

Consultation paper called by TRAI

Comments / Response

by



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1 Background

TRAI have come out with a consultation paper on the 16th of September 2019, inviting comments on the question of the call ringing timer to be adopted by operators and the possible impact on consumer experience.

2 About ValuConnex

Valu Connex , is a Mumbai based firm providing Consultancy & Professional Services to the Telecom Industry with operations across multiple states in India. With its portfolio of services and solutions from leading vendors Valu Connex strives to provide the market with innovative services and solutions that meet our customers evolving needs.

Valu Connex has extensive experience in the area of Customer Experience Measurements. It uses its award winning proprietary methodology to give service providers an outside-in view of the Services 'as the customer sees it'. We have executed multi year multi circle exercises for leading service providers in India. These Measurement Exercises focus on all aspects of the Customer Experience including and uniquely so the Core Network Aspects. We have an extensive body of work in this area and consequently a huge amount of observations and insights in this area.

With a team of extensively trained professionals, Valu Connex has both the knowledge and the knowhow that enables it to offer a wide range of ICT infrastructure implementation solutions and services for various-business requirements.

3 Answers to the questions raised

3.1 Question 1

Can the arbitrary value of T_{Ringing} impact consumer experience? Please give your views with detailed justifications.

Answer:

Yes. The value of T_{Ringing} definitely impacts consumer experience. Ideally a longer duration of T_{ringing} is better for the consumer, which will improve the chances of B Answer and a satisfactory experience for the Caller. However practical considerations demand a more balanced approach between consumer experience and optimization of network resources.

Let us consider two scenarios; one of the mobile telephone and the other a fixed telephone. A mobile telephone is individual to the person and we assume it is always with him or in close proximity. Hence it is expected, that a mobile customer is in a position to respond faster. In the case of the mobile network, We suggest a Tringing duration between 30 seconds and 40 seconds would be optimal, bringing in sufficient balance between consumer experience and network resource optimization. Anything shorter may be just that little for the person to respond and lead to some consumer

dissatisfaction and distortion in call statistics like ASR or forced customer call back; while anything outside this range may not really add much value in consumer satisfaction nor improving telecommunication statistics. In spite of this, there will always be cases where the consumer and his mobile are just out of reach, and the consumer would have to either retry or callback.

In the second scenario of a fixed telephone, the values for T_{ringing} , we suggest should be in the range of 45 seconds to 60 seconds. Some time may be consumed in getting access to the fixed phone or the hand-held extensions and the consumer should be given ample time to access the unit.

It is our observation based on years of real field measurements across all operators that there is seldom any uniformity in the Tringing timer value with a service provider. This can even vary within the same circle for a service provider. Also, it may be noted that the Tring value in practice as experienced by the subscriber may vary for different call types – local to local, local to global, to roaming, prepaid to postpaid etc and all combinations thereof... Thus in practice its not just the Tringing parameter in the core that comes into play, hence the need to very carefully synchronize all parameters in a particular call flow to ensure a standardized delivery of the customer experience. We also strongly recommend all interconnect agreements are also standardized and strictly followed.

3.2 Question 2

How to discover the appropriate values of T_{ringing} from customer's perspective? What may be the guidelines to be followed when configuring specific values of relevant timers in the originating and terminating networks to achieve T_{ringing} ? Please give your views with detailed justifications.

Answer:

Discovery of optimal T_{ringing} timer: The service provider has a responsibility towards the paying customer, to ensure that his call gets completed. The behavioural dynamics of a Mobile subscriber vis a vis a fixed line subscriber can be different and distinct approaches need to be taken while handling the calls involving them. In addition to the suggested range of values for T_{ringing} , TRAI could initiate an exercise with the service providers to carry out sustained observations over a period, in selected circles, controlled experiments with multiple values of the T_{ringing} timer. The timer can be modified in increments of 5 seconds from 15 seconds to 60 seconds and key statistics can be observed. These statistics would reveal the optimal values that could be adopted for the entire country and network type. From these experiments it can be determined that what are the optimal values of T_{ringing} beyond which the incremental gains in call completion rates are not significant.

Suggested Guidelines: The following may help in discovering optimal values for timers.

- i. TRAI can insist that the interconnect agreements procedures are properly followed, while establishing interconnects between service providers.
- ii. The focus should not be just on one timer vale in an MSC or Core Element but on all timer and parameters at all elements in a particular call type. We need to synchronize all these timers at both the calling and called party end. There should be regular audit of these timers across networks. There are multiple organizations inside the country who can audit networks and these can be gainfully utilized.
- iii. Any change in system timers should keep in mind, the interactions between telecom systems like IN, CRBT and Billing systems.

3.3 Question 3

Is there a requirement to configure values of timers related to ringing in a uniform manner across the networks or is there also a requirement to maintain additional time margins for the timer in the originating network with respect to the typical values of timer configured in the terminating networks? Please suggest typical values for T_{Ringing} along with supporting data and explain with detailed justifications.

Answer:

There definitely is a requirement to have configured all values of timers related to ringing in a uniform manner across the telecom networks in the country. These timers at both originating network and terminating network need to be set up during the interconnect agreement phase itself and shall follow guidelines specified by the TRAI. We illustrate a case which needs suitable T_{ringing} timer values so as to accommodate inherent network latencies and ensure good consumer experience.

Since most of the announcements in Indian telephony networks are played by the terminating exchange, we find, in the event that the originating exchange were to release the call due to its T_{ringing} timeout, the announcement played by the terminating exchange may not be played or may be abruptly interrupted. This is in the event when both originating and terminating networks have the same T_{ringing} timer.

To mitigate this scenario, the T_{ringing} timer of the originating network needs to be longer than the T_{ringing} timer of the terminating network. The timer values may need to consider the impact on landline networks and CRBT systems where present in the network. Further considering the typical rural social milieu of the country, wherein a single mobile may be shared between members of the family, the T_{ringing} timers in MGW / MSC's in rural regions could ideally be a little longer than those in an urban environment.

3.4 Question 4

Whether customers need to be offered options to change or modify the duration of ringing time particularly for them? If yes what should be the typical range of values within which one can set the values and what should be the granularity to make such a change? To modify values, What procedure is suggested?

Answer:

We feel that perhaps this is not the time to give an option to the end customer to be able to change / modify the duration of the ringing time specific to their individual tastes. The reasons for this statement are as below:

- i. Firstly we need to ensure that the industry reaches a level of agreement on the standardization and then goes through with the implementation
- ii. Going by past experiences, we find the vast majority of customers are generally may not wish to either remember any short codes based activity nor are very inclined to customize the same. Even if a very friendly user interface is made available like an app etc. this might only lead to more customer complaints.
- iii. The vast numbers of mobile customers are prepaid users where there is a high turnover and MSISDN numbers get re-used without much of a quarantine period. As we find with the DND databases, the DND status are not reflected / refreshed when the number is issued afresh to a new consumer. A similar fate might await this feature.

- iv. Customer behavior is also a key factor. Today people may not want to answer a call and /or send a message after disconnecting the call, as most phones offer such features. With personalized timers and the continuing behavior, this may only compound the problem.

In view of the above, it is best to have a standard timer value for T_{ringing} across the network to begin with and once sufficient data is available then revisit the topic

3.5 Question 5

How to discover the appropriate values of percentage of calls that can be force released by the network i.e. value of C_{REL} , which may be acceptable in general from customer's perspective? How this value affects with the changes in value of the T_{ringing} ? Please suggest typical values for C_{REL} along with supporting data and explain with detailed justifications.

Answer:

From a calling customer's perspective, the percentage of calls force released by the network should ideally be 0%. But as stated earlier, we need to consider practical limitations. The C_{rel} timer %age should not become a measure for customer satisfaction or acceptance. As stated earlier when enough statistics are collected by setting up values in a controlled environment and checking the call completion ratios when the timers are modified over a period of time, would present a better picture of the preferred values. There should not be any justification for having any preference to any single operator.

3.6 Question 6

How the impact on the utilization of different types of telecommunication (TS21) resources such as radio spectrum, point of interconnect etc. may be assessed due to the change in the values of timers, related to duration of ringing, configured at originating network or at terminating network? Please provide details of computation methodology to make such assessment along with supporting data to justify the suggested value of T_{ringing} .

Answer:

There is definitely a correlation between the length of the T_{ringing} timer values and the network resource utilization. While we are not privy to the gains made by our customers on these parameters, we can suggest that these parameters be change in incremental steps and in a very controlled environment. As regards the measurements the key parameter would be traffic volumes at different points and the call completion rates.

3.7 Question 7

Whether networks can be adaptive by utilizing Artificial Intelligence (AI) and Machine Learning (ML) techniques to discover appropriate value of ringing duration specific to a subscriber or class of subscriber? Whether networks can also differentiate commercial calls from normal calls from the perspective of ringing duration? Please provide inputs and give your views with detailed justifications.

Answer:

From a market maturity perspective, the discovery should be made by the industry led by TRAI. It would be an interesting exercise to understand the capability of the subscriber of a given profile and his

propensity to use tools / technology at his disposal. We suggest a two stage approach. We can use AI / ML, first to mine data from the service provider's call logs /cdrs', especially the rejected CDRs and a detailed analysis of the same followed by field trials in controlled environments.

3.8 Question 8

Any other issue which is relevant to this subject?

Answer:

We feel, that this may be a good opportunity for the TRAI and the industry to consider that all announcements as a rule be played by the Originating network. Today, announcements are typically returned by the terminating network and typically over multiple languages. This leads to unproductive usage of network resources.

One must take a holistic approach to the issue of call completion, abandoned calls and overall customer call experience. The other aspects, which influence customer experience, are (1) Call Progress Tone (2) Paging timer.

The Call Progress Tone is an important feedback to the customer, which tells her that the network is working on the call. When a CPG is consistently delivered to the customer she is more likely to hold on to the call, thereby increase the chances of call maturity. Likewise, in the absence of a CPG the subscriber is more likely to disconnect earlier and retry, thereby increasing the call attempts, which could have been easily avoided.

Similarly the paging timer value, if kept high, influences the customer behaviour and can lead to higher number of abandoned calls and consequently increase in the call attempts.

Thus T_{Ringing} , the CPG, Paging Timer and call setup time all influence the customer experience. This calls for greater industry & regulatory consultation and participation to evolve guidelines, which bring customer centricity, and experience to the forefront and at the same time allows enough leeway for engineering innovation and leads to service provider resource optimization.