Fzero

Tuesday, May 31, 2016

3:45 PM

**General Info**

* + **The main target of this application is to reduce the loss of our client due to Fraud calls**
  + A client can be a country and the players are operators
  + Calls are generated from G to R (Generator and Receiver)
  + Generators are:
    - Android App
    - Manual
    - Fzero
  + Receivers are:
    - Android
    - GOIP
  + When received, calls are send from R to the database via emails or as excel sheets
  + Emails are received by a service that imports the data to DB and start analyzing it
  + Excel sheets are imported manually (with preview functionality)
  + Analysis are done on two levels:
    - L1 compare
    - L2 compare
  + Numbers are considered either Fraud or suspect
  + IGW has a WCF service that sends data for us
  + Related numbers are the numbers related to Fraud numbers and detected by operators
  + Related numbers are sent for us separately to add them to our reports when we need to send them to the client
  + Analysis are done this way:
    - Data are read from G and for each record
      * If found by ID in R
        + If same CLI then status becomes clean instead of pending
        + Otherwise status becomes fraud
      * If not found ID in R then it is ignored
  + The flow in general starts with:
    - Generating calls
    - Collecting data and Importing it to the system
    - Mapping and Analyzing
    - Showing them as reports
  + Repeated numbers are those who were detected and not blocked by operators, then you have detect it again
  + Reporting Fraud and flagging it in DB as reported

**Other Notes**

* All clients are now in same application
* No workflow for Approval and frauds are directly reported
* Summaries are accumulated in a wrong way (more general)
* Fzero DB has no backup (the one installed at the client)
* PDF and Excel Files that are collected by the email listner are also added to a certain folder, these files are used in reporting later to download the file (these should be added to DB instead of local directory)

**Online Portal**:

* This was supposed to be used by operators to:
  + Check what are the Fraud numbers collected
  + Mark them as blocked after they block the Fraud number
* The requirement was given by Rashid and Ali Choaito
* This portal is not used from Operators:
  + They do not like to block numbers (loss for them)
  + They do not want to work for us

Generators Receivers

Tuesday, June 7, 2016

11:52 AM

**General Info**:

* PSTN means land line in Iraq
* IGW is the international Gateway in Iraq that every call should pass by in order to be considered legal
* If an international call by passes IGW it is considered as Fraud
* In order to bypass IGW you can do the following:
  + A carrier in Syria for example calls a person who buys a SIM box and connect it to the internet
  + This person has the SIM box at home may be and buys also different SIM cards
  + SIM cards are on Iraq local network, and when an international call comes from to this carrier
  + The carrier passes this call to the SIM box directly where the cost is less than if it passes it to IGW
  + What happens is that when the call comes to the termination, the CLI that appears is the local one of the SIM card put in the SIM box
  + This does not happen in Lebanon because the local calls costs as much as IGW in Lebanon

**Other notes**:

* When two calls are generated from two sources to the same receiver, there is no way to know who is the called except if we check the time.
* Based on the time we can know who is the generator
* If the latency is more than 0.5 minutes (it might be a third generator)

Machine generated alternative text:
Generators 
VOIP 
+Drops calls in this switch 
Switch 
Manual 
Service 
Receivers 
Same service that drops calls 
in VOW 
In and Out calls are sent from 
the app to IDS and IDS send 
them to Fzero by Email 
Android 
No Service 
Android 
Drops calls in this switch 
While it should not in 
An SQL Job which is stopped now 
order to identify the caller 
because calls are saved in VOIP 
Call Generator 
Analysis 
Email Receiver 
Reports 

* + **VOIP**: is the switch that collects all CDRs from Manual and temporary from Call Generator:
    - A service reads CDRs from VOIP switch and sends them as an email (Specific XML Schema)
  + **GOIP**: is a SIM box that we buy and put in Iraq:
    - This way we can collect information of the caller and the receiver
  + **Generators Data**: is only used for statistics to check which source is detecting more frauds
  + **Android**: application are either installed on users phones or we buy a Syrian line and schedule calls on it
  + **Android Receiver**: is the part that collects all calls that have an unknown Generators
    - the generator might become unknown because of an error happens to the app when the calls is generated (may be connection is turned off)
  + **Revector**: is a company that performs all this cycle and sends to us an email with results (a specific parser is implemented to read this type of xml)
  + **Protel**: we have access to Protel database but this is not official, we collect frauds from their CDRs
  + **Call Generator**: is installed in London

L1 Compare

Wednesday, June 8, 2016

1:13 PM

Machine generated alternative text:
A, B, AT 
Yes 
Clean 
Receive CDR Data from 
Services 
Insert them to 08 in G and R 
tables 
Is A Equal to CLI 
No 
CLI is Local? 
Yes 
Fraud 
B, CLI, AT 
No 
Compare 
LI compare which is done 
using an SQL Job 
L2 compare is done using 
a WCF Service 

* When adding data to DB, there is a small type of normalization that happens in order to remove 00 or + from numbers
* In order to detect the ID of generated call a comparison based on Attempt time happens:
  + +1 min is added to attempt time at G and it is subtracted at R
  + If there are 3 numbers calling:
    - First one before 5 seconds
    - Second one after 2 seconds
    - Third one after 5 seconds
  + Then Second call is the caller, the id of generated record is got and A is collected to start comparison with CLI

* + There is certain configuration needed to be done in order to detect if a number is local
    - For each client we need to define these configuration
    - When a new range is added also we need to add it to configuration
    - Local Numbers are detected using (for example in Lebanon):
      * Size: 8
      * Starts with: 03 / 70 / 71…

* + When a number is considered as Fraud, a flag is set to true at this record for later use

L2 Compare

Wednesday, June 8, 2016

1:59 PM

Machine generated alternative text:
Get Data from backup of 
IGW 
Is Number Found 
in DB? 
Yes 
No 
Clean 
Suspect 
IGW has all CDRs logged into 
a real time DB 
Based on a schedule a 
backup is got from this DB to 
another server 
This is done using a WCF 
service that is turned off 
currently 
Here starts the manual 
checks for this number to 
see if it is Fraud or not 

* + **Why the service is turned off?**
    - In Iraq we are allowed to access this DB
    - In Syria they did not accept to give us the data, that is why this WCF service is turned off from 2 years and it is not functional
    - Another reason is that the data is not real time, sometimes the comparison shows 200 000 records as suspect due to this latency

* + Manual detection is done as following:
    - A manual call is done to suspect number
      * If a person answers then this number is clean, otherwise it is Fraud
      * If a machine answers:
        + A conversation is done with this machine to detect if it is a machine or a person

Services + Reporting

Wednesday, June 8, 2016

2:07 PM

**CDR Import Service**:

* This is the email listener that accept emails from Android, Call Generator, Revector and GOIP
* This service should be always running
* When an email comes, there is a specific parser for each type
* CDRs are parsed and inserted to the Database directly (Either to G or to R)
  + To G if the data are coming from VOIP My SQL DB that collects all manual calls
  + To R if the data are coming from VOIP My SQL DB that collects received calls by GOIP device installed in Syria or Iraq

**Daily / Weekly / Yearly Report service**

* These services runs on the same data
* Each one collects the data in a specific aggregation
* Other notes about Yearly:
  + The most complicated
  + The most needed because this is the one that shows the loss last year and compares it with this year to show the client how Fzero is making difference

**Normal Report Service**:

* This service runs every 2 hours
* It collects from the DB all data that are flagged as Fraud
* It creates from the collected data either:
  + A PDF file
  + Or An Excel Sheet (a request from Syria Telecom)
* An email is sent to the operator after detecting it based on the configuration
  + A configuration is done to define the prefixes for all operators for this purpose
* The email always copies (ITPC or ST) in our case
* The client then request from the operator to block al Fraud numbers
* The Operator then sends us the related numbers to add them to our DB
* If the same number is repeated, this service only sends the last record:
  + This might happens because of the latency, or the service might be off for a while
  + We do this to avoid having problems with the client (why would not you send this record before)
  + All other numbers are marked in the database as ignored and the last one is marked as reported
  + Note: the status To Be Reported was set manually and now it is not used anymore

**Received My SQL Service**:

* This service runs everywhere a GOIP is installed
* GOIP drops its data on a VOPI switch
* This service collects data from My SQL of VOIP switch
* Then sends them as an email to be received by CDR Import Service

**My SQL Service**:

* Same as the above but it is the one related to collecting manual calls

**Repeated Report Service**

* This service runs once a week
* It collects all repeated numbers that were not blocked by an operator
* The record should be one day old at least to be considered as repeated