TCL Response to Consultation Paper on Migration to IP based Networks

Background:

At the outset we would like to thank the Authority for initiating consultation on this important issue and providing an opportunity to all the stakeholders to submit their views. We welcome the Authority's endeavor of seeking consultation on the issue of IP Interconnections. We feel that the Consultation Paper is visionary and progressive, and attempts to future gaze technology and interconnections in a constantly evolving technology environment and continuously changing multi operator interconnection scenario.

Prior to our submission on each issue of consultation we shall like to present a preamble to our submissions as below:

India Telecom Geography

Indian Telecom service sector is highly competitive with multiple operators having acquired various service licenses in the old service specific regime since 1995 which has proliferated the tele-density to more than 75 as on date. In the Access Services there are seven Operators who have licenses to provide services in all the Licensed Service Areas (22 in number) along with one Operator who is yet to launch its services and two Operators who provide services on a regional select LSA basis. Access service license also includes the license for providing internet services as well. There are 34 licensed National Long Distance Operators (NLDOs) and 24 International Long Distance Operators (ILDOs) providing domestic/international carriage services to the Access Providers apart from providing data services to their end-customers. The Long Distance licenses are pan-Indian basis. In case of Internet service licenses are being on pan-India basis (Cat A), LSA basis (Cat B) and Secondary Switching Area (Cat C) basis. There are about 350 Operators who have taken license to provide internet services which includes all the categories of ISPs. As of March, 2014, India had 904.51 million Wireless subscribers in addition to 28.50 million Wireline subscribers taking the tele-density of India upto 75.23. India had 60.87 million broadband subscribers and total internet subscribers at 251.59 million.

Unified Licensing Regime

The new Unified Licensing regime introduced in August 2013 based on TRAI recommendations aggregates service specific licenses for various services like Access service, National Long Distance service, International Long Distance service, Internet service etc. As observed current Licensing Regime is still based on service specific and geography specific licensing. The licenses for Access services is still being given on a geographic Licensed Service Area (LSA) basis which are twenty two in number and inter-LSA traffic is required to be handled by National Long Distance Operator(Domestic Carriage service provider). Similarly all international carriage services are required to be provided by the ILDO through NLDO or directly to the Access service provider. This hierarchical interconnection regime which is feature of the new UL regime would not only impact NGN interconnection due to geographical feature of new UL regime but also limit

anywhere to anywhere interconnection generally envisaged in the NGN interconnection apart from putting the role of NLDOs and ILDOs at a serious risk. Internet Service Providers both in the old service specific licensing regime as well as in the new UL regime are not allowed to interconnect with UL-Access Service, UL-NLD, UL-ILD Licensees. The Unified License enables provision of Access and Internet services within service areas ranging from a Circle for Mobile operations, SSA (Coterminous with district), Circle or Pan India for ISP services and Pan India for NLD and ILD services.

Current Interconnection Regime and requirements for IP Interconnections

Interconnection is a well-defined obligation and privilege bestowed upon the licensed telecom service providers in accordance with the terms and conditions of their licenses for various services and which translates into a commercial relationship amongst them for exchange of voice traffic as per regulations issued by TRAI. ISPs are not allowed to interconnect with other telecom service providers but they can interconnect with other ISPs.

The current Interconnection regulatory framework provides for TDM based points of interconnection and usage based Interconnection usage charges (based on Cost Plus – work done principle). Although several operators have deployed IP in their core networks the interconnections with other operators continue to be on TDM and also sharing of revenues continue to be on the TDM POI architecture. This is based on the principle of per minute charging for voice call across ACCESS- NLDO-ILDO domains. This framework integrates the network of India operators seamlessly with the International operators in other geographies outside India where all voice calls are charged in terms of per minute of usage irrespective of underlying technology i.e. TDM or VoIP.

IP networks allow for service agnostic and geography agnostic interconnections, which are not coinciding with the current licensing regime prevalent in India under the Unified Licenses. There is a need to have a relook at the licensing framework in respect of its geographical and hierarchical nature along with the terms relating to interconnection before we embark upon journey towards mandating an all IP interconnection- the migration path from existing service area licensing to a 'full' Unified licensing needs to be clearly defined by the Licensor to be able to leverage the IP technology completely. However one thing is clear that right to interconnect would only be available to licensed telecom service providers.

IP interconnection is already prevalent in India in respect of ISPs. It may be noted that as per the new UL regime ISPs cannot have any connectivity with PSTN/PLMN/GMPCS networks in the country. IP interconnection for ISPs is largely unregulated globally as also in India. The ISPs in India interconnect with each other on the basis of free peering in case the traffic between the two networks is symmetric and smaller ISPs buy transit services from the larger Tier-1 ISPs for getting the connectivity to internet. ISPs in case of Internet service licenses are being on pan-India basis (Cat A), LSA basis (Cat B) and Secondary Switching Area (roughly district basis). In order to ensure that the domestic IP traffic originating in India and meant for termination in India is kept within India National Internet Exchange of India (NIXI) has been established as a Section 25 company which is run on a cooperative basis by the ISPs and administered by the Government and

some of the ISPs peer/interconnect at NIXI to exchange the domestic IP traffic. There is no obligation on the licensed ISP to interconnect or peer with content providers as per terms and conditions of their license.

As stated in the Consultation Paper telecom network in India presently being run by the licensed Telecom Service Providers is a combination of TDM and packet switched network with core network being migrated to NGN first. In some cases like of later entrants their entire network is based on NGN technology. Since telecom services sector is a capital intensive business with lot of investments being made in the TDM infrastructure by the TSPs in the past the TDM infrastructure installed by the TSPs at a considerable cost is likely to continue for quite some time.

Additionally, The current network deployments of service provider in India also is engineered to cater to the underlying 'regulatory' architecture of POIs and point of handover of traffic while the IP core is being used to optimize 'backhaul' of traffic across different network point of presence, while TDM continues to be the technology to exchange voice traffic across networks. This is further evidenced by the fact that most of the interconnections which are happening between licensed TSPs are on TDM and not on IP. It may also be noted that the in last exercise for determination of IUC conducted by TRAI the underlying cost basis for determination of IUC also bears out the same fact.. It is our view that before deciding on the issues relating to IP interconnection including particularly mandating the same now or in future, mode of regulation of IP interconnection, QoS issues etc. the network readiness of all licensed TSPs should be first estimated.

The Unified License issued by the DoT addresses many issues specially the issue of Internet Telephony- PSTN interconnections, however the service area concept requires each service provider (Access, NLDO, ILDO, ISPs) to maintain logical segregation of points of interconnects and points of presence within Service Areas. Over and above the same accounting separation requirements need the operators to clearly segregate service wise, circle wise network/traffic and revenues.

It may also be noted that not much progress has been made globally in various countries in terms of mandating IP connection or setting capacity based IP interconnection charging regime for IP interconnection. In some countries like Norway, Denmark and Germany limited implementation of IP interconnection has taken place. In most of the cases IP interconnection is happening between the Operators through mutual negotiations.

IP Interconnections increasingly would be required to facilitate convergence however at the same time the Indian Regulatory environment needs to evolve on the principles of non-discrimination, level playing field and due compensation to telecom service providers who have invested to grow this sector as amongst the prominent business sector contributing to India's GDP and Social Growth.

While we support the Unified License endeavors we submit that the migration path determined should take into account the investments made and license fee revenue paid by the older – incumbent licensees and ensure a level playing field in the unified environment.

Keeping in view the above we shall like to submit are responses as below:

Q1. Is there a need to mandate IP interconnection? If so, what should be the time frame for implementation of the same? Please comment with justifications.

TCL Response: There is no need to mandate IP interconnection as on date since there is a significant amount of infrastructure in the core and access layer of the telecom network which still runs on TDM technology. The IP interconnection between IP ready networks/operators should be left to be decided by mutual negotiations and agreement. Moreover, the licenses in India for various telecom services are technology neutral and the operators based on cost and other considerations choose the technology for their network. The earlier installed TDM infrastructure which is digital should be allowed to complete its life cycle in the licensed networks and thereafter only an IP interconnection regime can be considered for implementation. Hence to allow for seamless continuity of services as well as reap optimization benefit of IP, IP interconnections cannot be mandated but should be left to mutual negotiation of interconnecting service providers. IP is a technology to facilitate internetwork exchange of packets. It is pertinent to provide a regime in India which allows most efficient use of network and technology coupled with flexibility of enabling the traffic exchange. Depending upon the IP Codecs being used to generate or transit VoIP traffic, IP transit or interconnection may or may not be the most optimum way of exchanging the voice traffic.

Q2. Whether both TDM and IP interconnection should be allowed to coexist? If so, whether the existing regulation i.e. 'Reference Interconnection Offer dated 12th July 2002' addresses the requirements of IP interconnection also? Please comment with justifications.

TCL Response: Yes, TDM and IP Interconnection should be allowed to coexist. IP is a technology to facilitate internetwork exchange of packets. It is pertinent to provide a regime in India which allows most efficient use of network and technology coupled with flexibility of enabling the traffic exchange. Depending upon the IP Codecs being used to generate or transit VoIP traffic, IP transit or interconnection may or may not be the most optimum way of exchanging the voice traffic. TDM although gradually diminishing continues to be a technology for exchanging point to point traffic specially in cases where a 'transparent pipe' is required.

Additionally there are significant network segments within the country which are not IP ready, any interconnection regime should keep in view the overall connectivity of various grades of network, specially ensuring that no part of the country is devoid of communication needs.

Further, the service providers have invested in creating the existing TDM networks including setting up Media Gateways to exchange TDM traffic while the core backhaul networks are converted to IP. The regime should provider for a time frame of migration of all networks to IP domain till which time both technologies should co-exist. Moreover, regulations should facilitate adoption of new technology and eventually the service providers will transform their networks to IP or any other new technology which emerges based on the optimization and ease of providing services the technology offers. Authority should be looking at a role of facilitator and allow for the technology and disruptions to take a natural course of adoption.
Hence to allow for seamless continuity of services as well as reap optimization benefit of IP, IP interconnections cannot be mandated but should be left to mutual negotiation of interconnecting service providers.

The existing regulation i.e. 'Reference Interconnection Offer dated 12th July 2002' adequately addresses the requirements of IP interconnection as it covers the provisions of PSTN/ VOIP Interoperability Standards and therefore need not be reviewed:

Q3. In case IP interconnection is mandated in India, whether the enforcement of interconnection agreements should rely on
(i) Bilateral agreements and dispute resolution; or
(ii) Mandatory reference offer

TCL Response: Not Applicable in view of response to Question No. 1.

Q4. In an IP based network scenario, which mode of interconnection is preferable to carry traffic:- peer-to-peer, Interconnect Exchange or combination of both? Please comment with justifications.

TCL Response: In a multi operator scenario it is pertinent to allow peer-peer interconnection and not enforce a concept of centralized agency monopolizing interconnections and transit. No restrictions or controls should be imposed by a centralized agency overseeing the IP interconnect framework which could lead to pre-defined and mandatory service or commercial models. Original Interconnection Regime envisaged Peer-peer interconnections to facilitate Competition and level playing field by regulating and guiding the interconnections between two networks. The regime has played a significant role in maintaining the requirements of growth in the Telecom Services and there is no reason to believe that introducing an interconnection exchange will contribute any more significantly than what peer-peer regime has already accomplished. IP Interconnections are an alternate technology to accomplish the role of exchange of traffic across two domains, and the peer-peer interconnection model, ubiquitous and effective in other competitive markets, will suffice in achieving the objective of technology advancement and be future ready for next generation interconnection regime.

Further the peer-peer regime continues to leverage the advantage of a hybrid TDM-IP technology allowing the investments already made by service providers to be leveraged at the same time allowing for cost optimization by using IP technology for interconnections.

Q5. In case an Interconnect Exchange is required, should such Exchange be placed within each licensed service area or a single Interconnect Exchange will be adequate for the entire country? Please comment with justifications.

TCL Response: We submit that the IP Interconnections should be on the basis of peer-peer arrangement and there is no requirement for interconnect exchange.

Q6. Whether any regulatory intervention is required to mandate the locations and structure of points of interconnection (POI) for IP based network architecture? Please comment with justifications.

TCL Response: Yes, The Authority needs to issue interconnection guidelines similar to the interconnection guidelines issued for TDM Interconnections including that of application of IUC regulations. The Authority should also look into ensuring the POI locations and structure are not impacted significantly to allow for a seamless migration to IP Interconnection regime yet enabling TDM interconnections to exist simultaneously allowing optimization of investments based on ease and technological feasibility of creating IP Interconnections and the mandated POI location and structure are in line with the current applicable licensing regime.

Since IP Interconnections are easier to manage and provision, the Authority should review the guidelines of time to provision capacities at the POI.

Separation of ports for allowing various stream of traffic viz. Local, NLD, ILD should be maintained in order to facilitate accounting separation and to avoid predatory pricing.

Q.7 What are your views on the migration from the existing interconnection regime-measured in terms of minutes of traffic to an IP interconnection regime replaced by measures of communication capacity? Please comment with justifications.

TCL Response: The per minute regime for measuring voice traffic is an existing practice and norm adopted globally, irrespective of TDM or IP networks, per minute measuring of voice enables a seamless exchange of traffic as well as a quantifiable measure which allows compensation of network use of one Operator by other Operator on the basis of time of usage. It is pertinent to note that even in Data Services, it is increasingly being noticed that customers are

demanding pay per use or 'variable' charges which are based not on fixed capacities but based on usage of network. Globally the IUC regime in various countries barring an exception or two has also not shifted towards settlement in terms of communication capacity. It is advisable to continue with the present regime till regulatory practices in respect of settlement of interconnection charges for NGN networks evolve to a state of reasonable maturity.

It may be deemed as a retrograde step that while even data services progressively move towards time based charging, Indian Interconnection regime reverts to a capacity based charging. In fact, the IUC regulations provide for compensation of the port capacity through port charges already.

A port or capacity base charging creates a chasm between the International settlement processes for voice traffic and interconnection usage charges which may lead to disputes and uncertainty in settlements between operators hence it is not advisable.

Q.8 In an IP interconnection between networks, comment on the type of charging principles that should be in place
(a) Capacity based in terms of Mbps.
(b) Volume based in terms of Mbps.
(c) QoS based.
(d) a combination of the above three.

TCL Response: We do not believe there is a case for any of the above charging mechanism and the existing minute based charging regime should be continued to avoid any disruption of services, avoid disputes and disconnect Indian regime from global principles. Please also refer to response to question no 8 in this regard.

Q9. What should be the criteria to estimate the traffic minutes in IP environment if interconnection charges continue to be minute based? Please provide justification in support of your answer.

TCL Response: IP Interconnection are only a way of changing media of interconnection. IP networks and soft switches provide full capability of CDR based billing on per minute basis and no changes are required vis-à-vis TDM interconnection to measure and settle minutes. Relevant mediation and billing interfaces are tested and deployed by almost all operators which are currently being used to collate minute based information in case of deployment of NGN in core networks. IP interconnections do not change the commercial principles of settlement of traffic hence need to continue as per the old criteria.

Q10. In addition to the above, any other modifications or components of IUC which are required to be reviewed in the IP **based network scenario? Please provide all relevant details?**

TCL Response: Please also refer to our response to Q9 above. Over the years, the Interconnection Usage Charges Regime has provided a stable and consistent framework for sharing of revenues between multiple operators involved in the origination, carriage and termination of voice calls. The IUC Regime provides for cost-based charges and compensates all operators on a "work-done" principle. This eliminates the need for negotiation of revenue sharing between multiple operators and does not leave any scope for restrictive practices or delays/disruption in interconnections by dominant operators and thus creates a level playing field for all licensed operators. The change of interconnections from TDM to IP does not alter the need for defining of IUC and in fact IUC Regulation becomes all the more necessary in a multi-operator environment where interconnections expand rapidly in a supportive IP framework. We believe that there are no fundamental changes required in the IUC regime. However, technically, inclusion of 'SIP trunk' as a media to interconnect should advised by TEC with relevant Interface parameters applicable for exchange of voice traffic on such SIP trunk.

The Interconnection Usage Charges prescribed by TRAI have been reviewed from time to time and the charges prescribed for different components of the IUC have reduced progressively based on costs related data shared by the Licensed Operators with the Regulator. Even as the existing IUC Regime provides for charges and/or ceiling for different components (Origination, Termination or Carriage) of the IUC payable to different licensed operators concerned involved in carriage of voice calls, it does not provide for a specific IUC component for Licensed ILDOs for Carriage of Inbound International Calls. We would recommend that a Carriage Charge for ILDO should be provided in Interconnect Usage Charges Regime whenever the related computation for review of IUC is done for a IP based interconnection framework.

Q11. Do you envisage any interconnection requirement for application & content service providers? If so, what should be the charging mechanism? Please provide all relevant details justifying your comments.

TCL Response: Interconnection is an obligation and right embedded in the license agreement of the licensed telecom service providers. Since application and content service providers are not licensed entities we do not envisage any interconnection requirement for them. In fact content service providers do not have interconnection rights even with the ISPs as ISPs can interconnect only with ISPs.

Q12. Whether the existing regulatory framework for measuring and reporting quality of service parameters as defined for PSTN/PLMN/Internet may continue to apply for IP based network services? Please comment with justifications.

TCL Response: TRAI must extend the existing regulation on Quality of service for VOIP based international long distance service (Third amendment), 2004 to for the proposed IP based network services.
The voice calling service over circuit switched (TDM) network, has dedicated bandwidth between end subscribers. Hence has highest call quality, termed as toll quality. The current regulatory framework hence does not consider the Voice Quality measurement as a critical KPI. In VoIP network however, the calls traverse over shared bandwidth and the quality of call is subject to bandwidth utilization and IP network parameters. Hence the measurement of Voice Quality needs to be a critical KPI , benchmarked against standards such as ITU T E Model- G.107.

Currently deployed monitoring infrastructure is insufficient to provide such "Voice Quality" measurement. Additional probe based Voice Quality Performance Monitoring systems need to be deployed across the IP interconnect network

Following KPIs need to be monitored as per E model for Voice Quality Monitoring for individual calls :-

1. MoS (Mean Opinion Score)-Subjective – As defined in ITU-T P.800
2. Jitter
3. Packet Loss
4. Delay

In addition to the Voice Quality monitoring, there are other critical aspect of IP network monitoring that need to considered with VoIP Service offering:-

1. Network Security: - Guidelines must be agreed between Operators needs to include the Network security monitoring to avoid transfer of network threat from one operator to another.
2. Bandwidth allocation:- There shall be monitoring of the bandwidth to avoid deterioration of quality of service due unavailability of requisite bandwidth.
3. DOS attack:- There shall be adequate monitoring, alerting and restriction on the denial of service attack on IP network. There can be penalties/regulatory guide line in case there is DOS attack from one operator to another

Q13. In the context of IP based network Migration, if the parameters in the existing QoS regulation are required to be reviewed immediately then please provide specific inputs as to what changes, if any, are required in the existing QoS regulations issued by the Authority. Please comment with justification.

TCL Response: Existing QOS based on the regulation THE STANDARDS OF QUALITY OF SERVICE OF BASIC TELEPHONE SERVICE (WIRELINE) AND CELLULAR MOBILE TELEPHONE SERVICE (SECOND AMENDMENT) REGULATIONS, 2012 are based on TDM

interconnect. For IP based network we need to include network centric parameters like packet delay, jitter, packet loss, R- value and MOS.

The monitoring of Key Performance Indicator on Voice Quality Monitoring is mentioned in the response of Q12 .

Q14. In case new QoS framework is desirable for IP based network, do you believe that the QoS be mandatory for all IP based network services. If yes, what should be QoS parameter and their benchmarks?

TCL Response: The QOS for IP based network should be in the line with TRAI existing regulation on Quality of service for VOIP based international long distance service (Third amendment), 2004 to for the proposed IP based network services.

Passive quality monitoring shall be done as per ITU-T E mode l(G. 107). There shall also be additional bench marking need to be done considering India IP Network scenario. The key performance indicators shall be as follows :-

Delay	< 150 ms
Jitter	< 5 ms
Packet Loss	< 0.1%
R-Value	> 70
MOS	> 3.7

Voice quality is also dependent on the codec is being used for the specific call. The low bit codec will provide an inferior Voice quality. Hence the use of codec need to be regulated along with Voice quality.

It is suggested that 8 bit or higher bit rate codec should be allowed such as G.711, G.729 , G.722 etc.

Q15. What should be the mechanism for monitoring the parameters for end to end QoS in IP based network environment? What should be the reporting requirement in this regard? Please comment with justification.

For the monitoring parameters for end to end QOS in IP based network, reference can be made to the existing TRAI regulation on Quality of service for VOIP based international long distance

service, 2002 & regulation on Quality of service for VOIP based international long distance service (Third amendment), 2004

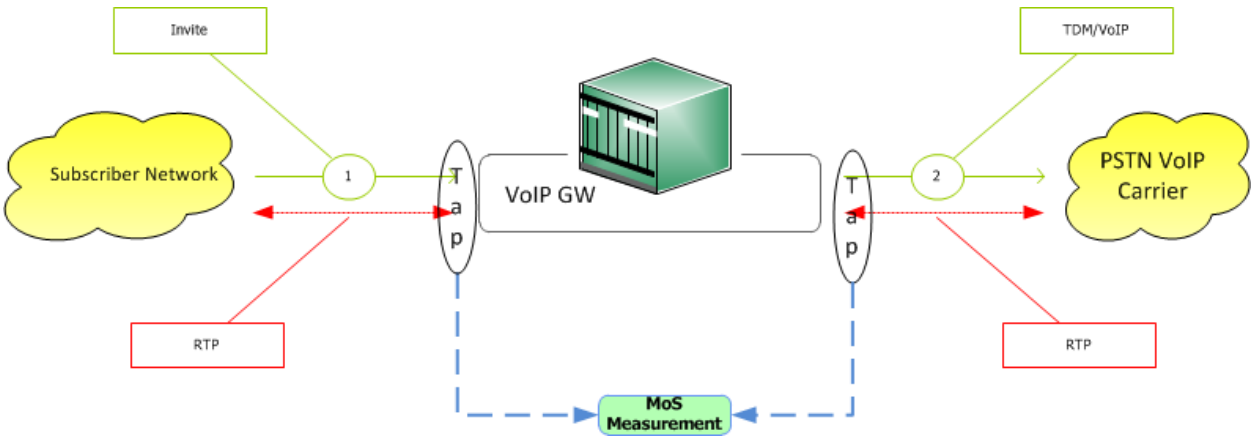
Two types of Voice quality monitoring is suggested as per ITU-T P.800.1:-

- MoS LQO/CQO:- It is mean opinion score for listening/conversation mode measure by objective method. The score is calculated by means of an objective model which aims at predicting the quality for a listening-only test situation. Objective measurements made using the model given in ITU-T Rec. P.862 give results in terms of MOS-LQO. This is also referred as active call quality monitoring. This shall provide end to end results of Voice quality across the network. However being a simulation testing, it will not able to provide Voice Quality results of actual subscriber calls.

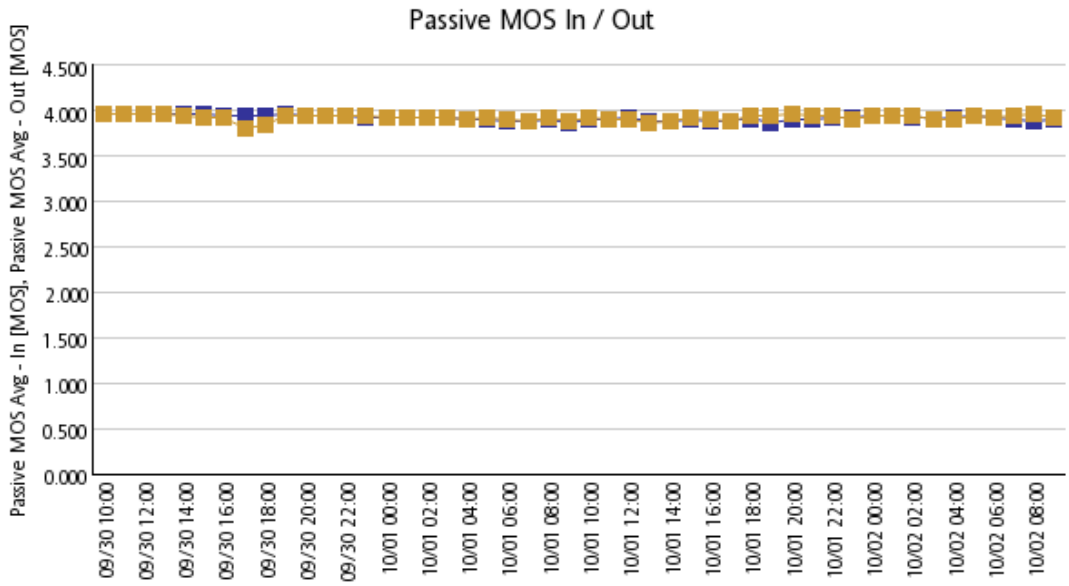
- MoS LQE/CEQ:- It is Mean Opinion Score of listening/conversation mode by Estimation method. The score is calculated by a network planning model which aims at predicting the quality in a listening-only application situation. It is primarily done by ITU T G.107 – E Modeling. It is also referred as passive Monitoring and most useful to estimate the actual user quality experience.

End to End Voice quality monitoring needs to be performed in a distributed architecture, where the network capture/monitoring point shall be at least, at the ingress and egress point of a service provider network.

The suggested logical diagram of such network monitoring is shown as below:-



Sample report on QoS Monitoring on VoIP Network is as follows:-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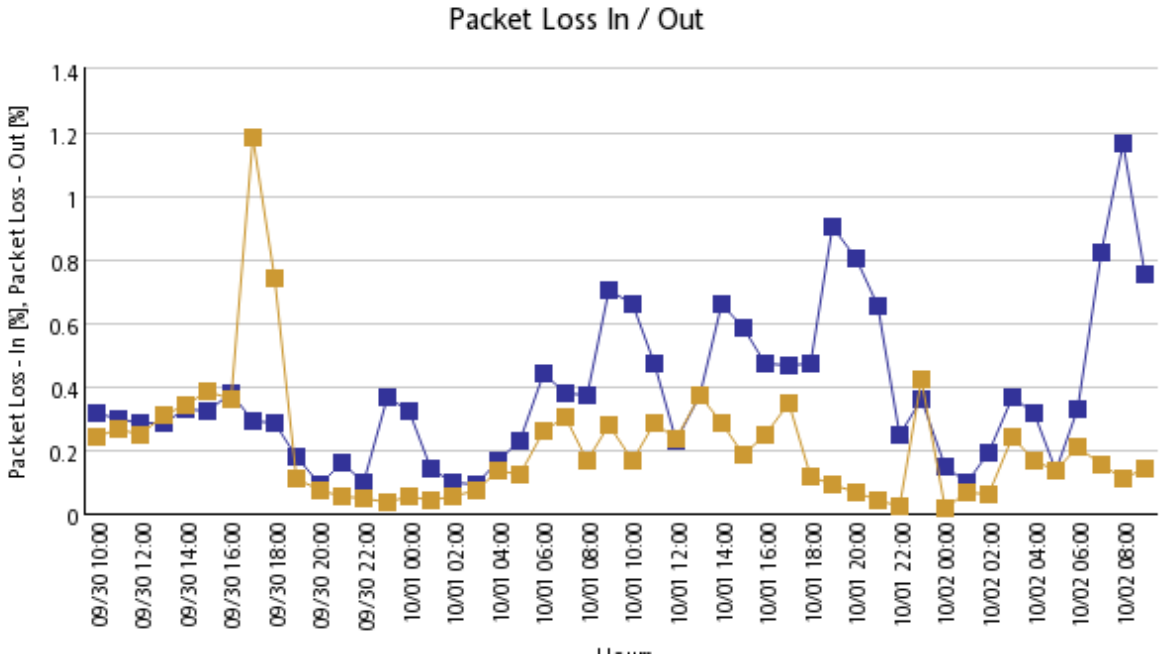
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0.8
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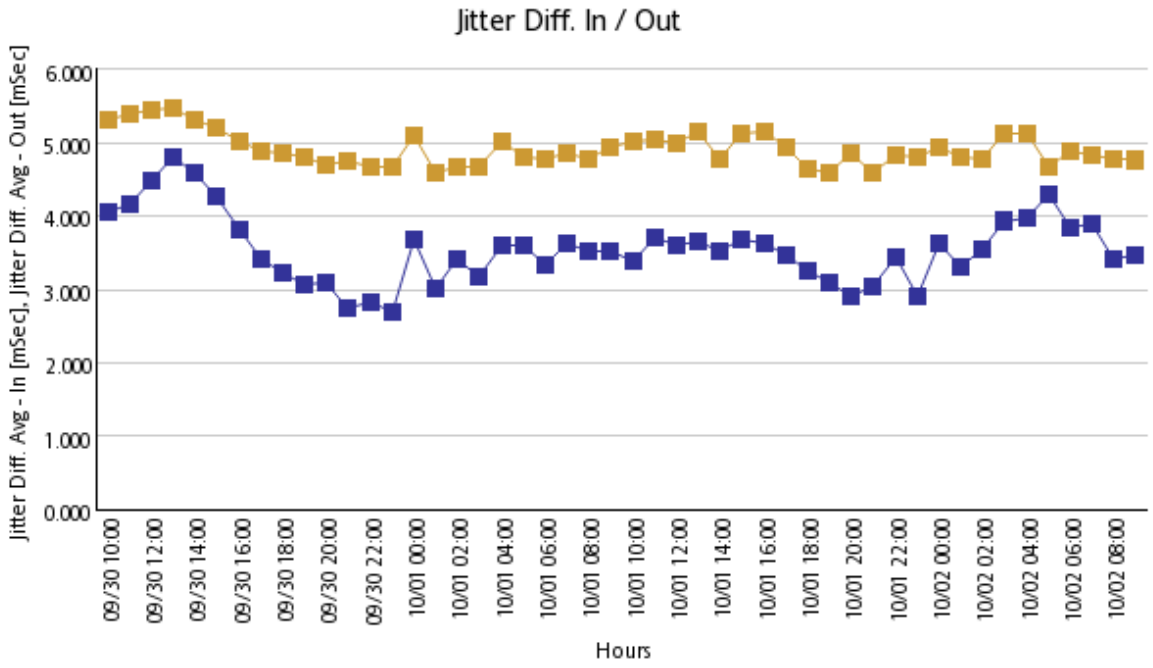

Span	Description	Parameter	Value for QOS parameters	Method
X2 - X3	NLD segment employing VOIP techniques (excluding transmission delay)	Packet Delay	< 50 ms	Individual parameters measured by using IP analyzer plus the aggregate measure (MOS or RValue)
		Jitter	< 10 ms	
		Packet Loss	< 0.5%	
		R-value	> 70	
		MOS	> 3.7	
X1 - X4	End to End National Connection	Delay	< 150 ms	Aggregate measure (MOS or Rvalue) CCS7 Signaling Analyzer
		Jitter	< 5 ms	
		Packet Loss	< 0.1%	
		R-Value	> 70	
		MOS	> 3.7	
		CCS7 signaling delay	As per Q.709	

Q16. Should sharing of the IP based core and Access network element by different telecom service providers be allowed in IP based network scenario? What are the challenges, opportunities and problems of such sharing? Please comment with justifications.

TCL Response: The sharing if infrastructure should continue as being implemented currently in case of TDM domain. Currently the Service providers are allowed to share passive elements within multiple operators while active elements within the same operator network. This needs to continue to comply with the various regulations and direction pertaining to separation of traffic /accounts, security monitoring, segregation of Access, NLD and ILD traffic streams.

Sharing of IP based Core and access networks should be allowed as this will improve network efficiency cost of delivery of services and management. Regulatory intervention is not required and it would be desirable to leave the same to the market forces.

Therefore sharing of both core and access networks in the new IP scenario will be a great boost to Broadband penetration and delivery of new services. There may be some need to create a framework of guidelines for Security, QoS, fair competition rules and Network availability for customer service.

Network sharing can provide better economics and will act as a mean to close the mobile broadband coverage gap. In the broader scheme, permission to share is now an imperative to ensure rapid growth of broadband and also to ensure competition to flourish.

Q17. Do you see any issues concerning the national numbering plan with regard to the migration towards IP based networks?

TCL Response: In the proposed IP interconnection regime mirroring the TDM interconnection regime there is no requirement of changes in numbering plan.

Q18. Do you believe that ENUM has to be considered when devising the regulatory policy for IP based networks as it will provide essential translation between legacy E.164 numbers and IP/SIP (Session Initiation Protocol) addresses.

Q19. Which type of the ENUM concept should be implemented in India? What should be the mechanism for inter-relationship between number and IP addressing, and how it will be managed?

Q20. Is there a need to mandate Emergency number dialing facilities to access emergency numbers using telephone over IP based networks platform? Please give your suggestions with justifications.

Q21. How will the issues, of Caller location delivery and priority routing of calls to the emergency centre in IP based networks environment, be handled? Please comment with justifications.

TCL Response: In the proposed IP interconnection regime mirroring the TDM interconnection regime there is no requirement of ENUM. However, the Unified License allows for IP telephony interconnection with PSTN/PLMN services, which requires the Authority to advise ENUM modalities. Since the issue is not pertaining to the subject matter of this consultation and also ENUM and its impact are far reaching as they will impact number portability, IP-PSTN calling etc, it is recommended that Authority may if deemed fit issue a separate consultation covering all aspect pertaining to ENUM implementation or constitute an expert body comprising of representatives from all TSPs, DoT, TEC, TRAI and based on its recommendations action on the various issues concerning ENUM concept implementation may be taken.