Review of Tariff for Domestic Leased Circuits

ITU has defined a leased circuit as "a two-way link for the exclusive use of a subscriber regardless of the way it is used by the subscriber". In simple terms, a leased line is a defined amount of capacity, which has been allocated by a telecommunication infrastructure provider between two points. Business users' Intranets employ the TCP/IP protocol over leased lines to make up private networks.

Leased lines are the building blocks for not just electronic commerce networks, but e-governance, internet access for masses, IT and ITES sector along with the financial sector. Thus, domestic leased circuits (DLCs) are an integral part of the economic growth apparatus of the country.

Businesses can interconnect separate offices and buildings using a leased line which ensures that users are able to connect fast and directly to their host server or the internet anytime they want. Businesses need not have to own or deploy the connections as they can lease them from service providers.

Addressed below are the key points to be considered while reviewing the Tariff for DLCs-

1. The pricing for DLCs was last determined through the ceiling tariffs prescribed by the regulator in Telecommunication Tariff (36th Amendment) Order, 2005 ("TTO Order 2005"). The Indian telecom services market has witnessed a lot of changes over the course of this time period. There has been a tremendous surge in the supply and demand of leased circuits as the country has undergone these changes.
2. The customer requirements have also seen shifts in terms of servicing higher bandwidth needs. The environment wherein we had catered to a bandwidth of 64 Kbps/2 Mbps is longer present. Now, we have moved to an era where bandwidths to the tune of 8 Mbps/DS-3 (45 Mbps)/STM-1 (155 Mbps).
3. In our view, there is a strong need to revisit the 2005 tariff pricing policy. With the reduced cost of providing DLC owing to advancements in transmission technologies and new

technological developments (such as the emergence of MPLS-VPN), there is a need to make the tariff framework more affordable. Where liberalisation has enabled the rollout of competitive infrastructure, and new structures for supplying capacity aimed at catering to the market demand, it is all the more important for such a exercise to be carried out.

4. We believe that a cost-based tariff model would not be the most appropriate mechanism to determine pricing going forward. As we've stated earlier, since the 2005 formulation of tariff structure for DLCs, the pace of technological developments and the market dynamics has outgrown itself. The cost of active and passive equipment as well as Right of Way (digging) costs should be calculated not on the basis of Greenfield projects, but treated as costs incurred in a Brownfield project.
5. We must also re-examine the ceiling tariffs in light of the point to point (P2P) environment being sort of redundant now. At that time, requirement for STM-1 or STM-4 was not there and since then MPLS etc have come up.
6. Telecom technology has moved on, both in terms of costing of equipments and use of capacities. The pricing should therefore be based on at least DS-3 basis. For lower bandwidth capacities the cost may be calculated separately on a case to case basis.
7. Considering the number of suppliers of bandwidth has increased, cost at sourcing level should not be a problem and in case of exigencies public sector players such as PGCIL, GAIL, RailTel, etc should be encouraged to supply at low cost. These public sector players do enjoy greater ease of access in terms of low Right of Way (RoW) costs, RailTel (along Tracks), PGCIL (Dial on Pylons-Fibre strung on towers) and Gail (Fibre under the pipes). In addition, NHAI also buries pipes while building roads.
8. Thus, we believe that the revision of the tariff structure on DLC is imperative. There is a need for the prices to be more affordable with the decrease in equipment and infrastructure costs as well as new technological advances made (such as MPLS) along with a increased demand for utilization of higher bandwidth capacities.

Issues for Consultation

Q1: Should TRAI continue to use the bottom-up fully allocated cost method for computation of cost-based ceiling tariffs for point-to-point DLCs (P2P-DLCs)?

Q2: In case your response to the Q1 is in the affirmative, what values of the following items should be used for estimation of ceiling tariffs for P2P-DLCs:

(i) Return on Capital Employed (ROCE)

(ii) Useful lives of transmission equipment and Optical Fiber Cable (OFC) separately

(iii) Average no. of fiber pairs lit in OFC in trunk segment and local lead segment separately

(iv) Utilization factor of OFC system in trunk segment and local lead segment separately?

Q3: In case your response to the Q1 is in the negative, what should be the alternative approach for determining tariffs for P2P-DLCs of various bandwidth capacities? Please support your view with a detailed methodology along with supporting data and assumptions, if any.

<Combined Answer for 1 & 3>

We do not believe that a bottoms-up fully allocated cost method for the computation of tariffs for DLCs is justified unless it is a Greenfield project. The premise of P2P DLCs for determination of tariffs is misplaced at this juncture. When we have STM-1 now as well as possibly STM-4 and STM-16 in the future, and MPLS also having come up, the distance based price mechanism would be redundant. If one were to talk in terms of P2P, what would the capacities we're talking about, is what we would humbly ask the Authority.

We would ask the regulator to get a modelling carried out on the basis of 96 fibre and DWDM (dense wavelength division multiplexing) on a 1000/1500 kilometre area. In this area, 50% of the fibre may be lit (i.e., if there are 96 OFCs, then 48 would be lit). One can then calculate the cost of wavelength and STM, and look at the tariff accordingly.

TRAI must look to conduct this study in an intelligent fashion.

Q4: In your opinion, what are the bandwidth capacities of P2P-DLCs for which ceiling tariffs need to be prescribed?

We believe that, with the rapid advancement in technologies, the pricing should be based on at least DS-3 basis or above. We believe that the Authority should prescribe ceiling tariffs up to STM-16 (~2.5 GHz), given the anticipated increase in bandwidth demand from customers. For lower bandwidth capacities the cost may be calculated separately on a case to case basis.

Q5: In your opinion, is there a need for prescribing separate ceiling tariffs for local lead and trunk segment?

We do not see the requirement to prescribe separate ceiling for local lead and trunk segment. Having said that there are components of cost which are far less in local lead provisioning. The model has to be such as to prevent overcharging for the local lead. The ceiling could be for Local lead, trunk segment and end to end (Local and Trunk). The tariff should be determined on the basis of bandwidth and wavelength as per a modelling proposed by us hereinabove, suitably factoring costs not applicable for local leads.

Q6: in your opinion, is there a need for prescribing separate ceiling tariffs for remote and hilly areas?

We do not see merit in prescribing a differential ceiling tariff for remote and hilly areas. The focus should lie on improving infrastructure requirements in the hilly and remote terrains instead.

Q7: In your opinion, what are the distances of (i) trunk segment and (ii) local lead segment (separately) of P2P-DLCs for which ceiling tariffs need to be prescribed?

For local leads, we believe the distance should be linked to an area defined as local, which could be anything from 5 kms to say 25 kms and would depend on the architecture of the core network used for access. For trunk segment it would be good to have ceiling defined for 500 kms, 1000 kms and 2000 kms.

Q8: in your opinion, is the distance interval of 5 km still relevant for prescribing distance-based ceiling tariffs for P2P-DLCs?

No we do not see the distance interval of 5 km to be relevant.

Q9: In case your response to the Q8 is in the negative, what distance interval should be used for prescribing distance-based ceiling tariffs for P2P-DLCs?

Please refer to our response to Q7. We have to segregate local from trunk by carefully ensuring that the total cost does not exceed the trunk cost ceilings.

Q10: What equipped capacities of trunk segment and local lead of P2P-DLC should be used for computation of ceiling tariffs of various bandwidth capacities?

We do not find that a distance based price approach should be looked at or ever for that matter placing much importance on the trunk and local lead segments.

And, also it is difficult to even arrive at the basis of why we should look at a distance interval of 5 km, and not 50 or 500 km.

Instead, we believe that the modelling should be carried out keeping a fill factor of 50% in mind and then calculate the tariff on the back of that data for local and trunk segments.

Q11: Should VPNs such as MPLS-VPNs also be brought under tariff regulations for DLC?

Q12: In case your response to Q11 is in the affirmative, what method should be used for computation of cost based ceiling tariffs for VPNs?

<Combined Answer for 11, 12>

MPLS is the way forward. The typical direct leased lines are likely to be redundant in next few years because of inherent drawback of the point-to-point concept. It is the right time for the Authority to drive the adoption of this new generation technology. Given the complexity and size of the businesses in the modern world, MPLS technology could be favoured by a lot of

enterprises in the future. Only needs to be guarded in ensuring sufficient and proper security mechanisms are in place before commencing transition to MPLS.

In light of this, we would support the Authority in bringing MPLS-VPN under the ambit of the DLC tariff regulations.

We believe that the method for computation of tariff for MPLS-VPN should be determined keeping two aspects in mind. The MPLS VPN is established with a leased line circuit that is connected to the MPLS point. Therefore, there is a leased circuit element cost to the MPLS. We are of the view that only this leased line component should be brought under the tariff regulation for the purposes of MPLS VPNs.

Separately, the add-on cost of MPLS element (i.e., routers and other equipment) may not be regulated. The MPLS element costs would depend on variable capacity requirements and port charges being calculated accordingly.

Q13: In your opinion, is there still a need for prescribing separate ceiling tariffs for DLCs which are provided on Managed Leased Line Network (MLLN) Technology?

We do not find merit in the need to prescribe separate ceiling tariffs for DLCs provided on the basis of MLLN technology as it is already a P2P mechanism and there is a system in place on pricing of P2P DLCs.

Q14: Is there any other relevant issue related to tariff for DLCs which the Authority should keep in mind while carrying out the present review exercise?

We would ask the regulator to get a modelling carried out on the basis of 96 fibre and DWDM (dense wavelength division multiplexing) on a 1000/1500/2000 kilometre area. In this area, 50% of the fibre may be lit (i.e., if there are 96 OFCs, then 48 would be lit). One can then calculate the cost of wavelength and STM.

There is also a need to look at unlit dark fibres or even pipes for pulling fibre into.

TRAI must look to conduct this study in an intelligent fashion.