GOVERNMENT OF PAKISTAN
PAKISTAN TELECOMMUNICATION AUTHORITY
HEADQUARTERS F-5/1, ISLAMABAD
http://www.pta.gov.pk

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SUBJECT: - <u>**Interconnect Exchange or Interconnect Bill Clearing House**</u>

Interconnect related issues may need special attention in the deregulated environment, to enable a feasible interconnection arrangement where several operators need to be interconnected. A paper has been prepared at PTA for Industry Consultation and attached.

Studies had been carried out at ITU / APT and papers were presented in the study group meetings. For details the following APT and ITU sites may be consulted as well:

http://www.aptsec.org/meetings/2005/sg25/DOCS/25SG-05-ID-06_New-Interconnection-Option_TRAI-India.doc

http://www.aptsec.org/meetings/2002/SG22/papers/PL-02-24_SQ2.11_Rapporteur-report.doc

http://www.aptsec.org/meetings/2004/PRF/documents/INF05-Interconnection-phl.ppt

http://www.itu.int/ITU-D /
treg/Interconnection_Prices/Bhatnagar-INTERCONNECTION_PAPER.pdf

In order to explore the idea of Interconnect exchange for the Pakistani environment, PTA would like to invite operators to solicit their opinion.

Wasim Tauqir
Director General (Industry Development)

A CONSULTATION PAPER

on

Interconnect Exchange & Bill Clearing House

1. <u>Background</u>

The open and unrestricted policies in telecommunication in Pakistan, since the inception of the De-regulated era, has ushered a wave of Local Loop and Long Distance & International licensees and henceforth basic service providers. During this era two new Cellular operators have also been added taking the total number to six. Although the entire deregulation process is for the benefit of the consumers and the industry but in due course, things which were not so complicated in the past have become so especially due to Interconnect, APC etc. Now it is up to the industry and the Regulator together, whether to offset the complication created because of this liberalization through creative and regulatory measures or to let the industry sort it out itself the hard way.

To understand the above mentioned, let us first refer to the following picture in which each operator is shown by a vertex or a node:

Figure 1
('n' = # of nodes

a

"1" (n-1) interconnect for "2"

b

"3" (n) interconnects for "3" operators.

c

"6" (n+2) interconnects for "4" operators.

d

"10" (n+5) interconnects for "5" operators.
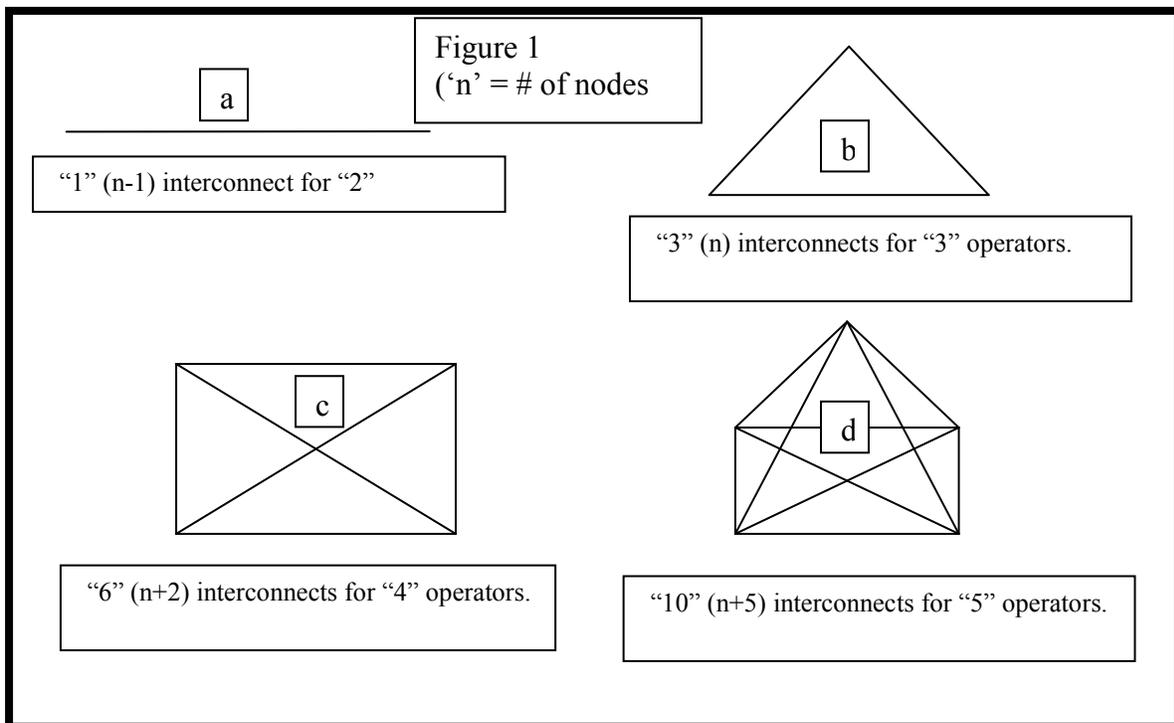
2. Analysis

It is obvious that the number of Interconnects that are required for a greater number of Operators (Nodes) does not increase linearly. The gradient of the Nodes versus Interconnects is exponential. Exponential increase calls for a complicated scenario which although can be solved as depicted in "a" of figure 1 but for 5 operators it may mean that the solution is repeated 10 times.

The issue does not just end here, it is the beginning to countless problems. In this paper we will be limited to the discussion of "Physical Interconnect" issue and the "Interconnect wholesale Bill clearing and Verification" issue. With regards to the bill clearing issue we should be mindfull that like the multiplicity of physical connectivity, each operator should be and would be keeping track of the traffic which flows through it as well as all the remaining off-net traffic which means that in figure 1-d each operator shall maintain records of the other four operators and will maintain four separate interfaces for each one of them. This increases the record-keeping work, understanding of that data, its verification, dispute settlement and not to mention the different fields that it will have to maintain for the sake of local, long distance and international calls segregation. In future it may increase many folds by adding VoIP and other value added services as well. We know that each switch, NGN, and IN platform manufacturer will constantly ungrade their software which will end up in more investments for the operator and more interoperability/ compatibility issues.

It is in the best interest of the New Telcos to sought out these problems much ahead of time for smooth sail for their services.

3. Approach

The world is now moving towards convergence. It means convergence of Technologies, Services, Regulations and also the convergence of NETWORKS. To avert the complexities we can simplify the problem in one of the several ways through Billing and Networking Convergence. It would be most appropriate to call such solutions as "Bill Clearing House" and "Internet Exchange". Let us analyze them in greater detail.

For the sake of simplicity we will discuss "Internet Exchange" first.

4. Interconnect Exchange

Conceptually An internet exchange is nothing more than a physical exchange point for massive information flowing through it belonging to various operators. Initially we can imagine it as a space switch rather than a time switch. It is envisaged that there should be at least one such exchange in each Telecom Region and preferably several depending on the geographical size and population density, as well as number of operators present in that region. Fat telecom highway pipes from each operator would terminate at that information exchange hub/ switch which should be capable of handling all local, long distance and international traffic whether it is any form i.e. voice or data or image.

Figure 2 below is a simple image of what it should look like at the boundary.

Figure 2

Interconnect Exchange

Only five telecom pipes for five operators with five interfaces
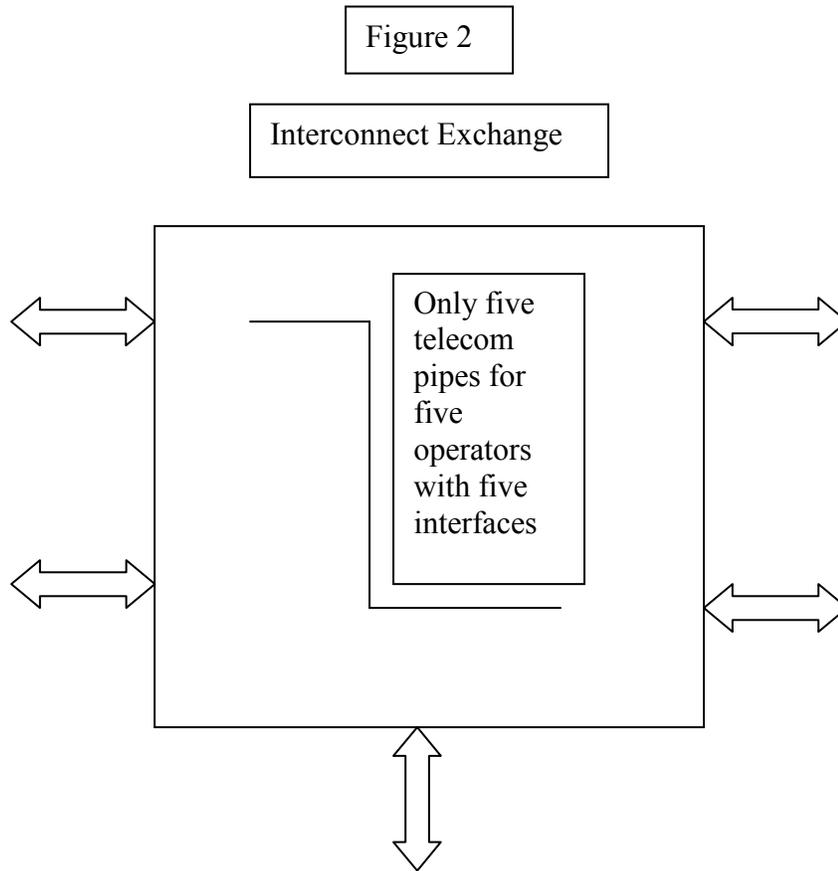
It was most desirable to split PTCL before its privatization and establish such independent exchanges throughout the country, out of its transit exchanges. As per the policy, such a responsibility was transferred onto PTCL. However, this is an undesirable mandate for any incumbent which may have its biases with the new competitive TELCOs due to the competitive nature of the businesses. It is expected that the incumbent will partially fail in meeting the desired policy objectives. With the current scenario it is only possible if the incumbent changes its mentality through magic, think in a bigger in a broader perspective while pulling itself out of the retail business thereby limiting itself to wholesale business. In Pakistan, the incumbent is not expected to come out of the retail business, especially after its privatization.

If the above conclusion is correct then we should revert back to the discussion of having an independent INTERCONNECT EXCHANGE within the country.

It should be a licensed and highly regulated operation with all operators participating very much similar to the MNP implementation project.

Realizing the fact that, PTCL is already providing some interconnect & co-location through PTAs determination on "Interconnect & Co-location" it would be only appropriate to allow only one INTERCONNECT EXCHANGE service provider in each telecom region or only one on a nationwide basis, the later being preferred. The new licensee will cater for interconnect as well as co-location.

The only difficulty would be if a couple of big players form a cartel and try not to connect through this EXCHANGE and have their own point-to-point connectivity. Such SMP malpractices can be controlled through Regulations & Anti-competitive laws. The other concern would be that since such an INTERCONNECT EXCHANGE service provider will not be offering its other services i.e. local access therefore the cost of dipping into this EXCHANGE will be additional to the FIXEDLINE & MOBILE termination and origination rates which will again, have to be worked out through regulations and mutual consent. Such a concept of an INTERCONNECT EXCHANGE should turn out to be successful and profitable for the consumers as well as all the operators. Such networks require reasonable sized investments but can go a long way in helping the new born deregulated telecommunication industry in Pakistan. Let us look at another issue which is not as much infrastructure intensive but is equally important and will certainly help the smaller operators. It will also help the regulator. It is the concept of an "Interconnect Clearing House".

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5. Interconnect Clearing House

To make it simple, the concept of an Interconnect Clearing House will follow the same pattern as that of the Mobile Number Portability (MNP). There can only be one such entity licensed by PTA, strictly regulated by PTA, formed out of a consortium of all licensed players who participate and oversee its operations through an independent operating company. *This model is simpler than that of an Interconnect Exchange and maybe its forerunner*. In this scenario, all operators interface to each other whichever way they consider most appropriate (as already in vogue) but transport their CDRs to the Clearing House in an efficient manner. The Clearing House will parse all the data and ensure complete Bill Verification/ Validation. It is debatable whether should such a Clearing House be allowed to settle the disputes arising among them or be referred to PTA.

Among other things such a Clearing House will make the National Consumed Minutes Database very clean and authentic.

Through this, PTA will be able to enforce proper Interconnect and also ensure the development and roll-out of related Infrastructure expansion in a timely manner through regulation.

Bill verification, through this service, will help the operators to check their millions of rupees worth of lost revenue. *In fact, this will help the two SMPs in Pakistan more than anyone else.*

6. Interconnect Bill Clearing Bureau

This bill clearing Bureau is nothing more than an unlicensed (but registered) service in which any number of Bill Clearing Agencies may operate in the country on their own with negligible

oversight from the Regulator. Each Clearing Agency may invite participating operating companies to send their CDRs for evaluation and verification only and in return analyze their CDRs and submit the relevant reports to the individual operating companies for their own use, whichever way they deem satisfied. Neither the Clearing Agency nor the Regulator is actively involved in the proceedings unless one operator complains against another (as is done today).

7. <u>Conclusion</u>

Obviously establishing a single Interconnect Exchange (to begin with) through proper licensing and regulations is the way to go but as an intermediate step the concept of Interconnect Clearing House is a need of the day. It will certainly curb the disputes and will help in managing Infrastructure expansion in a deterministic and intelligent way. The concept of Bill Clearing Bureau is not recommended although it is present in the "Simplified Class Value Added Service" regime introduced by PTA in year 2005.