
  - The Host will reply with a decline to the Bill Payment request from the POS (H-BP-8);
  - The Host will start a reversal process with NCS (H-RNCS-1).
- If the reply from the VAS Provider was not received or received with error:
  - The Host will reply with a decline to the Bill Payment request from the POS (H-BP-8);
  - The Host starts a reversal process with NCS (H-RNCS-1);
  - The Host starts a reversal process with the VAS Provider (H-RVP-1).

## 4.2.6 Payment Notification with Token

The Payment Notification is described inside of the Bill Payment Process but replicated here for convenience as a separated process in the Host.

### **Step H-BP-4 – Host processing of the Payment Notification with Token Web Service request message**

- After receiving an approved Purchase from the NCS, the Host sends a Payment Notification with Token to the VAS Provider (where applicable);
- The process continues at **Step H-BP-5**.

### **Step H-BP-5 – Host processing of the Payment Notification with Token Web Service reply message**

- If the reply from the VAS Provider was received with error code equal to 00 (approved) the Host continues the processing of the Bill Payment (will send an approved reply to the POS) (H-BP-9);
- If the reply from the VAS Provider was received with error code different from 00 (declined):
  - The Host will reply with a decline to the Bill Payment request from the POS (H-BP-8);
  - The Host will start a reversal process with NCS (H-RNCS-1).
- If the reply from the VAS Provider was not received or received with error:
  - The Host will reply with a decline to the Bill Payment request from the POS (H-BP-8);;
  - The Host starts a reversal process with NCS (H-RNCS-1);
  - The Host starts a reversal process with the VAS Provider (H-RVP-1).

## 4.2.7 Bill Payment

### Step H-BP-1– Host processing of Payment for Bills request message from the POS

- When the Host receives a Payment for Bills request message from the POS the Host analyses the contents of field #60 Tag 41 in the request to determine the Biller Identification Code of the operation. The Host will use the Biller Identification Code as the key to:
  - Select the VAS Provider to be used during the remaining of the process;
  - Select the value of field #41 Card Acceptor Terminal Identification to be used in the messages exchanged with NCS;
  - Select the value of field #42 Card Acceptor Identification Code to be used in the messages exchanged with NCS.
  - Select the value of field #43 Card Acceptor Name / Location to be used in the messages exchanged with NCS.

### Step H-BP-2– Host sends Purchase request to NCS

- The Host will try to find in the Billers Table the mapped DE#41 Card Acceptor Terminal Identification, DE#42 Card Acceptor Identification Code and DE#43 Card Acceptor Name / Location.
  - If it finds the correspondence, should replace the original DE#41, DE#42 and DE#43, by the ones that are present in the Biller List Table.
    - Field #41 Card Acceptor Terminal Identification associated to the Biller Identification Code (this information is obtained from the billers table);
    - Field #42 Card Acceptor Identification Code associated to the Biller Identification Code (this information is obtained from the billers table).
    - Field #43 Card Acceptor Name / Location associated to the Biller Identification Code (this information is obtained from the billers table).
  - If it doesn't find any correspondence, the transaction should continue with the original DE#41, DE#42 and DE#43.
- After formatting the message with the remaining fields copied from the original transaction sent by the POS to the Host, the Host sends a Purchase request message to NCS.
- The process continues at **Step H-BP-3**.



#### **Step H-BP-3– Host processing of Purchase reply message from NCS**

- If NCS declines the Purchase (field #39 Response Code different from 00, 08, 11) the process continues at **Step H-BP-8**;
- If NCS does not reply to the Host the process continues at **Step H-BP-8**;
- If NCS Purchase reply message is approved (field #39 Response Code equal to 00, 08, 11) the Host processing continues at **Step H-BP-4**.

#### **Step H-BP-4 – Host notification request to the VAS Provider**

- If the Biller Identification Code starts with 5 the POS processes a Subscription Type Bill Payment. In this case the Host will send a **Payment Notification** to the VAS Provider
- If the Biller Identification Code starts with 4 the POS processes a Product Type Bill Payment. In this case the Host will send a **Payment Notification with Token to the VAS Provider**;
- The process continues at **Step H-BP-5**.

#### **Step H-BP-5 – Host processing of the reply from the VAS Provider**

- If the reply from the VAS Provider was received with error the process continues at **Step H-RVP-1**;
- If the reply from the VAS Provider was not received the process continues at **Step H-RVP-1**;
- If the reply from the VAS Provider was received with error code different from 00 (declined) the process continues at **Step H-RNCS-1**;
- If the reply from the VAS Provider was received with error code equal to 00 (approved) the process continues at **Step H-BP-9**;

#### **Step H-RVP-1 – Host initiates a reversal to the VAS Provider**

- The Host initiates the reversal process to the VAS Provider in the following situations:
  - Error on the VAS Provider response to the Payment Notification;
  - Timeout on VAS Provider to the Payment Notification.
- The process continues at **Step H-RNCS-1**.

#### **Step H-RNCS-1 – Host sends a reversal to NCS**

- The Host initiates the reversal process to NCS in the following situations;
  - Error on the VAS Provider response to the Payment Notification;
  - Timeout on VAS Provider to the Payment Notification;



- VAS Provider refused the Payment Notification;
  - Error on the VAS Provider response to the Payment Notification;
  - Timeout on NCS to the Purchase request message.
- The Host will wait for a reply from the NCS. The absence of reply or reply with errors will be treated as an exception;
- The process continues at **Step H-BP-8**.

**Step H-BP-8 – Host sends a refused reply to the POS (END)**

- The Host sends a refused Bill Payment response message to the POS if one of the following conditions happened:
  - NCS did not respond;
  - NCS refused the operation;
  - NCS approved the operation but there was no reply from the VAS Provider;
  - NCS approved the operation but the VAS Provider refused the operation.
- **The process ends.**

**Step H-BP-9 – Host sends an approval reply to the POS (END)**

- The Hosts sends an approved Bill Payment response message to the POS if an approval was obtained from the NCS and from the VAS Provider approved;
- **The process ends.**

## 4.2.8 Reversal to VAS Provider

The Host sends a Reversal request to the VAS Provider in the following conditions:

- If it receives a Reversal Request for a previous approved Bill Payment from the POS;
- If a previous response to a Reversal request sent to the VAS Provider from the Host was not received or received with error.

### Step H-RVP-1 – Host processing of the Reversal Request to the VAS Provider

- The Host sends a Reversal request to the VAS Provider;
- The process continues at **Step H-RPV-2**.

### Step H-RVP-2 – Host processing of the Reversal Reply from VAS Provider

- If the reply from the VAS Provider was received with error code equal to 00 (approved) the Host proceeds with the reversal process depending on the source of the request (Host or POS);
- If the reply from the VAS Provider was received with error code different from 00 (declined):
  - The Host sends a declined Payment Validation reply to the POS (H-PV-2).
- If the reply from the VAS Provider was not received:
  - The Host sends a declined response to the POS;
  - The Host starts a Reversal with the NCS;
  - The Reversal will be repeated to the VAS Provider.

## 4.2.9 Reversal to NCS

The Host sends a Reversal request to the NCS in the following conditions:

- If it received a Reversal Request from the POS for a previous approved Bill Payment operation;
- If an error occurred during a Payment Notification (see H-BP-4);
- If Reversal reply was not received or received with error.

### Step H-RNCS-1 – Host processing of the Reversal Request to NCS

- The Host sends a Reversal Request to the NCS;
- The process continues at **Step H-RNCS-2**.

### Step H-RNCS-2 – Host processing of the Reversal Reply from the NCS

- If a Reversal reply was received with success the Reversal Process ends;



- If a Reversal reply was not received or received with error, the Host will resend the Reversal request.

## 4.3 Processes at NCS

### 4.3.1 Purchase

#### **Step NCS-P-1 – NCS processing of Purchase request message from the Host**

- NCS forwards the Purchase request message to the processor;
- The process continues at **Step NCS-P-2**.

#### **Step NCS-P-2 – NCS processing of Purchase reply message to the Host**

- If NCS receives a reply message from the processor it replies to the Host;
- If NCS does not receives a reply message from the processor NCS it will not reply to the Host.

### 4.3.2 Reversal

#### **Step NCS-R-1 – NCS processing of Reversal request message from the Host**

- NCS forwards the Reversal request message to the processor;
- The process continues at **Step NCS-R-2**.

#### **Step NCS-R-2 – NCS processing of Reversal reply message to the Host**

- If NCS receives a reply message from the processor it replies to the Host;
- If NCS does not receives a reply message from the processor NCS will not reply to the Host.

## 4.4 Processes at VAS Provider

### 4.4.1 Payment Validation

#### **Step V-PV-1 – VAS Provider processing of Payment Validation request message from the Host**

- VAS provider processes the Payment Validation request from the Host.
- The process continues at **Step VAS-PV-2**.

#### **Step V-PV-2 – VAS Provider processing of Payment Validation reply message to the Host**

- The VAS Provider processes the Payment Validation request and replies to the Host according to the result of the Payment Validation.

### 4.4.2 Payment Notification

#### **Step V-PN-1 – VAS Provider processing of Payment Notification request message from the Host**

- VAS provider processes the Payment Notification request from the Host.
- The process continues at **Step VAS-PN-2**.

#### **Step V-PN-2 – VAS Provider processing of Payment Notification reply message to the Host**

- The VAS Provider processes the Payment Notification request and replies to the Host according to the result of the Payment Notification.

### 4.4.3 Reversal

#### **Step V-R-1 – VAS Provider processing of Reversal request message from the Host**

- VAS provider processes the reversal request from the Host.
- The process continues at **Step V-R-2**.

#### **Step V-R-2 – VAS Provider processing of Reversal reply message to the Host**

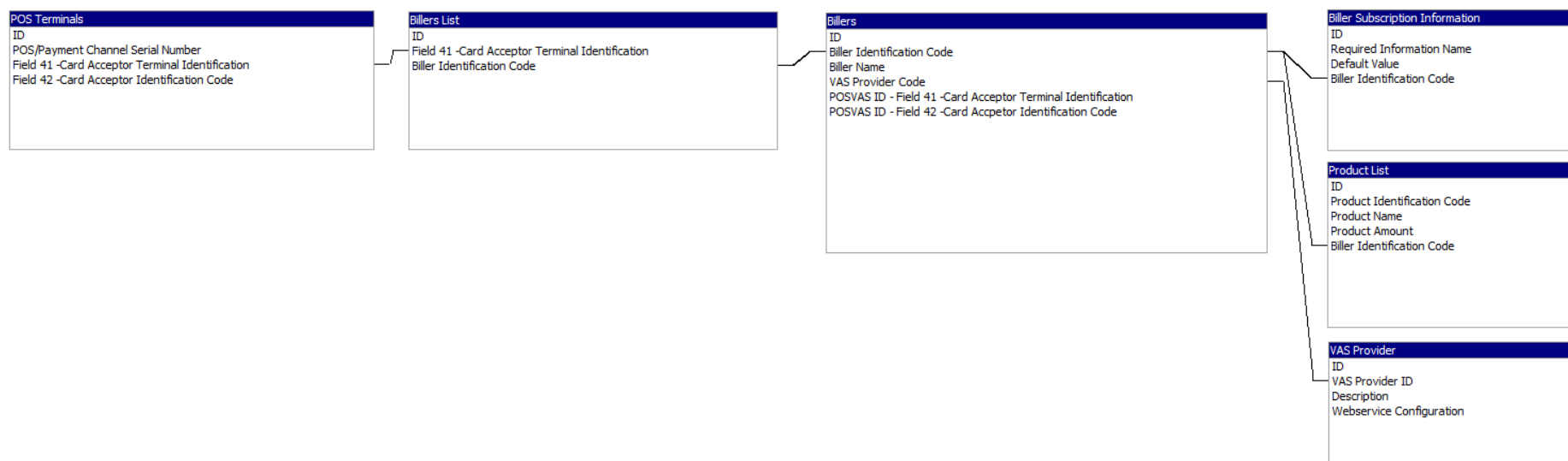
- The VAS Provider processes the Reversal request and replies to the Host according to the result of the Reversal Request.

## 5 Host Data Model

This section describes a possible data model for the Host to be able to support Bill Payment Operations. The data model is not complete in the sense that it does not capture all the data elements necessary to support the remaining operations in the POS, including for instance other POS registration details. However this exercise helps to determine additional fields, tables and relationships that needs to exist to support the service.

The next picture depicts a possible Host Data Model that is able to support the Bill Payment Operations and related transactions.

**Figure 7 – Host Data Model (sample)**



**Note: In the Table 5 – Billers, was added the POSVAS ID – Field 43 – Card Acceptor Name / Location.**

- **POS Terminals**

The POS Terminals table holds the necessary information about the registered terminals.

Example:

**Table 3-POS Terminals**

POS Terminals		
POS/Payment Channel Serial Number	Field 41 -Card Acceptor Terminal Identification	Field 42 -Card Acceptor Identification Code
20000001	20000001	30000001
20000002	20000002	30000001
20000003	20000003	30000001
20000004	20000004	30000002
20000005	20000005	30000003
20000006	20000006	30000004
20000007	20000007	30000005

- **Billers List**

The Billers List table contains all the Billers for a Particular POS.

The table can only contain information that is registered in the Billers Table.

Each POS will have its own Biller List.

**Table 4-Billers List**

Billers List	
Biller Identification Code	Field 41 -Card Acceptor Terminal Identification
4V0159990000021	20000001
4V0259990000004	20000001
4V0259990000039	20000001
4V0259990000004	20000002

- **Billers**

The Billers Table contains all the Billers that are registered in the system.

Each Biller is uniquely identified by: Biller Identification Code ( char 15 )Each Biller has one VAS Provider.

Each Biller has associated:

- POSVAS ID – Field 41 – Card Acceptor Terminal Identification
- POSVAS ID – Field 42 – Card Acceptor Identification Code



- POSVAS ID – Field 43 – Card Acceptor Name / Location

The above fields are to be used in transactions to NCS, replacing the original Field 41, 42 and 43 in the messages sent by the POS terminal when doing Bill Payment transactions for a particular Biller.

Table 5-Billers

Biller Identification Code	Biller Name	VAS Provider Code	POSVAS ID - Field 41 - Card Acceptor Terminal Identification	POSVAS ID - Field 42 -Card Acceptor Identification Code	POSVAS ID - Field 43 - Card Acceptor Name / Location
4V0159990000021	MTN (UPSL)	V01	20000005	30000003	CITISERVE BILLER XYZ, LANG
4V0259990000004	PHCN Benin	V02	20000006	30000004	UPSL BILLER XYZ, LANG
4V0259990000039	PHCN Rec	V02	20000007	30000005	CITISERVE BILLER XYZ, LANG

- **Biller Subscription Information**

The Biller Subscription Information identifies the fields that need to be collected by the POS during a Bill Payment operation. Each Biller may have multiple fields to be collected by the POS.

Table 6-Billers Subscription Information

Biller Subscription Information		
Biller Identification Code	Required Information Name	Default Value
4V0159990000021	Subscriber ID	
4V0159990000021	Phone Number	
4V0159990000021	Recharge	100
4V0159990000021	Expiration Date	
4V0259990000004	Subscriber Name	
4V0259990000004	User ID	
4V0259990000039	Pack	100000

- **Product List**

The Product List table contains the products provided by each Biller.

A Biller can have multiple products.

Each product is associated with only one Biller.

Table 7-Product List

Product List			
Product Identification Code	Product Name	Product Amount	Bill Identification Code
0000000001	Air Time 100	100	4V0159990000021
0000000002	Air Time 200	200	4V0159990000021
0000000003	Air Time 300	300	4V0159990000021
0000000004	Air Time 400	400	4V0159990000021
0000000001	Bundle Web 1	1000	4V0259990000039
0000000002	Bundle Web 2	2000	4V0259990000039

- **VAS Provider**

The VAS Provider table contains the details of the VAS Provider that is involved in the Bill Payment operation.

There is a one to one relationship between a Biller and a VAS Provider (one Biller is supported by one VAS Provider).

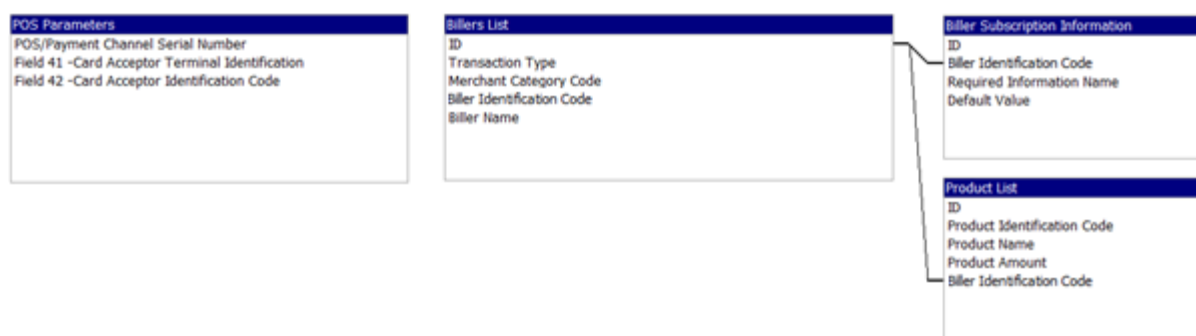
There is a one to many relationship between a VAS Provider and Billers (one VAS Provider can support multiple Billers).

**Table 8-VAS Provider**

VAS Provider		
ID	VAS Provider ID	Web service Configuration
1	Citiserve	Citiserve Webservice
2	VAS Aggregator 1	VAS Aggregator Webservice

## 6 POS Data Model

This section describes a possible data model for the POS to be able to support Bill Payment Operations. The data model is not complete in the sense that it does not capture all other data elements necessary to support the remaining operations in the POS but it is enough to understand what data needs to exit in the POS.



**Figure 8 – POS Data Model (sample)**

- **POS Parameters**

The POS Parameters represents the repository of the POS for its general information.

Field 41 (in ISO messages) is the Card Acceptor Terminal Identification in the network (manually inputted in the terminal) and field 42 (in ISO messages) is the Card Acceptor Identification Code downloaded by the Host in through a POS Parameter Download message (see [1]).

- **Billers List**

The Billers List contains all the Billers supported by the POS. This list is parameterized in the Host individually for each POS. It is downloaded to the POS using a Biller List download transaction (4B).

- **Biller Subscription Information**

The POS obtains the Biller Subscription Information using transaction Biller Subscription Information Download (4D). The request is automatically triggered by the POS as soon as the Biller is selected during the execution of a Bill Payment operation.

The Biller Subscription Information contains a collection of items that must be presented to the merchant for input. The POS goes through this list and uses the “Required Information Name” text to query the merchant. If there is a “Default Value”, the POS presents the query with the preformatted information.

Example:

Consider that the Biller Subscription Information downloaded by the Host forms the contents described in Table 9.

**Table 9 - Biller Subscription Information contents in POS (sample)**

Biller Identification Code	Required Information Name	Default Value
4V0159990000021	Subscriber ID	
4V0159990000021	Phone Number	
4V0159990000021	Recharge	100
4V0159990000021	Expiration Date	

During processing the POS will first query the first item in the table, in this case the "Subscriber ID" (see Figure 9).

**BILL PAYMENT**

Subscriber ID:

**Figure 9 – Bill Payment – Biller Subscription Information input (sample POS screen 1).**

The POS proceeds querying the next item in the table (see Figure 10).

**BILL PAYMENT**

Phone Number:

**Figure 10 – Bill Payment – Biller Subscription Information input (sample POS screen 2).**

- **Product List**

The POS obtains the Product List using transaction Product List Download (4C). The request is automatically triggered by the POS as soon as the Biller Information Subscription is processed (or immediately after the Biller selection if the Biller Information Subscription has no values).

This list is used to present to the merchant a list of products that can be “purchased” from the selected Biller.

**Table 10 – Product List contents in POS (sample)**

Product ID	Product Name	Product Amount
0000000032	Classic View	000000000000
0000000033	Premium View	000000000000
0000000034	Extra-View	000000000000

## 7 POS-Host Transactions

This chapter identifies the POS transactions necessary to implement Bill Payment operations. It is a subset of the specification [1] presented here for convenience with some information filled in. The full description of the data elements can be also found in [1].

### 7.1 0800 Biller List Download (4B)

#### 7.1.1 Request - 4B

Table 11 - 0800 Biller List download request message

Field	Description	Field presence in specification	Sample Details
	Transaction Type	Mandatory	0800
	BitMap	Mandatory	2238000000800000
3	Processing code	Mandatory	4B0000
7	Transmission date and time	Mandatory	0627104359
11	Systems trace audit number	Mandatory	000116
12	Time, local transaction	Mandatory	104359
13	Date, local transaction	Mandatory	0627
41	Card acceptor terminal id	Mandatory	20390014
62	Private, management data 1	Mandatory	01011K3702C21623
64	Primary Message Hash Value	Mandatory	CF730D32BD0A3162B393B17CA4907C12 0319C45CAA9581E442EE451B7CFAB47

The following represents the tags that can be present field 62 for the Biller parameter download request message.

- **Field 62: Private, management data 1**

It contains several informative sub-fields structured in tags.

Each sub-field is formed using the following structure:

Tag+LLL+data

In this case: **01011K3702C21623**

Table 12 - Field #62 in the 0800 Biller Parameter download request message

Tag	Description	Len	Value
-----	-------------	-----	-------

01	POS/Payment Channel Serial Number	011	K3702C21623
----	-----------------------------------	-----	-------------

## 7.1.2 Response - 4B

Table 13 - 0810 Biller Parameter download response message

Field	Description	Field presence in specification	Details
	Transaction Type	Mandatory	0810
	BitMap	Mandatory	0238000002800005
7	Transmission date and time	Mandatory	0627104359
11	Systems trace audit number	Mandatory	000116
12	Time, local transaction	Mandatory	104359
13	Date, local transaction	Mandatory	0627
39	Response code	Mandatory	00
41	Card acceptor terminal id	Mandatory	20390014
62	Private, management data 1	Conditional	410155V015999000006242019DSTV Subscr. (UPSL)410155V025999000000142018Airtel(Citiserive)410155V025999000002942015MTN (CitiServe)410155V035999001042942018DSTV (Interswitch)
64	Primary Message Hash Value	Mandatory	c7adaec0bf1c5da51b448edfa3f30627b790037b5d4348250b1393448d2c8c42

The following represents the tags that can be present field 62 for the Biller parameter download response message.

- Field 62: Private, management data 1**

It contains several informative sub-fields structured in tags.

Each sub-field is formed using the following structure:

Tag+LLL+data

In this case: **410155V015999000006242019DSTV Subscr.(UPSL)410155V02599900000142018Airtel(Citiserive)410155V025999000002942015MTN(CitiServe)410155V035999001042942018DSTV(Interswitch)**

**Table 14 - Field #62 in the 0810 Biller Parameter download response message**

Tag	Description	Len	Value
41	Biller identification code	015	5V0159990000062
42	Biller name	019	DSTV Subscr. (UPSL)
41	Biller identification code	015	5V0259990000001
42	Biller name	018	Airtel (Citiserve)
41	Biller identification code	015	5V0259990000029
42	Biller name	015	MTN (CitiServe)
41	Biller identification code	015	5V0359990010429
42	Biller name	018	DSTV (Interswitch)



## 7.2 0800 Biller Subscription Information Download (4D)

### 7.2.1 Request - 4D

Table 15 - 0800 Biller Subscription Information download request message

Field	Description	Field presence in specification	Sample Details
	Transaction Type	Mandatory	0800
	BitMap	Mandatory	2238000000800005
3	Processing code	Mandatory	4D0000
7	Transmission date and time	Mandatory	0703105536
11	Systems trace audit number	Mandatory	000033
12	Time, local transaction	Mandatory	105536
13	Date, local transaction	Mandatory	0703
41	Card acceptor terminal id	Mandatory	20390006
62	Private, management data 1	Mandatory	0100881126029410155V01599900000622
64	Primary Message Hash Value	Mandatory	B9114985F04CD831D8BB88A9220A7161E F4A0B8855BD1A37BB6854DE537BD0D9

The following represents the tags that can be present field 62 for the Biller Subscription Information download request message.

- **Field 62: Private, management data 1**

It contains several informative sub-fields structured in tags.

Each sub-field is formed using the following structure:

Tag+LLL+data

In this case: **0100881126029410155V0159990000062**

Table 16 - Field #62 in the 0800 Biller Subscription Information download request message

Tag	Description	Len	Value
01	POS/Payment Channel Serial Number	011	00881126029
41	Biller identification code	015	5V0159990000062

## 7.2.2 Response - 4D

Table 17 - 0810 Biller Subscription Information download response message

Field	Description	Field presence in specification	Sample Details
	Transaction Type	Mandatory	0810
	BitMap	Mandatory	0238000002800005
7	Transmission date and time	Mandatory	0703105536
11	Systems trace audit number	Mandatory	000033
12	Time, local transaction	Mandatory	105536
13	Date, local transaction	Mandatory	0703
39	Response code	Mandatory	00
41	Card acceptor terminal id	Mandatory	20390006
62	Private, management data 1	Conditional	43011SMARTCARDNO44000
64	Primary message hash value	Mandatory	f1168a2fba027a94dadadaf6e77b8017a070a bf0f6addf0b3d018c956631f980

The following represents the tags that can be present field 62 for the Biller Subscription Information download response message.

- **Field 62: Private, management data 1**

It contains several informative sub-fields structured in tags.

Each sub-field is formed using the following structure:

Tag+LLL+data

In this case: **43011SMARTCARDNO44000**

Table 18 - Field #62 in the 0810 Biller Subscription Information download response message

Tag	Description	Len	Value	Observation
43	Required information name	011	SMARTCARDNO	
44	Default value	000		(Dimension = 000, no value present)

## 7.3 0800 Product List Download (4C)

### 7.3.1 Request - 4C

Table 19 - 0800 Product List download request message

Field	Description	Field presence in specification	Sample Details
	Transaction Type	Mandatory	0800
	BitMap	Mandatory	2238000000800005
3	Processing code	Mandatory	4C0000
7	Transmission date and time	Mandatory	0703105426
11	Systems trace audit number	Mandatory	000026
12	Time, local transaction	Mandatory	105426
13	Date, local transaction	Mandatory	0703
41	Card acceptor terminal id	Mandatory	20390006
62	Private, management data 1	Mandatory	0100881126029410155V0159990000062
64	Primary message hash value	Mandatory	365A34CC9FF5C78EF0383B5CA945A0D08051FC93D4A4D4ADD23B3BEE97B5D8A1

The following represents the tags that can be present in field 62 for the Product List download request message.

- Field 62: Private, management data 1**

It contains several informative sub-fields structured in tags.

Each sub-field is formed using the following structure:

Tag+LLL+data

In this case: **0100881126029410155V0159990000062**

Table 20 - Field #62 in the 0800 Product List download request message

Tag	Description	Len	Value
01	POS/Payment Channel Serial Number	011	00881126029
41	Bill identification code	015	5V0159990000062

## 7.3.2 Response - 4C

**Table 21 - 0810 Product List download response message**

Field	Description	Field presence in specification	Details
	Transaction Type	Mandatory	0810
	BitMap	Mandatory	02380000028000005
7	Transmission date and time	Mandatory	0703161319
11	Systems trace audit number	Mandatory	000094
12	Time, local transaction	Mandatory	161319
13	Date, local transaction	Mandatory	0703
39	Response code	Mandatory	00
41	Card acceptor terminal id	Mandatory	20390006
62	Private, management data 1	Conditional	45010000000000346015AirtelN2000.004701200000200000
64	Primary Message Hash Value	Mandatory	06f1aad899d36e8421ccac8421b02f76c2a57891e6d5417535757e36a8dbc1b4

The following represents the tags that can be present field 62 for the Product List download response message.

- Field 62: Private, management data 1**

It contains several informative sub-fields structured in tags.

Each sub-field is formed using the following structure:

Tag+LLL+data

In this case: **45010000000000346015AirtelN2000.004701200000200000**

**Table 22 - Field #62 in the 0810 Product List download response message**

Tag	Description	Len	Value
45	Product identification code	010	0000000003
46	Product name	015	Airtel N2000.00
47	Product amount	012	000000200000

## 7.4 0800 Payment Validation (4E)

### 7.4.1 Request – 4E

Table 23 - 0800 Payment Validation request message

Field	Description	Field presence in specification	Sample Details
	Transaction Type	Mandatory	0800
	BitMap	Mandatory	2238000000800005
3	Processing code	Mandatory	4E0000
7	Transmission date and time	Mandatory	0207115233
11	Systems trace audit number	Mandatory	000146
12	Time, local transaction	Mandatory	115233
13	Date, local transaction	Mandatory	0207
41	Card acceptor terminal id	Mandatory	2UP11291
62	Private, management data 1	Mandatory	01009321700091410155V010003000000348 024Phone Number=08183953752
64	Primary message hash value	Conditional	8330D0A5C8745CE76DA60B713B2D9105F2EF 4BAE659AF938D9BB8F260C423A2F

The following represents the tags that can be present in field 62 for the Payment Validation request message.

- Field 62: Private, management data 1**

It contains several informative sub-fields structured in tags.

Each sub-field is formed using the following structure:

Tag+LLL+data, where Tag is composed by 2 digits.

In the previous example:

**01009321700091410155V010003000000348024Phone Number=08183953752**

Table 24 - Field #62 in the 0800 Payment Validation

Tag	Description	Len	Value
01	POS/Payment Channel Serial Number	009	321700091
41	Billor identification code	015	5V0100030000003
48	Payment Code	024	Phone Number=08183953752

## 7.4.2 Response – 4E

Table 25 - 0810 Payment Validation response message

Field	Description	Field presence in specification	Details
	Transaction Type	Mandatory	0810
	BitMap	Mandatory	02380000028000005
3	Processing code	Mandatory	4E0000
7	Transmission date and time	Mandatory	0207115233
11	Systems trace audit number	Mandatory	000146
12	Time, local transaction	Mandatory	115233
13	Date, local transaction	Mandatory	0207
39	Response code	Mandatory	00
41	Card acceptor terminal id	Mandatory	2UP11291
62	Private, management data 1	Conditional	49152Billerid=5V0100030000003  TerminalId=2UP11291  CustomerID=08183953752  InvoiceNumber=  CustomerName=  TransactionAmount=0  TransactionFee=0  RespCode=00
64	Primary Message Hash Value	Conditional	06f1aad899d36e8421ccac8421b02f76c2a5789 1e6d5417535757e36a8dbc1b4

The following represents the tags that can be present field 62 for the Payment Validation response message.

- Field 62: Private, management data 1**

It contains several informative sub-fields structured in tags.

Each sub-field is formed using the following structure:

Tag+LLL+data where Tag is composed by 2 digits.

In the previous example:

**49152Billerid=5V0100030000003||TerminalId=2UP11291||CustomerID=08183953752||InvoiceNumber=||CustomerName=||TransactionAmount=0||TransactionFee=0||RespCode=00**

Table 26 - Field #62 in the 0810 Payment Validation response message

Tag	Description	Len	Value
49	Payment Validated Information	152	Billerid=5V0100030000003  TerminalId=2UP11291  CustomerID=08183953752  InvoiceNumber=  CustomerName=  TransactionAmount=0  TransactionFee=0  RespCode=00



## 7.5 0200 Bill Payment (48)

### 7.5.1 Request - 48

Table 27 - 0200 Bill Payment request message

Field	Description	Field presence in specification	Sample Details
	Transaction Type	Mandatory	0200
	BitMap	Mandatory	
2	Primary account number	Mandatory	418742*****2306
3	Processing code	Mandatory	481000
4	Amount, transaction	Mandatory	000000020000
7	Transmission date and time	Mandatory	0208101511
11	Systems trace audit number	Mandatory	000141
12	Time, local transaction	Mandatory	101511
13	Date, local transaction	Mandatory	0208
14	Date, expiration	Mandatory	1708
18	Merchant's type	Mandatory	5499
22	POS entry mode	Mandatory	051
23	Card sequence number	Conditional	001
25	POS condition code	Mandatory	00
26	POS PIN capture code	Conditional	12
28	Amount, transaction fee	Mandatory	D000000000
32	Acquiring institution id code	Mandatory	111129
35	Track 2 data	Conditional	418742*****2306D1708***** *****
37	Retrieval reference number	Mandatory	170208101511
40	Service restriction code	Optional	226
41	Card acceptor terminal id	Mandatory	2063H738
42	Card acceptor id code	Mandatory	2063KW00A007316
43	Card acceptor name/location	Mandatory	BMK GROCERIES KW KWNG
49	Currency code, transaction	Mandatory	566
55	Integrated Circuit Card System Related Data	Conditional	9F2608CA653B7137E51E669F2701 809F100706010A03A420009F3704 CA0BD0D49F360203B99505408000 88009A031702089C01239F020600 00000200005F2A02056682025C00 9F1A0205669F34034102029F3303 E0F0C89F3501229F1E0838303032 363735389F090201009F03060000 000000005F340101

56	Message reason code	Optional	1510
60	Payment Information	Conditional	410155V010001000000145010000 000007450024Phone Number=08034255068
123	POS data code	Mandatory	511201513144001
128	MAC Extended	Mandatory	828D0296A1EB38CFC02E4E9F9604 051359628FC194F88BED69365AE5 441432A9

## 7.5.2 Response- 48

Table 28 - 0210 Bill Payment response message

Field	Description	Field presence in specification	Sample Details
	Transaction Type	Mandatory	0210
	BitMap	Mandatory	
2	Primary account number	Mandatory	418742*****2306
3	Processing code	Mandatory	481000
4	Amount, transaction	Mandatory	000000020000
7	Transmission date and time	Conditional	0208101511
11	System trace audit number	Conditional	000141
12	Time, local transaction	Mandatory	101511
13	Date, local transaction	Conditional	0208
14	Date, expiration	Conditional	1708
15	Date, Settlement	Conditional	
18	Merchant's type	Mandatory	5499
22	POS entry mode	Mandatory	051
23	Card Sequence Number	Conditional	001
25	POS condition code	Mandatory	00
26	POS PIN Capture code	Conditional	12
28	Amount, transaction fee	Conditional	D00000000
30	Amount, transaction processing fee	Conditional	
32	Acquiring instituion id code	Mandatory	111129
33	Forwarding institution id code	Conditional	

35	Track 2 data	Conditional	418742*****2306D1708***** ***
37	Retrieval reference number	Mandatory	170208101511
38	Authorizationid response	Conditional	
39	Response code	Mandatory	00
40	Service restriction code	Conditional	226
41	Card acceptor terminal id	Optional	2063H738
42	Card acceptor id code	Conditional	2063KW00A007316
43	Card acceptor name/location	Conditional	BMK GROCERIES KW KWNG
49	Currency code, transaction	Mandatory	566
54	Additional amounts	Conditional	
56	Message Reason code	Conditional	1510
59	Transport (echo) data	Conditional	
60	Payment Information	Conditional	50024Phone Number=08034255068
102	Account identification 1	Optional	
123	POS data code	Mandatory	511201513144001
127.1	Bitmap	Optional	0000008000000000
127.3	Routing Information	Optional	
127.6	Authorization Profile	Optional	
127.20	Originator/Authorizer date settlement	Optional	
127.25	ICC Data	Optional	1053<?xml version="1.0" encoding="UTF-8"?> <IccData><IccRequest><Cryptogram>CA653B7137E51E66</Cryptogram><CryptogramInformationData>80</CryptogramInformationData><IssuerApplicationData>06010A03A42000</IssuerApplicationData><UnpredictableNumber>CA0BD0D4</UnpredictableNumber><ApplicationTransactionCounter>03B9</ApplicationTransactionCounter><TerminalVerificationResult>4080008800</TerminalVerificationResult><TransactionDate>170208</TransactionDate><TransactionType>23</TransactionType><AmountAuthorized>000000020000</AmountAuthorized><TransactionCurrencyCode>566</TransactionCurrencyCode><ApplicationInterchangeProfile>5C00</ApplicationInterchangeProfile><TerminalCountryCode>566</TerminalCountryCode><CvmResults>410202</C

			vmResults><TerminalCapabilities>E0F0C8</TerminalCapabilities><TerminalType>22</TerminalType><InterfaceDeviceSerialNumber>80026758</InterfaceDeviceSerialNumber><TerminalApplicationVersionNumber>0100</TerminalApplicationVersionNumber><AmountOther>000000000000</AmountOther><ChipConditionCode>0</ChipConditionCode></IccRequest></IccData>
128	Secondary Message Hash Value	Mandatory	0bc9ec7cdc254959279b4328f7891ffc2db3973ea3313b7e066a85d57a32e25a

**Note:** Please, note that the ICC data is being translated to DE55 before sending to the Terminal.

## 7.6 0200 Prepaid (4A)

### 7.6.1 Request – 4A

**Table 29 - 0200 Prepaid request message**

Field	Description	Field presence in specification	Sample Details
	Transaction Type	Mandatory	0200
	BitMap	Mandatory	
2	Primary account number	Mandatory	539983*****5088
3	Processing code	Mandatory	4A1000
4	Amount, transaction	Mandatory	000000050000
7	Transmission date and time	Mandatory	0916164924
11	Systems trace audit number	Mandatory	000031
12	Time, local transaction	Mandatory	164924
13	Date, local transaction	Mandatory	0916
14	Date, expiration	Mandatory	1602
18	Merchant's type	Mandatory	4815
22	POS entry mode	Mandatory	051
23	Card sequence number	Conditional	000
25	POS condition code	Mandatory	00
26	POS PIN capture code	Conditional	12
28	Amount, transaction fee	Mandatory	D000000000
32	Acquiring institution id code	Mandatory	111129

35	Track 2 data	Conditional	539983*****5088D1602***** *****
37	Retrieval reference number	Mandatory	32A630240031
40	Service restriction code	Optional	221
41	Card acceptor terminal id	Mandatory	2232A630
42	Card acceptor id code	Mandatory	SBP1099078SA000
43	Card acceptor name/location	Mandatory	SIYANBOLA ABIODUN OYEWA LANG
49	Currency code, transaction	Mandatory	566
55	Integrated Circuit Card System Related Data	Conditional	9F2608DB6F6CAAB9D8F3A69F2701 809F10120110A500030200008CB3 00000000000000FF9F37043CAD0D 8E9F360200F2950500800088009A 031409169C01239F0206000000005 00005F2A020566820258009F1A02 05669F34034103029F3303E0F0C8 9F3501229F1E0838313633343738 329F0902008C9F03060000000000 005F340100
56	Message reason code	Optional	1510
60	Payment Information	Conditional	410155V025999000002945010000 000000250017MSIDN=0706644909 7
123	POS data code	Mandatory	511201513144002
128	MAC Extended	Mandatory	358521C86494BDE21202AEC6B331 FB8E85530F725D26F8B811EF74EE 9B9A81A5

## 7.6.2 Response- 4A

Table 30 - 0210 Prepaid response message

Field	Description	Field presence in specification	Sample Details
	Transaction Type	Mandatory	0210
	BitMap	Mandatory	
2	Primary account number	Mandatory	539983*****5088
3	Processing code	Mandatory	4A1000
4	Amount, transaction	Mandatory	000000050000
7	Transmission date and time	Conditional	0916164924
11	System trace audit number	Conditional	000031

12	Time, local transaction	Mandatory	164924
13	Date, local transaction	Conditional	0916
14	Date, expiration	Conditional	1602
15	Date, Settlement	Conditional	0916
18	Merchant's type	Mandatory	4815
22	POS entry mode	Mandatory	051
25	POS condition code	Mandatory	00
28	Amount, transaction fee	Conditional	C00000000
30	Amount, transaction processing fee	Conditional	C00000000
32	Acquiring institution id code	Mandatory	627629
33	Forwarding institution id code	Conditional	111129
35	Track 2 data	Conditional	539983*****5088D1602*****
37	Retrieval reference number	Mandatory	32A630240031
38	Authorizationid response	Conditional	737079
39	Response code	Mandatory	00
40	Service restriction code	Conditional	221
41	Card acceptor terminal id	Optional	2057N045
42	Card acceptor id code	Conditional	2057LA000011520
43	Card acceptor name/location	Conditional	SIYANBOLA ABIODUN OYEWA LANG
49	Currency code, transaction	Mandatory	566
54	Additional amounts	Conditional	1002566C0000000212531001566C0000000212531053566D0000000050000
59	Transport (echo) data	Conditional	2232A6305V02599900000290000000002MSIDN=07066449097
60	Payment Information	Conditional	Token=AAAA-BBBB-CCCC-DDDD
102	Account identification 1	Optional	481044212401005900
123	POS data code	Mandatory	511201513144002
127.1	Bitmap	Optional	2400108000000000
127.3	Routing Information	Optional	ZIBNCSSWTScrZIBSWTSnk000031000031GTB_MCTG
127.6	Authorization Profile	Optional	11
127.20	Originator/Authorizer date settlement	Optional	20140916
127.25	ICC Data	Optional	0226<?xml version="1.0"encoding="UF-8"?><IccData><IccResponse><ApplicationTransactionCounter>00F2</ApplicationTransactionCounter>

---

			unter><IssuerAuthenticationData>3E 97A4BE02F342D 60012</IssuerAuthenticationData></ IccResponse></IccData>
--	--	--	---

**Note:** Please, note that the ICC data is being translated to DE55 before sending to the Terminal.

## 8 Host-VAS Provider Interface - Web Services

This chapter describes the functional characteristics of the operations performed within the web service interface between the Host and the VAS Providers.

The operations performed using this interface are:

- **Bill Payment Notification**

This service allows the Host to notify the Biller that payment has been made after obtaining an approval of the payment from the NCS.

This service will trigger in the Biller the release of the product or service.

This service is used when the POS made a Bill Payment transaction (48).

- **Bill Payment Notification with Token**

This service also allows the Host to notify the Biller that payment has been made after obtaining an approval of the payment from the NCS.

This service will trigger in the Biller the release of the product or service. In reply, the VAS Provider will issue a token that needs to be sent to the POS.

This service is used when the POS made a Prepaid transaction (4A).

- **Payment Validation**

This service allows to ask for the Biller to validate information about the Bill Payment. This service is used in the sequence a Payment Validation request message sent from the POS to the Host.

- **Reversal**

This service allows to reverse a previous Bill Payment Notification or Bill Payment Notification with Token.

This service is used in the following scenarios:

- A Bill Payment Notification Web Service Request (with or without token) has been made from the Host to the VAS Provider but no response has been received Web Service Interface.
- A Reversal request has been sent from the POS to the Host to reverse a Bill Payment or PrePaid request.

Although with the same format as the other operations, the VAS Provider reversal will be communicated in a specific operation named "BillPaymentNotificationReversal".



## 8.1 Request and Response Format

The format of the request and response messages in a Bill Payment operation between the HOST and the VAS Provider consists of several fields separated by the following characters: '| '.

Each field is composed by a name, followed by the '=' sign, and followed by the value of the field.

**Sample:**

```
BillId=4V025999XXXXX30|ProductCode=XXXXX00006|BetNumber=N1,N2,N3,N4,N5,N6|MOBILE=070XXXXX430|Amount=000000010000|TerminalId=XXX202JE|MerchantId=XXX2FC000007701|RetrievalRefNumber=3202JE53XXXX|DateTime=0731170253
```

## 8.2 Security

The messages exchanged between the Host and the VAS Provider uses public key cryptography to secure the exchanged messages.

The Security Module generates public and private keys for NIBSS, encrypts the messages sent to the Biller and decrypts the ones received from the Biller. The public key is the key for encryption, while the private key is used for decryption. Each integrating party will submit its public key to NIBSS and keep its private key secret while NIBSS shares its public key with the integrating party's designated officer(s) while keeping its private key secret.

Every message is completely encrypted during exchange between parties.

## 8.3 Bill Payment Notification

The Bill Payment Notification is used to notify a Biller that a Bill Payment operation was successfully performed.

On a Bill Payment operation, the POS terminal originates a Bill Payment request message which is received by the HOST. The HOST forwards a purchase request to the NCS which is then processed by different participants until a reply is received from the HOST server.

Upon receiving a successful response, the HOST sends a Bill Payment Notification to the VAS Provider of the Biller. After receiving the notification, the VAS Provider sends a response message to the HOST. Once the HOST gets the reply from the VAS Provider it replies to the Bill Payment request made by the POS terminal.

### 8.3.1 Request

The request message sent from the HOST server to the VAS Provider is composed of TAGS of fields separated by the '|' symbol. The following table illustrates the feature of each field within the request message.

Table 31 - Bill Payment Notification – Request

Field Code	Field Name	Length	Sample
B0001	BillerId	15	5V0100010000001
B0002	ProductCode	10	0000000074
B0003	CustomerSubscriptionInformation	< 975	Phone Number=08034255068
B0005	Amount	12	000000000200
B0006	TerminalId	8	2063H738
B0007	MerchantId	15	2063KW00A007316
B0008	RetrievalRefNumber	12	170208101511
B0009	DateTime	10	0208101511

### 8.3.1.1 Mapping with ISO 8583 message

The next table establishes the relationship between the ISO Bill Payment Request message sent by the POS and the notification performed by the HOST to the VAS Provider of the Biller.

**Table 32 - Bill Payment Notification – Request Mapping**

ISO 8583 Message – Bill Payment Notification Request (POS)					Bill Payment Notification Request (Biller)		
Field	Description	Format	Tag	Source	Field	Description	Format
60	Private Field, Management Data 1	Tag + LLL + data	<b>41</b> - Biller Identification Code	From 0200 of POS	B0001	BillerId	C15
60	Private Field, Management Data 1	Tag + LLL + data	<b>45</b> - Product Identification Code	From 0200 of POS	B0002	ProductCode	C10
60	Private Field, Management Data 1	Tag + LLL + data	<b>50</b> - Customer Subscription Information	From 0200 of POS	B0003	Customer Subscription Information	< C975
4	Amount, transaction	C12		From 0200	B0005	Amount	C12
41	Card Acceptor Terminal ID	C8		From 0200	B0006	TerminalId	C8
42	Card Acceptor ID code	C15		From 0200	B0007	MerchantId	C15
37	Retrieval Reference number	C12		From 0200	B0008	RetrievalRefNumber	C12
7	Transmission Date and Time	N10		From 0200	B0009	DateTime	N10

### 8.3.2 Reply

The reply message is sent from the VAS Provider back to the HOST. The format is similar to the request message, but now contains a Response Code. The table below illustrates the feature of each field name within the request message.

**Table 33 - Bill Payment Notification - Reply**

Field Code	Field Name	Length	Sample
B0001	BillId	15	5V0100010000001
B0002	ProductCode	10	0000000074
B0003	CustomerSubscriptionInformation	< 975	BetNumber=08034255068  MOBILE=
B0005	Amount	12	000000000200
B0006	TerminalId	8	2063H738
B0007	MerchantId	15	2063KW00A007316
B0008	RetrievalRefNumber	12	170208101511
B0010	RespCode	2	00

### 8.3.2.1 Mapping with ISO 8583 message

The next table establishes the relationship between the message replied by the VAS Provider and the reply sent to the POS.

**Table 34 - Bill Payment Notification– Reply Mapping**

Bill Payment Notification Reply (VAS PROVIDER)			ISO 8583 Message – Bill Payment Notification Reply (POS)				
Field	Description	Format	Field	Description	Format	Tag	OBS
B0001	BillerId	C15	INFORMATION IS DISCARDED				
B0002	ProductCode	C10	INFORMATION IS DISCARDED				
B0003	CustomerSubscriptionInformation	< C975	60	Private Field, Management Data 1	Tag + LLL + data	<b>50 -</b> Customer Subscription Information	to 0210
B0005	Amount	C12	4	Amount, transaction	C12		to 0210
B0006	TerminalId	C8	41	Card Acceptor Terminal ID	C8		to 0210
B0007	MerchantId	C15	42	Card Acceptor ID code	C15		to 0210
B0008	RetrievalRefNumber	C12	37	Retrieval Reference number	C12		to 0210
B0010	RespCode	C2	39	Response Code	C2		to 0210

**Note:** Tag 50: Customer Subscription Information is an optional tag in the response from the HOST to the POS terminal.

**Note:** Field B0003 CustomerSubscriptionInformation should be equal to the field B0003 CustomerSubscriptionInformation that was sent on the request from POS Terminal and not the one sent in VAS response.

## 8.4 Bill Payment Notification with Token

The Bill Payment Notification with Token is used to notify a Biller that a Bill Payment operation was successfully performed. The reply from the VAS Provider of the Biller contains additional information (Token) that needs to be transferred to the POS in the HOST reply.

The Bill Payment Notification with Token follows the same process as the “regular” Bill Payment, but this time, a token is sent from the Biller to the HOST server (after a notification from the HOST server), which is sent to the POS terminal for the completion of the transaction. The customer will use this token as an access to the service being paid at the POS terminal. If the Biller is unable to send a token to the HOST server, the HOST does not reply to the POS terminal, the POS terminal will reverse the transaction.

### 8.4.1 Request

The next table describes the request message sent from the HOST to the VAS Provider for a Bill Payment Notification with Token.

**Table 35 - Bill Payment Notification with Token – Request**

Field Code	Field Name	Length	Sample
B0001	BillerId	15	4V025999XXXXX30
B0002	ProductCode	10	XXXXX00006
B0003	CustomerSubscriptionInformation	< 975	BetNumber=N1,N2,N3,N4,N5,N6   MOBILE=070XXXXX430
B0005	Amount	12	000000010000
B0006	TerminalId	8	XXX202JE
B0007	MerchantId	15	XXX2FC000007701
B0008	RetrievalRefNumber	12	3202JE53XXXX
B0009	DateTime	10	0731170253

### 8.4.1.1 Mapping with ISO 8583 message

The next table establishes the relationship between the message sent by the POS and the request to the VAS Provider.

**Table 36 - Bill Payment Notification with Token – Request Mapping**

ISO 8583 Message – Bill Payment Notification with Token Request (POS)					Bill Payment Notification with Token Request (VAS PROVIDER)		
Field	Description	Format	Tag	Source	Field	Description	Format
60	Private Field, Management Data 1	Tag + LLL + data	41 - Biller Identification Code.	From 0200 of POS	B0001	BillerId	C15
60	Private Field, Management Data 1	Tag + LLL + data	45 - Product Identification Code	From 0200 of POS	B0002	ProductCode	C10
60	Private Field, Management Data 1	Tag + LLL + data	50 - Customer Subscription Information	From 0200 of POS	B0003	CustomerSubscriptionInformation	< C975
4	Amount, transaction	C12		From 0200	B0005	Amount	C12
41	Card Acceptor Terminal ID	C8		From 0200	B0006	TerminalId	C8
42	Card Acceptor ID code	C15		From 0200	B0007	MerchantId	C15
37	Retrieval Reference number	C12		From 0200	B0008	RetrievalRefNumber	C12
7	Transmission Date and Time	N10		From 0200	B0009	DateTime	N10

### 8.4.2 Reply

The reply message is sent from the VAS Provider after receiving a notification from the HOST. The VAS Provider attaches a token to the message which will be sent by the HOST to the POS terminal to complete the transaction. The format is similar to the request message, but contains a Response Code and a Token. The table below illustrates the feature of each field name within the request message.

Table 37 - Bill Payment Notification with Token – Reply

Field Code	Field Name	Length	Sample
B0001	BillId	15	4V025999XXXXX30
B0002	ProductCode	10	XXXXX00006
B0003	CustomerSubscriptionInformation	< 975	BetNumber=N1,N2,N3,N4,N5,N6   MOBILE=070XXXXX430
B0005	Amount	12	000000010000
B0006	TerminalId	8	XXX202JE
B0007	MerchantId	15	XXX2FC000007701
B0008	RetrievalRefNumber	12	3202JE53XXXX
B0009	DateTime	10	0731170253
B0010	RespCode	2	00
B0011	Token	500	AAAA-BBBB-CCCC-DDDD



### 8.4.2.1 Mapping with ISO 8583 message

Table 38 - Bill Payment Notification with Token – Reply mapping

Bill Payment Notification with Token Reply (VAS PROVIDER)			ISO 8583 Message – Bill Payment Notification with Token Reply (POS)				
Field	Description	Format	Field	Description	Format	Tag	OBS
B0001	BillerId	C15	60	INFORMATION IS DISCARDED			
B0002	ProductCode	C10	60	INFORMATION IS DISCARDED			
B0003	CustomerSubscriptionInformation	<C975	60	Private Field, Management Data 1	Tag + LLL + data	<b>50</b> - Customer Subscription Information (1)	To 0210
B0005	Amount	C12	4	Amount, transaction	C12		To 0210
B0006	TerminalId	C8	41	Card Acceptor Terminal ID	C8		To 0210
B0007	MerchantId	C15	42	Card Acceptor ID code	C15		To 0210
B0008	RetrievalRefNumber	C12	37	Retrieval Reference number	C12		To 0210
B0009	DateTime	N10	7	Transmission Date and Time	N10		To 0210
B0010	RespCode	C2	39	Response Code	C2		To 0210
B0011	Token	User-defined	60	Private Field, Management Data 1	Tag + LLL + data	<b>51</b> – Token (2)	To 0210

**Notes:**

- (1) *Tag 50: Customer Subscription Information is an optional tag in the response from the HOST to the POS terminal.*
- (2) *If more than one token exists, they should be separated by comma ','.*

## 8.5 Payment Validation

The Payment Validation allows the POS terminal application to validate information of the customer (subscriber) before payment is committed

### 8.5.1 Request

The request message contains the following fields:

**Table 39 - Payment Validation – Request**

Field Code	Field Name	Length	Sample
B0001	BillerId	15	5V0100030000003
B0004	PaymentCode	< 975	Phone Number=08183953752
B0006	TerminalId	8	2UP11291
B0009	DateTime	10	0207115233

#### 8.5.1.1 Mapping with ISO 8583 message

**Table 40 - Payment Validation – Request mapping**

ISO 8583 Message – Payment Validation Request (POS)					Payment Validation Request (VAS PROVIDER)		
Field	Description	Format	Tag	Source	Field	Description	Format
62	Private Field, Management Data 1	Tag + LLL + data	<b>41</b> - Biller Identification Code.	From 0200 of POS	B0001	BillerId	C15
41	Card Acceptor Terminal ID	C8		From 0200 of POS	B0006	TerminalId	C8
7	Transmission Date and Time	N10 - MMDDhmmss		From 0200	B0009	DateTime	N10
62	Private Field, Management Data 1	Tag + LLL + data	<b>48</b> - Payment Code.	From 0200	B0004	PaymentCode	< C975

## 8.5.2 VAS Provider to HOST – Payment Validation Response

The reply message contains the fields listed in the next table.

**Table 41 - Payment Validation – Reply**

Field Code	Field Name	Length	Sample
B0001	BillerId	15	5V01000300000003
B0006	TerminalId	8	2UP11291
B0012	PaymentValidatedInformation	< 975	CustomerID=08183953752  InvoiceNumber=  CustomerName=
B0015	TransactionAmount	12	0
B0016	TransactionFee	15	0
B0010	RespCode	2	00

### 8.5.2.1 Mapping with ISO 8583 message

**Table 42 - Payment Validation – Reply mapping**

Payment Validation Reply (VAS PROVIDER)			ISO 8583 Message – Payment Validation Reply (POS)				
Field	Description	Format	Field	Description	Format	Tag	OBS
B0001	BillerId	C15	62	Private Field, Management Data 1	Tag + LLL + data	<b>49</b> - Payment Validated Information	0200
B0006	TerminalId	C8	41	Card Acceptor Terminal ID	C8		0200
			62	Private Field, Management Data 1	Tag + LLL + data	<b>49</b> - Payment Validated Information	0200
B0012	PaymentValidatedInformation	< C975	62	Private Field, Management Data 1	Tag + LLL + data	<b>49</b> - Payment Validated Information	0200
B0015	TransactionAmount	12	62	Private Field, Management Data 1	Tag + LLL + data	<b>49</b> - Payment Validated Information	0200
B0016	Transaction Fee	C15	62	Private Field, Management Data 1	Tag + LLL + data	<b>49</b> - Payment Validated Information	0200
B0009	DateTime	N10	7	Transmission Date and Time	N10 - MMDDhhmmss		0200

			62	Private Field, Management Data 1	Tag + LLL + data	<b>49</b> - Payment Validated Information	0200
B0010	RespCode	C2	39	Response Code	C2		0200
			62	Private Field, Management Data 1	Tag + LLL + data	<b>49</b> - Payment Validated Information	0200

## 8.6 Reversal

The reversal transaction notification occurs whenever there is a communication error during the Bill Payment operation. The POS terminal initiates this operation by sending a reversal message to the HOST server. The HOST server sends the message to the NCS server until the message reaches the Issuer. The HOST server notifies the VAS Provider of the reversal. Although with the same format as the other operations, the reversal will be communicated to the VAS Provider in a specific operation named "BillPaymentNotificationReversal".

### 8.6.1 Request

The following table shows the data required in the Reversal request message:

**Table 43 – VAS Provider Reversal – Request**

Field Code	Field Name	Length	Sample
B0001	BillerId	15	4V025999XXXXX30
B0006	TerminalId	8	XXX202JE
B0007	MerchantId	15	XXX2FC000007701
B0008	RetrievalRefNumber	12	3202JE53XXXX
B0009	DateTime	10	0731170255
B0002	OriginalProductCode	10	XXXXX00006
B0003	OriginalCustomerSubscriptionInfo	< 975	BetNumber=N1,N2,N3,N4,N5,N6   MOBILE=070XXXXX430
B0005	OriginalAmount	12	000000010000
B0008	OriginalRetrievalRefNumber	12	3202JE53XXXX
B0009	OriginalDateTime	10	0731170253

### 8.6.1.1 Mapping with ISO 8583 message

The next table establishes the relationship between the message sent by the POS and the request to the VAS Provider.

**Table 44 - VAS Provider Reversal – Request mapping**

ISO 8583 Message – Bill Payment Reversal (POS)					Bill Payment Notification Reversal (VAS PROVIDER)		
Field	Description	Format	Tag	Source	Field	Description	Format
60	Private Field, Management Data 1	Tag + LLL + data	41 - Biller Identification Code.	From 0200 of POS	B0001	BillerId	C15
41	Card Acceptor Terminal ID	C8		From 0200	B0006	TerminalId	C8
42	Card Acceptor ID code	C15		From 0200	B0007	MerchantId	C15
37	Retrieval Reference number	C12		From 0200	B0008	RetrievalRefNumber	C12
7	Transmission Date and Time	N10		From 0200	B0009	DateTime	N10

All the remaining fields of the Bill Payment Notification Reversal (Name=Original\*) are from the original transaction and therefore have no correspondence with the POS ISO8583 Reversal message.

### 8.6.2 Reply

The reply message is sent from the VAS Provider back to the HOST. The format is similar to the request message, but now contains a Response Code. The table below illustrates the feature of each field name within the reply message.

**Table 45 – VAS Provider Reversal – Reply**

Field Code	Field Name	Length	Sample
B0001	BillerId	15	4V025999XXXXX30
B0006	TerminalId	8	XXX202JE
B0007	MerchantId	15	XXX2FC000007701
B0008	RetrievalRefNumber	12	3202JE53XXXX

B0009	DateTime	10	0731170255
B0002	OriginalProductCode	10	XXXXX00006
B0003	OriginalCustomerSubscriptionInfo	< 975	BetNumber=N1,N2,N3,N4,N5,N6   MOBILE=070XXXXX430
B0005	OriginalAmount	12	000000010000
B0008	OriginalRetrievalRefNumber	12	3202JE53XXXX
B0009	OriginalDateTime	10	0731170253
B0010	RespCode	2	00

### 8.6.2.1 Mapping with ISO 8583 message

There is no mapping back from the VAS Provider reversal reply to the POS ISO8583 message since the reversal will be treated in a Pending & Cancel batch process and not in real-time following the POS ISO8583 Reversal request.

## 9 HOST-NCS

### 9.1 Purchase

#### 9.1.1 0200 Purchase Request

Table 46 - 0200 Purchase request message

Field	Description	Field presence in specification	Sample Details
2	Primary account number	Conditional	539983*****5088
3	Processing code	Mandatory	001000
4	Amount, transaction	Mandatory	000000050000
7	Transmission date and time	Mandatory	0916164924
11	Systems trace audit number	Mandatory	000031
12	Time, local transaction	Mandatory	164924
13	Date, local transaction	Mandatory	0916
14	Date, expiration	Conditional	1602
18	Merchant's type	Conditional	4815
22	POS entry mode	Mandatory	051
25	POS condition code	Mandatory	00
26	POS PIN capture code	Conditional	12
28	Amount, transaction fee	Optional	D000000000
32	Acquiring institution id code	Conditional	111129
35	Track 2 data	Conditional	539983*****5088D1602***** *****
37	Retrieval reference number	Mandatory	32A630240031
40	Service restriction code	Conditional	221
41	Card acceptor terminal id	Mandatory	2057N045
42	Card acceptor id code	Mandatory	2057LA000011520
43	Card acceptor name/location	Mandatory	SIYANBOLA ABIODUN OYEWA LANG
49	Currency code, transaction	Mandatory	566
56	Message reason code	Optional	1510
59	Transport (echo) data	Optional	2232A6305V0259990000029000000 0002MSIDN=07066449097
103	Account identification 2	Conditional	
123	POS data code	Mandatory	511201513144002
127.1	Bitmap	Conditional	0000008000000000
127.25	ICC Data	Optional	1128<?xml version="1.0"encoding="UTF F- 8" ?>

			<IccData><IccRequest><Cryptogram>DB6F6CAAB9D8F3A6</Cryptogram><CryptogramInformationData>80</CryptogramInformationData><IssuerApplicationData>0110A500030200008CB300000000000000FF</IssuerApplicationData><UnpredictableNumber>3CAD0D8E</UnpredictableNumber><ApplicationTransactionCounter>00F2</ApplicationTransactionCounter><TerminalVerificationResult>0080008800</TerminalVerificationResult><TransactionDate>140916</TransactionDate><TransactionType>23</TransactionType><AmountAuthorized>000000050000</AmountAuthorized><TransactionCurrencyCode>566</TransactionCurrencyCode><ApplicationInterchangeProfile>5800</ApplicationInterchangeProfile><TerminalCountryCode>566</TerminalCountryCode><CvmResults>410302</CvmResults><TerminalCapabilities>E0F0C8</TerminalCapabilities><TerminalType>22</TerminalType><InterfaceDeviceSerialNumber>81634782</InterfaceDeviceSerialNumber><ApplicationVersionNumber>008C</ApplicationVersionNumber><AmountOther>000000000000</AmountOther><ApplicationPrimaryAccountNumber>00</ApplicationPrimaryAccountNumber><ChipConditionCode>0</ChipConditionCode></IccRequest></IccData>
--	--	--	---



## 9.1.2 0210 Purchase Response

Table 47 - 0210 Purchase response message

Field	Description	Field presence in specification	Sample Details
2	Primary account number	Conditional	539983*****5088
3	Processing code	Optional	001000
4	Amount, transaction	Optional	000000050000
7	Transmission date and time	Mandatory	0916164924
11	Systems trace audit number	Mandatory	000031
12	Time, local transaction	Mandatory	164924
13	Date, local transaction	Mandatory	0916
14	Date, expiration	Optional	1602
15	Date, settlement	Conditional	0916
18	Merchant's type	Conditional	4815
22	POS entry mode	Mandatory	051
25	POS condition code	Mandatory	00
28	Amount, transaction fee	Optional	C00000000
30	Amount, transaction processing fee	Optional	C00000000
32	Acquiring institution id code	Optional	627629
33	Forwarding institution id code	Conditional	111129
35	Track 2 data	Conditional	539983*****5088D1602***** *****
37	Retrieval reference number	Optional	32A630240031
38	Authorization id response	Conditional	737079
39	Response code	Mandatory	00
40	Service restriction code	Conditional	221
41	Card acceptor terminal id	Mandatory	2057N045
42	Card acceptor id code	Mandatory	2057LA000011520
43	Card acceptor name/location	Optional	SIYANBOLA ABIODUN OYEWA LANG
49	Currency code, transaction	Mandatory	566
54	Additional amounts	Optional	1002566C0000000212531001566C0 000000212531053566D0000000500 00
59	Transport (echo) data	Conditional	2232A6305V0259990000029000000 0002MSIDN=07066449097
102	Account identification 1	Optional	481044212401005900
123	POS data code	Mandatory	511201513144002
127.1	Bitmap	Conditional	2400108000000000
127.3	Routing Information	Optional	ZIBNCSSWTScrZIBSWTSnk00003100 0031GTB_MCTG

---

127.6	Authorization profile	Optional	11
127.20	Originator/Authorizer date settlement	Optional	20140916
127.25	ICC data	Optional	0226<?xml version="1.0" encoding="U TF -8"?><IccData><IccResponse><ApplicationTransactionCounter>00F2</ApplicationTransactionCounter><IssuerAuthenticationData>3E97A4BE02F342D60012</IssuerAuthenticationData></IccResponse></IccData>

## Annex A. Web Services Data Dictionary

### **B0001 BILLER ID** **C** **15**

This is the ID assigned to the biller from NIBSS.

A set of alphanumeric characters of length 15.

Example:

```
BillerId=4V025999XXXXX30.
```

This Field can be found in the **Tag 41 (Biller Identification Code)** of the **Field #60 - Payment Information** or in **Tag 49 (Payment Validated Information)** of the **Field # 62 Private Field, Management Data 1** of the ISO8583 message interface between the HOST server and the POS terminal.

It is a mandatory field in the Request message of the Biller Payment Notification and the Payment Validation operations.

### **B0002 PRODUCT CODE** **C** **10**

This is the code assigned to products by NIBSS.

A set of alphanumeric characters of length 10.

Example:

```
ProductCode=XXXXX00006
```

This Field can be found in the **Tag 45 (Product Identification Code)** of the **Field #60 - Payment Information** of the ISO8583 message interface between the HOST server and the POS terminal.

It is a mandatory field in the Request message of the Biller Payment Notification operation.

### **B0003 CUSTOMER SUBSCRIPTION INFORMATION** **C** **< 975**

This is a Biller specified transaction parameter. It contains information details assigned to a customer during the Bill Payment Notification and Bill Payment Notification with Token operations. This element can be seen as an envelope carrying information externally provided (e.g. from the POS) in Tag 50 (Customer Subscription Information) of the **Field #60 - Payment Information** of the ISO8583 message interface between the HOST server and the POS terminal

The contents of B0003 will be on the form `<tag_1>=<value_1>`. If more that on pair `tag=value` exists they will be separated by the pipe sign "|". The contents organization of B0003 is a responsibility of the POS and VAS Provider (and not from the Host that is acting as an intermediary transporter).

**Content format:**

```
<tag_1>=<value_1>
```

If multiple pairs of <tag\_x>=<value\_x> exists they will be separated by the pipe sign "|", for instance:

```
<tag_1>=<value_1>||<tag_2>=<value_2>|| ... ||<tag_n>=<value_n>
```

### Example 1:

Consider the following contents of DE60:

```
410155V02599900000294501000000000250017MSIDN=07066449097
```

In this case, B0003 will be:

```
MSIDN=07066449097
```

### Example 2:

Consider the following contents of DE60:

```
410155V02599900000294501000000000250027BetNumber=N1,N2,N3,N4,N5,N6
```

In this case, B0003 will be:

```
BetNumber=N1,N2,N3,N4,N5,N6
```

### Example 3:

Consider the following contents of DE60:

```
410155V02599900000294501000000000250046BetNumber=N1,N2,N3,N4,N5,N6|MSIDN=07066449097
```

In this case, B0003 will be:

```
BetNumber=N1,N2,N3,N4,N5,N6|MSIDN=07066449097
```

## B0004 PAYMENT CODE

**C** < 975

This is biller specified transaction parameter to be sent in a **REQUEST** message. It contains information details assigned to a customer during the Payment Validation operation.

Format:

```
PaymentCode=xxxxxx
```

- Where PaymentCode is a property assigned to a customer. Example : CustomerID, product1, etc
- Where xxxxxx is a set of alphanumeric characters of a user-defined length.

Example:

```
CustomerID=00123456
```

The details of this field can be found in the Tag 48 (Payment Code) of the **Field #62 - Private Field, Management Data 1** of the ISO8583 message interface between the HOST server and the POS terminal during a request transaction.

**Tag 48 (B0004)** and **Tag 49 (B0012)** can be used interchangeably. The format is the same as **Tag 50 (B0003)**

<b>B0005 AMOUNT</b>	<b>N</b>	<b>12</b>
---------------------	----------	-----------

Transaction Amount in kobo.

A set of numeric characters of length 12

Example:

Amount=000000010000

The details of this field can be found in the **Field #4 - Amount, transaction** of the ISO8583 message interface between the HOST server and the POS terminal.

<b>B0006 TERMINAL ID</b>	<b>C</b>	<b>8</b>
--------------------------	----------	----------

Unique ID of Terminal

A set of alphanumeric characters of length 8

Example:

TerminalId=XXX202JE

The details of this field can be found in the **Field #41 - Card acceptor terminal ID** or in **Tag 49 (Payment Validated Information)** of the **Field # 62 Private Field, Management Data 1** of the ISO8583 message interface between the HOST server and the POS terminal.

<b>B0007 MERCHANT ID</b>	<b>C</b>	<b>15</b>
--------------------------	----------	-----------

Unique ID of Merchant

A set of alphanumeric characters of length 15

Example:

MerchantId=XXX2FC000007701

The details of this field can be found in the **Field #42 - Card acceptor ID code** of the ISO8583 message interface between the HOST server and the POS terminal.

**B0008 RETRIEVAL REFERENCE NUMBER C 12**

This is a unique ID generated by the terminal per transaction.

A set of alphanumeric characters of length 12

Example:

RetrievalRefNumber=3202JE53XXXX

The details of this field can be found in the **Field #37 - Retrieval reference number** of the ISO8583 message interface between the HOST server and the POS terminal

**B0009 DATE TIME N 10**

Date and time of transaction

A set of alphanumeric characters of length 10 using the following format MMDDhhmmss

Example:

DateTime=0731170253

The details of this field can be found in the **Field #7 – Transmission Date and Time** or in **Tag 49 (Payment Validated Information)** of the **Field # 62 Private Field, Management Data 1** of the ISO8583 message interface between the HOST server and the POS terminal

**B0010 RESPONSE CODE C 2**

Response code returned by biller

Format:

RespCode=xx

Where xx is a set of numeric characters of length 2.

Example:

RespCode=00

The details of this field can be found in the **Field #39 - Response code** or in **Tag 49 (Payment Validated Information)** of the **Field # 62 Private Field, Management Data 1** of the ISO8583 message interface between the HOST server and the POS terminal

B0010 Response Code Value	Meaning
00	Approved or completed successfully
01	Refer to card issuer
02	Refer to card issuer, special condition
03	Invalid merchant
04	Pick-up card
05	Do not honour

B0010 Response Code Value	Meaning
06	Error
07	Pick-up card, special condition
08	Honour with identification
09	Request in progress
10	Approved, partial
11	Approved, VIP
12	Invalid transaction
13	Invalid amount
14	Invalid card number
15	No such issuer
16	Approved, update track 3
17	Customer cancellation
18	Customer dispute
19	Re-enter transaction
20	Invalid response
21	No action taken
22	Suspected malfunction
23	Unacceptable transaction fee
24	File update not supported
25	Unable to locate record
26	Duplicate record
27	File update edit error
28	File update file locked
29	File update failed
30	Format error
31	Bank not supported
32	Completed partially
33	Expired card, pick-up
34	Suspected fraud, pick-up
35	Contact acquirer, pick-up
36	Restricted card, pick-up
37	Call acquirer security, pick-up
38	PIN tries exceeded, pick-up
39	No credit account
40	Function not supported
41	Lost card
42	No universal account
43	Stolen card

B0010 Response Code Value	Meaning
44	No investment account
51	Not sufficient funds
52	No check account
53	No savings account
54	Expired card
55	Incorrect PIN
56	No card record
57	Transaction not permitted to cardholder
58	Transaction not permitted on terminal
59	Suspected fraud
60	Contact acquirer
61	Exceeds withdrawal limit
62	Restricted card
63	Security violation
64	Original amount incorrect
65	Exceeds withdrawal frequency
66	Call acquirer security
67	Hard capture
68	Response received too late
75	PIN tries exceeded
77	Intervene, bank approval required
78	Intervene, bank approval required for partial amount
90	Cut-off in progress
91	Issuer or switch inoperative
92	Routing error
93	Violation of law
94	Duplicate transaction
95	Reconcile error
96	System malfunction
98	Exceeds cash limit

**B0011 TOKEN****C 500**

Token is returned by the biller for customer utilization.

Format:

Token=xxx-xyy-zzzz



Where xxx-xyyy-zzzz is a set of alphanumeric characters of a user-defined length.

Example:

Token=AAAA-BBBB-CCCC-DDDD

The details of this field can be found in the **Tag 51 (Token)** of the **Field #60 - Payment Information** of the ISO8583 message interface between the HOST server and the POS terminal.

If more than one token exists, they should be separated by comma ','.

## **B0012 PAYMENT VALIDATED INFORMATION** **C** **< 975**

This is a biller specified transaction parameter to be sent in a **REPLY** message. It contains information details assigned to a customer during the Payment Validation operation.

Format:

PaymentCode=xxxxxx

- Where PaymentValidatedInformation is a property assigned to a customer. Example : CustomerID, product1, etc
- Where xxxxxx is a set of alphanumeric characters of a user-defined length

Example:

InvoiceNumber=1001234

The details of this field can be found in the or in **Tag 49 (Payment Validated Information)** of the **Field # 62 Private Field, Management Data 1** of the ISO8583 message interface between the HOST server and the POS terminal.

**Tag 48 (B0004)** and **Tag 49 (B0012)** can be used interchangeably. The format is the same as **Tag 50 (B0003)**.

## **B0015 TRANSACTION AMOUNT** **N** **12**

Transaction Amount in kobo.

Example:

TransactionAmount=000000012000

The details of this field can be found in the **Field #04 – Amount** or in **Tag 49 (Payment Validated Information)** of the **Field # 62 Private Field, Management Data 1** of the ISO8583 message interface between the HOST server and the POS terminal.

## **B0016 TRANSACTION FEE** **C** **15**

This is biller specified transaction parameter to be sent in response.

Example:

TransactionFee=10.00

The details of this field can be found in the **Field #28 - Amount, transaction fee** or in **Tag 49 (Payment Validated Information)** of the **Field # 62 Private Field, Management Data 1** of the ISO8583 message interface between the HOST server and the POS terminal

.

## Annex B. POS2Host & Host2NCS Data Dictionary

### **DE001 DataElement[1] C 4**

This data element carries the element #1 - Message Type code of the ISO8583 message.

Format:

DataElement[1]=xxxxxxxxxxxxxxxx

Example:

DataElement[1]=0430

### **DE002 DataElement[2] C 19**

This data element carries the element #2 - Primary Account Number of the ISO8583 message.

Format:

DataElement[2]=xxxxxxxxxxxxxxxxxxxx

Example:

DataElement[2]=539983\*\*\*\*\*7691

### **DE003 DataElement[3] C 6**

This data element carries the element #3 - Processing Code of the ISO8583 message.

Format:

DataElement[3]=xxxxxxxxxxxxxxxx

Example:

DataElement[3]=001000

### **DE004 DataElement[4] C 12**

This data element carries the element #4 - Transaction Amount of the ISO8583 message.

Format:

DataElement[4]=xxxxxxxx

Example:

DataElement[4]=000000200000

**DE007 DataElement[7]** **C** **10**

This data element carries the element #7 - Transaction Date and Time of the ISO8583 message.

Format:

`DataElement[7]=xxxxxxxxxx`

Example:

`DataElement[7]=1118142209`

**DE011 DataElement[11]** **C** **6**

This data element carries the element #11 - System Trace Audit Number of the ISO8583 message.

Format:

`DataElement[11]=xxxxxxx`

Example:

`DataElement[11]=000623`

**DE012 DataElement[12]** **C** **6**

This data element carries the element #12 – Transaction Local Time of the ISO8583 message.

Format:

`DataElement[12]=xxxxxxx`

Example:

`DataElement[12]=142209`

**DE013 DataElement[13]** **C** **4**

This data element carries the element #13 - Transaction Local Date of the ISO8583 message.

Format:

`DataElement[13]=xxxxx`

Example:

`DataElement[13]=1118`

**DE014 DataElement[14]** **C** **4**

This data element carries the element #14 - Expiration Date of the ISO8583 message.

Format:

DataElement[14]=xxxx

Example:

DataElement[14]=1602

---

<b><u>DE018 DataElement[18]</u></b>	<b>C</b>	<b>4</b>
-------------------------------------	----------	----------

This data element carries the element #18 - Merchant Type of the ISO8583 message.

Format:

DataElement[18]=xxxx

Example:

DataElement[18]=5122

---

<b><u>DE022 DataElement[22]</u></b>	<b>C</b>	<b>3</b>
-------------------------------------	----------	----------

This data element carries the element #22 - PIN Entry Capability of the ISO8583 message.

Format:

DataElement[22]=xxx

Example:

DataElement[22]=951

---

<b><u>DE023 DataElement[23]</u></b>	<b>C</b>	<b>3</b>
-------------------------------------	----------	----------

This data element carries the element #23 - Card Sequence Number of the ISO8583 message.

Format:

DataElement[23]=xxx

Example:

DataElement[23]=005

---

<b><u>DE025 DataElement[25]</u></b>	<b>C</b>	<b>2</b>
-------------------------------------	----------	----------

This data element carries the element #25 - POS Condition Code of the ISO8583 message.

Format:

DataElement[25]=xx

Example:

DataElement[25]=01

**DE026 DataElement[26]** **C** **2**

This data element carries the element #26 - POS PIN Capture Code of the ISO8583 message.

Format:

`DataElement[26]=xx`

Example:

`DataElement[26]=04`

**DE028 DataElement[28]** **C** **C+8**

This data element carries the element #28 - Transaction Fee Amount of the ISO8583 message.

Format:

`DataElement[28]=Cxxxxxxxx`

Example:

`DataElement[28]=C00000000`

**DE032 DataElement[32]** **C** **LLVAR**

This data element carries the element #32 - Acquiring Institution Identification Code of the ISO8583 message.

Format:

`DataElement[32]=xxxxxxx`

Example:

`DataElement[32]=639138`

**DE033 DataElement[33]** **C** **LLVAR**

This data element carries the element #33 - Forwarding Institution Identification Code of the ISO8583 message.

Format:

`DataElement[33]=xxxxxxx`

Example:

`DataElement[33]=111129`

**DE035 DataElement[35] C LLVAR**

This data element carries the element #35 - Track 2 Data of the ISO8583 message.

Format:

DataElement[35]=xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

Example:

DataElement[35]=539983\*\*\*\*\*7691D1602\*\*\*\*\*

**DE037 DataElement[37] C 12**

This data element carries the element #37 - Retrieval Reference Number of the ISO8583 message.

Format:

DataElement[37]=xxxxxxxxxx

Example:

DataElement[37]=100000000335

**DE038 DataElement[38] C 6**

This data element carries the element #38 - Authorization Code of the ISO8583 message.

Format:

DataElement[38]=xxxxxx

Example:

DataElement[38]=558609

**DE039 DataElement[39] C 2**

This data element carries the element #39 - Response Code of the ISO8583 message.

Format:

DataElement[39]=xx

Example:

DataElement[39]=00

**DE040 DataElement[40] C 3**

This data element carries the element #40 - Service Restriction Code of the ISO8583 message.

Format:

DataElement[40]=xxx

Example:

DataElement[40]=221

#### **DE041 DataElement[41]** **C** **8**

This data element carries the element #41 - Card Acceptor Terminal Identification of the ISO8583 message.

Format:

DataElement[41]=xxxxxxxx

Example:

DataElement[41]=20704X93

#### **DE042 DataElement[42]** **C** **15**

This data element carries the element #42 - Card Acceptor Identification Code of the ISO8583 message.

Format:

DataElement[42]=xxxxxxxxxxxxxxxxxx

Example:

DataElement[42]=FBP204010654959

#### **DE043 DataElement[43]** **C** **40**

This data element carries the element #43 - Card Acceptor Name/Location of the ISO8583 message.

Format:

DataElement[43]=xxxxxxxxxxxxxxxxxxxxxxxx

Example:

DataElement[43]=U.ILIFEPEAKPHARMACYANLALANG

#### **DE049 DataElement[49]** **C** **3**

This data element carries the element #49 - Transaction Currency Code of the ISO8583 message.

Format:

DataElement[49]=xxx

Example:

DataElement[49]=566



**DE052 DataElement[52]** **C** **16**

This data element carries the element #52 - PIN Data of the ISO8583 message. It contains the PIN of the cardholder formatted into a 64-bit block and encrypted with a DES key.

**DE054 DataElement[54]** **C** **LLLVAR**

This data element carries the element #54 - Additional Amounts of the ISO8583 message.

**DE056 DataElement[56]** **C** **LLLVAR**

This data element carries the element #56 - Message Reason Code of the ISO8583 message.

**DE059 DataElement[59]** **C** **LLLVAR**

This data element carries the element #59 - Transport (echo) data of the ISO8583 message.

**DE060 DataElement[60]****C****LLLVAR**

This data element carries the element #60 - Payment Information of the ISO8583 message. It contains several informative sub-fields. Each sub-field is formed using the following structure:

Tag+LLL+data, where Tag is composed by 2 digits.

The tags transported in DE062 depends on the transaction according to the next table.

Transaction Type	Tag	Description	Length	Format	Presence Indicator	Request /Response
Bill Payment	41	Bill Identification Code	015	C	Mandatory	Request
	45	Product Identification Code	010	C	Conditional	
	50	Customer Subscription Information	<976	C	Optional	
	50	Customer Subscription Information	<976	C	Optional	Response
Bill Payment with Token	41	Bill Identification Code	015	C	Mandatory	Request
	45	Product Identification Code	010	C	Conditional	
	50	Customer Subscription Information	<976	C	Optional	
	51	Token	<500	C	Conditional	Reply
	50	Customer Subscription Information	<976	C	Optional	

**Tag 41 Biller Identification Code, length=015, format=C**

This tag uses the following format:

1<sup>st</sup> position – transaction type the biller is setup for:

4 – Token (e.g. Recharge Card) Sales

5 – Bill Payments

2<sup>nd</sup> – 4<sup>th</sup> position – VAS Provider Code

5<sup>th</sup> – 8<sup>th</sup> position – Merchant Category Code

9<sup>th</sup> – 15<sup>th</sup> position –Biller ID

**Tag 50: Customer Subscription Information, length <976, format=C**

This tag used the following format:

<name>=<value>, where <name> and <value> are of C format.

If more than one pair it must be separated by “||”.

Example: *name=Halima Eze Ajayi||customerid=00001||prod1=3||prod2=4*

**Tag 51: Token**

<value> where <value> is of C format.

If more than one <value> it must be separated by “,”.

**DE062 DataElement[62]****C LLLVAR**

This data element carries the element #62 – Private Field, Management Data 1 of the ISO8583 message. It contains several informative sub-fields. Each sub-field is formed using the following structure:

Tag+LLL+data, where Tag is composed by 2 digits.

The tags transported in DE062 depends on the transaction according to the next table.

Transaction Type	Tag	Description	Length	Format	Request/Response
Biller List Download	01	POS/Payment Channel Serial Number	050	C	Request
	*41	Biller Identification Code	015	C	Response
	42	Biller Name	050	C	
Biller Subscription Information Download	01	POS/Payment Channel Serial Number	050	C	Request
	*41	Biller Identification Code	015	C	Response
	43	Required Information Name	050	C	
	44	Default Value	050	C	
Product List Download	01	POS/Payment Channel Serial Number	050	C	Request
	*41	Biller Identification Code	015	C	Response
	45	Product Identification Code	050	C	
	46	Product Name	050	C	
	47	Product Amount	012	C	
Payment Validation	01	POS/Payment Channel Serial Number	050	C	Request
	*41	Biller Identification Code	015	C	
	***48	Payment Code	<976	C	
	***49	Payment Validated Information	<976	C	Response

**Tag 41 Biller Identification Code, length=015, format=C**

This tag uses the following format:

1<sup>st</sup> position – transaction type the biller is setup for:

4 – Token (e.g. Recharge Card) Sales

5 – Bill Payments

2<sup>nd</sup> – 4<sup>th</sup> position – VAS Provider Code

5<sup>th</sup> – 8<sup>th</sup> position – Merchant Category Code

9<sup>th</sup> – 15<sup>th</sup> position –Biller ID

**Tag 48: Payment Code, length <976, format=C**

This tag used the following format:



Format:

Example:

```
DataElement[128]=568545236887954565211479930023501489623145789254756214633200897845
2548
```