Telecom Regulatory Authority of India
Notification
New Delhi, the 11th March 2005

No.310-3(1)/2003-Eco. In exercise of the powers conferred upon it under Sub-section (2) of the section 11 and Section 11(1)(b)(i) of the Telecom Regulatory Authority of India Act, 1997, the Telecom Regulatory Authority of India (TRAI) hereby further amends the Telecommunication Tariff Order, 1999 as under, namely:-

1. Short title, extent and commencement:

(i) This Order shall be called " The Telecommunication Tariff (Thirty Fourth Amendment) Order, 2005" (1 of 2005).

(ii) This Order shall come into force from the date of its publication in the Official Gazette.

2. The existing title of Schedule IV of the Telecommunication Tariff Order 1999, shall stand deleted and substituted to read as under:

Schedule IV

Domestic Leased Circuits

3. In the Telecommunication Tariff Order 1999, after Schedule IX, the following new Schedule shall be inserted, namely:-

Schedule X

International Private Leased Circuit (IPLC)-(Half Circuit)

ITEM	TARIFF
(1) Date of implementation	1.4.2005
(2) Coverage	(a) All tariffs specified as ceilings (b) The prescribed ceiling tariff will be applicable for all destinations, capacities and types of cable systems used for carrying either voice or data. (c) Service providers may offer discount on the ceiling tariff. Discounts, if offered, shall be transparent, non-discriminatory based on laid down criteria and should be reported to TRAI. (d) It is mandatory for International Private Leased Circuit Service Providers to offer Half Circuits for all routes/destinations for which circuits are offered by them.
(3) Tariff for IPLC	Capacity/Speed Ceiling Tariff per annum (Rupees in Lakhs) E1 13 DS-3 104 STM-1 299
(4) Tariff for capacity/ speed below E1	Forbearance
(5) Tariff for IPLC through satellite media	Forbearance
(6) All other matters relevant to IPLC	Forbearance

General

In case of any doubt with regard to the interpretation of any provision of this Order, the decision of the Authority shall be final.

This Order contains at Annexure-A, an Explanatory Memorandum, which explains the reasons for this amendment to the Telecommunication Tariff Order, 1999.

By Order,

(Dr. Harsha Vardhana Singh)
Secretary cum Principal Advisor

Annexure-A

Explanatory Memorandum

The International Private Leased Circuit- Half-Circuit (hereinafter referred to as IPLC) is a dedicated point-to-point connection providing a non-switched, fixed and assured bandwidth between two points, one being in India and the other in a foreign country. Broadly speaking, the IPLC is divided into far end and near end, which is termed as half-circuit. The tariff for the far end is dependent upon many factors including mutual negotiations between the foreign carriers with their Indian counterparts.

2. Hitherto the tariff for IPLC was forborne in Telecommunication Tariff Order (TTO), 1999. Software exporters, BPO units, banks and other financial services companies, and Internet Service Providers (ISPs) and ILDOs are key users of IPLCs. IPLC is considered to be one of the basic requirements for Information Technology (IT) and IT-Enabled Services (ITES) industries like Business Process Outsourcing (BPO). India has emerged as one of the leading providers of ITES in the world and is fast acquiring a formidable reputation in this sector. In addition, ISPs use IPLC for their upstream connectivity abroad. The cost of inputs for these important initiatives needs to be based on competitive prices, if the market is not competitive. Further, promotion of broadband is now a major objective of the Government as shown for example by the Broadband Policy 2004 of the Government, which also provides a basis for fundamentally transforming the socio-economic opportunities in rural India. This requires consumer price for the service to be affordable.

3. The Authority received representations from user groups such as NASSCOM, Internet Service Providers Association of India (ISPAI), Call Centre Association of India and other Business Process Outsourcing (BPO) units requesting to regulate the tariff for IPLC on the ground that the tariffs in India for IPLC were much higher than in several other countries, including countries with

which Indian enterprises engaged in IT and ITES sector have to compete in the global market.

4. In this regard, the Authority held meetings with the user groups, service providers, etc. Major investors, both existing and potential, were of the view that the high bandwidth price in India is one of the deterrent factors to expand the investment base in the IT and IT related sectors, and India was thus losing investment to alternative destinations. During the period from 25.7.03 to 4.2.04, the Authority held a number of meetings with VSNL and other ILDOs on the issues relating to tariffs for IPLC alone. This is in addition to a number of other meetings held with VSNL and Reliance on related issues of access to cable landing station facilities. In these meetings, the service providers (IPLC) assured the Authority that the lease rentals for IPLC (half circuit) would come down substantially within a period of about six months.

5. Authority also analyzed the constraints on the growth of broadband/Internet services in the country and saw that the price of broadband in India was much higher than in richer countries, which had performed well in expanding their broadband. The Authority recalled that price reduction had played a major role in extraordinary expansion of the mobile sector in India during the last two years. The Authority also arrived at the conclusion inter-alia that the cost on account of bandwidth forms a substantial proportion of the cost of provisioning broadband and Internet services in the country in general. In the Broadband India Recommendations on Accelerating Growth of Internet and Broadband Penetration, it has been stated (See para 4.1.2 in Chapter 4) that the cost of bandwidth both domestic and international account for more than 45% of total monthly costs and even more, if lower prices and higher quality of service for consumers is desired. Thus, a competitively priced IPLC service is fundamental to achieve a higher rate of broadband penetration in the country.

6. In view of the foregoing, the Authority decided to examine the tariffs for IPLC and also the extent of competition in the market. As part of its review of IPLC prices, the Authority examined the prevailing prices in the market and noted that the IPLC lease rentals had not come down to the extent expected and were substantially higher compared with other country prices (see Table No.1 to 3 and 5 to 7 in Appendix I of Annexure-A).

7. Taking these aspects into account, the Authority had issued a Consultation Paper on Fixation of Ceiling Tariff for IPLC (Half Circuit) on 30th April 2004. The cost based prices given in the Consultation Paper (CP) were based on costs submitted by VSNL and were seen as a starting point for deeper examination of cost based tariff ceiling for IPLC. Various stakeholders, including service providers, user industries, consumer organizations and association of service providers had responded to this consultation paper with written comments. Open House Discussions on this were also held on 20.07.04 and 22.07.04 in Delhi and Bangalore respectively.

8. Concurrently with its consultations on IPLC tariffs, the Authority was also carrying forward its process of obtaining Separated Accounts from the operators so that appropriately allocated costs for specific services could be made available to TRAI by the service providers. The Authority received separated Accounts from VSNL on 31st December 2004. This data also became part of the Authority's consideration of IPLC tariffs.

Section II

Summary of Main Comments

9. The various comments of the stakeholders on the consultation paper are summarized below:-

a) Should IPLC (half circuit) be henceforth regulated?

- The user groups and consumer organizations were of the view that the tariff for IPLC should be regulated till adequate competition is established in the market.
- Telecom service providers in general have expressed their concern that despite the opening up of the ILD sector in 2002, effective competition in the IPLC business segment has not yet emerged and therefore they are of the view that the Authority should not only regulate tariffs for IPLC but also take further steps to encourage competition in this segment.
- TRAI's intervention in regulating the tariff of IPLC is considered necessary at this point of time by many stakeholders on the ground that availability of IPLC at cost based prices would stimulate the growth and lead to greater penetration of the Internet and broadband services.
- One of the telecom service providers has stated in their submissions to consultation paper that fixation of tariff for IPLC by TRAI is essential so as to make IPLC prices in India more affordable and to make in line with market prices within the Asia-Pacific region.
- One view was that the stimulation and encouragement of Internet use and availability of affordable broadband services is dependent upon among other things, the access to lower priced international bandwidth because IPLCs are the main international carriage platform for these services.
- There was also a view that the high prices for IPLC's in India are constraining the potential growth of Indian international data revenues and by inference the underlying demand for capacity as well. Thus high IPLC prices tend to stifle demand for consumer services, which would otherwise employ large amounts of bandwidth capacity.

- Unless the IPLC prices are brought down, the customers for BPO services would turn to the growing number of other countries that seek to provide BPO services at lower prices. This could have negative consequences for the BPO industry in India.
- TRAI should set tariff ceilings to ensure that VSNL's rate moves towards cost orientation. The tariff should be reviewed periodically but should remain in place until there is a basis to conclude that effective market forces will sufficiently constrain IPLC rates.
- One of the ILDOs commented that the market forces should be allowed a free reign such that price is a function of market demand and supply. But the regulator should ensure that the operators who hold significant capacities (bottleneck facilities) do not resort to restricting bandwidth supply thereby artificially inflating prices. Accordingly, the regulator should ensure easy access to bottleneck facilities such as landing stations owned by the significant operators.
- The incumbent was of the view that market forces should be allowed to decide the price and thus there should be no price regulation of IPLC. Further, VSNL was of the view that any effort to regulate the market will hamper investments and hence the growth. They also believe that it might introduce rigidity in offering packages to the customers.
- The incumbent is of the view that IPLC prices in India are likely to fall by 30% over the next 12-18 months with increase in supply.
- VSNL has submitted that IPLC price constitute a very small proportion of the cost structure of IT, ITES and Broad Band services.

(b) Whether the reduction proposed by the Authority is adequate, less than adequate or too high.

- One of the ILDOs submitted that, the proposed tariff ceiling for E1 circuit of Rs.12 lakhs per annum seems very aggressive and more realistic level should be 15% to 20% reduction on the current tariff of VSNL. Similarly the multiple of 8 times of E1 ceiling price proposed for DS3 capacity should be revised to 11 times of E1 based on international practice

- One other ILDO was of the view that the reduction in tariffs proposed by the Authority is impressive. However the tariffs for the half circuits should be made more attractive than in those countries competing with India in BPO/ITES sector. This is absolutely necessary to create an attractive business atmosphere.
- One of the standalone players in telecom services submitted that while the cost+ method could be adopted to work out the prices for different Circuits, this should be benchmarked against the international prices so as to ensure that VSNL, the monopoly service provider, does not unduly realize the benefits of its inefficiencies.
- ISPAI was of the view that the reduction proposed by the Authority in the consultation paper is too little, too late. The reduction is highly inadequate considering the rapid reductions in the ISD tariffs by the very same ILDOs who have deliberately not passed on similar benefits to the users of IPLC.
- COAI in their written comments stated that the reduction proposed by the Authority in the consultation paper is too little, too late. The reduction is highly inadequate considering the rapid reductions in the ISD tariffs by the very same ILDOs who have deliberately not passed on similar benefits to the users of IPLC.
- One of the ISPs commented that that the greatest weight should be given to market rates charged elsewhere in the Asia-Pacific region for similar IPLC capacities when making the initial determination of VSNL's IPLC tariff.

(c) On the methodology and related issues including price-multiples

- One of the ILDOs was of the view that the cost based approach taken by the Authority for fixing of the tariffs seems appropriate. However there are overestimates in some places.
- The ISPAI submitted that, most international cables land in many countries and hence, the investment decisions are not based on the potential or current

market in a single country like India. This aspect becomes crucial in computing the costs.

- COAI has commented that loading the entire costs of the ILD on IPLC alone is unjustified.
- One of the foreign carriers has stated that TRAI should adopt the proposed rate reductions in an initial phase, but should conduct a full LRIC study for the methodology in a subsequent stage.
- One of the Telecom service providers has submitted that the methodology seems to be reasonable. However it should be recognized that installed capacity is much more. The capacity utilized is very nominal. If installed capacity was made available, cost per E1 would be substantially lower. It is to be noted that demand has been there and the market absorbs Capacity as soon as it is made available.
- VSNL has observed that the Paper assumes that the total available cable capacity will be sold on the day one and will remain committed to be sold for the next 15 years and there would not be any vacuum or churn. This is far from factual position. The assumption that there will be no downward price revision-taking place in the next 15 years is not a reality in practical scenario. Assumption that the Opex of 10% is sufficient to recover the entire operational cost of the entity is not a correct assumption. This methodology does not differentiate between the physical life of assets and economic life of assets.
- VSNL in its submission has commented on certain assumptions of the methodology contained in the consultation paper. These include that the proportion of satellite costs in the total cost assumed by the Authority is higher, there is under estimation of capital cost, and lower provision of supervision and administration charges
- VSNL has also observed that while the Authority has approved the ratio of 1:21: 63 for NLD pricing, it has proposed 1:8:23 for IPLC pricing. However, in both the services, the technology being used is similar and associated costs for multiplexing/demultiplexing are also in the similar proportion.

- One other ILDO has pointed out that they are in agreement with methodology that an E1 can be used as benchmark for higher multiples of the bandwidth. However, the cost and O&M charges for an E1 and its higher capacities are not in linear relationship. Hence it is not appropriate to consider bandwidth multiple as cost multiple. Thus there is no reason why the international standard for cost multiple be any different from that in India. They therefore recommend that prevailing international ratio should be accepted.
- NAASCOM was of the view that the methodology used is setting the ratio in the right direction and is a good start. However, as the usage of both DS3 and STM1 will increase, same benchmark and current multiples will not be valid and need to be periodically reviewed. Then the TRAI needs to have a look at factors like utilization factor, quality and reliability of services and congestion levels.
- One of the Investment analyst firms has commented that they agree with the pricing-multiples specified by the TRAI in the CP since these have a rational basis and are also in line with corresponding multiples in other countries.
- A telecom service provider has said that given the rapidly changing dynamics of the telecom sector, whatever tariffs the TRAI fixes may be reviewed after 12 months.
- The notified ceilings should be reviewed regularly, at least twice a year and ceilings modified, if so necessitated. However, once the 'Retail Minus' pricing is introduced, over one year, there may be no more a need to review, except intervening in exceptional circumstances.
- On the issue of whether the same tariff be made applicable irrespective of end use i.e. voice or data, the overwhelming opinion of the stakeholders was that from an economic and cost causality perspective, there is little or no difference in the cost of providing IPLCs for either data or Voice. There is, therefore, no cost-based rationale for the associated IPLC. Indian businesses and consumers would both benefit from the availability of the wider spread and higher quality standards normally associated with PSTN based international voice services at lower prices.

- An industry Association has submitted that ILDO's are bound by the conditions of the license to offer bottleneck facilities to all users and other ILDO's. The cable capacity is a bottleneck at this time as India has limited landing stations. ILDO's especially those having "incumbent" facilities should be made to offer a discounted rate to other ILDO's so as to reflect the higher order capacity need and also to encourage sharing of this bottleneck facility.
- The incumbent has stated that they invested in the infrastructure in the past when the country needed it and when the costs were on a higher side. They need to recover composite cost of its network while it offers IPLC services to its competitors. The tariff for the competitors (ILDOs) who resell the services, need to be different as compared to the tariff for corporate customers, who do not resell the services.

(d) Other comments

- Long run incremental cost (LRIC) on a forward looking basis of all cost elements including capacity increase in the long term, should not be used as they require deep understanding of network economics, and modeling assumptions are subjective.
- LRIC would more accurately reflect underlying service economics and will not protect inefficient incumbents.
- Lower prices are observed on routes where bandwidths demand and hence supply is abundant.
- The capacities existing in various markets have resulted in the creation of 'hubs' (e.g. Hong Kong, US, UK) and 'spokes' (e.g. Thailand, Indonesia, Brazil). The prices between hub to hub will be lower than hub to spoke or spoke to spoke.
- Prices also different according to routes.
- The methodology in the Consultation Paper is incorrect because it takes both capital recovery of 28% and asset life of 18 years
- Costs differ for owned and consortium cables, both for prevailing costs and for incremental costs.

- There is little flexibility for changing prices for consortium cables.
- Comparison with international prices is not correct because these prices reflect bankruptcy and write down of assets.

Section III

Comparison of Indian IPLC tariffs with Benchmarks

i) Comparison with List Prices

10. The tariffs prevalent in India for IPLCs were compared with international benchmarks, and with the cost based estimates arrived at using cost data available in the separated accounts of VSNL.

11. Through intensive interaction with domestic and international experts, the Authority examined various aspects of International lease prices for bandwidth including international benchmarking exercises, trends in the cost of cable construction for sub-marine network, market structures in various countries where prices are competitive, the regulatory environment governing the IPLC sector etc.

12. The international market for Bandwidth has witnessed a deflationary spiral for more than five years owing to various factors. In the international market for bandwidth, 2 Mbps i.e. E1 circuits served as the principal unit of capacity purchase for much of 1990s. Increasingly, DS-3s (Digital Signal 3) or STM-1s (Synchronous Transfer Module-1) are becoming the minimum purchase option. For purposes of comparing price trends across regions, STM-1 lease prices are now the most useful common denominator. In what follows, a comparison is made of the trends in the lease price of STM-1 across regions.

13. It has been found that In the Trans-Atlantic region, the median STM-1 price had plummeted 70% in 2000, 65% in 2001, 26% each in 2002 and 2003 and 25% in 2004. In the Trans-Pacific region, the median price of an STM-1 in a representative route fell 56% in 2003 and 40% in 2002. In the Europe-Asia region, the median STM-1 circuit prices fell by approximately 42% in 2003, which is comparable to the decline witnessed in the previous year. Median STM-1 lease prices in Asia fell by 50-60% in 2003 (source: PRIMETRICA, INC.2004, Vol.I: submarine networks). As against this backdrop, lease price for STM-1

originating from India, has declined only by about 10% in terms of Compounded Annual Growth Rate (CAGR) (from India to USA) during the period 2002 to 2005. The corresponding percentage decline in the lease price of DS-3 and E1 capacities originating from India were 8% and 10% (from India to USA) respectively.

14. A comparison of the above with the Indian prices shows that the extent of decline in the lease price of international capacity of services in India is substantially less than the extent of decline witnessed in other parts of the world.

15. A review was also made of the trends in the underlying cost of providing the IPLC service and it was found that the cost of cable construction and other associated activities for submarine network have declined significantly mainly on account of technological advances and increased competition among equipment suppliers. For instance, upgrading cables has been found to be a cost effective way to stay competitive in the market. Technological advances, such as new modulation techniques, etc. allow older cables to boost their capacities beyond their initial design capacities. Thus, upgradations are a key aspect of cable system because they allow the operator to very cheaply add capacity instead of constructing a new cable. This is evident from the fact that the cost of construction of submarine cable in 2003 was a little over US$ 1 billion as compared to US$ 12 billion in 2001 (source: PRIMETRICA, INC.2004, Vol.I submarine networks). This is reflected not only in the lease prices of bandwidth but also in the IRU prices (Indefeasible Right of Use) in the international market.

ii) **Comparison with Actual Prices, i.e. List Prices Corrected for Discounts**

16. The Authority considered it necessary to compare the market prices (IPLC lease rental) in other countries with that of IPLC half circuit tariffs in India. This type of information is typically very difficult to source and usually only list price is

available, which is often significantly higher than the actual market price. For this purpose, TRAI conducted thorough research and information on market prices from international experts was obtained. Tables 5, 6 and 7 in Appendix 1 of Annexure-A give a comparison of IPLC lease rentals reported (by international experts) to have prevailed during December 2004 in select Asian countries with that of the tariffs prevalent for IPLC in India for the farthest destination i.e. the USA. The international benchmark analysis suggests that prices for Indian IPLCs are substantially higher than in comparative markets especially for higher bandwidth circuits. It is therefore evident that international bandwidth is not competitively priced in India when compared with many countries in Asia, some of which are India's competitors in global Business Processing Operations business. These prices are an integral part of the costs of broadband and thus should be specially considered in any strategy to remove constraints and boost broadband in India, in particular rural India. Price regulation becomes important in the above context, based on costs and reasonable profits.

17. The evidence indicated above shows that the actual Indian IPLC prices are high in comparison to international benchmarks, which suggests lack of effective competition in the market for IPLCs in India. This has been confirmed in a recent study conducted by an independent consulting agency (Gartner, Inc 2004, 'Market Focus: International Bandwidth Pricing Trends, Asia-Pacific, 2004'). The conclusion of the Gartner study in regard to international bandwidth markets in Asia-Pacific is reproduced as under:-

'*The most-competitive markets for international bandwidth are Hong Kong, Singapore, Japan, Taiwan and South Korea. The least-competitive markets are Indonesia, India and Malaysia.'*

18. In this regard it also is relevant to quote the following statement of the Authority in paragraph 5 of the consultation paper on 'Fixation of Ceiling Tariff for International Private Leased Circuit (Half Circuit)' dated 30.4.2004.

"Effective competition has not emerged in the IPLC business segment. Bharti is the only other provider of IPLC but its operations are limited to non-restorable category. In addition, their submarine cable is a linear cable, which is not able to offer requisite levels of guaranteed availability/reliability without back up from an alternative cable. IT industry's requirement of reliability is of the order of 4 9's which today can largely be provided by only VSNL with facilities of access to multiple cables. Videsh Sanchar Nigam Ltd. (VSNL) is the incumbent operator in the IPLC business and is likely to maintain its dominance in this market for sometime."

19. Lack of competition in the IPLC market, or price for IPLC being much above cost, also implies a non-level playing field for the operators which use IPLC as an input but do not own it, if these operators have to compete in their service market with owners of IPLC which charge prices much above costs.

Section IV

Factors Constraining Competition

Limited Number of Players

20. In India, the international long distance (ILD) segment was opened to competition in 2002. Videsh Sanchar Nigam Ltd. (VSNL) is the incumbent operator with landing station facilities at Mumbai, Cochin and Chennai. The other ILDOs are Bharti Infotel, Reliance Infocomm and Data Access. Bharti Infotel owns a landing station facility at Chennai. Bharti Infotel has reported that their operations in the IPLC are limited to non-restorable category. As of now, Reliance Infocomm has not yet established their own cable landing facilities. M/s. Data Access does not own cable-landing facilities. VSNL is likely to maintain its dominance in the IPLC market for some more time. Thus, the prevalent market structure in IPLC in India is such that there are only three active players and of them only two have landing facilities. It is gathered that in many countries the number of players is large and most of the operators are Non-Facility based operators. At present, resale of capacity is not permitted in India because the focus has been on building additional capacity. The table below shows the number of bandwidth providers in each location (including resellers):

Location	Number of bandwidth providers
London	33
USA-NY	32
Germany	32
France	24
South Korea	14
India	3

Source: ERNST & YOUNG/NRA websites

Access to Facilities

21. Access to submarine cable landing stations is considered an essential input for many telecom services. Any unnecessary access restrictions tend to limit operator's competitive scope to provide international telecom services. Thus

the submarine cable landing stations are critical telecom structure and efforts should be made to ensure that they do not become bottlenecks to telecom service provision. Access barriers constrain the competitiveness of telecom operators and are detrimental to healthy growth of the telecom market. The Authority has received a number of complaints that competition is being restricted due to constraints on access to facilities.

22. VSNL's continued control of cable landing stations and associated facilities constitute bottlenecks, which allow the incumbent to stall or delay entry (or efficient operations) by other operators. Access problems are faced not only by the underlying cable operators but also by operators who have acquired capacity in a cable system and wish to access the capacity at the landing station. Discussions with industry sources suggest that establishing a cable landing station facility in India not only requires a huge amount of investment but is also a time consuming process involving various clearances including security clearance, etc. Thus, the control of access to the cable landing stations make it possible for the supplier of the access facility to impose constraints which are in the nature of non-price factors affecting the competition.

23. The Authority noted that there is a need to enhance competition in cable landing facilities and that regulatory intervention would be required for this. The present consultation process initiated was however limited to fixation of ceiling tariff for IPLC and the remaining issues relevant for promoting competition in the market would be addressed later through a separate consultation paper.

Section V

Review of International Practices governing IPLC regulation

24. The Authority reviewed international practices in the regulation of IPLC segment. The Authority has consulted international experts on this issue who had examined in detail, regulations of various telecom jurisdictions relevant for IPLC (for details see Table No.8 in Appendix 1 of Annexure-A).

25. The following main conclusions emerge from the consultations of the Authority with the International experts:

* Several markets that are considered competitive today had at one point of time or other been subjected to regulation
* Even now regulation, including regulation of tariff exists in certain countries, particularly for the dominant operator. In a number of countries where there is no official cap on price for IPLC, the National Regulatory Authority reviews/approves the tariffs. (The Authority noted that this was shown also by data submitted by the incumbent even though it had argued for the tariff not to be regulated).
* It is common practice for the tariffs to be regulated until competition in the market has developed to a level where the regulator can safely withdraw and allow forces of competition to impose effective market discipline on prices. This appears to be the approach adopted by most overseas regulatory authorities prior to competition getting established in those markets.

26. The Authority considered the existing market conditions in India for IPLC including prices, its market structure, the conditions prevalent elsewhere in the region and the practices governing regulation of IPLC in other jurisdictions. Further, the Authority noted that the IPLC service providers are also ISP service providers and thus they compete with other Internet service providers who use international bandwidth resources to compete with IPLC service providers. Similarly, these IPLC providers (facility based ILDOs) are also providing

international long distance telephony and to that extent non-facility based ILDOs have to depend upon facilities of IPLC providers. For this reason also it is relevant to regulate the IPLC sector by mandating a cost based price as tariff. This measure would thus promote a level playing field in the industry.

27. In view of the above and in view of the recent and likely developments in the Indian market for IPLC, the Authority concluded that the immediate need would be to mandate ceilings for IPLC prices primarily based on costs. The Authority fully recognizes that most regulators fix prices after taking into consideration Forward Looking Long Run Incremental Costs and if we fix the prices on this basis after considering the severe drops in such prices, the market structure would be unable to take the shock. The Authority would, therefore, consider such costs at the time of fixation next year.

Section VI

Costing exercise contained in the consultation paper- A brief overview

28. As part of the consultation process, the Authority sought and obtained costs of providing IPLC services. The cost based estimates of IPLC contained in the consultation paper were arrived at on the basis of data on costs given by the incumbent. This is because of the fact that M/s Bharti, the only other provider of IPLC in the early part of 2004, provided services that were of non-restorable category and hence not comparable. The methodology adopted in the consultation paper to arrive at a cost based IPLC tariff was Fully Allocated Cost (Top Down approach) using historical cost. The data provided by VSNL was difficult to verify except to check for consistency and validity of assumptions. Using this data and methodology, the average E1 price (Rs.12 lakhs per annum) had been worked out and that price was used to arrive at prices for higher capacity using a price multiple in the ratio of 1:8:23. However, the Authority in the consultation paper had noted the limitations of the data provided by the incumbent and it is relevant to reproduce the statement of the Authority in this regard.

"*During the tariff review, VSNL provided data relating to parameters like gross block, net block, and directly attributable operating expenditure to IPLC segments. VSNL provided a relative apportionment of assets used in cable based leased circuits, which was not easy to verify. The presumption in such situations is that the costs provided by the operator are likely to be over-estimates. VSNL used assumptions to further inflate the cost base. VSNL had claimed a depreciation rate, of 33% under WDV method for cable system. For the purpose of fulfillment of statutory obligations etc., however, VSNL was found to be using straight-line method of depreciation and average life of cable systems between 10 and 25 years in their Balance sheet. They had also claimed a pre tax return of 23.66% on total investment, which includes unutilized sum of Rs.625 crores raised through GDR issue. Further, the revised data submitted by VSNL, after prolonged discussions with them, vide their letter dated 10th October 2003 were also over estimates. These data too were inconsistent and not verifiable for* *a number of parameters like cable O&M restoration cost, and general-administration manpower and other overheads, etc. The number of E1 circuits declared from time to time also varied. More importantly, VSNL could not explain the basis for the gross block that was apportioned for purposes of IPLC segment of the business and also the higher amount of O&M under the operational expenses head. We have, however, used the data provided by VSNL with changes in certain underlying assumptions to obtain reasonable cost based estimates.” (paragraph 16 of the Consultation Paper)*

29. With separated accounts coming into force, the data provided by VSNL as part of Accounting Separation Regulation was made use of to arrive at cost estimates.

30. It was therefore possible to use the Audited cost for IPLC available in the Separated Accounts that became available to TRAI on 31st December 2004, which allocates costs specifically to IPLC. In addition, the Authority has more recent information on capacity, sales, and additional costs/investments made by the incumbent, which has also been used in the estimation of cost based tariffs.

Section VII

Costing exercises – Post-consultation paper

(a) Use of FAC based on Historical Costs

31. The approach of Top-Down, FAC method (with Historical cost) has been used to arrive at the relevant cost estimates by using the Audited cost data of Separated Accounts. For reasons of economic efficiency, it is generally recommended that the Forward Looking Long Run Incremental Cost (FLLRIC) be used to arrive at tariffs based either on Bottom-up approach or Top-down approach. In fact, internationally most Regulators use incremental costs for determining cost based charges. Even the incumbent in its submission to the Authority has stated that "*Long Run Incremental Cost does not protect inefficient incumbents*", and that "*Historical Average Cost might not reflect costs going forward in the face of technology changes and declining capex*" (i.e. it will be higher than the relevant cost).

32. However, when FLLRIC based tariffs are calculated, the amounts are much lower than those based on current or historical FAC. While the Authority emphasizes a reduction in prices towards costs, it also emphasizes sustaining this process so that a transition to FLLRIC based prices may take place overtime either through competition in the market, or through greater reliance on FLLRIC if the competition does not develop in the market over time. Relying mainly or fully on FLLRIC would give a much greater shock to the market, and is also likely to make transition to competition much more difficult. Therefore FLLRIC is not being given the importance it deserves at this stage. This implies that the cost base that has been used to arrive at the ceiling price has a buffer in it. The Authority emphasizes that from next year it would gradually move towards using to a larger extent the FLLRIC for fixing tariffs.

Cost Estimates for IPLC

33. The following four different types of cost estimates are possible :

(i) Based on data pertaining to incumbent's submarine cable operations for the period up to March 2004 (using data available in separated Accounts and the financial statements of the balance sheet for 2003-04).

(ii) Based on data obtained pertaining to the incumbent's new investments in establishing a modern submarine cable system i.e. Chennai-Singapore.

(iii) Based on data obtained from service providers on IRU payments made for leasing cable on long term basis submitted by one of the new entrants, and combination of IRU payments for leasing cable on long term basis and other investments made by another new entrant in landing station facilities.

(iv) Based on data on the cost of acquisitions of submarine cable systems by the ILDOs.

34. Data on cost of acquisition (i.e. item (iv) above) was sought but has not yet been provided as yet. Therefore, the information relating to the cost of acquisitions of submarine cable systems was collected through various sources.

35. The information on acquisitions of cable systems during the last two to three years does give an idea of the order of the cost decline for the capacity that is being augmented in the IPLC sector by these ILDOs. For example, the information submitted by the incumbent itself shows an asset impairment of $2 billion during 2002 for FLAG, and write-off of $665 million for Tyco (i.e. Rs. 8,800 crores and about Rs. 3,000 crores if an exchange rate of Rs. 44 to one dollar is used)

36. It is noteworthy that the cost based tariffs determined by the Authority are not based on the extremely low levels of investments/cost of acquisitions of submarine cable systems by the ILDOs in India because this would imply a fraction of the prevailing investment per E1. Using these costs would result in a

drastic reduction in the cost based price of IPLC and would go against the Authority's attempt to fix cost based ceiling tariffs without causing major shock to the market during the transition period.

37. One new entrant has provided data on the IRU lease rentals paid by them for leasing cable on a long term basis. Another new entrant has provided data on investments made in cable landing facility and IRU lease rentals paid by it. Based on these data, cost estimates were derived for E1 capacity. These estimates, also give a very low price as compared to the cost estimates based on historical cost in respect of investments in older cable systems of the incumbent. As stated earlier, the Authority decided to manage the transition smoothly without a major shock to the market particularly to the incumbent and thus, the cost estimates of new entrants were not considered appropriate at this stage for fixing the ceiling tariff.

38. The Authority noted that VSNL has built a new cable system between Chennai and Singapore and a landing station at Chennai in the year 2004. This cable system is ready for operations. The cost estimates of providing IPLC services through this new cable system set up by VSNL were derived based on the cost data provided by them. A range of capacity utilization was considered for arriving at cost estimates in terms of E1 capacity taking relatively low capacity utilization that is shown by the incumbent in its submissions to the Authority on this matter, and it was found by the Authority that these too show a cost based tariff much lower than that derived from VSNL's separated accounts for its older cable systems. For the reasons already mentioned above, the Authority is not relying at all on these relatively lower costs also, even in terms of a weighted average cost for VSNL, and thus a substantial buffer is provided in the cost based tariff.

39. The Authority noted that the most detailed information is from the separated accounts of the incumbent, and the cost based tariff estimate has

been derived after detailed examination and analysis of the data. As mentioned above, estimates based on the other data have also been made and they provide a useful background for our analysis and cost based tariffs derived from the separated accounts of the incumbent. The estimates based on alternative cost information are lower, and as a regulatory policy it would have been valid for the Authority to use such information for determining its tariff ceiling. The Authority has not used these alternative lower cost estimates at all in order to avoid major shocks to the system and to maintain a reasonable buffer in the specified ceiling.

Capacity Utilisation

40. The Authority has information on the actual capacity available with VSNL as of July, 2004. The Authority examined the capital expenditure/investment made by VSNL in the period April to July 2004, and concluded that the capital expenditure for the separated accounts for 2003-2004 could be allocated to this capacity available in July 2004, i.e. the CAPEX for end-March 2004 could be considered as giving rise to the available capacity in July 2004.

41. The next step is to examine the extent of this available capacity to which the costs should be allocated for determining the average cost per E1. The Authority has data on VSNL's sales in terms of various capacities i.e. E-1, DS-3 and STM-1 for March 2004 and September 2004. In September, 2004 the capacity sold by VSNL was less than 60% of the capacity available in July 2004. The Capital expenditure and Operating expenditure are allocated on per E 1 basis to this capacity level.

42. Taking account of the growth scenario submitted by VSNL itself, this would appear to be an underestimation of the capacity utilization relevant for the implementation period. VSNL's saleable capacity will also increase manifold during the implementation period and its cost will be much lower than those calculated for capacity available for July 2004. Thus, a substantial reduction in average cost would arise if the Authority relies on the relatively lower cost

estimated for the new additions to capacity. The new lit capacity added by the incumbent is more than 96% of its total lit capacity and thus to that extent the cost based tariffs based on historical cost of the older cable systems would be a significantly higher estimate than the cost that would arise for VSNL during the implementation period. Nonetheless, the Authority has provided a buffer to ensure smooth transition to competition, by not relying on the incremental cost approach for reasons of managing the transition without causing a major shock to the market. Instead, the Authority has thus used average costs based on the data submitted by VSNL for 2003-04 and other data on sales / capacity etc. during 2004, while the implementation period is 2005-2006.

Capital Expenditure (CAPEX)

43. The CAPEX includes Return on Capital Employed (ROCE) and depreciation/ amortization claimed on the capitalized assets. The methodology for calculation of these expenses is discussed below:

(a) Capital Employed - The capital employed is defined in the DOT's order number 7-4/2001-Tariff notified in the Gazette dated 8.11.2003 on the manner of maintenance of books prescribed by Telecom Regulatory Authority of India, Service Providers (Maintenance of Books of Accounts and other Documents) Rules, 2002 as the sum of net fixed assets, working capital and capital work in progress. In the accounting separation reports, the capital employed by the service provider is allocated to different products offered by it. VSNL has allocated its capital employed to the IPLC in the separated accounts. The Authority has made certain adjustments to these amounts, as follows.

(i) **Funds not related to IPLC business**: The amount of capital employed for IPLC in VSNL's separated account includes portion of its investments in the TATA Teleservices Ltd and money raised from its GDR issue, which is presently lying in the bank. These items have been excluded for costing as they are not relevant for IPLC service for which costing is done. VSNL had submitted to the

Authority that this amount should not be reduced because investment in TTSL is made to foster growth of VSNL's business and hence should be treated as part of operating capital. Further, VSNL claimed that the deposits representing monies raised during GDR issue are financial resources available for use and has a cost attached to it and considered as part of the Capital employed. The Authority does not agree with this view. These funds are not linked to the operation of IPLC *per se*, and the costs related to them should not be imposed on the customers of IPLC and thus this has been excluded. The capital employed is therefore adjusted for these two items.

(ii) Removing capital expenditure for satellite: The Authority is specifying tariff ceiling only for cable and not for satellite IPLCs. Thus, the costs allocated to satellite need to be removed. The separated accounts submitted by the incumbent for 2003-04 for the IPLC segment include the cost for cable circuits as well as satellite circuits. The satellite assets employed for IPLC segment are separately available in report on "Pricing of IPLC" (prepared by Boston Consulting Group on the behalf of VSNL), submitted to the Authority by VSNL. In this report, it is stated that the satellite assets relevant for IPLC are about 4%. The capital employed is adjusted only to this extent although the proportion of gross block accounted by assets for satellite in the composite costs are higher as per another estimate derived by the Authority.

(b) **ROCE**: The Authority had used a ROCE of 14.42% in its Consultation Paper (Paper no 10/2004). VSNL has submitted to the Authority that if more recent cost estimates are taken for deriving the ROCE, then the appropriate pre-tax ROCE would be 18.79 %, based on a equity-debt ratio of 99:1 and return on debt and equity, respectively, of 8% and 18.92 %. For its estimate of 14.42%, the Authority had in the consultation paper taken the equity-debt ratio of 96:4.

44. The Authority examined the submission of VSNL in this regard and noted that the equity-debt structure was substantially different from normal and reasonable capital structure. The use of the ratio in the Consultation Paper was to obtain further comments in this regard. Moreover, the ROCE in the Consultation Paper was in the range of reasonable industry ROCE, and not a lopsided one, which has arisen in the submission of VSNL. It is reasonable for the Regulator to make adjustments in data (including for capital structure) which is abnormal and also indicates inefficiencies of the operator. The Authority has examined the average of the ROCE for other operators in the industry and that figure amounts to less than 14%. In the above-mentioned submission of VSNL too, if we change the equity-debt ratio to 60:40, which is a reasonable ratio for efficient capital structure, the ROCE become similar to the one used by the Authority in the Consultation Paper. In fact, the Authority has in some other previous exercises, used an equity-debt ratio of 1:1 and if this ratio is used then the ROCE would be even lower at 13.46%. Moreover, VSNL has used 14.42% as the WACC (Weighted Average Cost of Capital) in the accounting separation statement, which are audited accounts submitted to the Authority on 31st December, 2004 under a Regulation (notified in the Gazette). For these reasons, the Authority has continued to use the ROCE of 14.42%.

(c) **Depreciation:** The expenditure under the depreciation head for the IPLC segment given in the accounting separation statement is adjusted by 4% to account for depreciation for assets for satellite based IPLC segment.

45. VSNL has submitted to the Authority that the value of depreciation taken for costing capital should be higher because while the depreciation amount has been taken on the basis of a lifetime of 18 years, for all practical purposes, the economic life of the cable is 5 to 8 years. VSNL supported this by stating that "*the recent write-down in asset values including SMW3 and SAFE where VSNL invested only in the last 7-8 years. Current estimates of the economic lives of assets have further lowered down from 8 years. SMW-2 which was*

commissioned in the year 1995 is slated to retire by next year upon commissioning/stability of SMW-4."

46. The Authority noted that it is using the actual depreciation amounts for IPLC that are given by VSNL in the audited separated accounts submitted under a Regulation to the Authority, on 31st December, 2004. Moreover, the Authority noted that VSNL's claim that now the life of a cable for the purpose of depreciation was taken as less than 10 years is not correct. In its Annual Report for 2003-2004, VSNL has stated with respect to Tata Indicom India Singapore Cable (TIIS Cable) that: "*With an estimated <u>life of 25 years</u>, the new cable aims to significantly enhance India's connectivity into the Asia-Pacific region and the U.S. via the Pacific*" (emphasis added; page 12 of the Annual Report). If we use this estimate of lifetime, then the amount of depreciation should be even lower. However, the Authority has not done this and has relied on the audited accounts submitted to it with separated accounts. The Authority also noted that the cable in its physical form normally does not cease to function at least until its full life assumed in the calculation of TRAI. Further, the capacity of cables can be enhanced phenomenally at a very low cost owing to the availability of new techniques.

47. Based on the various data submitted by VSNL, the Authority also noted that the prices have been very high in the past (e.g. in 2000, the IPLC price was Rs. 163.7 lakhs), which have already provided large returns on the investment.

Operational Expenditure (OPEX)

48. The operational expenditure under various heads as given in the separated accounts for 2003-04, has been taken into account for determining the OPEX. Items of expenditure under this heading, which were not considered relevant by the Authority for the purpose of providing IPLC through submarine cable, have been excluded for deriving OPEX estimates. These include rent for the landlines and operational expenditure for the satellite based IPLC.

49. Regarding the rent of landline charges shown in separated accounts, VSNL has clarified that this item of expenditure consist of ‘lease changes for domestic bandwidth acquired from other service providers for providing domestic connectivity for IPLC services**’.** The tariffs for these are charged separately from IPLC. With respect to the operational expenditure for satellite, the Authority noted that there was a discrepancy in the costs submitted by VSNL, which showed an over-estimation of the relevant costs. In its annual financial statement (i.e. the composite accounts of the company in its Annual Report), VSNL has classified satellite related operational expense of Rs. 172.17 crores under the Head “rent for satellite channels”, for the financial year 2003-04. In its separated accounts, VSNL has not got any cost category as “rent for satellite channels”. In separated accounts it has provided another Head, namely “international bandwidth charges”, under which it has given costs for satellite rental together with some other costs. This latter Head is not in the annual composite account, and there is a need to reconcile the data, which has been done by the Authority because even subsequent information submitted by VSNL shows that it is underestimating to a large extent the relevant operational costs that should be assigned to satellite. Based on its reconciliation exercise, and taking account of the usage pattern as well as the importance of other cost components within “international bandwidth charges”, the Authority has calculated the cost based tariff for IPLC by making adjustments to the operational costs so that the amount of Rs. 172.17 crores of rent for satellite channels is fully and reasonably accounted for in the separate activities that are given by VSNL in its separated accounts. In this regard, it is noteworthy that in the separated accounts, if two-thirds of the amount shown as “international bandwidth charge” for services other than IPLC are taken to be accounted by expenses due to rent for satellites, the entire amount of the “international bandwidth charge” shown in the separated account for IPLC will have to be allocated as rent for satellite channels.

50. Based on the CAPEX and OPEX estimates arrived at after addressing in detail all the relevant issues explained above, the Authority has determined the Tariff for IPLC Half-Circuit in terms of E-1. The average cost per E1, based on reasonable assumptions using the above-mentioned methodology, is in the range of Rs.7.40 lakhs to Rs.9.00 lakhs per E1. In deciding the price of E1 (based on cost estimate), the Authority also kept in view the ratios that are to be proposed for higher capacities as price multiples. Decreasing the price multiples in relation to the E1 cost, for higher capacities in comparison to their technical coefficients (or technical multiples of capacity) implies that there is a cost amount that is not recovered unless the tariff ceiling for E1 is increased. The Authority has done this, taking account of the multiples for higher capacity discussed in the next Section.

51. Taking the above factors into account and considering also that this ceiling tariff would be applicable to all distances and all types of cable systems irrespective of the destination/route, the Authority has decided to fix ceiling tariff for IPLC at Rs.13 lakhs per E1 per annum. Detailed calculations are not being given here as the Authority has used commercially confidential data of the incumbent. It would have been valid for the Authority to have used the much lower cost estimates taking account of the new capacity of the new entrants and even the incumbent. However, the Authority has not done so to ensure smooth transition to lower costs and has kept a substantial buffer in the cost based tariffs. Thus, the ceiling tariff fixed now is for the farthest destination and the operators are at liberty to offer tariffs below the ceiling tariff for various destinations/routes.

Section VIII

Pricing of DS-3 and STM-1

52. Bandwidth, like most other goods become cheaper on a per unit basis when it is purchased in large volumes. Additionally, the costs for required equipment, marketing and sales also decreases with higher capacities. Analysis of global multiples (PRIMETRICA, INC.2004, Vol.I: submarine networks) shows that the multiples of the price of E1 to DS-3 is frequently in the range of 4-7 times the price of E1 circuit, while the multiple from E1 to STM-1 is in the range of 8-17 times the E1 prices (see Table below).

Source	Ratio (**E1:**DS-3: STM-1)
Telegeography-High	**1:**7:17
Telegeography-Low	**1:**4:8

Additionally, it needs to be borne in mind that, the price ratio has to be seen in conjunction with the price for the lowest capacity i.e. E1. The prevalent tariffs offered by the ILDOs in India give the ratio between E1, DS-3 and STM-1 that are very high compared to international price ratios for these capacities. The market data on sales in terms of different capacities suggests that higher capacities will dominate the demand scenario for IPLC in the near future. Therefore, having arrived at the cost estimates of E1 capacity, the next step is to decide the price of DS-3 and STM-1 so that on an average, the service provider recovers the total cost incurred in the provision of services of all capacities put together. The technical co-efficient of equivalent capacity in terms of E1 for these capacities are 1: 21: 63. The co-efficient to be adopted for pricing these capacities are to be derived. The objective as stated earlier is to derive prices, which would be reasonable and adequately cover the cost.

53. Based on cost data supplied by the incumbent and other cost data discussed in the earlier sections of this Memorandum, it is evident that the average cost of bandwidth has been declining overtime both for investment and operational cost. This trend is likely to continue in the future as well owing to

technological advances, which implies that the marginal cost of acquiring additional capacity is substantially below the average cost estimate and will decrease further in the future. Based on the data with the Authority, including the recent submissions of VSNL and other ILD operators, the prevailing IPLC lease rentals in various countries, keeping in view the incentives for investments in the infrastructure for IPLC, and after ensuring cost recovery on a weighted basis from various capacities the price multiples for DS-3 and STM-1 capacities are fixed at 8 and 23 respectively. The mandated ceiling tariff results in a reduction of 35%, 71% and 70% in respect of E-1, DS-3 and STM-1 respectively from the existing listed tariffs of the incumbent (See Table No.4 in Appendix 1 of Annexure A). These are also compared with the international prices (market prices as of December 2004) and ratios of these prices for higher capacities vis-à-vis E1 price. These are given below:

International comparison of IPLC price (Asian Region)
E1 prices and price multiples

	(1)	**(2)**	**(3)**	**(4)**
Country	**E 1 price US$'000**	**DS-3 price US$ Millions**	**STM-1 price US$ Millions**	**Ratio of Columns (1):(2):(3)**
Japan	23	0.10	0.2	1:4:8
South Korea	23	0.10	0.2	1:5:10
Hong Kong	24	0.12	0.3	1:5:11
Singapore**	33	0.17	0.3	1:5:11
India (existing)*	39	0.66	1.9	1:18:50
India (ceiling fixed) @ Rs.	**29.55**	**0.24**	**0.68**	**1:8:23**

Source of International data: ERNST & YOUNG/Telegeography
Note :-US $=Rs.44
* Discounted price
** Singapore's E1 price is high inter-alia on account of low multiple for DS-3 and STM-1

54. VSNL has in its submission to the Authority stated that while the Authority has approved the ratio of 1:21: 63 for NLD pricing, it has proposed 1:8:23 for IPLC pricing. However, in both the services, the technology being used is similar and associated costs for multiplexing/demultiplexing are also in the similar

proportion. In this regard, the Authority noted that a separate consultation paper is underway for revising the ceiling tariff applicable for domestic leased circuit and in that order, the Authority would appropriately address this issue.

Section IX

Further examination of Issues raised during consultation process

55. A number of issues raised during the consultation process have been addressed in the foregoing notes. VSNL in particular has raised the same issues once again during its presentation to the Authority and vide its letter dated 23rd February 2005. These are again addressed in the following paragraphs:

"IPLC prices in India are in line with comparable benchmarks"

56. This argument has been strongly refuted with evidence in the relevant sections in this explanatory memorandum. The reduction in the IPLC tariffs in India during the last three years amounted to about 10% (Compounded Annual Growth Rate) as against about 45% (CAGR) decline in other major markets. More importantly, the comparison of Indian IPLC tariffs and IPLC lease rentals prevalent in other countries made by the incumbent in their presentations to the Authority was based on listed prices. The prices relevant for comparison in such situation are the average actual prices prevalent in the market and not the listed prices. In view of this, the Authority obtained the market prices from the international experts, which indicate, that the price decline in India for IPLC has not been commensurate with the declines witnessed elsewhere nor are the prices in line with costs. The argument of the incumbent that rapid reduction in international bandwidth prices is due to the chapter 11 Bankruptcy Protection is not entirely true. Further, even the incumbent has acquired capacity at very low price in this situation, which we have not considered. Instead, the derivation of the cost estimates based on FAC – Top Down Approach using separated accounts for 2003-2004 and capacity available in July 2004, submitted by VSNL to the Authority shows that the prices set by VSNL are much above the cost. Separately too, evidence has been collected to show that internationally the cost of laying submarine cable systems has come down drastically (Discussed in Section III). Moreover, since costs are declining and the implementation period of the tariff ceiling is in 2005-2006, the tariff ceiling based on costs and capacity

of the previous period will have an additional margin in addition to that already provided in the methodology.

"International Bandwidth is small part of IT costs"

57. One of the submissions made by VSNL in their presentation to the Authority was that international bandwidth is a small part of cost structure for IT and IT enabled services and the cost of providing broadband services and, therefore, they argued that tariff reduction in IPLC will not have any major impact on the cost of providing the services for which international bandwidth forms an input. The Authority noted this point and reiterated that bandwidth is a critical input for IT and ITE services and for providing broadband services in the country in general and rural areas in particular. Further, the Authority recalled that the cost on account of bandwidth forms a substantial proportion of the cost of provisioning broadband and Internet services in the country in general (more than 45% of total monthly cost). Moreover, these prices also have an effect on the level playing field for those using but not owning IPLC as inputs for providing services, in a market where they compete with the owners of IPLC also for their market. Taking account of all these factors, it is for the regulator to decide whether a particular service is to be regulated and also decide the cap on prices for such services. The Authority's decision is based on such an analysis, as has been shown in this Explanatory Memorandum.

"Prices are different for links between hubs and those between hubs (spokes) and spokes"

58. The incumbent has further submitted to the Authority that certain lower prices for IPLC shown to be prevalent in certain Asian countries are in fact prices between hubs and prices of IPLC between such hubs ought to be lower due to high traffic density. In this regard, the Authority noted that the tariffs fixed for IPLC have been determined based on actual costs and in that cost also sufficient margin and buffer have been provided.

“Regulation of market will hamper investments”

59. VSNL was of the view that any effort to regulate the market will hamper investments and hence the growth. They also believe that it might introduce rigidity in offering packages to the customers. The Authority is of the view that setting a ceiling price as set by the Authority will not affect future investments, as there is considerable under utilized existing capacity and sufficient margin has already been provided in the cost estimates owing to the adoption of historical cost and providing a buffer in those cost estimates as discussed elsewhere in this note. Further, these capacities of the incumbent have earned huge surplus owing to high prices prevailed during the last several years. Since the price proposed for IPLC will be in the form of Ceiling, the operators will be at liberty to offer any tariff package to the consumers.

“Single IPLC rate may restrict the product choice for customers”

60. VSNL has stated that, Single IPLC rate may restrict the product choice for customers and thus would bring rigidity in the market. In this regard, the Authority notes that TRAI is not specifying any specific tariff for IPLC half circuit but is giving a ceiling for the tariff. Fixation of ceiling tariff provides full liberty to the service providers to offer different tariffs to different destinations/routes etc. provided such tariffs are not above the ceiling tariff. Since the tariff ceilings have left a considerable margin compared to costs, especially if we consider the costs during the implementation period of the regime, this provides major flexibility for the service provider to give appropriate tariff packages covering overall costs. Moreover, as noted earlier, VSNL has already recovered large amounts of its relatively costlier circuits which were installed earlier.

”Internationally, price regulations for IPLC is very rare”

61. The Authority made a detailed review of the International practices governing regulation of the IPLC market in a number of countries the results of the review are tabulated and a detailed exposition of the regulatory practices governing IPLC sector in many countries are given in Table No. 8 in Appendix 1

of Annexure A. As per that review, a number of markets, which are now considered to be competitive, have at one time or other been subjected to regulation of various kinds including tariff regulation. Even now, in some of the competitive markets for IPLC, the dominant operator in those markets is subjected to tariff regulation in the sense that they are required to file the tariffs with the regulator which are then subjected to detailed scrutiny and prior approval has to be obtained from the regulator, who gives such approval after being satisfied with the prices proposed by these operators. Even the submissions of the incumbent to the Authority clearly indicate that IPLC sector is regulated in countries like Vietnam, Singapore, Taiwan and in European Union. In the case of Vietnam, it is in the form of price band/ceiling and prior approval of the regulator. In the case of Taiwan, for dominant operators the type of regulation in IPLC is through price band/ceiling. In Singapore, the dominant IPLC providers have to obtain the prior approval of the regulator for the tariffs. In some markets where explicit regulation is not seen now, the conditions prevalent in those markets are completely different from the ones facing the Indian IPLC market. Each country has to decide whether or not to regulate a particular market, and in the case of India there is a good case for regulation of IPLC.

"VSNL alone does not control the consortium decisions of commercial cable"

62. VSNL in their submission to the Authority has stated that the ownership / control of most of the cables landing in India was in the hands of the consortium which decides any upgradation/expansion of capacity in cables; a single consortium member has a very limited say in the matter. VSNL has said that the capacity expansion on the consortium cable is expensive and on-going restoration and O&M contracts are negotiated by the consortium, leaving little flexibility to the individual members.

63. The Authority has noted that the above assertions of VSNL clearly indicate that VSNL has not denied that they have freedom to set prices or comply with the

tariff orders of the Authority as and when issued. In fact VSNL has submitted to the Authority that they will reduce the prices as desired by the Authority but would not like as sharp a fall in these prices as the Authority had proposed in the Consultation Paper. Even during the meetings with VSNL, a specific question was put to them in this regard and they did agree that they have flexibility to effect changes in the price of IPLC (Half Circuit) with them.

64. The Authority is of the view that the process of tariff ceiling regulation has been significantly extended to accommodate various and repeated submissions by IPLC providers, and this too is an example of reluctance on part of the IPLC suppliers to change prices of IPLC in a market which lacks competition and requires regulatory action.

'VSNL's Weighted Average Revenue realization is less than E1 tariff'

65. VSNL has claimed that with the tariffs proposed in the consultation paper, the weighted average revenue realization for all capacities is less than the price of E1. The Authority's methodology to fix tariff ceilings in this Regulation takes account of this point. The Authority notes that the detailed calculations that have been made now with the audited data of costs reported by VSNL as part of Accounting Separation give an idea of the surplus in the tariffs of VSNL over the cost of providing the services. VSNL's submissions have aimed at trying to show costs as high as possible and on obtaining a large margin above cost in the specified tariffs. An examination of the Weighted average revenue realization, the average cost of the incumbent, and further analysis on the basis of the market data on the product-mix ratio of the three capacities, has been conducted to ensure that the tariffs ceilings fixed not only cover the overall costs but also provides for sufficient buffer over those costs. It may also be noted that the ceiling tariffs are still above the tariffs prevalent in certain countries, more so for higher capacities. The Authority is firmly of the view that tariffs of IPLC, a key input for a variety of economic and social activities, cannot be completely left to

the commercial judgment of operators particularly when the Authority does not consider the market competitive.

'Higher license fee pushes up the IPLC tariff'

66. VSNL has stated that one of the reasons of the higher cost of IPLC is the higher license fee (15% of Adjusted Gross Revenue) as applicable in India and in most countries the license fee is much less than this. In this regard, the Authority notes that the argument of VSNL is not valid, as the cost based tariff has been derived by taking into account revenue share license fee at 15%. In fact the Authority has recommended in the Unified Licensing Regime that the revenue share license fee be 6%, and if the license fee is reduced there would be a further increase in the margin for the IPLC service providers. In the event of reduction of license fee for the ILDOs, the Authority would reduce the ceiling tariff correspondingly.

'Request for sharing of tariff working arrived by the Authority, seeking time to provide actual tariffs, and allowing personal interaction with external consultant if engaged by the Authority'

67. The Authority noted this point of the incumbent and recalls the number of such meeting the incumbent had with TRAI before and after the issue of consultation paper. Therefore the Authority is of the view that, enough opportunity was given to the incumbent by the Authority before and after the issue of consultation paper in the matter of sharing information, data, viewpoints and other perception about market developments, etc. From July 2003 to February 2004, a number of meetings had taken place between VSNL and TRAI for discussions relating to pricing of IPLC. After the issue of the consultation paper also, at the request of VSNL, TRAI extended the opportunity to their consultants i.e. BCG, for a series of discussions (during 8.10.04 and 27.10.04) culminating in a presentation to the Authority on 16.2.05. The incumbent knows well that the Authority fixes its tariff ceiling in terms of changing the <u>actual</u> price and not the listed prices, because the effect of a price change can otherwise be

substantially mitigated by changing (or removing) the prevalent discounts. Still the incumbent and its experts even till the end submitted price comparisons in terms of list prices.

68. The Authority has had several interactions with VSNL regarding the tariff working also, which is why they have submitted a number of suggestions for changing or making amendments in the methodology. The issues raised by them from time to time have been taken into account in the formulation of proposals for fixation of IPLC tariff. This explanatory memorandum gives details of the background and circumstances leading to the issue of the tariff order, relevant data used for the purpose, and other relevant information/methodlogy for tariff fixation. It is not incumbent upon the regulator to arrange for a discussion with the external consultants engaged for such a purpose. Till now, the Authority has not followed such procedures where interaction is provided with external consultants used by the Authority. In the view of the Authority, it is also not an appropriate regulatory practice to accede to such requests. The Authority views these requests as another attempt to delay the consultation process, which actually began in April 2004.

Price for capacity below E1

69. It is proposed not to specify separate ceiling price for IPLC capacities below E1 as smaller capacities form a low proportion of total demand for international bandwidth now which would become an insignificant proportion in future. This is also evident from the incumbent's data on sales of various capacities during the last year. Therefore, the tariffs for such capacities are forborne.

Price for Different Use

70. Another issue raised in the Consultation Paper relates to the applicability of this ceiling tariff for various usages i.e. voice or data. From an economic and cost causality perspective, there is little difference in the cost of providing IPLCs

for either data or voice. There is therefore, no cost based rationale for the associated IPLC tariff ceiling to vary. The majority of the stakeholders were of the view that the proposed ceiling tariff should be the same whether it is used for voice or for data services. In view of the above, the Authority has mandated that the ceiling tariff for IPLC half circuit shall be the same irrespective of its end use i.e. whether for voice or for data. The Cellular Operators Association of India have in their submissions stated that loading the entire cost of the international long distance on IPLC alone is unjustified. In this regard, the Authority clarifies that in arriving at the cost based estimates for IPLC, the separated accounts available for 2003-04 duly audited for IPLC segment have been relied upon. In the separated accounts similar cost details are separately available for international long distance business and therefore the statement of COAI is not correct. In the event of VSNL using IPLC for ILD calls, the price that VSNL should charge for such usages should be the same as that of the charges applicable to others.

Tariff forbearance for satellite IPLC

71. As mentioned in the methodology, the costs related to satellite IPLC have not been considered. Thus, tariff for satellite IPLC are forborne.

Standard Tariff for Half-circuit IPLC to be mandatory

72. There are two components involved in the provision of IPLC service i.e half circuit of the Indian end and the other Half-circuit of the farther end. TRAI's regulation/tariff orders for IPLC can cover only the near end portion of the IPLC that is offered by a licensed ILDO of India. ILDOs in India do provide full circuit services of IPLC by having commercial arrangements with the foreign carriers; but the Tariff order of TRAI applies only for the near-end Half-circuits linked to India. It is possible to circumvent the tariff order that mandates only the half-circuit tariff by offering only full circuit services and tariff for that service to the customers.

73. Therefore, the Authority mandates a Standard Tariff Package in which Half-circuit will be offered at the ceiling tariff for each of the capacities and destinations for which full circuit services are offered by the ILDOs. This would enable the Authority to monitor the compliance of the tariff order by the service providers. However, the ILDOs are at liberty to offer any other Alternative Tariff Packages to match competitive activity in the market.

Conclusions

74. The Authority recalls the growth experience in mobile telephony consequent upon tariff declines witnessed in India. Similarly, reduction in lease price for IPLC would also stimulate strong growth. This argument is further strengthened with the evidence brought out by independent studies that have stated that, India is forecast to achieve very rapid growth in fixed data services averaging at least 20% annually between 2004-2008, i.e. higher than China. The experience with growth in India has been that with low prices, there has been explosive growth of subscriber base in voice telephony and it would be reasonable to expect that the same story would be repeated in the growth of Broadband /Internet and other data services that are crucially dependent upon international bandwidth. Therefore the intervention of the Authority by stipulating a cost based tariff for IPLC becomes important but the growth in demand induced by the lower prices being mandated by the Authority will itself act as demand stimulant leading to higher utilization of capacity of the operators that would have secondary effects in pushing down the price levels. A number of other reasons have also been given in this Explanatory Memorandum to show the basis of the Authority's intervention with respect to IPLC tariffs.

Based on the above, the IPLC tariff ceilings are specified as follows:

Capacity	Price (Rupees in lakhs)
E1	13
DS-3	104
STM-1	299

75. The Authority will review the situation with regard to developments in the IPLC segment within a year. Separately, the Authority would come out with necessary consultation papers on issues relating to cost based access pricing for cable landing stations and issues arising out of cable landing station facilities as a bottleneck facility and other related issues for promoting competitive conditions in the IPLC segment.

Appendix 1 of Annexure-A

Table No.1 – Trends in IPLC (Half Circuit) Lease rentals in India – VSNL
(Exchange rates as prevalent during the relevant period have been applied)

Year	Annual Lease Rentals					
	E1 (2 Mbps)		DS-3 (45 Mbps)		STM-1 (155 Mbps)	
	Rupees in lakhs	US $	Rupees in lakhs	US $	Rupees in lakhs	US $
2002*	26	54,629	471	990,126	1365	2,867,647
2003#	30.8	67,102	471	1,026,797	1365	2,973,856
1.1.04#	23.7	52,202	445	980,176	1235	2,720,264
1.4.04#	21.3	48,519	401	913,439	1112	2,533,029
2005#	20.2	45,909	361	820,454	1000	2,272,727

Note: Discounts offered have not been taken into account, as they are dependent upon various criteria.

* Tariff for IPLC services irrespective of the destination.
\# Tariff applicable for Restorable Category and for the farthest destination from India

Table No. 2 – Existing IPLC(Half Circuit) Tariff – Bharti Infotel

Capacity	**Annual lease rental**	
	Rupees in lakhs	**US $**
E1	9.81	22295
DS-3	175.50	398864
STM-1	418.50	951136

Note:
1. IPLC services of Bharti Infotel are for Non-Restorable category only (as reported).
2. The above tariff is for farthest destination from India.
3. Discounts offered have not been taken into account, as they are dependent upon various criteria.
4. Exchange rate applied: US$=Rs.44.

Table No. 3 – Existing IPLC(Half Circuit) Tariff – Reliance Infocomm

Capacity	Annual lease rental	
	Rupees in lakhs	US $
E1	(Full circuit tariff – Rs.69.9 lakhs)	(Full circuit tariff – 159,000)
DS-3	427	971,500
STM-1	1238	2,815,000

Note: 1. Above Tariff is applicable to all destinations.
2. Discounts offered have not been taken into account.

The discount structure for VSNL, Bharti and Reliance Infocom are as follows:-

(i) VSNL

Discounts offered are conditional upon commitment to buy larger capacities/ circuits and commitment to buy for a longer duration viz: in terms of number of years . In India, the discounts on account of Volume (circuits) and Volume(bandwidth) put together go up to 15% of the listed price in the case of E1. Commitment for a longer duration of 3 years would give another 10%. In the case of DS-3 and STM-1 the maximum rates of discounts are 20% and 15% respectively excluding the discounts related to longer duration commitment (10% for 3 years.)

(ii) Bharti

Discounts are offered on a case-by-case basis. Eligibility criteria for the discount schemes depend upon long-term business commitment and competitive prices. Discount rates have not been specified and left open ended.

(iii) Reliance

The maximum rates of discounts reported is 40% and are dependent upon the following criteria:

* Total revenue from the customer
* Repeat order and contract period
* Capacity utilization by specific location

* Compliance with desired terms and conditions
* Global customer of a carrier partner
* Multiple global route diversity

Table No. 4

Comparison of existing listed price of IPLC (Half-Circuit) in India and ceiling tariff fixed for IPLC

Capacity	Annual Lease Rental		Extent of Reduction
	Existing Listed Price	Ceiling tariff fixed	
	Rs. in Lakhs	Rs. in Lakhs	
E1	20.2	**13**	35%
DS-3	361	**104**	71%
STM-1	1000	**299**	70%

Note: 1. Tariff applicable for the farthest destination from India.

2. Discounts offered have not been taken into account, as they are dependent upon various criteria.
3. **The existing listed tariff** of **VSNL assumed to be the Listed price in the above table**

Table No.5 - International comparison of IPLC (Half-Circuit) E1 price

Countries	Existing price (US$ Thousands)
Japan-USA	23
South Korea-USA	23
Hong Kong-USA	24
Singapore-USA	33
India-USA*	39

Table No.6 - International comparison of IPLC (Half-Circuit) DS-3 price

Countries	Existing price (US$ Thousands)
Japan-USA	99
South Korea-USA	102
Hong Kong-USA	124
Singapore-USA	174
India-USA*	656

Table No.7 - International comparison of IPLC (Half-Circuit) STM-1 price

Countries	Existing price (US$ Thousands)
Japan-USA	191
South Korea-USA	229
Hong Kong-USA	269
Singapore-USA**	346
India-USA *	1931

* Pertains to IPLC tariffs of VSNL applicable for the farthest destination and Maximum discounts on volume have been taken into account.

** E-1 tariffs of Singapore are higher on account of their low tariffs of DS-3 and STM-1.

Note: In other countries also, price multiples for DS-3 and STM-1 are much lower than in India.

Source: For International Data *ERNST&YOUNG/* Telegeography

Table No.8. Internationally the regulatory and competitive environment for IPLC products is as follows:

Country	Regulation
Australia	National and International leased lines were under a CPI-X% price cap control between 1992 and 2001. This was subsequently removed when the market for international leased lines was determined to be competitive.
China	All leased line rates set by the government. No further specific information was available.
Hong Kong	The carrier license regime for providing fixed telecom network services (FTNS) came into effect in April 2001, and imposed price ceilings on dominant operators. REACH was the only dominant operator. On March 2002, OFTA declared that REACH was no longer dominant and removed the price ceiling.
Ireland	ComReg is currently conducting a consultation exercise on the market for IPLCs. ComReg currently believes that the domestic market for IPLCs is competitive and proposes to withdraw all obligations on Eircom, which currently include cost orientation, and non-discriminatory access to competitors.
Japan	Japan defines operators as Type I or Type II. Type I operators were subject to price ceilings, and any tariff changes needed to be approved by the regulator before implementation. All regulations were abolished in April 2004 as the regulator determined that the market for DPLCs and IPLCs was now competitive.
Singapore	In Singapore, dominant licensees have to file tariffs with the regulator for approval. Singtel is considered a dominant provider of IPLCs and therefore has to file any tariff amendments with the IDA, the IDA will assess as to whether these tariffs are inline with those observed in other jurisdictions, check whether they are discriminatory, and whether they are cost based. Furthermore, in 2001 the IDA ruled that alternative operators could co-locate their equipment at SingTel's landing station. In April 2002 this was amended to require SingTel to provide connection to alternative operators. The IDA's approach is to impose interconnection rights, then allowing the market to set the retail tariff.
South Korea	In the International leased line market there are 14 license holders - the market for IPLCs is considered competitive.
UK	Market considered competitive - no regulation.
USA	Market considered competitive - no regulation.

Source: *ERNST & YOUNG*