ISO8583 Specifications

for

Arcot Systems Inc

Version 1.0.4

Distribution

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Version Control

Version	Date	Author	Reviewer	Comments
1.0.0	31/03/2009	Joslyn Monteiro	Selvam R. Periyasamy	This document covers the ISO8583 Interface specifications for Arcot Systems Inc
1.0.1	26/05/2009	Joslyn Monteiro	Selvam R. Periyasamy	Document updated by Joslyn on 26/05/2009: - Added Key Management - Added Network Communication
1.0.2	28/05/2009	Joslyn Monteiro	Selvam R. Periyasamy	Document updated by Joslyn on 28/05/2009 - Changed the processing code
1.0.3	21/07/2009	Joslyn Monteiro	Selvam R. Periyasamy	Document updated by Joslyn on 21/07/2009 - Updated Bit 3 for Yes Bank and Bank of India - Updated Bit 32 for Yes Bank, Bank of India - Updated Bit 43 for Yes Bank and Bank of India - Updated network messages to be bidirectional instead of unidirectional
1.0.4	02/03/2010	Joslyn Monteiro	Selvam Periyasamy	- Added Addition Support for Ecommerce transactions
1.0.6	26/03/2014	Joslyn Monteiro	Selvam Periyasamy	- Added for NKGSB Bank

Customer Specification Document for Arcot Systems Inc

CONFIDENTIALITY

ACCEPTANCE OF ARCOT SYSTEMS INC

The card issuer confirms the acceptance of the Customer Specification Document for Arcot Systems Inc, as detailed in this document

We understand that any request for change will be subject to the agreed Change Control Procedure.

_____
Signature

_____
Name

_____
Title

_____
Date

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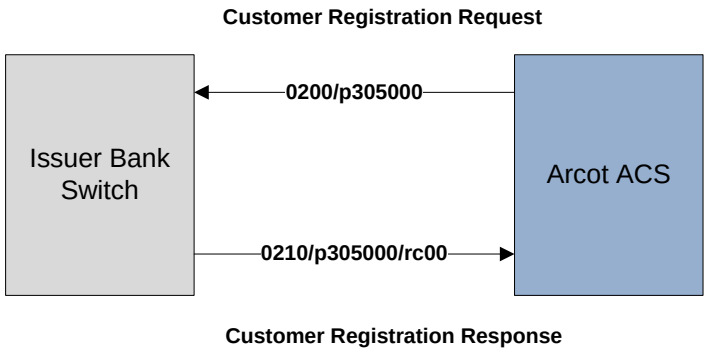
Overview

Bank of India Limited, Mumbai, India has opted in for Verified By Visa to meet the RBI guideline of August 1st, 2009 to comply with new security standards for e-commerce transactions. Bank is planning to use Arcot Systems Incorporated as their Access Control Solution Provider. It is proposed that FIS develops an iso8583 interface in Bank of India's IST/Switch Version 7.5 that will communicate with Arcot Systems Inc for the registration transaction leg only.

Transaction Flow Diagram



Transaction Flow of the Registration Leg

- Customer registers his card for Verified by Visa using Arcot Systems Inc, ACS
- ACS Redirects him the registration page.
- Customer enters his pan, expiry date, atm/debit card pin
- ACS will receive the request, form an iso8583 message, and encrypts the pin using the zonal pin key to form a pin block. The zonal pin key is shared between Bank of India and Arcot.
- ACS will send the request to Bank of India's switch via the iso8583 interface to perform a pin verification request
- Bank of India's switch verifies the pin and responds back with the 00 - Approval code to Arcot
- The customer receives a set of security questions that he/she has to enter the answer
- The customer has to set his Verified by Visa password.
- Once this is done, the ACS stores the customer information in their database
- The registration process is successful.

Data Element Definitions

Introduction

This chapter defines each of the bitmaps currently supported by FIS Payment Solutions and Services India Private Limited. The conventions that are used to represent the field elements are defined first, followed by the fields themselves.

Conventions

Fields are described using an attribute followed by a length. The following tables define how these attributes are to be interpreted:

Field Type Attributes

Notation	Interpretation
a	Alphabetic characters only (includes blanks).
n	Numeric characters only (0,1,2,3,4,5,6,7,8,9)
s	Special characters only.
an	Alpha and numeric characters allowed.
as	Alpha and special characters only.
ns	Numeric and special characters only.
b	Binary data.
z	Magnetic stripe on track1, track2 and track3
x	The character 'C' or 'D' to indicate Credit or Debit value.

Field Length

Notation	Interpretation
-digit(s)	Fixed length in number of positions. For example, n-10 indicates a 10 digit position field. Example: an-10 indicates a 10 alphanumeric position field.
...digit(s)	Variable length in number of positions. Example: n...4 indicates a variable numeric field with up to 4 digits. Example: an...7 indicates a variable alphanumeric field with up to 7 positions.
LLVAR	When present, this indicates that the data element contains two fields. The first field is 2 positions long (LL) and indicates the length of the data to follow. The second field is exactly LL positions in length. VAR represents the data portion of the field. Note that the total field length becomes LL + 2. Example: an..25 LLVAR indicates a field with up to 25 positions. The actual number of positions present would be encoded in the first subfield. In this case the encoding would be 25... where ... would be 25 data positions.
LLLVAR	This field is identical to LLVAR with the exception that the length subfield can be 3 digits.

Data Representation

1. All message data fields are aligned on a byte boundary.
2. All data is encoded either in EBCDIC or ASCII display representation. The choice of character set depends upon the configuration.
3. All fields with data type "b" (binary) are encoded as the display representation of the hexadecimal value. For example if the field contains the decimal number 959, the application would first convert it into the equivalent hexadecimal representation, 3BF, and then convert that number into the display representation.
4. All lengths given indicate the logical number of positions required. For example,a field specified as n-12 indicates that 12 digits are required. The physical length of the field is inferred from the encoding. Using the above example, the physical length of a field of type n-12 would be 12.
5. All numeric, type n, fields are right-justified with leading zeros.
6. All binary, type b, fields are right-justified with leading zeros.
7. All other field types are left-justified with trailing blanks. This only applies if the field is of fixed length.
8. Where a field expresses an amount, it will be represented without a decimal point. For example, the amount 23.47 would be represented as 2347. The decimal places are implied.
9. Where a field expresses a rate (i.e. a conversion rate), the rate is expressed as xnnnnnnn, where x is a number between 0 and 7 and indicates the number of positions that the decimal separator shall be moved from the right. For example, the number 67123890 is interpreted as 7.123890.

Definitions

Message Type Identifier

Format : n-4, Length: 4 bytes

Description: This element is required in all Arcot System Inc messages. It identifies the class of message being processed.

MTI	Definition
0200	Financial Request
0210	Financial Request Response

Primary Bitmap

Format: b-64 , Length: 16 bytes

Description: The primary bitmap is required in all messages. It determines which data elements are present. The bits are interpreted from left to right where a 1 indicates the field in that bit position is present and a 0 indicates the absence of that field. Bit position 1, if set to 1, indicates the presence of a secondary bitmap.

Secondary Bitmap

Format: b-64 , Length: 16 bytes

Description:

The secondary bitmap is present only if data elements 65-128 are present in the message. The secondary bitmap has the same description as the primary bitmap.

Bit 2 : Primary Account Number

Format: Var-2 Length: n..19, 2 byte length, 1...19 digits of the PAN to follow

Description: This field contains the primary account number (PAN) as represented on the consumer's card. This field is used for all account numbers up to 19 digits in length. The switch requires this field in all 01xx, 02xx, 04xx transactions. The PAN is used to determine routing within Bank of India's Switch.

Representation: The 2 byte length field indicates the number of digits in the PAN and is zero filled and right justified. The 1...19 digits of the PAN are left justified and must contain exactly the number of digits specified by the length subfield.

Bit 3: Processing Code

Format: n-6 Length: 6 bytes

Description: This field is required in the 02xx messages. It is sometimes referred to as the Pcode. IST/Switch uses this field to determine the type of transaction requested. This element is composed of 3 subfields:

- A two digit process code (1-2)
- A two digit from account (3-4)
- A two digit to account (5-6)

Subfield 1: Transaction Types

Value	Definition
360050	VBV Registration Code for Yes Bank and Bank of India
365000	VBV Registration Code for Syndicate Bank
935000	VBV Registration Code for Dhanalakshmi Bank
300000	Saraswat Bank Limited, PMC Bank, Thane Janata, Bharat Bank, Abhyudaya, NKGSB Bank

Bit 7: Transmission Date and Time

Format: n-10, MMDDhhmmss , Length: 10 bytes

Description : This data element is required in all IST/Switch messages. It represents the date and time, in UTC format, at which the transaction first entered the EFT (electronic funds transfer) network. Once set, this field remains unchanged for the life of the transaction.

Representation

MM	Month Indicator
DD	Date Indicator
Hh	24 hour clock
mm	Minutes
ss	Seconds

Example: To express May 6, 2:30.376 p.m. use 0506143037

Bit 11: System Trace Audit Number

Format: n-6 , Length: 6 bytes

Description: This data element is required in all IST/Switch messages. It is a unique number, within each UTC date for a specific terminal/acquirer, which is generated by the acquirer. Note that the trace, by itself, is not unique enough to identify a transaction. This is because IST/Switch accepts messages from many networks, some of which might overlap trace numbers with each other. For this reason, IST/Switch uses the (trace, terminal id, and acquirer) as a unique key. This field must remain unaltered for the life of the message.

Representation: This field is zero filled and right justified

Bit 12: Local Transaction time

Format: n-6, hhmmss, Length: 6 bytes

Description: This field represents the local time at the terminal when the transaction occurred.

Representation

hh	24 hour clock
mm	Minutes
ss	Seconds

Example: To represent 5:14.53 p.m. use 171453

Bit 13: Local Transaction Date

Format: n-4, MMDD , Length: 4 bytes

Description: This field represents the local date at the terminal when the transaction occurred

Representation

MM	Month Indicator
DD	Date Indicator

Example: To represent March 18 use 0318

Bit 14: Card Expiry Date

Format: n-4, YYMM, Length: 4 bytes

Description: This field is used to represent the expiration date of the card. It must be present whenever the acceptor does not electronically capture either track1 or track2.The expiration date should represent the date after which the card will have expired. To indicate a card which does not expire, use the cardholder's card expiry date as 0912 or 4912. This field represents the local date at the terminal when the transaction occurred

Representation

YY	Last two digits of the year 09 – 99
MM	The month on which the card expires

Example: To represent a card which expires after June 2010 use 1006.

Bit 17: Capture Date

Format: n-4, MMDD , Length: 4 bytes

Description: This field represents the local date at the terminal when the transaction occurred

Representation :

MM	Month Indicator
DD	Date Indicator

Example: To represent March 18 use 0318

Bit 32: Acquirer Network ID

Format: n…11, Var-2 , Length: 2byte length, 1..10 digits acquirer id to follow

Description: This field is required in all IST/Switch messages. It indicates the acquiring institution identifier and is used internally by IST/Switch to determine routing as well as other profile specific elements

Representation : This field contains a 2 byte length which is zero filled and right justified. This length is followed by up to 10 digits.

Example: For FIS India banks, the acquirer institution network id is '00000005', the same will be forwarded to the Card Issuer. Use 0800000005

Bit 33: Fowarding Institution ID

Format: n…11, Var-2 , Length: 2byte length, 1..10 digits acquirer id to follow

Description: This field is required in all IST/Switch messages. It indicates the fowarding institution identifier.

Representation : This field contains a 2 byte length which is zero filled and right justified. This length is followed by up to 10 digits.

Example: For Arcot , the acquirer institution network id is '00000005', the same will be forwarded to the Card Issuer. Use 0800000005 to represent the identifier

Bit 35: Track2Data

Format: z..24, Length: 2 byte length following by 24 bytes of the track2data

Description: This field contains the track2 data, and is used for internal processing of the transaction if Bit 14 Expiry Date is not present in the message. DE 35 is mandatory in the authorization request. To standardize the message formats. Arcot will need to build a track2data in the following format:

Representation: The track2 data should follow the ISO 7813 standard. Valid Separator is "="

Track2Data Format

Field Name	Fixed or Variable	Maximum Length
Primary Account Number	V	n19
Field Separator	F	n1
Expiration Date	F	n4

Bit 37: Retrieval Reference Number

Format: an-12, Length: 12 bytes

Description: This field is a document reference number as supplied by the ACS

Representation: This field needs to be zero filled right justified

Bit 39: Response Code

Format: n-2 , Length: 2 bytes

Description: This field is required in all response messages and is used to indicate if the transaction was approved or if it has declined. If the transaction was approved by the switch, Arcot will receive a response code 00 from Banks Switch. If the response code not 00, the transaction must be considered as unsuccessful.

00 Approved
02 Refer Card Issuer
03 Invalid Merchant
04 Do Not Honor
05 Unable To Process
08 Issuer Timeout
12 Invalid Transaction
20 No From Account
39 Transaction Not Allowed
41 Hot Card
42 Special Pickup
43 Hot Card Pick Up
44 Pick Up Card
62 Restricted Card
68 Late Response
75 Exceeds P I N Retry
76 Invalid Account
80 Pin Length Error
81 Invalid Pin Block
96 System Error

Bit 41: Card Acceptor Terminal ID

Format: an-8, Length: 8 bytes

Description: This field is used to identify a terminal at the acquirer. It should be unique within that acquirer but need not be unique within the several networks.

Representation: For Arcot a default Terminal ID needs to be sent, value is “ARCOT100”

Bit 42: Location ID

Format: an-15, Length: 15 bytes

Description: This field identifies the acquirer to IST/Switch and the network. The value in this field is network dependent

Representation: For Arcot, FIS has defined the value as “000000000000000”,

Bit 43: Card Acceptor Name

Format: ans-40, Length: 40 bytes

Description: This field is used for the acquirer name and location. It is presented in a format which is ready for printing on the customer's statement. The format is as follows:

Position	Length	Description	Example
1-26	26 bytes	Merchant Name	< ARCOT SYSTEMS INCORPORATED>
27	1 byte	Space	< >
28-36	9 bytes	Specific terminal location	<BANGALORE >
37	1 byte	Space	< >
38-40	3 bytes	Terminal State or Country Code	<IND>

Representation: To represent the card acceptor name for FIS India use “**ARCOT SYSTEMS INCORPORATED BANGALORE IND**”

Bit 49: Acquirer Currency Code

Format: n-3, Length: 3 bytes

Description: This is a required field in all 02xx messages. It defines the currency code for Bit 4 (transaction amount).

Representation: To represent the code for INR, use 356

Bit 52: Pin Block

Format: b-64, Length: 16 Alphanumeric

Description: The Personal Identification Number is a secret number assigned to the cardholder. Its function is to allow the cardholder to identify him or herself to the point-of-service devices and ultimately to the issuer. IST/Switch requires that all PINs entering or leaving the switch be encrypted using DES. The encryption must be performed in a physically secure device. Under no circumstances can the customer-entered PIN be in the "clear" outside of a physically secure device. The default PIN block format is the ANSI format (this is also known as ISO Format-0 PIN Block Format).

FIS Message Specifications for Pin Verification Request

0200 – Authorization Request

Bit No.	Attr.	Format	Description	M/O	Values	Remarks
	Fixed	N-4	Message Type	M	0200	Registration Transaction Request
	Fixed	B-16	Primary Bitmap	M		
1	Fixed	B-16	Secondary Bitmap	O		Required only if bits 65-128 are present
2	Var-2	N..19	PAN	M		421**********
3	Fixed	N-6	Processing code	M	*	Registration Leg Proc Code
4	Fixed	N-12	Transaction Amount	O		000000000000
7	Fixed	N-10	Tran Date and Time	M		0908051433(MMDDHHMMSS)
11	Fixed	N-6	STAN	M		Unique Trace Number
12	Fixed	T-6	Local Transaction Time	M		Format: HH24MISS
13	Fixed	D-4	Local Transaction Date	M		Format: MMDD
14	Fixed	N-4	Expiry Date	M		YYMM
32	Var-2	AN..10	Acquirer Institution code	M		00000005
35	Var-2	Z-24	Track2Data	M		421**********=1101
37	Fixed	AN-12	Retrieval Reference No	M		100000000001-199999999999, this value needs to be reset after it reaches the max limit
41	Fixed	AN-8	Card Acceptor Terminal ID	M		Default "ARCOT100 "
42	Fixed	AN-15	Location	M		Default "000000000000000"
43	Fixed	AN-40	Card Acceptor Location	M		Default " ARCOT SYSTEMS INCORPORATED BANGALORE IND "
49	Fixed	N-3	Transaction currency code	M		Default: 356(INR)
52	Fixed	Hex-16	Pin Block	M		Encrypted Pin Block

0210 – Authorization Response

Bit No.	Attr.	Format	Description	M/O	Values	Remarks
	Fixed	N-4	Message Type	M	0210	Registration Transaction Response
	Fixed	B-16	Primary Bitmap	M		
1	Fixed	B-16	Secondary Bitmap	O		Required only if bits 65-128 are present
2	Var-2	N..19	PAN	M		
3	Fixed	N-6	Processing code	M		Registration Leg Proc Code
4	Fixed	N-12	Transaction Amount	O		000000000000
7	Fixed	N-10	Tran Date and Time	M		0908051433(MMDDHHMMSS)
11	Fixed	N-6	STAN	M		Unique Trace Number
12	Fixed	T-6	Local Transaction Time	M		Format: HH24MISS
13	Fixed	D-4	Local Transaction Date	M		Format: MMDD
14	Fixed	N-4	Expiry Date	M		YYMM
32	Var-2	AN..10	Acquirer Institution code	M		To be decided
35	Var-2	Z-24	Track2Data	M		421**********=1101
37	Fixed	AN-12	Retrieval Reference No	M		100000000001-199999999999, this value needs to be reset after it reaches the max limit
39	Fixed	N-2	Response Code	M		00 – Approved, !=00 - Declined
41	Fixed	AN-8	Card Acceptor Terminal ID	M		
42	Fixed	AN-15	Location	O		
43	Fixed	AN-40	Card Acceptor Location	O		
49	Fixed	N-3	Transaction currency code	M		Default: 356(INR)

Network Messages between Arcot and Bank of India

Sign on-Signoff, Echo Test Request

Bit No.	Attr	Format	Name	M/O	Values	Remarks
	Fixed	N-4	Message Type	M	0800	
	Fixed	B-16	Primary Bitmap	M		
1	Fixed	B-16	Secondary Bitmap	O		Required only if bits 65-128 are present
7	Fixed	N-10	Transmission Date & Time	M		
11	Fixed	N-6	STAN	M		
70	Fixed	N-3	Network id code	M		001 – Signon 002 - Signoff 301 - Echo Test

Signon-Signoff, Echo Test Response

Bit No.	Attr	Format	Name	M/O	Values	Remarks
	Fixed	N-4	Message Type	M	800	
	Fixed	B-16	Primary Bitmap	M		
1	Fixed	B-16	Secondary Bitmap	O		Required only if bits 65-128 are present
7	Fixed	N-10	Transmission Date & Time	M		
11	Fixed	N-6	STAN	M		
39	Fixed	N-2	Response code	M		00 - Approved
70	Fixed	N-3	Network id code	M		001 – Signon 002 - Signoff 301 - Echo Test

Scenarios:

- Echo Tests needs to be sent after 10 minutes to check if the remote server is up
- Log on will be sent after the network connectivity is established
- Log off will be initiated before a maintenance activity is about to commence

(Logon and Logoff can be initiated by both servers i.e. Arcot as well as the Issuers host system)

Key Management

The network keys are going to be shared offline once every three months/six months. The keys used to communicate between Arcot and FIS is static. The pin will need to be encrypted using the ZPK provided by the bank

Key Type – ZPK
Key Length – 32

Network Communication

Arcot's Application Server will act as the client, while Bank of India's switch will act as a server. The connection will be built by Arcot's Application Server to Bank of India's switch on a specific IP Address and port number. The IP address/port number is going to be assigned by Bank of India as the link is going to be managed by Bank of India.

Syndicate Bank Specific Changes

DE3 – Processing Code for Syndicate Bank is 365000

DE 32 – Acquiring Id for Syndicate Bank is 3000000

DE 42 – Terminal Location, an-15 bytes (needs to contain the customer mobile number) the format needs to be as follows '9821020425 '

DE 43 – Card Acceptor Name an-40 bytes, (needs to contain the customer email address) the format of this field needs to be as follows

Position	Length	Description	Example
1-36	22 bytes	Merchant Name	< RAJARAM.BASKARAN@ARCOT.IN >
37	1 byte	Space	< >
38-40	3 bytes	Terminal State or Country Code	<IND>

[RAJARAM.BASKARAN@ARCOT.IN IND]

The End