

International Voice Tariffs: Disparities and Recommendations for convergence in South Asia

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ABSTRACT

The purpose of this paper is to explore the issues of international roaming in South Asia and make recommendations on how transparency and consistency in tariffs may be achieved; two elements that are important if the objective of SAARC is to provide its citizens a single-market environment.

International roaming is a service that allows ease of communication for travelers and facilitates cross-border communication. It is a service that is only used by those who can afford foreign travel and high roaming charges; however, it is these communication links that connect the region. Affordability aside, research¹ shows significant price variations within the SAARC region. Such disparities in roaming tariffs have long been the cause of concern for many and efforts have been made to regulate tariffs at a regional level within other organizations; the most successful being that of the European Union (EU). This paper also draws upon such examples.

Keywords

International roaming, Transparency, Convergence, South Asia

¹ LIRNEasia (July 2010). International Roaming Benchmarks. Retrieved November 12, 2010, from <http://lirneasia.net/wp-content/uploads/2007/08/Roaming-Data-July-for-publicationV22.pdf> and LIRNEasia (February 2010). International Voice Benchmarks. Retrieved November 12, 2010, from <http://lirneasia.net/wp-content/uploads/2010/03/International-Voice-Prices-Feb-2010.pdf>

INTRODUCTION

The purpose of regional organizations is to provide its citizens with some intra-regional benefits and to facilitate relationships that enhance economic development, among others. Cross-border communication is not only essential for regional organizations to function, but it has also become a basic need for many. International voice (that allows a user to dial a foreign number directly from a fixed or mobile phone) and international roaming (that allows a user to seamlessly operate a local SIM while abroad) are two main telecommunication services that foster regional collaboration. Although it is presumed that international voice is the prevalent service since roaming requires international travel, there isn't enough evidence to say which service is more beneficial. Therefore, it is assumed that both services are equally important.

Recognizing its significance, leaders of the South Asian Association for Regional Cooperation (SAARC) issued the following at the 15th SAARC Summit (SAARC, 2008) *“The Heads of State or Government observed that an effective and economical regional telecommunication regime is an essential factor of connectivity, encouraging the growth of people-centric partnerships. They stressed the need for the Member States to endeavor to move towards a uniformly applicable low tariff, for international direct dial calls within the region”*. Despite the directive efforts have not been made to lessen or converge international voice tariffs in the region (LIRNEasia, 2011). However, in comparison prices are significantly lower and vary a lot less than roaming tariffs (LIRNEasia, 2011). Further, in contrast to roaming, international voice tariffs are far more transparent to users; as such it is international roaming that contributes more to “bill shock”.

Although international roaming is used by a relatively small percentage of the total South Asian population it is these travelers who link the region. Therefore, the importance of international roaming and ease of communication while travelling within the region should not be marginalized. The lack of tariff awareness and the fact that roaming is usually bundled with other voice and data services are reasons for consumers to neglect high tariffs when signing up with a mobile operator. Additionally, roaming tariffs are not well publicized or are complicated (different rates of a vast range based on the network the user connects to in the visited country).

Such disparities in roaming tariffs have long been the cause of concern for many and have prompted regional bodies such as the European Union (EU) to investigate further. The outcome was tariff regulation (both wholesale and retail) among its member countries (Europa, 2007). In addition, significant changes were made to offer consistency in roaming tariffs for all EU citizens (Europa, 2010). The Trans-Tasman region is following suite with its recent consultation (Joyce, 2010) to implement simple and transparent tariffs for communication channels between Australia and New Zealand. Although unsuccessful due to the lack of enforcement, the League of Arab States (AREGNET) also has put forth a proposal for regional price convergence and transparency (AREGNET, 2007).

SAARC lags behind. Research (LIRNEasia, 2009-2011) on international voice and roaming tariffs within SAARC show significant variation. The difference is most prominent for international roaming, where a user may be charged anything between USD 0.32 and USD 3 to make a local call while roaming in the region. In fact, using a local pre-paid SIM from the visited country to

make an off-net call is more cost effective. For instance, instead of USD 3, an Afghan roaming in Sri Lanka will be paying only USD 0.022 - 133 times less than the roaming tariff.

The objective of this paper is to focus on international roaming; discuss its issues and provide recommendations. The two main aspects of tariffs that this paper deals with are transparency and consistency. The former is required in order to provide users the necessary information upfront so that informed decisions can be made and the bill shock phenomenon can be avoided. Tariff convergence or consistency is required to meet the single-market objective of the regional body and inevitably bring about transparency. Ideally, the tariffs ought to converge with observable downward trend; however, that leads to a discussion on affordability, which is out of scope for this paper.

INTERNATIONAL ROAMING: TARIFF STRUCTURES

International roaming tariffs consist of several sub-components charged by the various network operators required to deliver the end-to-end service. When a roamer switches his mobile on for the first time in the visited country the mobile attempts to connect to an available network (either based on automatic selection or manually by the user). Detecting that the mobile connection is not registered with the visited operator, it tries to authenticate by contacting the roamer's home network (subject to agreements between the two operators). A temporary profile of the roamer is then created in the Visitor Location Register (VLR) of the visited network, allowing the roamer to seamlessly use voice and data roaming services. Use is recorded by the visited operator and is sent to the home operator for final billing. Pre-paid customers on the other hand are billed in real-time.

For Global System of Mobile communication (GSM) networks, there are two key components in wholesale charges that determine roaming prices (MED, New Zealand and DBCDE, Australia, 2010).

1. Inter-Operator Tariff (IOT) is the predominant component of the charge for the **origination of voice, SMS and data services**. The visited operator charges the home operator for the origination of services, arranging for the transit and/or termination on other networks and for roaming specific costs such as negotiating agreements, testing the roaming platform, costs incurred in data & financial clearing houses etc.
2. Mobile Station Roaming Number (MSRN) termination fee – Charges for the **termination of services** on the visited network. Unlike the IOT the MSRN is charged to the international transit operator, who in-turn charges the home operator.

The IOT defines a non-discriminatory tariff, known by all GSM Association (GSMA) members, and is typically used as a starting point for wholesale rate negotiations. The final outcome however, is determined by relationships, negotiating power, volume discounts, etc., and therefore, distorts any unbiased features of the IOT (Paltridge, Otsuka, & Díaz-Pinés, 2009). If sufficient competition does not exist in the market, reduction in wholesale prices will not be passed on to the end user (MED, New Zealand and DBCDE, Australia, 2010)

Charging for Services

The visited operator charges for services according to agreements with the home operator. The final bill that the customer receives will include additional charges such as home operator's mark-up, applicable services charges, taxes etc. Below is a brief explanation of the basic premise upon which roaming services are charged (excluding instances of special promotions or regulated tariff structures) (MED, New Zealand and DBCDE, Australia, 2009).

- **Making voice calls:** The visited network and the end network are the only entities involved. Therefore, the home network may not be involved in the technical process of placing a call if it is not the end network. The call is transferred from the Mobile Switching Center (MSC) of the visited network to the MSC of the end network via the relevant network gateways. The Home Location Register (HLR) of the end network is then queried to identify the Base Station Subsystem (BSS) and thereby the Base Transceiver Station (BTS) of the recipient. If the two networks are in two different countries the call is routed via the International Transit Operator (ITO) of the visited operator's choice. The home operator is charged an IOT by the visited operator for call origination, for arranging and paying for the international transit and termination on the end network.
- **Receiving voice calls:** All networks (visited, home and originating network) are involved in the technical process. The call is sent from the originating network to the home network via the relevant gateways. The home network queries its HLR, finds the location information of the user and passes it on to the appropriate MSC in the visited network. This is carried out via an ITO. The Visitor Location Register (VLR) is then queried to determine the BSS and BTS of the user. The visited operator charges the ITO an MSRN fee for terminating the call and the ITO charges the home operator for costs incurred, thereby creating a cascading billing structure.
- **Sending an SMS:** The VLR of the visited network is queried to identify the home network of the user. The SMS is then transferred to the home network's MSC via the ITO and the relevant SMS gateway. If the recipient is on the home network the HLR is queried to identify the BSS; however, if the recipient is on a third party network, the SMS is transferred to the MSC of that network where the HLR querying takes place. Irrespective of the final destination of the SMS, the visited network routes the message via the home network. Therefore, the destination of the SMS does not affect the SMS-IOT fee charged the visited operator (for originating and arranging international transits).
- **Receiving an SMS:** the originating network sends the SMS to the home network's MSC via the relevant SMS gateway. The HLR is then queried and the message is passed on to the visited network via the ITO and SMS gateway. A VLR query is carried out to identify the BSS of the recipient. Typically, there is no charge by the visited operator for the delivery of an SMS.

DISPARITIES IN SOUTH ASIA

The lack of transparency and uniformity in regional pricing often causes the bill shock phenomena for frequent users of international roaming. The variation of roaming pricing plans in the region is vast. For example, a network operator in Sri Lanka has multiple agreements (approximately 8) with as many operators in India. As a result, the prices can vary from USD 0.06 to USD 2.16 to receive a voice call, based on the network a user connects to while roaming; and this discrepancy is just within a single country. On a regional level the inconsistency is magnified.

Leaving these intra-country complexities aside, LIRNEasia annually benchmarks South Asian roaming tariffs charged by network operators with significant market share. In cases where roaming tariffs are not published, the operator with the second highest market share is selected, and so on. If none of the operators publish tariffs on their websites, the operator with the highest market share is contacted in an attempt to obtain the charges for these services (receiving a call, making a call in the visited country, making a call to the home country, sending an SMS) (LIRNEasia, 2010).

The latest report illustrates the inconsistencies.

		Home Country							
		Afghanistan	Bangladesh	Bhutan	India	Maldives	Nepal	Pakistan	Sri Lanka
Visited Country	Afghanistan		0.84	-	1.03	1.35	1.26	0.36	1.40
	Bangladesh	1.00		-	1.17	0.71	1.62	0.36	1.09
	Bhutan	-	1.55		1.85	2.50	2.55	-	2.14
	India	1.50	1.83	2.12		2.68	3.07	-	2.16
	Maldives	1.00	0.43	-	0.84		0.47	0.36	1.16
	Nepal	1.50	0.67	-	1.03	1.11		0.36	0.97
	Pakistan	1.00	0.49	-	-	0.65	0.62		0.65
	Sri Lanka	2.00	0.58	-	0.86	0.78	0.55	0.36	

Table 1: Roaming - Incoming call tariffs (LIRNEasia, 2011)

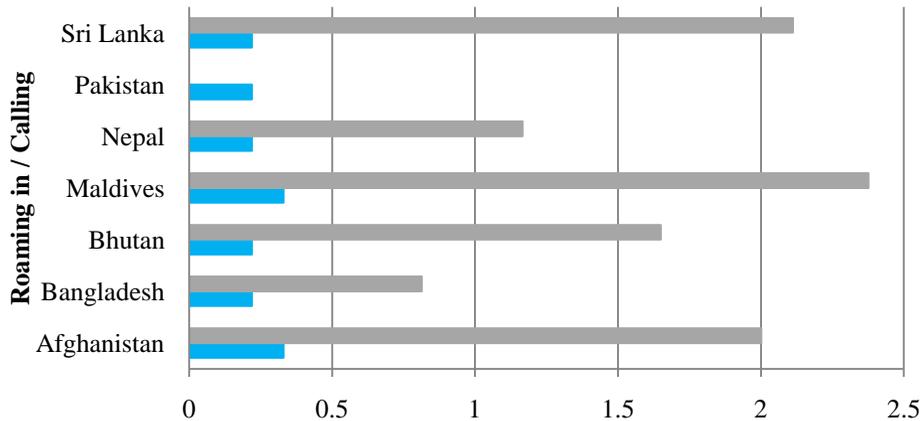
As shown in Table 1, to receive a voice call while roaming in the region the highest tariff is borne by a Nepalese roaming in India who has to pay as much as USD 3.07 per minute. Whereas Pakistanis pay eight times less (USD 0.36) in South Asian countries. LIRNEasia has observed this tariff consistency for Pakistani roamers throughout the two years of this study when they were charged a constant fee of USD 0.38 in 2009 and USD 0.36 in 2010 and 2011 (LIRNEasia, 2009-2011) (the marginal variation between the two data point is being caused by exchange rate fluctuations when converting to USD for this paper, not due to actual change in price).

As expected, outgoing calls cost significantly more; especially those made to one's home country (Table 2).

		Home Country							
		Afghanistan	Bangladesh	Bhutan	India	Maldives	Nepal	Pakistan	Sri Lanka
Visited Country	Afghanistan		2.20	-	2.00	2.20	3.43	2.25	2.54
	Bangladesh	2.00		-	0.81	0.94	1.14	1.49	1.02
	Bhutan	-	2.13		1.65	3.20	3.41	-	2.51
	India	3.00	2.12	2.80		3.34	3.41	-	2.77
	Maldives	2.00	1.58	-	2.38		3.18	2.25	2.25
	Nepal	3.00	1.02	-	1.17	1.61		2.25	1.07
	Pakistan	2.00	0.27	-	-	0.39	1.07		0.92
	Sri Lanka	5.00	2.11	-	2.11	3.09	3.68	2.99	

Table 2: Roaming - Outgoing call (Home country) tariffs (LIRNEasia, 2011)

Although price disparities and inconsistencies exist in international voice services (i.e. using a fixed or mobile connection to make international calls), it is still considerably cheaper than using international roaming to call home.



■ International voice (Using a local SIM in the visited country to call India) ■ International roaming

Chart 1: Calling Home - Roaming vs. International Voice for an Indian roaming in South Asia (LIRNEasia, 2011)

As illustrated in Chart 1, an Indian roamer may pay up to 9.5 times more to call home while roaming as opposed to making an international voice call using a local SIM from the visited country. Although inter-operator discount tariffs are typically offered, these are subject to network service availability, the awareness and ability of the roamer to make the right network selections.

		Home Country							
		Afghanistan	Bangladesh	Bhutan	India	Maldives	Nepal	Pakistan	Sri Lanka
Visited Country	Afghanistan		0.60	-	0.59	0.76	0.93	0.90	0.69
	Bangladesh	1.50		-	0.64	0.63	1.14	0.90	0.73
	Bhutan	-	1.29		1.32	1.94	2.07	-	1.52
	India	2.50	1.07	1.39		1.65	1.69	-	1.37
	Maldives	1.50	0.17	-	0.31		1.26	0.90	0.34
	Nepal	2.50	0.41	-	0.51	0.77		0.90	0.61
	Pakistan	1.50	0.41	-	-	0.60	0.86		0.52
	Sri Lanka	3.00	0.32	-	0.33	0.44	1.04	1.49	

Table 3: Roaming – Outgoing call (visited country) tariffs (LIRNEasia, 2011)

Similarly, in the instance of making a call to a local number within the visited country (Table 3), roaming tariffs are compared with the cost of using a local SIM card to place an off-net call. Table 4 presents the ratio of making a local call using a roaming SIM vs. using a local SIM (e.g. a Bangladeshi pays 84 times more on roaming as opposed to using a local SIM to make an off-net call while in Bhutan). In a few instances, for example in the case of a Bangladeshi roaming in the Maldives, the difference is only two-fold; however, in most cases there is almost no incentive for roamers to use roaming services given the affordability of obtaining a local SIM and placing an off-net call.

		Home Country							
		Afghanistan	Bangladesh	Bhutan	India	Maldives	Nepal	Pakistan	Sri Lanka
Visited Country	Afghanistan		6	-	6	8	9	9	7

Bangladesh	81		-	34	34	61	49	39
Bhutan	-	84		86	126	135	-	99
India	95	41	53		63	64	-	52
Maldives	21	2	-	4		18	13	5
Nepal	71	12	-	14	22		26	17
Pakistan	93	26	-	-	37	54		32
Sri Lanka	133	14	-	15	19	46	66	

Table 4: Multiple paid to make a local (off-net) call on roaming as opposed to using a local pre-paid SIM (Calculated based on LIRNEasia's annual roaming & international voice benchmarks report, 2011)

REASONS FOR DISCREPANCIES IN ROAMING TARIFFS

- Lack of price regulation: Often, high wholesale charges are the underlying contributor to high retail prices; an element that is opaque to customers but transparent to regulators. However, if a regulator were to control wholesale prices, as this is a cross-border service, there is a need for bilateral or multilateral agreements in order to perform comparable wholesale price regulation (Paltridge, Otsuka, & Díaz-Pinés, 2009). It is noteworthy that a reduction in wholesale prices doesn't necessarily guarantee a reduction in retail pricing. This is because the revenue share from roaming services is often a small fraction of the total from voice services. As a result operators are likely to hold on to the cost savings by retaining high retail prices (if they remain unregulated). The lack of regulation is also the cause for inconsistent and opaque retail tariffs that affect the user.
- Lack of price transparency: Most operators in South Asia do not advertise roaming tariffs, and the ones that do provide levels of details that are too complicated (Sutherland, 2010). International roaming is usually sold as a bundled service; as it is generally less important compared to other services. As a result users tend to give it least priority when selecting an operator/service plan (Salsas and Koboldt, 2002) and are unaware of high tariffs when they roam causing bill shock.
- Lack of uniformity: The data presented in Tables 1 – 4 show a significant variation in tariffs. The difference between the two extreme data points can be as much as (approximately) 8-fold to receive a call, 9-fold to make a call to the visited country, and 166-fold to make a call home. The tariffs are based on agreements between operators and therefore external factors such as good will, relationships between operators etc. play a role in setting the wholesale charge that

has a knock-on effect on the retail price. However, there are some known factors that contribute to the extremely high roaming prices which in-turn causes price disparity. For instance;

- **Lack of competition:** Unlike in domestic tariffs, roaming tariffs are not necessarily lowered with the entrance of a new competitor (Ambjørnsen, Foros, & Wasenden, 2009). Roaming is a service that is typically sold as part of a bundle with other more frequently used voice services. It is therefore, not a major deciding factor for most when selecting a mobile network operator and service plan. Unless in the rare case of a frequent traveler, it is highly unlikely that existing users will switch operators purely based on lower roaming tariffs. Domestic tariffs and on-net offers are far more important. Therefore, introducing competition in the international roaming market is difficult (Paltridge, Otsuka, & Díaz-Pinés, 2009).
- **Lack of close substitutes:** SMS, e-mail, using a local SIM card or a public phone are the common examples of substitutes; but, none of these options are a perfect substitute for roaming. Using a local SIM in the visited country may be the closest match in terms of ease of use and mobility. However, this is user-dependent (while low income users may buy a local SIM, users on tight schedules will not) and cumbersome (as it requires the user to announce the new number to all contacts or will have to carry another handset / change back-and-forth between SIM cards). This solution, although cost effective, is far from hassle-free. The demand for roaming gives operators the bargaining power to maintain high retail prices.
- **Potential double taxation:** Inconsistencies in applicable taxes within the region may require consumers to pay tax on taxes levied in the roaming country. The Organization for Economic Co-operation and Development (OECD) identifies double taxation to cause significant increase in roaming tariffs (Paltridge, Otsuka, & Díaz-Pinés, 2009). Discussions to mitigate double taxation have been held in Latin America (de Mello, 2008) and at the Asia Pacific Telecommunity Workshop on International Roaming in Brisbane, Australia in 2010.

MEASURES TAKEN BY OTHER REGIONAL ORGANIZATIONS

The need for transparency and simplicity in roaming tariffs and increase in awareness to avoid bill shock is evident (Díaz-Pinés, 2010). This is true for any service. The purpose of regional cooperation is to offer its citizens the benefit of a single market. In the case of telecommunication, international voice and roaming charges must be lower within the SAARC if the single-market objective is to be achieved; however, as previously demonstrated, this is not the case. Other regional organizations on the other hand have made good efforts in this regard.

European Union

Following the Roaming Regulation Impact Assessment in 2007, the European Commission (EC) imposed wholesale and retail price caps for voice services, which was lowered further in 2009

along with a price cap on SMS (both wholesale and retail) and data roaming (wholesale only) (Shortall, 2010). A press release by EUROPA announced that the EU approved retail price cap for an SMS is EUR 0.11 while the wholesale price cap for data services is EUR 1 per megabyte. Further, in efforts to reduce “bill shock”, data roaming will be disconnected when a customer reaches EUR 50 (EUROPA, 2009). In addition to reducing wholesale and retail pricing, special efforts were made to ensure price transparency (Ecarase, n.d.).

Trans-Tasmanian negotiation

In 2010 the governments of Australia and New Zealand sought public comments on the trans-Tasmanian roaming markets. This discussion has identified that there is lack of awareness, inadequate roaming tariff transparency and relatively high roaming prices in the region (Ministry of Economic Development of New Zealand and the Department of Broadband, Communications and the Digital Economy of Australia, 2010). As such there was a lot of concern regarding the actual retail and wholesale mark-up. A report that was published by the Australian Competition and Consumer Commission concluded that 75 percent of the tariff paid by a roaming customer consists of the wholesale price charged by the visited operator (House of Representatives Standing Committee on Communications, 2009). This study is ongoing; a survey was conducted among travelers of Australia and New Zealand but no action has been taken thus far (Watkins, 2011).

ASEAN Telecommunications Regulators' Council (ATRC)

Although there is no evidence of price convergence, a significant reduction was implemented in 2009 during the 15th ATRC meeting when Malaysia, Singapore and Thailand agreed to reduce roaming charges due to the increase in travel within these countries. A study presented at this meeting indicated that the high tariffs for making a call was due to high IOTs (Mongkolporn, 2009). Subsequently, Malaysia and Singapore announced a 30 percent reduction in voice and 50 percent reduction in SMS in June 2010 with a promise to further reduce tariffs in 2011 (thestar, 2011).

League of Arab States (AREGNET)

Similar to the EU regulations, the memorandum of understanding (MoU) by ARGNET also proposes a retail price cap based on a multiple of the regulated wholesale charge. Transparency in roaming tariffs was also included (ARGNET, 2007). Few Arab countries have requested their operators to send an SMS to the roamers upon arrival; however, the lack of a regulatory power to enforce the proposed policy has resulted in non-uniform adoption.

RECOMMENDATIONS

The regulation of roaming tariffs is imperative for regional tariffs to converge. There are two facets that need to be considered – retail tariff regulation and wholesale tariff regulation. Traditionally, it is at the wholesale level that regulation is first introduced. Retail level regulation is carried out only if it is evident that policies, changes and therefore benefits in the wholesale market are not filtered down to the retail space (Paltridge, Otsuka, & Díaz-Pinés, 2009). The regulation of only retail prices may pose an added disadvantage to smaller operators who are

likely to have their margins squeezed. As such, it is recommended that both levels of regulation are carried out.

Publicizing wholesale charges will bring about awareness of the retail mark-up, thereby giving customers the bargaining power to pressurize operators to lower tariffs. However, commercial confidentiality will be breached and it will not necessarily improve the present lack of simplicity in regional pricing. Conversely, regulatory bodies can start benchmarking wholesale charges. It is likely that this benchmarking process will instigate a downward trend in roaming tariffs. The convergence on a regional scale will require some form of standardization of the bilateral and multilateral roaming agreements. The issue of double taxation is also worth exploring. There is a need for regional co-ordination for complementary tax agreements between the home and visited countries to avoid unwarranted costs filtering down to the retail tariff. As a regional body the SAARC can appoint a committee to ensure (based on some pre-established criteria) that operators are charged reasonable termination rates and customers are charged reasonable retail prices.

In addition, awareness among customers is essential to avoid bill shock. In countries that lack tariff transparency, it is recommended that policies are in place to compel operators to widely publish roaming and international voice tariffs via all communication media.

CONCLUSION

This paper discussed the general underlying principles of roaming services and related tariff structures. LIRNEasia's methodology on benchmarking roaming was used to examine the tariff disparities in South Asia. The fact that regional roaming tariffs are inconsistent and opaque was demonstrated. The purpose of SAARC and such regional organizations is to promote relations and to provide a single market environment. If the success of such organizations were measured by their inter-communication service offerings SAARC would be a failure.

Some other regional organizations however, have made efforts and have been successful in offering simple, consistent tariff structures. The EU is a good example. This paper also drew upon the other regional policies that may be considered and replicated within the SAARC. There are many examples to learn from and many ways of implementing customer-centric strategies that do not hinder the operators' bottom line. It is imperative that necessary guidelines on international roaming are in place in order to increase user awareness and ease of use.

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