GTC
GLOBAL TELCO CONSULT

Dear Mr. Ajay Kumar Kadel

With reference to your kind request on the 19th of May 2021, where Nepal Telecom seeks consultancy with regards to the procurement of a new billing system:

REFERENCE: **Background and Consultation Queries regarding Telecom Billing**

ISSUING DATE: 19th May 2021

Reply DATE: 25th May 2021

GTC is very honored to response to the consultation from Nepal telecom:

- **Question1:** Given that Nepal is in an area close to natural calamities like earthquakes, should geo-redundancy and cloud computing be used processing billing data consisting of sensitive personal information like IMSI, IMEI and MSISDN?

  Answer to Question 1:

  1. **Geo-Redundancy** is critical for business continuity especially for mission critical applications like a billing system and it should be a must to have in your new billing setup. It is all the more necessary for the telecom operations located in areas close to seismic activities like Nepal.

  2. **Cloud computing** is one of the most flamboyant technological innovation of 21st century. Pooled computing resources available through cloud computing have proven to offer tremendous benefits to business organizations in terms of efficiency, flexibility, cost saving and disaster recovery. However, Telecom operators across the globe have been very selective in choosing the right cloud approach with selected applications taking following into consideration:
     a. Return on Investment: While there is relatively low investment in adopting cloud for given application, but break evens are sometimes hard as in the long run the recurring expense over cloud would surpass a onetime capital expenditure when the longevity of the setup is certain like 5 years or more.
     b. Pattern of the Traffic: Cloud computing gives benefit when the peak resource utilization of multiple applications is spread across the day. However, in case of telecom operators it has generally seen that most of the applications' peak utilization fall around the same time- when traffic is high on the network. Since Telecom operators have setup dedicated computing instance, there is no saving when resources are under utilized
     c. Security: In case of public cloud, the security of the subscriber personal information (PI) play important role in decision making
     d. Technical Feasibility: Many applications which are latency sensitive or hyper scalable databases or traditional telecom technologies like SS7 do not perform best in cloud environment.

  Telecom operators around the world are setting up their owned Private Cloud which gives them better control, RoI and flexibility.

3. **Data Privacy:** It is also important to consider data privacy which has taken center stage even in the developing economies in last couple of years. Government after governments are coming up with laws and policies to protect the privacy of its citizens. Nepal also enacted The Privacy Act, 2075(2018). Chapter-10 of Act describes the collection and protection of the Personal Information. Clause 25 of Chapter 10 holds you responsible for making appropriate arrangement against unauthorised access to the personal information. Same Act also puts the onus on you to provide data to court, or agency or official authorized under law in the course of investigation of any criminal offence. There is it is imperative that personal information should be stored and processed securely and protected against unauthorised or unlawful processing, loss, theft destruction or damage.

4. **Cross border data transfer:** The security of personal data transferred across national borders has been one of the drivers for international consensus on the fundamental principles for the protection of personal data. For example, the principle articulated in the OECD Privacy Framework (OECD 2013) regarding transborder flows of personal data is that a data controller "remains accountable for personal data under its control without regard to the location of the data" (adopted in 1980 and revised in 2013, Article 17). However, due to uncertainty regarding data protection standards in foreign countries, many countries limit extraterritorial transfer of personal data. Such transfers may be permitted in certain circumstances or when the data protection standards in a third country are deemed adequate.

5. Many countries which earlier did not have data privacy laws about the protection of personal information are now coming up with data privacy laws which are compelling telecom operators to localised storage and processing of PI data.

Given the above aspects, it is suggested that if offshore-cloud provider is located in a foreign country, the foreign country should have reasonably strong data privacy laws and should adhere to the Nepal Laws as well which is unlikely. If cloud provider is based in Nepal, you can you consider that for building standby disaster recovery site.

- **Question2:** What is the effect if the core network equipment and billing system are both manufactured by the same company?

Answer to Question 2:

We clearly see a conflict of interest if the manufacture of core network devices and billing system is same as charging event records can be easily altered to hide deficiencies either in the network equipment or the billing system. We also foresee that upcoming technologies like IoT, M2M and 5G the access technologies and BSS stack should be decoupled for quicker go to market, hyper scalability and independent evolution of their features and functionalities. Also, the audits of all kinds are easier and meaningful when the core network and BSS manufactures are different where event records from each other can be tallied for audit purposes.

We hope we answered your queries and wish you the wisdom to select the best partner for the procurement of a new billing system.

With Kind Regards,

Erik van Stokkom
CCO