

Regional Interconnection Costs and Other Issues

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1. Introduction

The problem of Internet access costs for operators and Internet service providers in developing countries and the difficulties they face in order to connect to other countries within the same region or sub-region have been present at every debate that has taken place at international fora on Internet and the Information Society in recent years. This issue has generally been identified as “Regional Interconnection”.

Thus, for example, the issue is discussed in paragraphs 23, 27, and 50 of the Tunisia Agenda, one of the outcomes of the World Summit on the Information Society, as well as in many other documents such as, among others, the 2005 Rio de Janeiro Commitment, agreed at the Regional Ministerial Conference of Latin America and the Caribbean, and the eLAC-2007 Plan of Action, a regional plan of action for the development of the information society.

2. Simplifying the Debate

This debate has been characterized by a lack of focus and the lack of concrete proposals, while different obstacles have been encountered that have not allowed significant progress to be made.

These obstacles usually stem from positions that incorrectly simplify the problem, such as a belief that the solution is for developing countries to pay 50% of the cost of internet international links or, at the other extreme, a belief that everything will be solved through the natural behavior of the market, and that it would be sufficient to liberalize the markets and avoid monopolies.

As mentioned earlier, both extremes simplify the complexity of the problem.

The position that holds that internet international links should be paid 50% by each operator is not as relevant as it may seem, as we are speaking of interconnecting links whose prices are not regulated and, therefore, if the link currently costs \$100 and is paid 100% by an operator in a developing country, should the aforementioned criterion be applied, it would then cost \$200 and the operator of the developing country would pay 50%, which is exactly the same \$100.

In addition, we are speaking of connections that are not equally necessary for both parts. Initially, interest is usually generated at the operator of the developing country and, therefore, in most cases, its counterpart would not be willing to implement the connection and pay its corresponding part of the cost. This simple explanation represents only a small part of the arguments that show that it is not this type of proposals that will achieve the best possible solutions.

The argument that states that the market will naturally take care of solving the existing problems is no better than the one described above. It is clear that, almost in its entirety, the market of international carriers is a liberalized and competitive market. Therefore, those who proclaim that the market itself will solve the problem and that all that is needed is a greater liberalization of the business ignore that these are already the characteristics of this market and that not only do disparities and difficulties continue to exist but they are increasing.

Simplifying the debate and minimizing the effects of the problem only contribute to bring the discussion to a standstill.

3. Identifying the Problem

“The problem” was very well defined by Gabriel Adonaylo during the session where the issue of Access was discussed at the Internet Governance Forum that met in Athens in November 2006: “For the cost of an Internet link between a city in South America and the United States it is possible to lease a link having 60 times more capacity between New York and London.”

The price is not the cause but the consequence and, in order to change this reality, we must work on the factors found at the root of the situation. These factors include, among others: developing content of local interest and in local languages, developing infrastructure, favorable conditions for investments, transparency of the markets, modernizing existing legislation, and developing public policies.

3.1. Developing Content:

Although this issue has been repeated many times, it continues to be the most important aspect that needs to be considered. In general terms, infrastructure follows traffic flows. If there is no content at local level, content that is of interest to local users and/or written in local languages, local traffic will not achieve significant levels as compared to international traffic.

Although in many cases the development of this type of content is the result of private initiatives, it is an area where governments could have an active role in terms of promoting and creating incentives for content development. Those countries that have public policies in this sense have achieved very good results.

3.2. Promoting National Internet Exchange Points:

Most of the times, if not always, the creation of Internet exchange points at national level, or even at regional level within a country, is an excellent idea that brings about nothing but benefits. However, it is important to bear in mind what it was mentioned in the previous item. If there is no local traffic, Internet exchange points will have limited impact. However, it is clear that the availability of an IXP or NAP is an important issue that should be worked on.

IXPs may be non-profit organizations, associations (as in the case of chambers of commerce), state organizations or even private endeavors. What is important is that IXPs must be open to the participation of all those who are interested and that participation rules must be clear and transparent.

There are different IXP or NAP models, all of them valid in their due context. Some of them are based on multilateral agreements, others on bilateral agreements.

In some cases there are artificial barriers to participation, such as prices or membership rules, that do not allow the presence of IXPs to have a greater impact on the benefits to the local community.

There is no need of state regulation in terms of IXP operation and, in fact, in those countries that have this type of regulations, it is not clear whether they are beneficial; what is clear is that public-private dialogue is a key element for IXPs to contribute to access strategies at national level.

The existence of IXPs helps local traffic remain local and therefore contributes to the cost of international links having a smaller impact on user fees. But they also have other important advantages in terms of the stability of the local infrastructure which may be available even if problems arise in international links. In addition, IXPs are ideal locations for installing root server and ccTLD server copies, and this significantly increases the availability of these services.

3.3. International Internet Exchange Points

The importance of Internet exchange points (IXPs) has already been mentioned, as has their impact on improving access conditions. However, on many occasions the concept of "IXP" is associated with local traffic within a city, within a region of a country, or within the country itself. When the IXP model is based on multilateral agreements it is very difficult to allow international traffic at IXPs considered to be for local coverage. This could potentially create commercial problems among those participating in the IXP, as some of them might have to allow through their networks international traffic originated by clients of other participants of the IXP, thus generating an involuntary situation where one ISP would be subsidizing another.

In some cases the possibility of interconnecting IXPs among themselves has been considered in order to allow better routing of the traffic from an ISP located in one country to an ISP located in another.

This idea, which in principle might appear to be interesting, has not been successful because it has been faced with several obstacles:

- Who is the owner of the interconnecting links between IXPs?
- Who operates these links? (Consider that when we speak of connecting “N” IXPs among themselves, an important infrastructure comprising multiple links would be generated).
- Must they be operated for-profit or not-for-profit?
- How will quality of service be guaranteed? (investments, upgrades in terms of links and equipment, etc.)
- The most important obstacle is that these projects would affect the business of those carriers and operators that offer links among clients within the countries under consideration, which in many cases are even members of local IXPs, a fact that makes it difficult for these operators to support these initiatives, thus compromising their chances of success.

This does not mean that interconnections among IXPs can not be implemented. In some specific cases, if there was broad agreement among the members of those IXPs and business models were found that would allow the adequate operation of the project, they could be feasible but, as mentioned, only in very specific cases. It is clear that this is not a model that should be developed in a standard manner and that this type of measures will not truly improve connectivity conditions in developing regions.

Another solution is to promote, within a particular region, multiple IXPs based in a model of bilateral agreements. What does this mean? It means to create facilities where the physical connection of multiple IXPs is made possible, but where traffic among the different operators is regulated by specific agreements among them – usually called “peering” agreements”. In other words, creating the opportunity, from a physical point of view, for operators to negotiate traffic agreements among themselves. For example, at the moment in Latin America this physical possibility is limited to a small number of locations, the most important being that of the NAP of the Americas in Miami (located outside the region) and the PTT Metro Project in Brazil. The proliferation of this type of IXPs or NAPs located at different facilities within the same region would make it easier to improve regional interconnection conditions.

Although all IXPs inherently involve a certain level of neutrality, this model of greater neutrality would have a very positive impact because it would improve the routes carrying intra-regional traffic flows.

But what type of organizations should operate these ventures? This, in fact, is not the most important issue. Both private for-profit ventures as well as ventures headed by chambers of commerce or existing IXPs, as well as NGOs or even governments are and will continue to play important roles.

Governments, without participating directly, may develop actions to promote and stimulate this type of initiatives.

These initiatives do not affect the business model of the majority of the operators; on the contrary, they offer neutral spaces for operators to negotiate better conditions.

The availability of these iIXP (International Internet Exchange Points) might also promote the deployment of greater infrastructure on the part of the operators so as to be able to reach those IXPs.

3.4. Increasing International Connectivity Options

A truly important issue that has to do with the workings of the market is the availability of different international connectivity options.

Although the market is liberalized, there are many countries that do not have several “physical” connectivity options towards different regions and countries. For instance, in Latin America it is common for countries not to have sufficient connectivity options with neighboring countries, or that these options are extremely expensive. Without creating specific regulations – although in some cases these may be a useful tool –, there are many ways in which governments can affect the market through dialogue with the industry and the creation of incentives. The time of the major privatizations and opening of the market might have been a good opportunity for establishing the conditions and characteristics of the services that private operators would have to respect. At that moment, a greater availability of infrastructure could have been required, infrastructure that would allow adequate levels of connectivity with the countries of greatest interest. But, although most countries missed this opportunity, there are still ways to move forward in these issues.

3.5. Regulations – Obstacles or Incentives?

There are two ways in which regulatory aspects affect the current interconnection situation and the proposals mentioned in this article.

On the one hand, as mentioned earlier, some regulatory measures can be useful for achieving certain objectives, but it is clear that an excess of regulations can also have a negative effect on the development of these ideas.

In the previous item we mentioned operators’ potential interest in developing infrastructure (for example, deploying fiber optic cable) to reach iIXPs. If in certain countries legislation does not allow ISPs to install their own infrastructure, or if it makes it extremely difficult, then the goal of achieving more connectivity options, and its positive effect on costs, will not be attained.

Therefore, in certain regions, a good approach would be to carry out two types of actions at regional level: sharing best practices in terms of incentives for achieving the objectives that have already been mentioned; and analyzing, with the aim of eliminating them, the regulatory measures that could be affecting the possibility of ISPs of developing their own infrastructure necessary to reach Internet exchange points both at national as well as regional level.

Another related issue is how ISPs reach the nearest submarine fiber optic cable. In many cases, it is more expensive to reach the fiber optic cable than to connect between that point of connection and the port leased in a developed country such as the USA.

The obstacles involved should be analyzed in each situation, on a country-by-country basis. These obstacles may be attributed to a regulatory issue, an operator's predominant position, a lack of infrastructure, or other reasons. It is important to perform these analyses and work towards eliminating the factors that make the cost of this type of connections, usually called backhaul, excessively high.

3.6. Transparency in Price-Setting Mechanisms –

An issue on which doubts have been repeatedly expressed is the mechanism used for setting the prices of main Internet backbone links.

In developing regions there are not many options in terms of carriers and submarine fiber optic cable owners who provide this type of links. Although these markets operate on the basis of competition and exhibit a high level of deregulation, the lack of a greater number of options may generate doubts as to the natural functioning of the market.

It is not clear at this point that this actually represents a problem, and there are certainly many observers who believe that prices have naturally adapted to the characteristics of the market.

There is also another issue that exhibits similarities to the one described in the paragraph above. Some of the major carriers (Tier 1) are in the process of expanding their networks, offering connecting ports in developing countries. For instance, instead of having to reach Miami in order to lease a port, one might be available at Sao Paulo or Buenos Aires. In this case some concerns arise as to what prices would be charged for these ports. Will they be the same as if they were leased in the USA, for example, or will they be higher? It would be reasonable for them to be slightly higher so as to pay off the infrastructure that will be necessary at the access point and the traffic that these companies will probably have to pay between their new access point and the main backbones, but the difference in pricing should not be very significant.

Greater transparency in price-setting systems would not necessarily impact prices, but it would be a positive step for all parties involved.

4. Conclusions

The availability or non-availability of content that is of interest to the local community and/or content that is attractive to users in other countries determines Internet traffic flows.

Content development has a notorious influence on cost equations and drives the development of better connectivity conditions.

Beyond that, there are several measures that can be implemented in order to improve regional interconnection, and this affects the cost of international links and their influence on user fees.

The existence of local IXPs, incentives for the development of better connectivity conditions with neighboring countries, eliminating regulatory obstacles, promoting Internet exchange points that offer greater levels of neutrality and allow international traffic (iIXPs), as well as measures that add greater transparency to the price-setting

mechanisms for international connections, are some of the measures that may be implemented.

To conclude, it is important to maintain a multi-sector debate at international level, a debate based on a common understanding of the problem and focused on concrete proposals.

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