LEADERSHIP IN INFRASTRUCTURE POLICY

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Case Study in Number Portability:

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Number Portability (NP) is a feature of telecommunications networks that allows consumers to retain their telephone numbers while switching networks. In effect it is the ability for a subscriber to retain his telephone number when he moves from one provider to another.

This feature, when implemented, from the point of view of the regulator generally, enhances effective competition, new investment as well as fosters consumer choice. Consumers, whether they are Businesses, entrepreneurs or individuals, may have business, economic or social reasons why they want to retain their numbers, while being able to benefit from better coverage, price and services that another network or provider may be offering. They see it as a form of benefit as an increase in consumer's choice, and the inconvenience of having to inform third parties of number changes etc.

Though it was introduced as a tool to boost competition in the heavily monopolized wireline telecommunications industry number portability became popular with the advent of mobile telephones, since in most countries different mobile operators are provided with different area codes and, without portability, changing one's operator would require changing one's number. Some operators, especially incumbent operators with large existing subscriber bases, have argued against portability on the grounds that providing this service incurs considerable overhead, while others argue that it prevents vendor lock-in and allows them to compete fairly on price and service. Due to this conflict of interest, number portability is usually mandated for all operators by telecommunications regulatory authorities.[1]

Where prices offered by competing services are not significantly different consumers may be reluctant to 'churn'- that is to say - move from one provider to another.

Generally, once competition has been introduced into a telecoms market, Number Portability may be one of the value added service that follows. It goes without saying, however, that effective interconnection with all service providers in the market has to be in place, before Number Portability can be of any real value.

While in some markets NP may not have any significant impact, markets, such as in Europe, have experienced increased levels of churn (customers changing service providers), underscoring the value to consumers. This increased churn rate will force service providers to offer better prices and overall service to consumers to improve

[1] http://en.wikipedia.org/wiki/Local_number_portability

'stickability', (retaining the consumers unto their networks) - all products of a competitive market.

Operators/service providers have varying views with respect to NP. Of course new entrants and smaller operators see it as an opportunity to increase their market share, while the solid and larger shareholders of the market, have been reluctant to implement NP for obvious reasons.

Types of Number Portability

There are several types of Number Portability. These include:

Service Portability - This allows consumers to retain their numbers while switching from one service to another service **provided by the same service provider**. This has been practiced in Guyana since October 2005 when permission was granted for TDMA consumers of GT&T to keep their original numbers whenever they switch to GT&T's GSM network. This made good the transition process when this technological change was implemented.

Location or Geographic Portability - This facility allows consumers to keep their numbers when they physically move to another area. This type of portability usually applies to the fixed/landline type services.

Service Provider Portability - Here, a consumer moving **from one service provider to another service provider** is allowed to keep his/her number. This includes consumers moving from fixed mobile and mobile to mobile (also referred to as **Mobile Number Portability**) networks. This is the most popular portability in the world today.

Consumer Issues

Consumer Protection Issues In some instances, NP is now being branded as a right rather than just another possible service being provided by an operator. Despite this growing position there can be several issues/barriers relating to consumers enjoying NP.

These include:

- **SIM locked handsets** - a consumer would either have to replace or have to expend additional time and money to have his/her handset unlocked before the SIM card of the new network could be operational;

- **Long subscription contracts** - the cost of breaking off a contract can be high, thus causing a consumer to remain with an operator unwillingly;

- **Cost to port a number** - the cost borne by the need user for the ported number can be excessive if not based on the real cost for porting. In some jurisdictions (Finland for example), there is no direct cost for porting a number;

- **Time to port a number** - this is the time between when the request is made and when the number is actually ported;
- **Who does the consumer approach to request number portability** - a number of countries allow the request to be made to the operator to which the consumer is moving, in order to prevent any situation where the consumer could feel/be intimidated/uncomfortable when making a request to the old operator for a change;

Cost

Generally, the high costs associated with implementation of Number Portability have been one of the reasons against implementation of NP. In Guyana, one of the major providers of mobile services has argued that in a large country where mobile carriers serve millions of subscribers and where numbering authorities face the likelihood of number depletion, the costs associated with implementation and administration of NP can be incurred and cost recovery may be spread over the sizable customer base. It was pointed out that in the USA, for example, subscribers had to pay a recurring monthly charge, as high as US$1.75/month (AT&T Wireless) to cover the costs of implementing number portability. In Guyana, the argument has been that there is not a large enough

subscriber base to absorb the associated costs and that that in countries with small populations the costs generally outweigh the benefits.

At a workshop on "Implementing Mobile Number Portability" in Islamabad, Pakistan, the implications of mobile number portability (MNP) were discussed. The forum, comprising participants from the Asia-Pacific, the Middle east and Africa, provided insight into the technical, regulatory and operational aspects impacted by the porting process, with a focus on the Pakistani MNP exp

The reasons cited in favour of MNP were classified into advantages to the **subscribers** and **regulators**. The former were benefitted by an increase in choice of packages, and the eliminated costs of having to inform third parties of a number change, while the latter saw MNP as an approach to attract new investment and generate healthy competition. **Operators**, on the other hand, were split in their views: new entrants and operators with smaller market share were of the view that it would create fair play in the industry, but large operators with significant market [power were, unsurprisingly, against the implementation of MNP.

Mr John Harrocks, an MNP Consultant who spoke at the workshop demonstrated that a basic costs-benefit analysis of the portability process showed that implementing this service in smaller countries with populations of less than 10 million was not a feasible option, As the costs outweighed the benefits significantly. Instead, he suggested a few alternatives for these countries that would make number changes easier for subscribers (e.g. operators send free SMS to all cont acts on SIM, low cost for maintaining old number in parallel, etc), and ensure quality of service and competition among operators.

An argument that has been raised by the reluctant operator, is that since there are heavy direct costs associated with the implementation of Number Portability, there is the belief that consumers would be harmed in that carriers would be forced to expend on NP, as opposed to allocating resources to the continued enhancement of network modernization, network coverage and quality of service issues. Of course the other argument may be that on the contrary, NP encourages a more competitive and efficient service by the carriers.

Costs associated with NP include set-up and database costs which are fixed and operational costs, such as porting administration and re-routing, which are variable and based on volumes.

Accordingly, administrations need to examine the various cost methodologies such as **cost causation** (where the operator that generates the costs pays for it), **cost reciprocity** (where the cost is apportioned symmetrically), **negotiated** (operators negotiate the cost apportionment), **imposition on the end user,** or a combination of any of the above.

Whatever cost allocation methodology is used, one has to ensure it does not have an adverse effect on competition. Also, if a cost is imposed for number portability, it should be cost based and not priced to discourage porting of numbers.

Technical & Administration - Implementation of Number Portability

In the Guyana situation, the main service provider argues that the implementation of NP was costly as the steps to be taken are as follows:

1. Carriers must ensure that their equipment is capable of working in an MNP environment.
2. Carriers may have to ensure that their equipment is upgradeable or replace with new MNP capable equipment.
3. Carriers may have to ensure that there are in synch with upgraded software packages.
4. A database containing the necessary numbering information would have to be constructed, and arrangements put in place to have it maintained and updated as necessary from time to time.
5. Guyana carriers must develop technical and operational standards to enable the database to be used for the intended purpose.
6. Rights and responsibilities must be established among carriers i.e. to identify which carrier is responsible for quering the MNP database and how carriers will share information necessary for MNP.
7. Carriers will have to carry out testing before implementation of MNP

Complexity for number portability can come from many sources. Historically, numbers were assigned to various operators in blocks. The operators, who were often also service providers, then provided these numbers to the subscribers of telephone services. Numbers were also recycled in blocks. With number portability, it is envisioned that the size of these blocks may grow smaller or even to single numbers. Once this occurs the

granularity of such operations will represent a greater workload for the telecommunications provider. With phone numbers assigned to various operators in blocks, the system worked quite well in a fixed line environment since everyone was attached to the same infrastructure. The situation becomes somewhat more complex in a wireless environment such as that created by cellular communications.

In number portability the "donor network" provides the number and the "recipient network" accepts the number. The operation of donating a number requires that a number is "snapped out" from a network and "snapped into" the receiving network. If the subscriber ceases to need the number then it is normal that the original donor receives the number back and "snaps back" the number to its network. The situation is slightly more complex if the user leaves the first operator for a second and then subsequently elects to use a third operator. In this case the second operator will return the number to the first and then it is assigned to the third.[2]

In cellular communications the concept of a location registry exists to tie a "mobile station" (such as a cellular phone) to the number. If a number is dialed it is necessary to be able to determine where in the network the mobile station exists. Some mechanism for such forwarding must exist.[3]

Essentially, there are two methods of administering service NP, namely:

- bilateral database and
- Centralized/clearing house.

[2] http://en.wikipedia.org/wiki/Local_number_portability
[3] Supra.

With the former, bilateral database, the service providers maintain databases with the ported numbers and routing information. These database are duplicated with all the service providers involved.

With the centralized method, a central database of the ported numbers is maintained by a third party other than the service providers. The **call routing** is performed by service providers after queries with the centralized database.

The above administration methods give rise to four implementing schemes, namely:

- Onward Routing (Bilateral database method)
- Call Drop Back (Bilateral database method)
- All Call Query (centralized/clearing house method)
- Query on Release (centralized/clearing house method)

With the Onward Routing Scheme:

- A call is made on the Originating Network[4] which is then routed to the donor Network[5];

[4] The network on which the call originates

[5] [2]The network that was originally assigned the 'ported' number by the Number Administrator

- The donor network detects that the dialed number has been ported out of the donor switch and checks with an internal network-specific number portability database (NPDB);

- The internal NPDB then returns the routing number associated with the dialed number;

- The donor network uses the routing number to route the call to the recipient network[6].

With the Call Drop Back Scheme:

- A call is made on the Originating Network which is then routed to the donor network;

- The donor network detects that the dialed number has been ported out of the donor switch and checks with an internal network-specific NPDB;

- The internal NPDB returns the routing number associated with the dialed number;

[6]The network on which the 'ported' number now resides

- The donor network releases the call back to the originating network with the routing number and the call is then sent to the correct recipient network.

With the All Call Query Scheme:

- A call is made on the Originating Network which then sends a query to a centrally administered NPDB;
- The NPDB returns the routing number associated with the dialed number;
- The Originating Network then uses the routing number to route the call to the recipient network.

With the Query on Release Scheme:

- A call is made on the Originating Network which then routes the call to the donor network;
- The donor network receives the call and indicates that the dialed number has been ported out of that switch;
- The Originating Network then sends a query to its copy of the Centrally administered NPDB;

- The NPDB returns the routing number associated with the dialed number;
- The Originating Network then uses the routing number to route the call to the recipient network.

The above implementing schemes all have pros and cons in terms of costs of establishing the database etc., time to process the calls and cost of the transactions. Based on an analysis of these, a suitable methodology and scheme should be chosen.

Cases

In Hong Kong, the Mobile Number Portability was effectively spearheaded and implemented by the regulator, which used the existing Number Portability as set for the fixed-line services. In a heavily competitive and technologically prone society, portability was considered a success story there. The introduction of NP coincided with the introduction of four new entrants into the market.[7] In Finland on the other hand, while implementation was considered a success due to the lack of minimum contract periods along with the provision of high incentives to port (from one operator to another), operators began to lose substantially. This resulted in the introduction of minimum contract periods, which, in turn, reduced the porting rate from 40% to 10%, leading in turn to economic failure.[8] In the United Kingdom, Oftel was instrumental in encouraging MNP, hoping that it increases competition, however only one operator was inclined towards MNP, and this in turn played a large role in the resulting MNP failure. In addition to this the regulator did not play a large role in the implementation phase.[9]

Moving Forward

[7] Mobile Number Portability: the Case For and Against-Iqbal, October, 2007
[8] Supra.
[9] Supra.

In moving forward, the body with the charge for numbering should draw up firstly their national numbering plan- which involves determining a strategy for the use of all numbers in the numbering space as well as policies in the administration before considering number portability. Consideration will have to be given to the long term implications of numbering *vis a vis* number portability.

It is important that all parties should be on the 'same page' with respect to Number Portability and the Regulator should be heavily involved in the implementation process, while the service providers should be ideally in favor of number portability. The regulator should proceed based on international best practices. At minimum, the regulator should ensure that there is a demand for this type of service and that the cost-benefit analysis justifies the cost involved, and the Authority (in Guyana- the National Frequency Management Unit) with the charge for numbering has a clearly articulated numbering policy and strategy. It may perhaps be prudent to have public consultations on the issue. It may also be advisable to have a market survey done, along with a cost-benefit exercise to determine whether it is feasible to have number portability. The ideal situation, it seems, is for there to be equal entrants or players in the marker, although it is recognized that there is no standard NP solution for any country.

Legal Framework

For there to be successful Number Portability, there should be for instance, the existing legal framework to facilitate same- technical and legal rules that establishe the playing field for Number Portability. In most instances, the law at it relates to Telecoms

facilitates and confers the authority on the regulator and imposes an obligation on the operator to facilitate NP. It is to be noted that in the European Union for instance, Art. 30 of the Universal Service Directive stipulates that Member States shall ensure that all subscribers of publicly available telephone services, including mobile services, who request can retain their number(s) independently of the undertaking providing the service. In Australia, Part 22 of the Telecommunications Act confers powers on the regulator with respect to number portability. In the USA, the Telecommunications Act of 1996 imposes a duty on carriers to provide number portability in accordance with requirements by the Federal Communications Commission (FCC). I am not certain whether there are provisions made by any other Caribbean Jurisdiction for Number Portability, or indeed whether that has been implemented.

Any body of rules relating to /mandating Number Portability should provide, for instance, for the timing for porting (which should be at a minimum), the mechanics involved in porting, and contractual obligations etc may be points to consider when adumbrating the body of rules pertaining to Number Portability.

ECTEL While NP is relatively new to the Caribbean Region, it is an intervention that is necessary, especially since telecoms markets (in the context of NP) have been liberalized in most, if not all, of the territories.

As indicated above, NP has the ability of driving service providers to be more competitive in terms of prices and service offerings etc. This can only be beneficial to the consumers, the operators themselves and the Region as a whole.

ECTEL has been discussing the possibility of number portability but has not embarked upon its implementation. It has, however, realized that NP is very expensive to implement. This may well be the current hurdle to be crossed in deciding to implement Number Portability.

Its present numbering plan has in fact mentioned NP but does not deal with it in any detail. Its implementation involves the operation of extensive data base for trading and cross-referencing numbers.

It is ECTEL's intention to conduct a public consultation to decide whether to pursue the implementation of NP.

Conclusion

Number Portability does not generally generate competition, but it certainly improves the services offered by the providers. It fosters for instance short term promotional plans, lower and even rates, and multi add – on features, that are additional supplements to the services. This is important in the constantly evolving world of technology – which is in turn beneficial to the end-user -the consumer.

Respectfully submitted.

Prem Persaud.,

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