Financial and Legal Obligations that appear from Internet Traffic - Technology of Information and Communication Kosovo Case

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Abstract- *In this case study we have presented the comparison of the calls made by the clients to the telephone operator Y and the calls which have been transferred to the company responsible for the quiz through telephone calls. During this analysis we gathered calls from the Composite Call Data Record (CDR), the CDR partition is divided in two part, the CDR Originating part and the part of the CDR transit part. The part of the CDR Originating are as the showed following: Calling Party Number, Called Party Number, Date Fort Start Of Charge, Time For Start Of Charge, Time For Stop Of Charge and Chargeable Duration. The part of the CDR Transit part contains completely the same data that must be identical because it is the same call that additionally contains other information such as the name of the incoming route from which the call and outbound route or where the call came from is addressed by identifying its name. The data has been decoded by the hexadecimal system in the decade system to compare the numbers of calls, duration calls and time of calls. From the analysis that is done in this case study has come out there is a difference from the number of calls as well the duration of the calls that have been on the part of the customers to the operator Y and the calls directed by the operator Y in the contracting company X*

Keywords - *CDR (Composite Call Data Record); Called Party Number; Date Fort Start Of Charge; Time For Start Of Charge; Time For Stop Of Charge and Chargeable Duration*

1. INTRODUCTION

Telephone service providers, according to the rules in the places of residence where they have licenses for the provision of telephone traffic and / or general communications traffic (talks, data and video) offer a range of attractive services to their clients in order to maintain and increase their base, but also to increase revenues from the services provided. Additional value services are provided through specialized service platforms. Usually, service platforms are owned by companies and / or service providers specializing in providing this type of service, they also care about the service itself and the platform and should not be the communication service providers. It is practical that communication service operators conclude agreements with service providers providing value-added services. Typically, contracts regulate mutual relationships in terms of service maintenance and revenue sharing from that service. For this purpose, company X.... in Kosovo has entered into contracts with operators Y and Z who are operators of communication services in the territory of Kosovo. X SH.PK possesses a contract no. 01-6919 / 09 of the contract X LLC and the third company from Switzerland. Details and analysis of traffic realized are provided in the text below.

with operator Y linked on 23/11/2009. With operator Z, X SH.PK has signed a contract. Both contracts relate to the provision of the "speech queue" service, using a premium number. On the basis of the agreement, the contracting parties on a monthly basis should agree to confirm the amount of traffic realized on the service platform X, which will be the basis for the financial calculation between X SH.PK and Y contracted with X SH. PK and Z- under the contract. X SH.P.K provides a service platform through third companies from Switzerland, in order to provide the value of the "speech queue". Indeed, these two companies have signed a contract with which the third company from Switzerland is required to provide technical solutions, development, integration and support of the "speech queue" service during the term of the contract. Given this agreement, it follows that (not) the realization of Value Added Service (SIA), example, Failure to comply with the contractual obligations between X LLC and the communication service operators in Kosovo, Y and Z, has a direct reflection

2. TRAFFIC ANALYSIS CARRIED OUT

The traffic analysis on the X service platform will be in two parts. One part will present the calls made to the users of the telephone services by the operator Y measure, while the second part will focus on analyzing the data from the realized traffic of the users of the operator Z. In this regard, it will be mentioned that the analysis for both operators were made for the same time period, July 2010. This suggests that the data obtained from both analyzes can be easily compared, as is done in the text below.

3. TRAFFIC ANALYSIS BY OPERATOR USERS (Y) ON THE MEDIAPLUS SERVICE PLATFORM

According to the statistical data of (X) the format presented in Appendix 1 of this Ascertainment, which contains the following information:
* session_id - session identification (link created)
* resource - source from where the call is generated
* direction - direction
* a_num - an-number or dialing number
* b_num - b-number (in the terminology of communication usually represents the number that is called) but also the number as auxiliary identifier i and the final number
* c_num - c-number or number being summoned
* start time - call generation time
* connect time - call time setting
* disconnect time - call termination time
* duration - call duration
* status - call status
* status text - textual description of call status

Appendix 1, which is an integral part of this Ascertainment, provides a list of all calls generated in July 2010 by the operator's network (Y) with the above-mentioned text parameters. Calls from the operator (Y) according to the list attached to Appendix 1 are generated and placed on the service platform (X) and end in IVR (Interactive Voice Response) - device for interactive response (Wai M. Tam, 2005)[5].

The operator (Y) is connected to the 2HE1 connection or the 60 channel voice service platform (X) which suggests limited traffic by the designated service, respectively the limit of the number of the platform calls. Considering Erlang's theory of E1 communication traffic distribution that says the maximum link load can reach 0.8 Erlanga, so 80% of the total time can be charged, then this means that realized 223 335 calls with an average duration of 6 seconds is an expected and realistic reflection of traffic intensity in this service platform. When you connect a call to the IVR, the device generates and transmits a "answer" signal to the operator system (Y). This signal is an indication for the user who initiated the call being made, but also a call to the operator that the call should be logged in the billing system "Billing" system (Y) that can be charged based on the service provided the same service can be paid by the user. From the data attached to Appendix 1 it can be seen that the same number of calls

(the user) has repeatedly called the automatic voice device on different days of the month. As an example, the first number of callers can be obtained (in Appendix 1 designated as "a-num"). The same goes for other callers, user numbers. This refers to a completely uniform and legitimate use of the service provided by the service provider (X) through the operator's network (Y). From the form it can be seen that company (X) has made 223,355 calls to its service platform by operator users (Y). The data held by the operator (Y), ie, Telecom for the implementation of this service with a minimum difference of 10,598 calls, according to the agreement that are unpaid because they are not collected by users and referenced to post paid users and they will be paid at the time they are collected from the total registered by (X). The figure that distinguishes between two-way calls (with operator and service provider) is within European practice for this type of service and is a real indicator of traffic realized on the service platform (https://serverfault.com/questions/725262/what-causes-the-connection-refused-message, 2017).

4. TRAFFIC ANALYSIS BY OPERATOR USERS (Z) ON SERVICE PLATFORM (X)

The telephone traffic, negotiation, which operator network users (Z) realize on the service platform (X) is realized through communication channels using the IP protocol. Because of this, the structure of statistical data, the evidence of calls made by the service provider (X) and the operator (Z) is different. Indeed, the evidence on the side of (X) has exactly the same structure presented in Section II.3.1 where traffic analysis by users (Y) is processed, while the evidence with the operator (Z) is different. The registration received by the operator (Z) has a structure that can easily identify a number and b number as well as times when calls are generated to the IVR device of (X) and how long have extended conversations. This form provides data (call list for July 2010) based on service provider (X) data initiated by operator network users (Z). The data structure and their uniformity are identical. I would like to point out immediately that the accuracy of the data is also confirmed by the operator (Y) so that they are paid in accordance with the contractual obligations. Figure 2 provides a principle connection between the operator (Z) and the service provider (X) (Fiore, 2016)[2].

The difference between the service platform and the two operators is in the type of connection. While the service platform was connected to the E1 connections with the operator (Y), the connection to the operator (Z) was accomplished with an IP connection. The IP connection speed was 10 Mbps. If standard voice codices' are used (no compression), then a voice message is performed at a 64 kb / sec speed. It is easy to calculate that at the same time, you can create 160 voice connections (10 Mb / s: 64 kb / s = 160). Compared to the capacity of the connection

between the service platform and WAVE, the connection capacity from the platform to the operator (Z) is significantly greater, about 3 times (Edelman, 2015). The expectation is that traffic, the calls generated by the network operator (Z) should be more numerous in number. Namely, this is also registered by the service provider (X), example, there were registered 285,460 calls from the network (Z), compared to 223,355 calls from the operator's network (Y). I will continue the analysis by comparing the list of calls registered by (Z) and those registered by (X) for the same calls created by operator (Z) users in July 2010. As mentioned in Annex 5, Call records are made by network users (Z) on the service platform. These data are recorded by (X). I immediately want to mention that the data of these calls were made in the same time period when data for calls from the operator's network (Y) were made in July 2010. According to data of (X), network users (Z) in July provided 285,460 calls to the service platform, while data received from the operator (Z) listed in Annex 5 amounted to 20,470, representing a striking difference of 92.8%. Furthermore, given the skill analysis of operators (Z) and (Y) given in the text above, the number of calls submitted by the operator (Z) is unrealistic. By comparing Appendix 1 (operator call recordings (Y)) and (call records from operator (Z)) registered by the service provider (X), the uniformity and completeness of the data proving the high precision during the recording of calls made by (X). The fact that (Y) accepts the statistical data from (X) by correction is another indicator of the accuracy of the data held by (X), and hence the data for calls from the operator (Z). For the analysis itself, it is worth comparing directly the contested (Z) contested calls for calls made in the service platform for July 2010 and those of (X), ie, to compare the data.

For comparison, one can conclude as follows:

*The number of calls from (Z) records 10,585 different user numbers that have generated a call to the service platform (X) and generated 20,470 calls
* Call recording from (X) for the same period records 18,578 different user numbers that have generated 285,460 calls to the service platform.

There is a noticeable difference in the number of users for 7,993 more registered users in the (X) registries that have used this service. In addition, it is important to note that most of these 7,993 users who are not registered in the operator list (Z) generate more than one call to the service platform. The data for a single call of these users, although they have on average made more calls to the platform service, so as not to be registered by the operator (Z) less accurate because as noted in the schematic indicator all numbers have registered the platform (X) generated by the operator (Z). This is supported by the fact that calls matching data records like (Z) and (X) match in terms of the number of the user who created the call and from the time of the call generation time and during the call duration. It can be concluded that the data presented by the operator (Z) are not complete and there

are large differences in the number of calls in the amount of 92.8%.

5. SERVICE PLATFORM (X)

The service provider service platform (X) is based on two IBM series servers "xSeries 226", a high-fidelity 8648 operating system in a distribution environment. Servers are based on a 64-bit Intel® Xeon ™ processor with INTEL-Extended Memry 64 technology that provides flexible and stable performance of applications. Server performance is perceived in its three important settings, availability, confidentiality, and ability to reconfigure and store data in case of server outages. These features ensure the integrity of the data stored on the server, the availability of the server itself in case of heavy load and for quick and easy diagnosis as well as repair. Given its sustainability, high quality and confidentiality with the right (X) chooses it as the base of the service platform for the "speech queue" offered by operators (Z) and (Y). Of course, (X) relies on the operation of the operation by the third company from Switzerland in the form of technical solution, development, integration and support during the service lifetime to operators (Z) and (Y). During July 2010 no problems were observed in the operation of the entire system (X), which can be seen from the continuity of the service offered to operators (Y) and (Z) (https://www.aspect.com, n.d.). This fact also indicates that the data that the service provider (X) has for both operators are accurate and reliable. In my request for the contracted company of (X), namely the NTH company for the distribution of hardware and server for the KUIS I of FOLURI service, we deal with the way the service functions and the accuracy of the data and we have received complete documentation for the solutions hardware and software, and how to connect, process, and collect data as follows:

- Linux OS Debian Squeeze server operating system is used, kernel version 2.6.18-6-686 i686 under GNU (general public license) - The service logic has been developed with JAVA 1.5 performed through the Asterisk FreePBX platform under the GPL / GNU license. - The service only had access to the SSH tunnel with access registered only to NTH-IT members. Their MEDIAPLUS client did not have access to the servers so there was no manipulation mode during servicing or servicing functions. Incoming calls have been interrupted in this service, while outbound calls are managed through VoIP, this is done by using NTH infrastructure without any external access. This infrastructure was not only used for (X) but in all European countries where NTH operated and mainly in Switzerland where NTH completes and possesses all necessary legal patents and licenses. Under this hardware and software deployment infrastructure, NTH calls must match 100%.

NTH has retained this data for a longer period of time due to the trial (X) with (Z), though they have usually kept it for only 5 years.

6. CONCLUSION

The opinion from the field of information technology that follows is based on the attached well-documented documents in the introductory part of this Ascertainment as well as in the full analysis applied in the Aspects of Ascertainment. The Service Provider (X) through a highly reliable, high-quality, reliable, IBM-based server platform from "series 226" in July 2010 has provided value-added service to operators (Y) and (Z). The service platform has sufficient capacity to implement all calls from the networks of both operators and to provide top-level services in accordance with the agreed obligations between the platform owner (X) and the above-mentioned telecommunications operators, which was produced by NTH with hardware and software solutions according to all European standards and norms and the whole process was carried out by them, no third parties including (X) were able to manipulate the service and that all the calls recorded on their platform are generated by (Z), and that the accuracy of these data is 100%, and the probability of their logs is credible and accurate. The service delivery for operator users (Y) is realized with reciprocal satisfaction of both parties, where the number of calls made and received by both parties is 212,757 calls. The difference between the calls registered by the service provider (X) and operator data (Y) is minimal and not important in the framework of practice in European countries, where the exact value of the number of calls to the operator (Y) is taken into account. Unlike operator (Y), operator (Z) for the same period, July 2010, presents 20,470 calls to the service platform unlike recorded calls to service provider (X), which amount to 285,460 calls. The difference is 92.8%, which is unacceptably high.

Given the analysis made in sections II.3.1 and II.3.2 and the fact that the connection capacity (Z) with the service platform (X) is almost three times the capacity of the connections between the operator (Y) and the service platform where the higher turnover of traffic in the service is also activated, concluding that the displayed value of the number of calls made by the operator (Z) is incorrect, incomplete. Given all the details of the above analysis, the high quality and reliability of the service platform, the uniformity and completeness of the call records from (X) for the calls initiated by users and both operators (Y) and (Z) it can be concluded that the (X) data for calls made by operator (Z) users are reliable and accurate. The data presented by the operator (Z) is incomplete.

7. REFERENCES

[1] Edelman,B.,2015.*https://hbr.org.*[Online]Availableat :https://hbr.org/2015/04/how-to-launch-your-digital-platform [Accessed 2018].

[2] Fiore, M., 2016. Mobile Traffic Data Analytics. *Ins$tute of Electronics Computer and Telecommunica$on Engineering* , p. 20.

[3] https://serverfault.com/questions/725262/what-causes-the-connection-refused-message, 2017. *https://serverfault.com.* [Online]Available at: https://serverfault.com/questions/725262/what-causes-the-connection-refused-message [Accessed 8 October 2018].

[4] https://www.aspect.com,n.d.*https://www.aspect.com.*[Online]Availableat:https://www.aspect.com/develope rs/platforms/service-provider-platforms

[5] Wai M. Tam, F. C. M. L. C. K. T. Y. X. a. M. S., 2005. Traffic Analysis of a Mobile Communication System Based on a Scale-Free User Network. *005 International Symposium on Nonlinear Theory and its Applications (NOLTA2005),* p. 21.