

## Response to the

### Consultation Paper (No: 13/2014) on Interconnect Usage Charges

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## 1. International Settlement Charges (*Addressing Consultation Question No. 16-18*)

### 1.1. Background

India's market for international long distance was opened to private competition in April 2002. From a monopoly the market today in India is hyper competitive with 32 international long distance licensees.

IN this paper, we propose a theoretical model to explain the imbalance in settlement charges, and suggest a restructuring of the regulatory regime with respect to international settlement and local termination for international calls.

International settlement charges have been a constant area of concern for telecom operators. The effective access charge for an international call terminating in India is the sum of the international settlement charge and the local termination charge. The international settlement charge is under forbearance and is determined by contractual negotiation between operators. The local termination charge for an international incoming call has been fixed at 40 paisa/min by the regulator and is amongst the lowest termination charges prevailing worldwide. It is relevant that a domestic call incurs a termination charge of only 20 paisa/min for the same service and that the average termination rate paid by Indian operators is estimated at around Rs 3.50/minute for outgoing international calls.

The table below provides a comparison of settlement rates and number of international operators across different countries.

**Table 1. Comparison of Settlement Rate and Number of operators**

| Country      | Settlement Rate (Rs/min) | Number of international carriers |
|--------------|--------------------------|----------------------------------|
| Australia    | 0.86                     | 7                                |
| Bangladesh   | 1.92                     | 6                                |
| Brunei       | 3.52                     | 2                                |
| China        | 0.76                     | 3                                |
| France       | 7.35                     | 7                                |
| Hong Kong    | 1.13                     | 8                                |
| Indonesia    | 3.36                     | 13                               |
| Israel       | 3.2                      | 7                                |
| Italy        | 0.54                     | 8                                |
| Japan        | 1.67                     | 4                                |
| Kuwait       | 5.37                     | 3                                |
| Malaysia     | 1.44                     | 6                                |
| Maldives     | 28.96                    | 2                                |
| Mauritius    | 7.46                     | NA                               |
| Oman         | 13.11                    | 2                                |
| Pakistan     | 1.19                     | 7                                |
| Saudi Arabia | 6.39                     | 4                                |
| Singapore    | 0.83                     | 4                                |
| South Korea  | 2.31                     | 6                                |
| Sri Lanka    | 6.16                     | 10                               |
| Taiwan       | 5.91                     | 6                                |
| Thailand     | 1.28                     | 8                                |
| UAE          | 8.33                     | 2                                |
| Vietnam      | 3.91                     | 7                                |
| Yemen        | 7.53                     | 3                                |

Source: Extracted from Verizon and Telecom Live

<http://www.verizonwireless.com/wcms/global/international-long-distance-and-messaging.html?country=france>

For India the number is 13, reflecting the names of all telecom operators. It does not perhaps include the names of exclusive ILD operators. **A brief look at the above table indicates that there may not be a direct correlation between number of operators and settlement rate.**

The ratio of incoming to outgoing calls has increased substantially over a period of time. In 2012-13 for every outgoing call from India, the country was receiving 16 incoming international calls (as against the ratio of 1:3 in 2005-06). The total outgoing minutes in 2012-13 were 4633 million as compared to 76354 incoming minutes. The unbalanced international traffic pattern exacerbates the lost opportunity for Indian operators.

A brief possible theoretical explanation of the above phenomenon is given below:

## 1.2. Theoretical Model

*This theoretical model argues that the relatively low rates for calls terminating in India may be a result of higher price elasticity overseas, not merely the higher levels of competition in India.*

Consider two countries, N and S, serviced by two monopolies, one in each country (Laffont, Rey & Tirole 1998a, 1998b, Armstrong 2002).

The monopolists play a two stage game. In stage 1 they choose access charges (the international settlement charge and the local termination charge have been collapsed into this construct) and in stage 2 they choose prices for call origination. Assume all costs are zero. The profits are equal to the sum of origination and termination revenues.

Let the willingness to pay of consumers in country N be  $w_n$  and in country S  $w_s$ . Each consumer is assumed to consume exactly one unit of service if the price is less than or equal to their willingness to pay, else zero units.

We use backward induction to solve the game.

**Result 1:** In the second stage, each monopolist will set a price equal to the willingness to pay of their consumers or the access charge of the other network, whichever is the higher.

To solve the first stage game, note that the best response of a monopolist for any access charge chosen by the other is to set an access charge equal to the willingness to pay of the other country's consumers, thereby siphoning all the surplus.

**Result 2:** The sub game perfect Nash Equilibrium of the two stage game involves countries N and S setting access prices equal to  $w_s$  and  $w_n$  respectively, and charging a price equal to  $w_n$  and  $w_s$  respectively.

If the willingness to pay of country N is greater than country S then the access charges of country S would be greater than those of country N. The conundrum is that the access charges of India, where willingness to pay for international calls is almost certainly lower than in the USA, are lower than in the USA.

There are two possible resolutions:

a. the long distance market in India is more competitive than in the US resulting in Indian access charges being pushed down to cost while the US charges correspond to willingness to pay of Indian consumers.

Relaxing the assumption of monopoly in the local markets and assuming perfect competition, does not change the behaviour at the termination end, provided the countries, or the industry associations negotiate as single entities on behalf of their industries.

Given the fact that international settlement rates are determined by contractual negotiations, the high competition in the Indian market cannot be ruled out as a factor in the low effective access charge. The local termination rate does seem to serve as a floor for the effective access charge. But whether it is an inadequate floor can only be determined after we expand the model a bit further,

reverting to the assumption of a monopoly in both countries to highlight the possibility of low access charges in country S even in the absence of competition.

Suppose there are two kinds of consumers in country N:  $N_1$  with willingness to pay  $w_{n1}$  and  $N_2$  with willingness to pay  $w_{n2}$ .  $N_1$  are the 'high' type of consumers, i.e.  $w_{n1} > w_{n2}$ . Assume  $w_{n2} < w_s$ , the willingness to pay of the consumers in country S<sup>1</sup>, i.e. the willingness to pay of the low type in country N is lower than the willingness to pay of the consumers in country S. Suppose  $w_{n2}(N_1 + N_2) > w_{n1}$ .  $N_1$ , i.e. revenues of the monopolist in country S are maximized by including the low type in country N. Then country S will set an access charge equal to  $w_{n2}$ , a level lower than the access charge chosen by country N.

This leads us to the second possible resolution to the conundrum of low effective access charges:

b. The price elasticity of demand for long distance calls is far greater for inbound calls, for instance from the US. As a result reducing access charges increases access revenues and profits for Indian companies. On the other hand, reducing access charges reduces revenues and profits for overseas companies. This explains the low access charges in India and high charges overseas.

This assumption is quite likely to be true for the following reasons:

1. Availability of substitutes for overseas consumers including Voice Over Internet Protocol (VoIP)
2. Long distance calls from India are originated by well off price insensitive customers. The price sensitive Indians are recipients of calls from relatives who are also price sensitive.

**Hence the explanation lies in a combination of high competition in India and higher price elasticities overseas.**

### 1.3. Country Cases ( OECD)

When considering regulatory intervention, in the form of increased international settlement rates it is useful to peruse the example of increased termination rates in select African countries during the period 2007 to 2011 ( OECD, 2014). The termination rates in these countries were increased by the imposition of a surcharge. The OECD report cites the significant reduction in incoming international traffic to these African countries as compared to those that were left unchanged, attributing some causation to higher termination charges. In addition, countries that did not increase termination rates also enjoyed greater revenue per user.

In comparison to Africa, termination rates have declined rapidly in India since 2003. While the outgoing traffic from United States to India has increased dramatically as compared to Africa, the outgoing payment to Indian operators from US is cumulatively lower. This indicates that

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<sup>1</sup> We could also add another type of consumer in country S and make assumptions such that country N will choose to ignore them as the fall in prices does not compensate for the rise in numbers.

competition, not merely price elasticity, has played a role in bringing down termination rates below profit maximizing levels. The OECD report notes the need to conduct a regression based analysis on the elasticity of international traffic to change in termination rates.

#### 1.4. Policy Recommendations

We are not in favour of increasing local termination rates to set a higher floor for two reasons

- i. As per the WTO Reference Paper, a relevant principle is “Rates no less favourable” when governments mandate standard international termination rates which must not be divergent from termination rates offered to domestic suppliers, since traffic is carried to the same interconnection point.
- ii. From an economic point of view, a higher floor may be commercially suboptimal when faced with a country whose price elasticity warrants low effective access charges.

**Hence our recommendations are:**

1. Fix a uniform local termination charge of 20 paisa/minute for all types of calls (i.e. local and ILD). This will also prevent call masquerading by some of the Internet Service Providers currently happening due to asymmetric termination charges (Sridhar, 2012).
  - a. The international settlement rate should be fixed by TRAI/ DoT for every country based on an analysis of price elasticities. This can be along the lines of what FCC in the U.S. has been doing until now ([http://transition.fcc.gov/ib/pd/pf/isp\\_non\\_exempt.html](http://transition.fcc.gov/ib/pd/pf/isp_non_exempt.html)). (In fact, India is in the same position as the U.S. prior to 2004 International Settlements Policy Reform (Sridhar, 2000; Sridhar, 2012). However, this exercise should also take in to account the cost if termination of ILD calls so that the “whipsaw” effect as perceived by foreign carriers is as minimal as possible.
2. We also recommend that we make efforts to increase the price elasticity of Indian consumers for international calls by encouraging UAS providers to offer VOIP. This might force the foreign carriers to bring down their settlement rate on par with that of India (See appendix for a discussion of the trajectory of VOIP in India).

## Appendix

### VoIP and its implications on International Settlement Rate

At a generic level, Internet Telephony or Voice Over Internet Protocol (VoIP) can be of the following *four* types: (i) from a device (mobile/ computer) connected to the Internet to another device also connected to the Internet; (ii) from a device connected to the Internet within India to a device connected to telecom network outside India; (iii) from a device connected to the Internet outside India to a device connected to the telecom network in India; and (iv) from a device connected to the Internet within India to a device connected to the telecom network in India.

In India, as with many emerging countries in the world, the above forms of Internet Telephony, specifically types (iii) and (iv) have been regulated quite a bit. The regulator TRAI and DoT always indicated that Internet Telephony is a different service in its scope, nature and kind from real time voice as offered by other licensed telecom operators. Hence, there is asymmetric regulation between traditional voice telephony over telecom networks and Internet telephony.

India opened up a *restricted* form of Internet Telephony, allowing the first two types; but disallowing (iii) and (iv) way back in April 1, 2002. This restriction permeated a slew of grey market Internet Telephony service providers who would masquerade the calls, especially of type (iii), to offer low cost voice service.

However, realizing the potential of Internet Telephony in providing low-cost voice service, and the futility in restricting the same, the Indian government allowed *unrestricted* Internet Telephony (thus including types (iii) and (iv)) for Unified Access Service Licensees (i.e. telcos) in 2006. Today, the Over The Top (OTT) (e.g. Skype) calls of type (iii) to India are one of the cheapest in the world at 0.90 cents/ minute compared to even developed countries such as the U.S. and Singapore at 1.5 cents/ min and the much regulated countries such as UAE at 10 cents/min. **This is partially due to high price elasticity of demand of India calling customers.**

With all good intentions, TRAI recommended in Aug 2008 that even ISPs could provide unrestricted VoIP, as it would bring down price of NLD and ILD calls. However, in March 2008, the Telecom Commission of the DoT buckled under the lobbying pressure from the incumbent telcos and sent back the recommendations to TRAI for further review. Finally, the Unified License (UL) issued by the Government in January 2014, included the provisioning of unrestricted Internet Telephony through *Access Service authorization*. However, the entry fee at Rs. 1 crore per telecom circle for provisioning of unrestricted Internet Telephony is a steep rise from Rs. 2 lakh for a restricted { to (i) and (ii)} Internet Telephony service provisioning under ISP authorization (Sridhar, 2014).

**Though the effect of opening up Internet Telephony of kind (iii) for ISPs (i.e. ISPs taking the call in to India bypassing the ILD gateway and terminating it as a local call within India) on International Settlement Rate and charges is not clear and warrants further research, it might bring parity with rest of the world in terms of choices for the Indian consumers (both inward and outward bound International calls).**

Though UAS providers are allowed to provide calls of types (iii) and (iv), they are hesitant to provide this services due to fear of these subsuming their telco circuit switched calls and SMS offerings. Through UL, an access service authorized Internet Service Provider (ISP) can potentially offer unrestricted Internet Telephony calls, including those of types (iii) and (iv). Hence it is important to deliberate on the following:

- i. What is the termination charge for type (iii) (i.e. from a device connected to the Internet outside India to a device connected to the telecom network in India)?; should it be treated as an ILD call though it bypasses the ILD gateway?; and is it at all possible to determine the transmission path of such call for accounting purposes?

- ii. What is the termination charge for type (iv) ( from a device connected to the Internet within India to a device connected to the telecom network in India)?
- iii. If the termination charges for both local and ILD calls are made equal as per our recommendation outlined in section 1.5, then the problem is simplified; however the moot question is whether this should be part of IUC regulation.

However, this is also closely related to regulation of OTT services. Since an Internet Telephony call is a partial OTT service (i.e. from the origin until it hits the IP-Telco gateway), should Net Neutrality principles (as and when drafted) should be applicable for this as well.

The above question, can be taken up when the Net Neutrality rules or OTT regulation rules are framed by the regulator.

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