

go mobile with your money.

ISO 8583 Specification



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CHAPTER1

Design and Integration

1.1 Communication

Connection between *3PFI* and Mobile Money will be socket-based following the server-client architecture. Mobile Money will be the server while *3PFI* the client.

As TCP is a stream-oriented protocol, the first four bytes of all messages transmitted will indicate the length of the message (excluding the length indicator). For example if the message length is 71 bytes then 0071 should be prefixed to the TCP/IP stream.

1.2 Security

Secure pins will be processed from *3PFI* to Mobile Money with the following parameters: o Shared (2-part component) single length static pin working key to be configured at both 3PFI and Mobile Money

- Pin block format: ISO-0 (ANSI X9.8, VISA-1, ECI)
- A pin verification key, PVK, to be used by Mobile Money to verify secure pins against stored pin offsets

3PFI and Mobile Money connectivity will be on a private lease line and therefore, no extra data encapsulation and data security will be required. Access-lists will be defined for socket security.

1.3 Message Type

The following message identifiers will be supported between 3PFI and Mobile Money:

- 0200 online financial transaction request bidirectional
- 0210 online financial transaction response bidirectional
- 0420 reversal advice bidirectional
- 0421 repeat reversal advice bidirectional
- 0430 reversal advice bidirectional
- 0800 network management request
- 0810 network management response

1.4 Network Management Processing

Network management functions between *3PFI* and Mobile Money will be implemented using the ISO8583 (93) 08xx series network management messages.

- 0800 network management request
- 0810 network management request response

Sign on request and response



Sign on message shall be implemented to be originated by *3PFI* to Mobile Money, for Mobile Money advise on readiness to start processing transaction requests from *3PFI* upon successful establishment of connectivity.

Echo Test (polling)

The purpose of the echo test is for either *3PFI* or Mobile Money to determine the status of the other party. *3PFI* will implement a frequency of 5 minutes (configurable).

1.5 Message Timeout

The initiator of a transaction request will establish the amount of time it will wait for a response timeout. The time-out period will be set to 30 seconds (configurable)

Initiator of a transaction request will immediately initiate a reversal and continuously send repeat reversals until the reversal is acknowledged. The time-out period will apply to both a transaction request and a reversal advice

1.6 Message Matching

The following fields will be used to match messages transmitted between 3PFI and Mobile Money:

- 1. Message Type Identifier
- 2. Account number
- 3. Time, Local Transaction
- 4. Date, Local Transaction
- 5. System Trace Audit Number



Message Format

2.1 Message Structure

The messages transmitted between the *3PFI* and Mobile Money will be constructed with the basic message structure prescribed below. Messages are constructed in the sequence message.

Message type identifier	1 or 2 hex bitmaps	Data elements
1,1000tigo type 10to1ttille1	1 01 - 110/1 2101101p3	D tree creations

2.2 Message Fields Mapping

Notations:

'M' - mandatory, must be populated with valid data,

'C' – conditional, required if certain conditions are met

'O' - optional, may be included or not

'N' - Never required

Field	Name			0420			
No		0200	0210	0421	0430	0800	0810
-	Length	M	M	M	M	M	M
-	Message type	M	M	M	M	M	M
-	Bitmap	M	M	M	M	M	M
2	Pan	M	0	С	0	N	N
3	Processing code	M	M	M	0	N	N
4	Amount Transaction	M	M	M	0	N	N
7	Transmission Date and time	M	M	M	O	M	M
11	System trace Audit number	M	M	M	O	M	M
12	Local Time	M	M	M	O	M	M
13	13 Local Date		M	M	O	M	M
18	18 Merchant Type		0	0	0	N	N
30	30 Commission		M	M	0	N	N
32	32 Acquiring Institution bin		0	M	O	N	N
37	Retrieval Reference number	M	M	M	0	N	N
38	Authorization code	С	С	O	O	N	N
39	39 Response code		M	С	M	N	M
41	Terminal ID	M	O	M	O	N	N
42	Card acceptor ID code	M	O	M	O	N	N
43	Card acceptor name and loc	M	O	M	O	N	N
48	Additional response data	N	С	N	O	N	N

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49	Currency code	M	О	M	O	N	N
52	PIN Data	С	N	N	O	N	N
54	Additional amounts	С	С	С	0	N	N
59	Echo data	O	M	M	M	N	N
70	Network management info		N	N	0	M	M
90	90 Original data elements		N	M	O	N	N
95	Replacement amounts	N	N	M	С	N	N
102	Account to debit	M	С	M	С	N	N
103	Account to credit	M	С	M	С	N	N





Fields Definition

3.1 Data Types

Please note the following default values for the more common data types.

A - Alphabetic character, A through Z and a through z

n - Numeric digits, 0 through 9

ans - alphabetic, numeric and special characters

DD - Date, 01 through to 31

MM - Month, 01 through to 12

YY - Year, 00 through to 99 no apparent allowance for the turn of the century.

Hh - Hour, 00 through 23 mm - Minute, 00 through 59 ss - Second, 00 through 59

LL - length of variable length data element that follows, 01 through 99

LLL - length of variable length data element that follows, 01 through 999

3 - Fixed length of 3 characters ..11 - Variable length up to 11

b - Binary representation of data z - track 2 code

VAR - Variable Length Data Field

x - C-Credit or D-Debit normally prefixes a numeric amount time - time format

date - date format

Note – all fixed length "n" elements are presumed to be right justified with leading zeroes, except for those where examples show left justified with trailing spaces. All other fixed length data elements are left justified with trailing spaces.

3.2 Field Definition

1. Length

Format: n4

Description: this is length of the message. I.e. the number of characters contained in the message being sent e.g. 0199

2. Message Type

Format: n4

Description: this is used to specify the message type if e.g. 0200 for a Bank registration

3. Bitmap

Format: n32

Description: e.g. E230000400218000000000000040000001

4. Field 2: Primary Account Number (PAN)

Format: n...19, LLVAR

Description: This is a number identifying the cardholder and the card issuer. Typically, this number is embossed on the front of the card and encoded on Track 2 of the magnetic stripe. This can also be the MSISDN of the customer e.g. 255689884714

5. Field 3: Processing Code

Format: n6

Description: The customer transaction type and the account types, if any, affected by the transaction; this is a fixed length field consisting of 3 data elements:

Transaction type code:

Digits 1 and I	Description
----------------	-------------

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2	
0	Balance Inquiry
01	Mini statement
02	Bank to Mobile Money
03	Mobile Money to Bank
04	Bank to Bank
05	Registration of Mobile Money Subscriber
06	Bank account Registration
07	Bank to Mobile Money (Bank Originated)

From account type

Digits 3 and		
4	Description	
00	Default Account	
10	Savings	
20	Cheque	

To account type

Digits 5 and	
6	Description
00	Default Account
10	Savings
20	Cheque

E.g. for a bank registration 060000

6. Field 4: Amount Transaction

Format: n12

Description: The funds requested by the cardholder in the local currency of the acquirer or source location of the transaction exclusive of transaction fees. Values are expressed in the minor denomination (e.g. cents). I.e. a fund request for 100.00 is written as 000000010000

7. Field 7: Transmission Date and Time

Format: n10, MMDDhhmmss

Description: The date and time, expressed in Coordinated Universal Time (UTC), when this message is sent by the message initiator. E.g. 0919050516 for a transmission done at '9/19/2013 5:05:16 AM'

8. Field 11: System Trace Audit Number

Format: n6

Description: A number assigned by a transaction originator to assist in identifying a transaction uniquely. E.g. 161921

9. Field 12: Time, Local Transaction

Format: n6, hhmmss

Description: The local time at which the transaction takes place at the card acceptor location in authorization and financial message.

10. Field 13: Date, Local Transaction

Format: n4, MMDD



Description: The local date at which the transaction takes place at the card acceptor location in authorization and financial messages

11. Field 18: Merchant Type

Format: n4

Description: The classification of the merchant's type of business product or service, codes to be developed within each country

12. Field 30: Commission

Format: ans9

Description: this filed should include the fixed data of D00000000.

13. Field 32: Acquiring Institution Id Code

Format: n...11n, LLVAR

Description: A code identifying the financial institution acting as the acquirer of this customer transaction; the acquirer is the member or system user that signed the merchant, installed the ATM or dispensed cash. E.g. 639485

14. Field 37: Retrieval Reference Number

Format: an12

Description: A reference number supplied by the system retaining the original source information and used to assist in locating that information or a copy thereof. E.g. 000008033167

15. Field 38: Authorization Id Response

Format: anp6

Description: A code assigned by the authorizing institution indicating approval

16. Field 39: Response Code

Format: an2

Description: A code that defines the disposition of a transaction

Code	Description
00	Successful
01	Failed

17. Field 41: Card Acceptor Terminal Id

Format: ans8

Description: A unique code identifying a terminal at the card acceptor location

18. Field 42: Card Acceptor Id Code

Format: ans15

Description: A code identifying the card acceptor (typically a merchant)

19. Field 43: Card Acceptor Name and Location

Format: ans40

Description: The name and location of the card acceptor (such as a merchant or an ATM)

20. **Field 48:** Additional Data **Format:** ans....9999, LLLLVAR

Description: Used to provide linked account or mini-statement information for a linked account inquiry or a mini-statement inquiry. It can also be used to provide more data about the transaction,



for example. bank account details. The data in this field could contain more than one data element separated by a delimiter, most commonly a comma (,). **E.g.** FIRST NAME: Moses, SECOND NAME:, LAST NAME: Mwangi, NATIONALITY:KENYA, DATE OF BIRTH:05-June-1983, ID NUMBER:^{oa}E}□²†U.\! HDÂ, ACCOUNT STATUS:ACTIVE

21. Field 49: Currency Code

Format: n3

Description: The local currency of the acquirer or source location of the transaction e.g. 404 to represent KES. More codes on http://www.nationsonline.org/oneworld/currencies.htm

22. **Field 52:** Pin Data **Format:** b8 (Hex 16)

Description: The PIN data field contains the PIN (a number assigned to a cardholder intended to uniquely identify that cardholder) of the cardholder formatted into a 64-bit block and encrypted with a DES key.

23. Field 54: Additional Amounts

Format: an...120, LLLVAR

Description: Information on up to 6 amounts and related account data for which specific data elements have not been defined, each amount is a fixed length field consisting of 5 data elements: e.g.

- Account Type (positions 1 2)
- Amount Type (positions 3 4): 01=ledger bal; 02=available bal
- Currency code (positions 5 7)
- Amount sign (position 8) "C" or "D"
- Amount (position 9 20)

24. **Field 59:** Echo Data **Format:** ans...225, LLLVAR

Description: Contains data from the originator of the message that shall be returned unaltered in the response message e.g. 10736

25. Field 70: Network Management Information Code

Format: n3

Description: The code that defines the type of network management needed as follows:

001=Sign On Request 301=Echo Test

26. Field 90: Original Data Elements

Format: n42

Description: The data elements contained in the original message intended for transaction matching (e.g. to identify a transaction for correction or reversal). It is a fixed length field consisting of 5 data elements:

- Original message type (positions 1 4) the message type identifier of the original message of the transaction being reversed. E.g. 0200 -financial transaction
- Original systems trace audit number (positions 5 10) the System Trace Audit Number of the original message.
- Original transmission date and time (positions 11 20) the transmission date and time of the original message
- Original acquirer institution ID code (position 21 31) the Acquirer Institution Id Code of the original message (right justified with leading zeroes)



• Original forwarding institution ID code (position 32 - 42) – the Forwarding Institution Id Code of the original message (right justified with leading zeroes)

e.g. 020082696909250759440000062755900000000000

27. Field 95: Replacement Amounts

Format: an42

Description: The corrected amounts of a transaction in a partial or full reversal (or the final amounts for the transaction), it is a fixed length field consisting of 4 data elements:

- Actual amount, transaction (positions 1 12) the corrected, actual amount of the customer's transaction, in the currency of the transaction
- Actual amount, settlement (positions 13 24) the corrected, actual amount of the customer's transaction, in the settlement currency
- Actual amount, transaction fee (positions 25 33) the corrected, actual amount of the fee (in format x + n8) for this customer transaction, in the currency of the transaction
- Actual amount, settlement fee (positions 34 42) the corrected, actual amount of the fee (in format x + n8) for this customer transaction, in the settlement currency

28. Field 102: Account Identification 1

Format: ans...28, LLVAR

Description: A series of digits and/or characters used to identify a specific account held by the cardholder at the card issuer and if present, shall remain unchanged for the life of the transaction. This field usually contains the description of the "from" account e.g. 01D1000099102

28. Field 103: Account Identification 1

Format: ans...28, LLVAR

Description: A series of digits and/or characters used to identify a specific account held by the cardholder at the card issuer and if present, shall remain unchanged for the life of the transaction. This field usually contains the description of the "to" account e.g. 01D1000099103

CHAPTER4

Sample Messages

4.1 KYC Request

Request

 $00941200F238000000000000000000000000000122556898847140700000000000000103105500180001205\\50011031$

F2: 255689884714

F3: 070000

F4: 000000000000 F7: 1031055001 F11: 800012 F12: 055001

F13: 1031 **Response**

02311210723800000201000012254736291671070000000000000500009161310434143651310430916000147FI RST NAME:MOSES, SECOND NAME:, LAST NAME:MWANGI, NATIONALITY:KENYA, DATE OF BIRTH:05-JUNE-1982, ID NUMBER:????E}???U.\! HD?, ACCOUNT STATUS:ACTIVE.

LENGTH= 023

MESSAGE TYPE= 1210

BITMAP= 723800000201000012

F2= 254736291671

F3= 070000

F4= 00000005000

F7=0916131043

F11= 414365

F12=131043

F13= 0916

F39= 00

F48=FIRST NAME:MOSES, SECOND NAME:, LAST NAME:MWANGI, NATIONALITY:KENYA, DATE OF BIRTH:05-JUNE-1982, ID NUMBER:°ªE}□²†U.\! HDÂ, ACCOUNT STATUS:ACTIVE

4.3 Bank account Registration

Request

02511200F238000508E1800000000000000001225578667028006000000000000000010300330531345630 330531030D000000004020000000000CRDB 1000000000004 BANK ACCOUNT

Length: 0251

Message type: 1200

Bitmap: F238000508E18000000000000200000012

F2: 255786670280

F3: 060000

F4: 000000000000 F7: 1030033053 F11: 134563 F12: 033053



F13: 1030

F30: D00000000

F32: 0200

F37: 0000000000000

F41: CRDB

F42: 100000000000004

F43: BANK ACCOUNT REGISTRATION

F48: CRDB BANK,500100,0152316340300,THADEO, IBRECK

F49: 834

F103: 00000000000000

Response

F2: 255786670280

F3: 060000

F3. 000000 F4: 0000000000000 F7: 1030152810 F11: 134563 F12: 152810 F13: 1030

F30: D00000000

F32: 0200

F37: 000000000000

F38: 000000 F39: 00 F41: CRDB

F42: 100000000000004

F43: BANK ACCOUNT REGISTRATION

F48: REGISTRATION SUCCESSFULL FOR [CRDB LTD] BANK ACCOUNT NUMBER

[0152316340300] TO MSISDN [255786670280]

F49: 834

F103: 00000000000000

4.3 Bank to Mobile Money (Mobile Originated)

Request

02061200F238000500A180000000000000000001225478999223702000000000070000008010826220006510 826220801D0000000010NOT DEFIBANK TO ZAP 0015LIMITED

MOCARAN404130910298904845130001400303320

Length: 0206

Message type: 1200

Bitmap: F238000500A18000000000000600000012

F2: 254789992237

F3: 020000

F4: 00000700000 F7: 0801082622 F11: 000651 F12: 082622 F13: 0801

F30: D00000000

F32: 0

F41: NOT DEFI



F43: BANK TO ZAP

F48: LIMITED MOCARAN

F49: 404

F102: 0910298904845 F103: 0001400303320

Response

826220801D00000000010NOT DEFIBANK TO ZAP 0015LIMITED

MOCARAN404130910298904845130001400303320

Length: 0206 Message type: 1210

Bitmap: F238000500A180000000000000600000012

F2: 254789992237 F3: 020000 F4: 000000700000 F7: 0801082622 F11: 000651 F12: 082622 F13: 0801

F30: D00000000

F32: 0 F39: 00

F41: NOT DEFI F43: BANK TO ZAP

F48: 0001404C0043050593280002404C004325943296

F49: 404

F102: 0910298904845 F103: 0001400303320

4.4 Mobile Money to Bank (Mobile Originated)

Request

02061200F238000500A18000000000000000000122547363963510300000000001000008011213460006551 213460801D0000000010NOT DEFIZAP TO BANK 0015JARUPIA

IBRAHIM404130001400303320131050161280303

Length: 0206 Message type: 1200

Bitmap: F238000500A18000000000000600000012

F2: 254736396351

F3: 030000

F4: 00000010000 F7: 0801121346 F11: 000655 F12: 121346 F13: 0801

F30: D00000000

F32: 0

F41: NOT DEFI F43: ZAP TO BANK F48: JARUPIA IBRAHIM

F49: 404

F102: 0001400303320 F103: 1050161280303



Response

02721210F238000502A1800000000000000000012254736396351030000000001000008011213460006551 213460801D000000001000NOT DEFIZAP TO BANK 0079YOUR ACCOUNT HAS BEEN

SUCCESSFULLY CREDITED. YOUR CLEARED BALANCE IS -

3400841.0404130001400303320131050161280303

Length: 0272

MESSAGE TYPE: 1210

Bitmap: F238000502A180000000000000600000012

F2: 254736396351

F3: 030000

F4: 00000010000 F7: 0801121346 F11: 000655 F12: 121346 F13: 0801

F30: D00000000

F32: 0 F39: 00

F41: NOT DEFI F43: ZAP TO BANK

F48: YOUR ACCOUNT HAS BEEN SUCCESSFULLY CREDITED. YOUR CLEARED BALANCE IS -

3400841.0 F49: 404

F102: 0001400303320 F103: 1050161280303

4.5 Balance Query

Request (sent to Bank)

01791200E238000500A18000000000000040000001225473639635100000008010922010006520922010801D0 0000000010NOT DEFIBALANCE ENQUIRY 0015JARUPIA IBRAHIM404131050161280303

Length: 0179 Message type: 1200

Bitmap: E238000500A18000000000000400000012

F2: 254736396351 F3: 000000 F7: 0801092201 F11: 000652 F12: 092201 F13: 0801

F30: D00000000

F32: 0

F41: NOT DEFI

F43: BALANCE ENQUIRY F48: JARUPIA IBRAHIM

F49: 404

F102: 1050161280303

Response (From Bank)

01951210E238000502A18000000000000040000001225473639635100000008010922010006520922010801D0 000000001000NOT DEFIBALANCE ENQUIRY 0029YOUR CLEARED BALANCE IS

46.70404131050161280303

Length: 0195



Message type: 1210

Bitmap: E238000502A18000000000000400000012

F2: 254736396351

F3: 000000 F7: 0801092201 F11: 000652

F12: 092201 F13: 0801

F30: D00000000

F32: 0 F39: 00

F41: NOT DEFI

F43: BALANCE ENQUIRY

F48: YOUR CLEARED BALANCE IS 46.70

F49: 404

F102: 1050161280303

4.6 Mini statement

Request

01781200E238000500A18000000000000040000001225473563305701000009021811240011961811240902D0 0000000010NOT DEFIMINI STATEMENT 0014WACHIRA DANIEL404130690192516155

Length: 0178 Message type: 1200

Bitmap: E238000500A18000000000000400000012

F2: 254735633057 F3: 010000 F7: 0902181124 F11: 001196 F12: 181124 F13: 0902 F30: D00000000

F32: 0

F41: NOT DEFI

F43: MINI STATEMENT F48: WACHIRA DANIEL

F49: 404

F102: 0690192516155

Response (from bank)

00000001000NOT DEFIMINI STATEMENT 014331/08/13 CRASH WITHDR DR 55.0 31/08/13 EAZZY-BAL-I DR 5.5

31/08/13 EAZZY-BAL-1 DR 5.5 02/09/13 MOBILEM BAL DR 3.3

02/09/13 CRHQ DREPOSIT CR 90930.0

404130690192516155

Length:

Message type: 1210

Bitmap: E238000502A18000000000000400000012

F2: 254735633057

F3: 010000 F7: 0902181124 F11: 001196 F12: 181124 F13: 0902



F30: D00000000

F32: 0 F39: 00

F41: NOT DEFI

F43: MINI STATEMENT

F48: 31/08/13 CRASH WITHDR DR 55.0

31/08/13 EAZZY-BAL-I DR 5.5 02/09/13 MOBILEM BAL DR 3.3 02/09/13 CRHQ DREPOSIT CR 90930.0

02/09/13 CKIIQ DKEFO511 CK 90930

31/08/13 EAZZY-BAL-I DR 5.5 02/09/13 MOBILEM BAL DR 3.3

02/09/13 CRHQ DREPOSIT CR 90930.0

F49: 404

F102: 0690192516155

4.7 Bank to Bank (Mobile Originated)

Request

02031200F238000500A18000000000000000000122547337260530400000000632500007251915400006021 915400725D0000000010NOT DEFIBANK TO BANK 0012GICHUKI

JANE404130470192033433130120100303856

Length: 0203 Message type: 1200

Bitmap: F238000500A180000000000000600000012

F2: 254733726053

F3: 040000 F4: 000006325000 F7: 0725191540 F11: 000602 F12: 191540 F13: 0725 F30: D00000000

F32: 0

F41: NOT DEFI F43: BANK TO BANK F48: GICHUKI JANE

F49: 404

F102: 0470192033433 F103: 0120100303856

Response

Length:

Message Type:

Bitmap:

F2=MSISDN

F3=040000

F4=000000000012

F7=MMDDhhmmsss

F11=REFERENCE ID

F12=hhmmss

F30=D00000000

F38=000000

F39=Response Code

F43=Bank to Bank

F48=Your account has been successfully debited. Your cleared balance is ######

F49=404



F54=Your account has been successfully credited. Your cleared balance is #### 102=BANK ACCOUNT NUMBER TO BE DEBITED 103=BANK ACCOUNT NUMBER TO BE CREDITED

4.8 Registration of MOBILE MONEY Subscriber

Request

Length:

Message Type:

Bitmap:

F2=MSISDN

F3=050000

F7=MMDDhhmmsss

F11=REFERENCE ID

F12=hhmmss

F30=D00000000

F43=MOBILE MONEY Subscription

F48= First Name, Last Name, Street Address, Town,

Document Type, ID Number, Date Of Birth, Place Of Birth, Nationality

F49=404

Response

Length:

Message Type:

Bitmap:

F2=MSISDN

F3=050000

F7=MMDDhhmmsss

F11=REFERENCE ID

F12=hhmmss

F30=D00000000

F38=000000

F39=Response Code

F43= MOBILE MONEY Subscription

F48=Subscription Received, thank you.

F49=404

4.9 Bank to Mobile Money (Bank Originated)

Request from Bank

01911200F238000500A18000000000000000000101234567890210000000000050000612041132041196153 4230705D0000000010NOT DEFIBANK TO

ZAP 0004NAME4041225473469027012254737561276

F3: 210000 -> '210000'

F4: 000000005000 -> '50.00'

F7: 0612041132 -> '6/12/2015 4:11:32 AM'

F12: 153423 -> '5/13/2015 3:34:23 PM'

F13: 0705 -> '7/5/2015 12:00:00 AM'

F30: D00000000 -> 'D00000000'



F32: 0 -> '0'

F41: NOT DEFI -> 'NOT DEFI'

F43: BANK TO ZAP -> 'BANK TO ZAP '

F48: NAME -> 'NAME'

F49: 404 -> '404'

F102: 254734690270 -> '254734690270'------→(Source MSISDN)

Response to BANK

01931210F238000502A1800000000000000000010123456789021000000000050000513142934041196142 9340513D000000001000NOT DEFIBANK TO

ZAP 0004NAME4041225473469027012254737561276.

F2: 1234567890 -> '1234567890'

F3: 210000 -> '210000'

F4: 000000005000 -> '50.00'

F7: 0513142934 -> '5/13/2015 2:29:34 PM'

F11: 041196 -> '041196'

F12: 142934 -> '5/13/2015 2:29:34 PM' F13: 0513 -> '5/13/2015 2:29:34 PM'

F30: D00000000 -> 'D00000000'

F32: 0 -> '0' F39: 00 -> '00'

F41: NOT DEFI -> 'NOT DEFI'

F43: BANK TO ZAP-> 'BANK TO ZAP'

F48: NAME -> 'NAME'

F49: 404 -> '404'

F102: 254734690270 -> '254734690270' F103: 254737561276 -> '254737561276'



