**AUSPI'S RESPONSE TO TRAI CONSULTATION PAPER NO.8/2014  ON "MIGRATION TO IP BASED NETWORKS"**

*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.*

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*Q2.  Whether both TDM and IP interconnection should be allowed to co-exist? 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.*

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*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*

The service provider has flexibility to choose any digital technology for the access network including the use of packet switches as per the license. The operators based on their business plans and strategies are evolving from current technologies to the next generation technologies and networks. Equipment being offered today by Licensees Vendors are IP based and the existing TDM switches are/will reach end of service life leaving little choice with the operators but to migrate to IP.

Both TDM and IP interconnection should be allowed to co-exists since the licenses are technology neutral and already provide enough flexibility to operators to deploy technology of their choice (including NGN). The existing regulation i.e. 'Reference Interconnection Offer dated 12th July 2002' addresses the requirements of IP interconnection need not to be revisited as it covers the provisions of  PSTN/ VOIP Interoperability Standards:

*Quote*

> *For Interoperability between Circuit based switching and IP based networks, the interface will conform to relevant national standards or guidelines of Licensor/ Regulator. Media gateway, Signalling Gateway and Gatekeeper shall conform to relevant ITU-T Recommendations and Internet Engineering Task Force (IETF) standards, as applicable.*

*Unquote*

Further, Interconnection of the networks is very important and it has to be provided in a non-discriminatory manner for the entire system of telecommunication to function.  Service providers agree for interconnection after

finalising commercial and technical arrangements mutually. In the present market scenario, interconnections is not mandated and we consider that IP interconnection also need not be mandated and left to the mutual agreement of interconnecting parties. **Today almost all telecom networks in the country are providing voice and data services over** IP as core network and operators are constantly migrating to IP based networks from TDM based networks based on their business plans and market demand. **Thus, the interconnection between the licensed operators in India is already working well, with most of the operators are connected to each other.**

*Our Submission*

- o *Both TDM and IP interconnect should continue to coexist and operators should be free to migrate to IP network as per their business need/plan.*

- o *Interconnect between TDM and IP network should be based on bilateral agreement between two operators i.e. no need to have mandatory RIO.*

**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 justification*

One of the issues raised in the consultation paper is about issue of transit where one network agrees to offer traffic to the other. Taking the opportunity we would like to place before the Authority some difficulties faced by our member service providers in transiting through BSNL.

Present licence does not allow transit of other operator's traffic. However, if at all transit is done within the network of an operator then there should not be any charge w.r.t the same. To exemplify, Private operators are constrained by BSNL to handover their traffic to BSNL at Level II TAX and pay the transit charge of Rs 0.15/min for carriage of calls to SDCA. This should not be charged.

In other case where BSNL is not able to provide interconnection at SDCA to the NLD operator, they should allow the traffic to be handed over at the LDCA and the transit from LDCA to SDCA should not be charged.

Looking in to the above, the industry does not want any new arrangement where one or the other operator may force such unilateral conditions in future. Therefore, there should not be any transit or carriage charge at the termination end.

**Q7.** *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.*
*&*

*Q8.   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*

*&*

*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.*

*&*

*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?*

For a competitive and fast growing market like India wherein with the advent of modern technologies, data usage is increasing and TSPs are themselves migrating to IP based networks. In such a scenario we believe that, 'Bill And Keep' (**BAK**) **for termination charges** is the way forward in the co-existence of TDM and IP based interconnect.

In BAK charging methodology, traffic originating operator does not pay to the recipient operator for termination of traffic. Bill And Keep solves the problem of determining cost of termination for each technology and hence reduces the complexities involved.

An interconnection product charged on BAK principle result in no regulatory intervention, no consultancy fees, no monopoly problem and no arbitrage and is considered as the most popular IUC regime. Also, by forgoing payments, carriers avoid the administrative burden of billing one another for exchanged traffic. From a regulatory perspective it eliminates the need for the Regulator to review among other things, cost studies, rates in interconnection agreements and also reduce the innumerable disputes between the operators. Thus the frequent disconnection of POIs for settlement of compensations would also abate.

The BAK system is widely applied in the IP based network. However, this charging mechanism could be reviewed at a later stage and over a period of time based on technological advancements on IP Network.

**Our Submission:**
Given the simplicity of accounting, benefits to consumers, competition promotion and the need to have a single interconnection regime for telecoms and the internet, **Bill and Keep (for termination charges) is the most attractive framework of Interconnection Usage Charge for future deployment of technologies like IP based Networks.**

**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.*

We do not envisage any interconnection requirement for application and content service providers.

The telecom licenses are granted under Indian Telegraph Act 1885, to provide, establish, maintain and work telegraph. Since, Content and application Providers neither provide nor establish/maintain work telegraph, they cannot be a licensed operator in the telecom market and are not allowed to have direct interconnection with TSPs.

Moreover content providers being un-licensed players, have no obligations to provide any LI facility, QoS and emergency calling.

In case content and application service providers are desirous of gaining access to the end consumer, they are free to do so after acquiring an access license or **alternatively they can continue to access the end customer through the network of an access provider after signing standard commercial agreements.**

The charging mechanism should be left to the commercial negotiations and mutual agreement between the various stakeholders viz TSPs and application and content providers. Interfering into the commercial negotiations would destroy the free play of market forces. The commercial arrangements of TSPs and application and content providers are guided by the demand, acceptability of the product, technical arrangements on the network and other support services like billing arrangements, marketing agreement etc.

**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.*

*&*

**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.*

*&*

**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?*

*&*

**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.*

In today's ultra-competitive Telecom Service scenario, TSPs are regularly monitoring their networks to provide good quality of service to the customers. With the emergence of Mobile Number Portability, TSPs are under pressure to maintain their QoS standards to sustain in the market. QoS are driven by market forces and there should not be any forced approach for adoption of QoS benchmarks. If operators don't keep a self-check and measure their own performance, they can't maintain high service quality or address performance and quality issues as and when they arise. As a regular practice, Operators at their end do independent monitoring of the networks and other customer service aspects so that they can become more competitive by addressing customer satisfaction, capacity, service and quality issues.

**In view of that we believe that QoS is driven by market forces rather than by Regulatory intervention and Service provider are meticulously adhering to the reporting requirement of TRAI.**

Notwithstanding the above, if the Authority feels that there is need to have QoS parameters for wired IP based interface then to start with, some of the parameters as suggested in the VOIP regulations of 2002 for Toll Quality networks may be applicable as follows:

- o MOS ≥ 4 or R-value of 80 or higher
- o One-way end-to-end delay ≤ 150 ms
- o Packet loss not to exceed 0.1%
- o Jitter should not exceed 5 ms

**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.*

The Indian Telecom Sector is now one of the most mature markets in the world in terms of competition, customer services, choice of services and tariffs to consumers. since NTP 1994, it is 20 years the telecom sector was opened up for private competition. There are 900 million mobile phones in India today and it is one of the world's fastest growing broadband and data markets.

Thus the need for better regulatory and policy enablers for improving items like service delivery capability is of prime importance to ensure broadband infrastructure development.

While the level of innovation in voice services has been driven to a large extent by market dynamics it has also been made possible through innovative relaxation of regulatory oversight – which includes permission to share both passive and active infrastructure, self-declaration of tariffs to TRAI i.e. forbearance and a technology neutral licensing policy.

IP is now the fundamental building block of all new telecom networks. In fact new networks being rolled out would necessarily be all IP networks.

**Sharing** of IP based Core and access networks should thus 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.

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?*

*&*

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?*

**An expert committee needs to be formed, having representation from TSPs & Associations, TEC etc. to discuss the entire issue concerning numbering, e-num, migration, translation etc.**

Q20. *Is there a need to mandate Emergency number dialling 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*

This needs to be discussed as a separate subject as to how a VoIP provider would be able to route the Emergency Call to the designated emergency centre. This requires a detailed discussion on feasibility and work flow.

**********END**********