

Consultation Paper No. 12/2004



Telecom Regulatory Authority of India

## **Consultation Paper**

**On**

## **Revision of Ceiling Tariff for Domestic Leased Circuits**

22<sup>nd</sup> June 2004

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## **Preface**

Bandwidth is a key input to knowledge-based industries besides its use in the voice telephony by telecom service providers. Of particular importance in recent times is the crucial role of bandwidth in Information Technology (IT) and IT enabled service industries like Business Process Outsourcing (BPO), call centers, etc. Further, internet usage and broadband can be promoted inter-alia by making bandwidth available at reasonable prices.

2. The leasing of circuits is the popular mode of purchasing bandwidth by user industries from the telecommunication service providers and other infrastructure service providers (IP-II). Today leased circuits are considered to be a fast growing segment in the telecom industry.

3. The Authority while formulating the Telecommunication Tariff Order (TTO), 1999 specified cost based tariff for domestic leased circuits as the regime applicable in this segment. These tariffs were in the nature of price caps and the service providers were free to offer discounts to its customers. Tariff caps were fixed for leased lines with 64 Kbps and 2 Mbps capacity and for capacities below 64 Kbps the tariff were forborne.

4. There is a significant decline in the cost of transmission equipment including optical fibre cable. This coupled with the rapid technological advances have sharply reduced the unit cost of long-haul bandwidth. Reflecting these developments, the prevailing tariff for domestic leased circuit is substantially below the ceiling tariff prescribed in TTO, 1999. The Authority received representations from user industries and others suggesting a review of domestic leased circuit tariff to make it consistent with tariff reductions witnessed in other segments of the sector such as domestic and international long distance voice telephony so as to make it more competitive and consumer friendly.

5. The Authority in its document, “**Broadband India : Recommendations of Accelerating Growth of Internet and Broadband Penetration**” (April, 2004) has identified the high prices of domestic leased circuits and international circuits as one of the major hurdles preventing growth of internet and broadband services. Towards implementing the initiatives of ‘Broadband India’, the Authority has already issued a Consultation Paper on ‘Fixation of Ceiling Tariff for IPLC’. This Consultation Paper proposing revision of existing tariff for domestic leased circuits is sequel to the efforts of the Authority in reducing the cost of bandwidth in the country. Further, bandwidth being a crucial input for information technology (IT) and IT enabled industries like BPO etc., reduction in the cost of bandwidth would go a long way in enhancing the competitiveness of these industries in the global market. Reduction in tariffs will also lead to higher growth, as witnessed in the mobile telephony and consequently much better capacity utilization of networks and improvement in profits of service providers.

6. The cost based leased line tariffs have been calculated using an optical fibre cable system with STM1 as benchmark capacity. The methodology of cost estimation adopted in this consultation paper is that of a ‘bottom-up approach’. The cost of various operators was taken into account for normating the cost of providing the domestic leased circuit. The revised ceiling tariff for capacities of 2 Mbps and 64 Kbps for ‘beyond 500 kms distance’ comes to Rs.8.20 lakhs and Rs. 24000 respectively.

7. It is expected that higher capacities i.e. above 2 Mbps will dominate the demand structure in future. Keeping this in view, a price multiple for DS-3 and STM1 capacities have been proposed as eight times and twenty three times respectively the price of E1 capacity. This is based on the fact that there are scale economies arising out of higher capacities and also based on the prevailing price-capacity multiples observed elsewhere in other markets.

8. This paper is also available on TRAI's website ([www.trai.gov.in](http://www.trai.gov.in)). All stakeholders are requested to submit their comments and views on any or all issues raised in this paper on or before 15.7.2004. Submissions in the electronic form would be appreciated. For further clarifications, Shri M. Kannan, Adviser (Economic), TRAI may be contacted on Telephone No.26160752, Fax No.26103294 or email [tra18@bol.net.in](mailto:tra18@bol.net.in).

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22.6.2004

## **CHAPTER 1**

### **I. Introduction**

1. Leased circuits are considered to be a fast growing segment in the Telecom industry and are used by telecom service providers as well as other business organizations as input in their process. With a view to give a boost to this segment, the Authority while formulating the Telecommunication Tariff Order TTO 1999 specified cost based tariff as the regime applicable in this segment. These tariffs were in the nature of price caps and the service providers were free to offer discounts in a non-discriminatory manner. The same tariffs were also specified as interconnection charge, in the Interconnection Regulation of 1999.

2. The leasing of circuits is an alternative business model and obviates the need for building the circuit, which requires heavy investment. Leasing of circuits ensures a dedicated channel/line for data and voice transfer across the connected point of presence and tends to even out expenses for the lessee. On the other hand, leased circuits involve heavy capital investment upfront and maintenance thereafter for the operators who build them. For the provider of these circuits, leasing allows additional income from their investments and is thus similar to any business with high initial capital costs. Hence, leasing offers potential advantages to the seeker and the provider and is a preferred alternative for many enterprises including telecom service providers. For the provider of leased circuit it is an additional source of revenue by utilizing spare capacity. For the small telecom player, high price of leased circuits could act as a barrier to entry, while very low prices would create a disincentive for the provision of such circuits. The attempt of TRAI has been to have tariffs for leased circuits which do not become an impediment to facilitating competition in the sector. With an objective of removing double taxation as well as reduction in the cost of domestic bandwidth, TRAI has already recommended waiver of licence fee in the form of

revenue share for the portion of domestic leased lines, leased to licensed telecom operators by IP-II, UASP, NLDO.

3. This Consultation Paper has been brought out to facilitate discussion with stakeholders on various issues pertaining to determining the tariffs of domestic leased circuits. The structure of the Consultation Paper is as follows:-

Chapter 1 : Gives an overview of the existing tariff regime governing domestic leased circuit and the need for revising the ceiling tariff.

Chapter 2 : Discusses the various cost elements and the methodology for calculation of cost based charges for leased circuits.

Chapter 3 : Provides a discussion of various issues connected with charging the local lead or 'within city circuits'.

Chapter 4 : Issues for Consultation.

## **II. BACKGROUND:**

**The review of tariff for leased circuit is necessitated due to the following main reasons:**

### **Fall in price of Carriage/Bandwidth**

4. Rapid technological advances have sharply reduced the unit cost of long-haul bandwidth. It is also observed that there is a significant decline in the cost of transmission equipment including OF cable, which is the main component for setting up of leased circuit. Reflecting these realities, worldwide, the transmission circuit prices have fallen by about 90% since 1999 (International Bandwidth Report and Database, **Pri Metrica** 2004). It is, therefore appropriate that the tariff fixed as ceiling based on cost is reviewed in the light of the fact that costs of setting up capacities have come down.

### **Representation from Users**

5. Consumer organizations as well as user industries have suggested review of leased circuit tariff to make it consistent with tariff reductions witnessed in

other segments of the sector such as domestic and international long distance so as to make it more competitive and consumer friendly.

6. Bandwidth both domestic and international is a key input to knowledge based industries. Of particular importance is the crucial role of bandwidth in Information Technology (IT) and IT-enabled service industries like Business Process Outsourcing (BPO), call center, software exports, etc. A substantial proportion of the cost of rendering services by these industries is accounted for by the cost of leasing bandwidth which, therefore, crucially affects competitiveness of these services. Further, internet usage and broadband access can be promoted only through making the bandwidth available at reasonable prices. The Authority has received representations from various user industries, NASSCOM, Internet Service Providers Association, etc. in this regard with the request to make price of bandwidth more affordable.

### **Multiplicity of tariffs**

7. The Authority received tariff reports from various service providers in respect of leased circuits. In case of domestic leased circuits it has been observed that the prevailing tariff is substantially below the ceiling tariff prescribed in TTO, 1999. Operators are offering discount on total monthly bill for domestic leased circuits. The discount structure varies across operators. Reports available with the Authority indicate that in one case, the discount offered is as high as 70% for certain capacities indicating thereby that the existing tariff ceiling needs to be revised downward. In the recently filed tariffs of BSNL/MTNL meant for domestic leased line, the discount offered to its own customers (other than licensed telecom service providers) is 60% as against 30% discount to ISPs in respect of 2 Mbps and above and up to 34 Mbps, etc. In the case of capacities above 34 Mbps and up to 155 Mbps, the discount rate applicable to their own customers (other than licensed telecom service providers) is 60% and to ISPs it is 40%. For capacities above 155 Mbps, the applicable discount rate to ISPs is 50% and to their own customers (other than licensed

telecom service providers) it is 60%. BSNL in their tariff filing for leased line have stated that 'no discount will be available to the licensed telecom service providers such as NLD, ILD, CMSP, BSO and UASP as per existing circular.' MTNL's tariff for leased line circuits has also similar restriction. These tariffs of BSNL and MTNL have been intervened by the Authority on the ground that for the same service the competitors have been offered higher price than the retail price to customers and this would adversely affect competition in the market. BSNL and MTNL have represented to the Authority on this matter, which is under examination.

**Increase in the number of players, but ineffective competition.**

8. TTO, 1999 was notified when the Indian telecom industry had recently been opened up for private participation. The tariff specified for leased circuits in TTO, 1999 was based on cost inputs received from BSNL (the then Department of Telecom services), since at that point of time it was the major service provider of domestic leased circuits. There are more players in the providers market now. Presently Bharti Telenet, Reliance, Tata, HFCL, VSNL are providing domestic leased circuits along with state owned BSNL, signaling a break from erstwhile monopoly of BSNL (DOT). Further IP II license holders such as Railtel, GAIL and Power Grid Corporation are also active players in this market. At present, IP-II licenses are not permitted to provide leased circuits directly to the end users as per their license conditions. They can, however, provide leased circuits to other licensed telecom service providers.

9. In the local link segment of the domestic circuit, BSNL/MTNL enjoy a 'near monopoly power' because other new basic service operators have been largely using wireless mode to provide local lead for leased circuit purposes. The wireless based transmission systems are basically having low capacities as compared to optical fibre based system. Some leased line providers like STP are using wireless lines which can cater to data circuits but they are very few in number. There appears to be competition to some extent in the long distance

segment of data circuit because besides NLDOs, there are IP-II service providers who serve some of the licensed telecom operators including ISPs in this regard. Even though there is increase in number of players in the domestic leased circuit market, the competition is not fully effective, owing to the problems in the 'last mile' (for detailed discussion see Chapter 3).

### **Features of Tariff Specified in TTO 1999 for Domestic Leased Circuits**

10. The following are the main features of the tariff for the domestic leased circuits as prescribed in TTO'99.

- i) Leased circuits tariffs were fixed on the basis of cost.
- ii) All leased circuits tariffs were specified in the form of price caps. There was no price floor.
- iii) Tariff caps were fixed for leased line with 64 Kbps and 2Mbps capacity. For leased circuits below 64 Kbps capacity the tariff was forborne.
- iv) Ceiling tariff for 64 Kbps & 2 Mbps Leased Circuits was based on the cost details of 140 Mbps system as provided by the main service provider( i.e. DOT now BSNL) at that time. 5 km distance based Ready Reckoner ceiling tariffs were included in the TTO-99.
- v) Apart from the above, leased line tariff has the following additional components:  
**Local leads or end links charges**– Tariff for local lead (or end links) are levied as per rates in Schedule –IV charge for leasing these local leads or if such leasing is not possible then on “Rent and Guarantee” (R&G) terms or based on “Contribution” of total capital cost basis
- vi) **Tariff for circuits leased for short duration (specific time):** Double the pro rata rental and Cost incurred in addition to the existing local leads and long distance medium, including additional costs incurred for any special constructions to be added to the short duration rentals specified.

- vii) **Tariff when capacity addition is required to provide leased circuits:** Parties providing and renting circuits to share costs based on bilateral negotiations.
- viii) The calculation of chargeable distance is done by multiplying the radial distance by a factor not exceeding 1.25 as per provisions of the TTO 2<sup>nd</sup> amendment dated 31<sup>st</sup> May 1999.

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## Chapter 2

### **Methodology for Calculation of Cost Based Charges**

11. The estimates for annual rental of domestic leased circuit for capacities 2 Mbps and 64 Kbps have been calculated based on the cost data provided by the service providers, the cost estimates that have been determined by TRAI on the basis of a normated approach and taking account of the actually prevailing tariffs in the market.

12. Cost details were obtained from the operators, which were verified and further modified on the basis of discussions with the industry. The endeavour has been to adopt a bottom-up approach of using disaggregated network costs and to derive annual rental value. The data provided by operators showed that the costs vary considerably from operator to operator. Normally, regulators tend to use costs of the most efficient operator, but this paper has not done so. Instead, a normated approach has been used, with these costs being higher than the least cost operator, in order to provide some margin above the least cost estimate, though the difference between the least cost and normated cost is small.

13. The normated costs have been derived as follows:

- Second minimum of the fixed cost items among various operators taken into account.
- Cost of cable of an IP-II service provider which is also the second minimum among operators.
- Cost of laying cable of a BSO having the minimum cost taken into account. (For more details please see below.)

## **Domestic Leased Line Circuits:**

### **Key Cost Drivers**

14. The cost basis for leased line charges includes, inter-alia, cost of the equipment with STM-1 capacity, cost of cable, cost of laying the cable, cost on account of termination of cables, repeater stations, other supporting equipments, operating and maintenance (O&M) expenditure, etc. In trunk routes where demand is more, the systems largely used are STM-4, STM-16 and WDM. However, in the absence of detailed information of the proportion of deployment of STM1 to the total and as a conservative estimate the cost of STM1 system has been used as a benchmark capacity to arrive at the cost of 2 Mbps circuit. For domestic leased circuit of 64 kbps, the cost of 30-channel demux has been considered in addition to the cost components of 2 mbps leased circuit.

15. Three categories are considered for assessing costs. One focuses on those cost items which are linked to the distance covered another on costs which are in the nature of fixed cost independent of distance (fixed costs) and the third on costs which change after a specified distance is covered (50 kms. in this case) and remain unchanged within the distance interval. Distance related costs are one of the most significant cost factors in building and operating terrestrial networks. The cost of repeater is considered as a semi-variable cost as it is both a fixed cost as well as variable cost (a repeater station is assumed to be provided for every 50 kms of distance covered).

16. Further, three other items which augment the cost base that are considered in the calculation of costs are (a) allowance for redundancy, (b) capacity utilization and (c) operating and maintenance expenditure (O&M).

17. The need to make an **allowance for redundancy** of the line arises from the requirement for a trouble free functioning of the circuit and thus the required traffic is carried through an alternative line if the performance of the primary line gets adversely affected. Industry sources indicate that redundancy is normally

available only with higher transmission capacities. Considering the fact that redundancy has been proposed across all capacities including lower capacities, an overall redundancy factor of 25% has been applied to the cost of cabling in this exercise. Further, with a number of players in the long distance segment including the IP-II service providers, there are number of possibilities for obtaining alternative routes between two points and therefore the redundancy factor should be lower. The redundancy factor used in the previous exercise (1998) for determining the cost was 50%. However, in view of the reasons given above 25% increase in costs due to redundancy is considered to be a reasonable estimate for allowing for the redundancy factor.

18. Another factor which affects the cost base is the extent of capacity utilization of leased circuits. Utilization of capacity varies for different routes which in turn could have diverse impact on cost estimates. Considering the fact that there is a large demand emanating from IT and IT enabled service industries and considering the higher levels of the growth of the economy in general, and that of the voice telephony and broadband, utilization of capacity in the domestic segment should not be a matter of concern. The capacity is installed with a deliberate recognition of its likely use over time. For this consultation process, the costs have been calculated with the same rate of capacity utilization of 80% as was used in 1999 tariff calculations.

19. O&M cost has been applied as 10% of CAPEX for equipments, cable as well as other investments. Generally O&M cost shall inter-alia include the following: facility maintenance and repair, fibre maintenance and repair, utilities and labour. A network's physical infrastructure has a greater impact on O&M costs than does the capacity carried. Consequently, O&M costs per unit of capacity drops substantially as capacities increase. O&M costs of operators vary considerably. It generally ranges from 1% to 10% with one outlier at 26% among operators. For this consultation process, O&M at 10% has been assumed in the

domestic leased circuit business. In the past also, TRAI has assumed 10% as OPEX recovery in the Universal Service Obligation (USO) costing framework.

20. Since the most commonly used transmission capacity is of STM-1 (155Mbps), the cost of STM-1 equipment was taken as a reference point for calculating cost of 2 Mbps/64 Kbps stream (In the earlier exercise, cost of 140 mbps equipment was taken as reference while calculating the tariffs). The rationale behind this change is that long distance media of NLDOs is now based on SDH systems wherein STM-1 is the lowest building block. Applying the bottom up approach for calculating the cost for provisioning of a domestic leased circuit, the approach followed is in line with that used in the consultation process in the year 1998 (Reference: **Telecom Pricing : Consultation Paper on Framework and Proposals, September 1998, TRAI**). The cost items considered are:-

### **Cost Elements**

#### **I Fixed Cost Category:**

- a) Equipment cost: Two terminals required, one at each end equipped with the tributary cards up to E1 (2Mbps) level
- b) 30 channel demultiplexer along with channel cards of 64 kbps level
- c) Line control terminal
- d) Network manager
- e) Digital Distribution Frame
- f) Power plant
- g) Battery
- h) Engine alternator
- i) Electrical items
- j) Test instruments
- k) Earthing
- l) Accommodation, electricity and air conditioning
- m) Operating and Maintenance charge (annual)
- n) Installation and commissioning charge including project management cost

#### **II Semi-Variable Cost Category**

- a) Repeater station inclusive of all equipment/accessories : separation of repeater stations in kms (average) 50

### III Variable Cost Category

(i) Various cost elements in cabling

- a) OFC Cable
- b) Cost of trenching (Brick bedding, back filling, cable pulling in ducts etc.)  
Trench 0.4 m x 1.6 m
- c) Supply and laying of HDPE subduct : 50mm one way with all necessary fittings
- d) Charges for supply of installation jointing box and materials, testing equipment, splicing machine charges etc.
- e) Charges for project management and coordination charges paid to statutory agencies including Right of Way (ROW) charges
- f) Operating and maintenance cost

(ii) Extra cost on account of each termination of 24 fibre cables

- a) Termination of 24 fibres inclusive of termination box
- b) Supply of 24 pig tails/24 patch tails
- c) Supply of installation of fibre distribution frame for 24 fibres

(iii) Licence fee

21. The cost based price has been determined for 2 Mbps and 64 Kbps. The cost estimate for 2 mbps line is determined by dividing the cost of STM-1 equipment by 63 (the capacity of STM-1 is 63 times of 2 Mbps), which gives the equivalent cost for a 2 mbps system equipment (**Annexure-I**).

22. The cost of the system for 64 kbps stream is derived by dividing the costs for 2 mbps stream by 30 (the capacity of 2 Mbps is 30 times of 64 Kbps). However, some other costs have also been taken into account to provide for the electronics required for supplying 64 kbps stream to the subscriber which is the cost of 2 mbps channel mux (**Annexure-I**).

23. The cost based leased line tariffs have been calculated using an optical fibre cable system. This is a widely used system and therefore its cost based tariff provides a good basis for considering/revising the cap. Cables and equipment require fixed investments for construction/installation, but rentals are

charged annually. Therefore, there is a need to devise a mechanism for recovery of the capital cost (CAPEX) over a period of time besides providing for the OPEX on an annual basis. Towards this end, depreciation rates of 5.28% and 11.88% have been assumed for CAPEX recovery of cable and equipments respectively. For the purpose of depreciation life of cable has been taken as 18 years and for other assets life has been taken as 8 years. Straight-line depreciation has been applied. A weighted average cost of capital (WACC) of 13.93% has been adopted (**Annexure-II**). This is the same as the Authority has used in other determinations in the recent past. Informal suggestions by industry sources indicate that the depreciation periods for cable and equipment could be longer than considered above. However, in general the rates indicated above for depreciation could be taken as a reasonable basis for calculation.

24. Two considerations are relevant in proposing the revision of the ceiling tariff. One is that the revision of tariff should be cost based, and the other is that there shall be an incentive for investment in this segment.

25. The normation takes into account the second most efficient operator's cost of equipments and accessories, and cable. The cost of laying cable by a BSO having the minimum cost for providing domestic leased circuits has been taken into account for arriving at the normated cost. The main reasons for choosing this model of normation are to provide incentive to the new entrants for achieving greater efficiency and cost reduction, and such a system is feasible in the market.

26. The annual rental for domestic leased circuits arrived at based on the normated approach for 2 Mbps in respect of 500 kms distance comes to **Rs.819426**. The proposed ceiling tariff for distance beyond 500 kms is **Rs.8.2 lakhs**. The proposed tariff for different distances along with details of calculation as compared to the existing ceiling tariff (1999) is given in **Annexure-III**.

27. The tariff for 64Kbps Leased Line of 500Kms distance comes to **Rs.23656**. The proposed tariff for different distances along with details of calculation as compared to the existing ceiling tariff (1999) is given in **Annexure-III**. The tariff proposed for 64kbps leased line for distance beyond 500 Kms is **Rs.24000**.

#### **Tariffs for 'N times' 64 kbps and 'above E1 Capacity'**

28. The Leased line tariff caps proposed for N times 64 kbps lines are the ones based on the modified ITU co-efficients used in the 1999 tariff calculations. The cost based estimate in this paper is for E1 (2Mbps) and 64 Kbps capacities. It is expected that higher capacities particularly DS-3 and STM-1 will have significant demand in the future. Bandwidth, like most goods tends to be cheaper on a per-unit basis when it is purchased in large volumes. Many provisioning costs – including sales, legal fees, installation and some maintenance costs – are fixed regardless of circuit size. Thus larger capacities cost sellers less to administer than smaller circuits. For every level of multiplexing, a scale economy is achieved. Higher the levels of multiplexing, higher would be the levels of scale economies arising out of it. Therefore it is necessary to take into account this element of economies of scale in building up the cost estimate of capacities that are higher than E1. International Bandwidth Report on Terrestrial Networks (Pri Metrica 2004) has commented on this aspect which is reproduced below: "Traditionally prices across different capacities tended to fall into fairly predictable multiples. At each successive circuit increase from DS-3 to STM-16, price roughly doubles, while capacity sometimes quadruples.' In view of the above and in view of the results obtained in our calculation contained in the Consultation Paper in fixation of ceiling tariff for IPLC, it is proposed to adopt the same ratio of 1:8:23 that has been recommended in the IPLC price fixation. For capacities below 64 Kbps, it is proposed to keep this under forbearance as had been done in TTO, 1999.

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## Chapter 3

### **Issues Relating to Local Lead**

29. A domestic long distance leased circuit is a point-to-point connection between two customer premises providing a non-switched, fixed and assured bandwidth between the two points. The leased circuit can be intra SDCA in which case it is a local leased circuit with no long distance component. An operator provides the point-to-point bandwidth between the two ends by extending its transmission centers where bulk bandwidth is available to the customer end and connecting the transmission centers for the long distance connectivity. In the case of the incumbent the transmission center lies at LDCC in majority of the cases.

### **Methodology for Charging Local Lead or ‘Within City Circuits’**

30. Two components of domestic bandwidth come into play in determining the cost of the domestic segment of broadband links. One relates to “within city” networks and the other to long distance domestic networks.

31. Extensive optic fiber cable networks – well over 500,000 route kms – already exist within the country. Aside from BSNL networks, approximately 180 cities are also connected by the networks of other operators. In terms of the local link, these are largely provided by the BSNL and MTNL because other basic service operators have mostly utilized wireless systems for local connectivity, even though for some corporate customers the newer basic service operators have provided optic fiber based local links. IP-II operators are not allowed to service the retail customers directly.

32. The Authority in their Recommendations to the Government (Reference : **Broadband India : Recommendations of Accelerating Growth of Internet and Broadband Penetration**, 29<sup>th</sup> April, 2004, TRAI) had discussed the

possibility of governing the tariffs for local leased lines, or “within city” links, separately from those of long distance circuits. According to TTO 1999 there are three ways for a customer to obtain “within city” links from an access provider: lease at TTO or discounted rates, rent and guarantee (R&G), or contribution basis.

33. Certain operators and users of leased circuits have opined that the pricing and regulation of local circuits should be different from long distance ones. This may be applicable, especially considering the fact that the **competitive and investment environments between the two can be quite different**. Some of the user industries have complained that the service providers are charging tariff for local loops for a minimum of 5 kms even if the applicable distance is only 1 km. They have therefore stated that this situation has arisen because of the fact that there is no tariff fixed for the distance slab upto 5 kms. and thus they have requested the Authority to fix the tariff with the minimum slab of 1 km and incremental distance of 1 km thereof upto 5 kms. Another suggestion that has been received is that in the interest of simplicity and accuracy of calculation of the relevant tariff, the chargeable distance at 1.25 times the radial distance be reviewed and replaced by a more appropriate system of charging. Some operators have also said that of the three options available to them for local links, the last two, R&G and contribution, are often required by the access providers because of the need to create new infrastructure to service the client. Furthermore, because of a lack of regulated terms, the commercial agreements in this scenario can be quite unfavourable to the users. Considering what has been framed above and what has been discussed in the Recommendations to the Government on Internet and Broadband it may be appropriate to consider regulating the R&G terms and conditions in a generic manner. This may include establishing clear norms about the usage duration i.e. commitment period that do not tie down the users for an inordinate period of time.

34. The underlying cost varies across end links, which is another reason for not specifying any single tariff for this portion of the network. There is however information available which forms the underlying basis to estimate the interconnect usage charges (IUC) and it is worth considering whether this may be used to specify the ceiling tariff for end links and the related terms and conditions need to be clarified in that context.

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## Chapter 4

### **Issues for Consultation**

- 1) What are the shortcomings, if any, in the methodology used in this paper?
- 2) Should the tariff for leased line be specified on per kilometre basis for the first 5 kms. and on a slab basis at 5 km interval thereafter?
- 3) Should the chargeable distance be 1.25 times of the radial distance calculated for the purpose of domestic leased circuit?
- 4) Is the suggested ratio of 1:8:23 with respect to E1, DS3 and STM1 respectively as price multiples appropriate? If not, suggest an alternative approach along with its basis.
- 5) In the event of any demand from buyers for bandwidths between E1 and DS3 and between DS3 and STM1, what should be the basis for arriving at the appropriate price multiple?
- 6) Should the pricing for local lead/link be considered differently than the pricing for long distance networks? What should be the framework and related terms and conditions for local lead? What should be the coverage of local lead?
- 7) Should access providers who offer the 'within city limits' or local lead be required to come for prior approval to the Authority for the policy governing the basis for their Rent and Guarantee and Contribution Basis Agreements?

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**Annexure - I**

**Proposed**

**Cost Estimate of 2 Mbps stream**

<b>S.No</b>	<b>Cost Elements</b>	<b>Cost in Rs.</b>
1	Fixed Cost	5464
2	Semi Variable cost	1024 ( every 50 Km)
3	Variable cost	1444 (per Km)

**Cost Estimate of 64 Kbps stream**

<b>S.No</b>	<b>Cost Elements</b>	<b>Cost in Rs.</b>
1	Fixed Cost	1701
2	Semi Variable cost	34 ( every 50 Km)
3	Variable cost	38 (Per Km)

**Annexure-II**

**CAPEX Recovery adopted for Cable, Equipments and Other Assets**

<b>CAPEX for cable</b>	
Depreciation (18 year life) %	5.28
Cost of Capital (WAAC) %	13.93
<b>CAPEX as% on cost of investment</b>	<b>19.21</b>
<b>CAPEX for Equipments&amp; Other Assets</b>	
Depreciation (8 year life) %	11.88
Cost of Capital (WAAC) %	13.93
<b>CAPEX as% on cost of investment</b>	<b>25.81</b>
<b>License Fee %</b>	<b>10%</b>

Annexure-III

**Estimated Cost of 2 Mbps Stream**

Distance (Km)	Fixed Cost contribution to rental	Variable Cost contribution to rental	Semi-Variable Cost contribution to rental (Cost of repeater -1 repeater every 50 kms)	Total Cost of 2Mbps-rental (Rs.) *	Existing rates as per TTO, 1999	% of Reduction
1	5464	1444	0	7675		
5	5464	7218	0	14091	55820	-74.76%
10	5464	14436	0	22111	88056	-74.89%
25	5464	36089	0	46170	184763	-75.01%
35	5464	50524	0	62209	249235	-75.04%
50	5464	72178	1024	87407	348642	-74.93%
70	5464	101049	1024	119486	413482	-71.10%
100	5464	144356	2048	168742	538454	-68.66%
150	5464	216533	3073	250078	744943	-66.43%
200	5464	288711	4097	331413	951431	-65.17%
500	5464	721778	10242	819426	2190360	-62.59%
>500				<b>820000</b>	2200000	-62.73%

**Estimated Cost of 64 Kbps Stream**

Distance (Km)	Fixed Cost contribution to rental	Variable Cost contribution to rental	Semi-Variable Cost contribution to rental (Cost of repeater -1 repeater every 50 kms)	Total Cost of 64 Kbps rental (Rs.) *	Existing rates as per TTO, 1999	% of Reduction
1	1701	38	0	1933		
5	1701	192	0	2104	24558	-91.43%
10	1701	385	0	2318	25632	-90.96%
25	1701	962	0	2960	28856	-89.74%
35	1701	1347	0	3387	31005	-89.07%
50	1701	1925	34	4067	34319	-88.15%
70	1701	2695	34	4922	36480	-86.51%
100	1701	3849	68	6243	40646	-84.64%
150	1701	5774	102	8420	47529	-82.28%
200	1701	7699	137	10596	54412	-80.53%
500	1701	19247	341	23656	95710	-75.28%
>500				<b>24000</b>	96000	-75.00%

Note: \* Total Cost includes 10% License fee