

Consultation Paper No.10/2004



Telecom Regulatory Authority of India

Consultation Paper

On

**Fixation of Ceiling Tariff for
International Private Leased
Circuit(Half Circuit)**

Economic Division

30th April 2004

PREFACE

The International Private Leased Circuit (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 second in a foreign country. IPLC services in India are available for speeds ranging from 64 kbps to 155 mbps. Broadly speaking, the IPLC is divided into far end and near end termed as half circuit. The tariff for the far end is dependent upon mutual negotiations between the foreign carriers with their Indian counterparts. At present, the tariff for near-end half circuit IPLC is forborne.

2. IPLC is considered to be one of the basic requirements for Information Technology enabled services (ITES) 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. Software exporters, BPO industries, banks and other financial services companies, are key users of IPLCs. The competitiveness of these industries in the global market is dependent to a large extent on the price they pay for IPLC, In addition, Internet Service Providers (ISP) also use IPLC for their upstream connectivity abroad and high cost of IPLC's get reflected into the Internet access tariff which may have an adverse effect on the growth of Internet in the country.

3. Effective competition has not emerged in the IPLC business segment. Bharti Telesonic Ltd. is the only other provider of IPLC in India but its operations are limited to non-restorable category. 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. Presently, there are three landing stations – two owned by VSNL at Mumbai and Cochin and one by Bharti Telesonic Ltd. at Chennai.

4. The Authority received a number of submissions by users that adequate capacity of Bandwidth was not being provided and the capacity being provided was extremely high-priced. In their representation they have stated that Bandwidth prices in India are not competitive. It has been further stated that while the prices for a 2Mbps link is higher than international norms, this differential increases significantly

as we go to 45 Mbps (DS3) and 155 Mbps (STM1). We are also not competitively priced when compared with many countries in Asia who are India's competitors in global BPO business. Moreover the International cabling cost is reported to have declined significantly and the tariffs in several countries have also fallen substantially. However, the benefit of reduction in international bandwidth cost has not been passed on to the user groups by VSNL. The user industries have thus requested TRAI to intervene and investigate the price of IPLC to bring it down. As per the latest offer of VSNL filed with TRAI, the IPLC price for EI capacity from India to USA (the most popular destination in demand by user industries) is about Rs 20 lakhs per annum.

5. This Consultation paper is the result of the study conducted during the last two months and focuses on the issue of pricing of IPLC for the near end half-circuit. The matter of adequate capacity is being addressed separately. After review of the tariff based on data furnished by VSNL and other data available with the Authority on international prices of bandwidth, etc., it was felt necessary to fix a ceiling tariff for IPLC (Half Circuit). We have, used the data provided by VSNL with changes in certain underlying assumptions to obtain reasonable cost based estimates.

6. The cost based tariff for E1 works out to Rs.12 lakhs per annum. Keeping this as a bench mark and based on certain known co-efficients, tariff for capacities below E1 have also been proposed. Based on cost data supplied by VSNL, it is evident that the average cost of bandwidth has been declining over time. This trend is likely to continue in the future as well, which implies that the marginal cost of acquiring additional capacity is and will remain substantially below the average cost estimate competing for investment using international bandwidth. Further, in the future, demand for capacity is likely to be higher for higher capacity bandwidth and thus the prevailing price ratio needs to be revised downward. Keeping in view the results of the above analysis and the international comparisons of such price ratios it has been proposed to maintain a price ratio of 1:8:23 for EI and higher capacities of DS3 and STM1 respectively. All this would mean a price reduction of about 40% in the case of EI and below capacities and about 70% in the case of DS3 and STM1 as compared to the recently filed tariff of VSNL. While this being the proposed ceiling tariff, it is proposed to provide flexibility to the operators in the matter of offering various tariff packages to different destinations within the given ceiling.

7. This paper is also available on TRAI's website (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 27.5.2004**. Submissions in the electronic form would be appreciated. For further clarifications, Shri M. Kannan, Economic Adviser, TRAI may be contacted on Telephone No.26160752, Fax No.26103294 or email **tra18@bol.net.in**.

(Pradip Baijal)
Chairman, TRAI
30.04.2004

CONSULTATION PAPER ON INTERNATIONAL PRIVATE LEASED CIRCUIT (IPLC)(HALF CIRCUIT) TARIFF

1. Introduction

1. In the Telecommunications Tariff Order (TTO) 1999, tariff for IPLC (“dedicated”) was subject to forbearance. Thus operators offering IPLCs were free to decide the tariff and could implement these, following approval of the Authority. In its examination of tariff proposals, the Authority based the decision to permit the tariff on the accepted principles of non-discrimination, non-predation etc. At that time, VSNL was the only player offering IPLCs and even today it continues to have an overwhelming presence in the IPLC market.

2. Although, the International Long Distance (ILD) market was opened up to competition in 2002, provision of IPLCs has not featured among the bouquet of services offered by the new entrants. This is not surprising for cost reasons as well as the long gestation period associated with IPLC provision.

3. IPLC is considered to be one of the basic requirements for Information Technology enabled services (ITES) 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. Software exporters, BPO industries, banks and other financial services companies, besides multinational companies are key users of IPLCs. India’s importance in global networks business has also been pushed up by the increasing number of foreign companies setting up offices here as well as the emergence of ITES as a robust export sector. Further one of the key objectives of NTP 1999 is to raise the standard of telecom infrastructure in India to world-class levels. The improved quality of

telecom would consequently serve to enhance the competitiveness of those industries using telecom services as input. In addition, Internet Service Providers (ISP) also use IPLC for their upstream connectivity abroad and high cost of IPLC's get reflected into the Internet access tariff which is having adverse effect on the growth of Internet in the country.

4. The cost of leasing IPLC forms a substantial proportion of the total cost of the user industries mentioned above. Thus, the competitiveness of these industries in the global market is dependent to a large extent on the prices they pay for IPLC.
5. Effective competition has not emerged in the IPLC business segment. Bharti Telesonic Ltd. 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.
6. In view of the foregoing, the Authority decided to examine the tariff for IPLCs. In addition, the Authority received a number of submissions by users (including NASSCOM) that adequate capacity was not being provided and the capacity being provided was extremely high-priced. This Consultation paper is the result of the study conducted over the period of the last two months and focuses on the issue of pricing of IPLC for the near end half-circuit. The matter of adequate capacity is being addressed separately.
7. The tariff estimates have been calculated using a cost based methodology. To verify the estimates, the Authority has considered two alternative approaches, both of which give consistent results. The estimated tariff for E1 is about sixty per cent of the present level of tariff of VSNL. The Authority feels that the estimates are robust in view of the calculations detailed in this paper and may even be over estimates if we consider the fact that IPLC prices are declining in general. The estimates show that the user groups are adversely affected with the high prices charged by VSNL, and in such a situation there is

a need for regulatory intervention to address the incumbent exploiting its ownership of landing station, which is a bottleneck facility.

II. Prevailing Tariff Regime

8. As part of its review of IPLC prices, the Authority examined the prevailing prices in the market and noted that the prices charged by VSNL had not come down to the extent expected and were substantially higher compared with other country prices. Accordingly, an exercise was initiated to arrive at a price based on the cost data of the incumbent operator i.e. VSNL. A series of meetings were held with the VSNL officials in this regard. Subsequently, VSNL has filed a revised tariff. A comparison of this tariff with the tariff that existed earlier and the percentage reduction for each category and for major destinations is given in **Annexure-I**. The reduction ranges from a low of 23% to a high of 47% across different capacities and destinations.

9. However, even after the reduction, tariff for IPLC would be higher than the corresponding tariffs in some of the Asian countries that are competitors to India in the global ITES market. A comparison in this regard is in the Table at **Annexure-II (a) and (b)**.

10. Another noteworthy feature is that M/s. Bharti, a recent entrant in IPLC business with a landing station at Chennai has offered a lower tariff. This is placed at **Annexure-III**. However, Bharti's tariff is not strictly comparable to VSNLs since they are offering only non-restorable category IPLC. M/s. Bharti is in the process of acquiring additional capacity to offer the restorable service.

III. Representation of NASSCOM

11. MNC's like GE, American Express, AOL, Dell, HSBC, BT, Prudential, and Fidelity etc. have outsourced a significant part of their IT and call center/back office activity to India. The excellent results of outsourcing have been encouraging for them, and they are now looking to significantly step up their activities in India. However, they are looking at an improvement in the reliability of the media as well as competitive pricing at the higher levels of bandwidth capacity (45/155 Mbps) that they would now need. Multinational Banks are now contemplating to add 100 to 200 MB each in the next 4 to 5 months, a capacity requirement that we now see regularly.
12. NASSCOM in their representation have stated that prices in India are not competitive. The cost of a DS3 (Data Service Level-3) and STM1 (Synchronous Transport Module Level 1) link from India to USA is nearly 2-3 times more expensive compared to a similar link from Singapore and it is 8-10 times as expensive as in China. We are also not competitively priced when compared with countries like the Philippines. It has been further stated that while the prices for a 2Mbps link is higher than international norms, this differential increases significantly as we go to 45 Mbps (DS3) and 155 Mbps (STM1). The price multiple in India for E1:DS3:STM1 is 1:17:53, while the corresponding ratio is about 1:7:18 in other countries. They have also requested TRAI to intervene and investigate the price of IPLC to bring it down.

IV. Representation of ISPAI

13. Internet Service Providers Association of India (ISPAI) in their representation to TRAI, have highlighted the high rates of IPLC circuits in India as compared to countries like China, Japan, Hong Kong and Singapore and have requested the Authority to compare the prevailing tariffs for international leased lines with the prices abroad and to determine new multipliers for various capacities of leased lines (See Annexure-II a).

V. Tariff Review Exercise

14. Two years have elapsed since the International long distance market has been opened for competition in 2002. But the market has not witnessed effective competition in respect of the IPLC Sector. VSNL continues to be the main market player for provisioning of IPLC. The incumbents' landing station facility is a 'Bottleneck Facility' in nature. In this context it would be relevant to recall that the ILD license agreement includes a clause for providing equal access to bottleneck facilities for international bandwidth owned by national and international bandwidth providers. Moreover the International cabling cost is reported to have declined significantly and the tariffs in several countries have also fallen substantially. However, the benefit of reduction in international bandwidth cost has not been passed on to the user groups by VSNL. Keeping in view this aspect as well as the fact that the landing station is a "bottleneck facility", a series of meetings were held with VSNL officials, for effecting a substantial reduction in the IPLC tariff in line with the reduction in the bandwidth prices obtained elsewhere in the region. Meetings for this purpose were held with VSNL on 25/7/2003, 8/10/2003, 25/11/2003, 16/12/2003, 21/12/2003, 29/1/2004, 3/2/2004 and 4/2/2004. VSNL submitted various estimates of costs and capacity, which were inconsistent in some cases and it was evident that the focus was on increasing the applicable cost base. They were informed of their tariffs being high in comparison to costs, but the tariff reductions offered by VSNL in their revised IPLC tariffs are not significant. There is, therefore, a need for the Authority to consider whether to bring down the tariff of IPLC and if yes, by what extent.
15. After review of the tariff based on data furnished by VSNL and other data available with the Authority on international prices of bandwidth, etc., it was felt necessary to fix the tariff for IPLC (Half Circuit).
16. 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.

17. On the issue of recovery of the cable cost, VSNL had stated that they would like to recover the cost of cable in a period of three years in view of the falling cable prices. Going by their own argument, most of the capacity that they had set up even in the year 2000 would have been now written off completely not to speak of the capacities that they had set up earlier in the years 1994 and 1987. Further, these capacities, which are older than three years, are still yielding returns to them. Not only that, with marginal addition to their investment, the capacity of the cables can also be increased due to technological progress in the compression technique. It may be seen from the data given by VSNL in the Table-1, that nearly 83% of the capacity had been installed in 2000 or later, which also implies a reduction in the average costs.

Acquisition of International Cable Bandwidth (VSNL)

Table 1

Period of Investment	Investment Rs. Million	E1 capacity	Investment per E1 (Rs. In lakhs)	Percentage Reduction in cost
Upto 2000	3751	303	123.7	76%
2000-2002	4350	1504	28.9	
Total	8101	1807		

18. Further, VSNL has also mentioned that its average cost is higher because of low capacity utilization. Prevailing data shows that the current capacity utilization is high and in practice there is considerable shortage of supply. As is shown from the current discussions for augmenting capacity, VSNL is certain to face an increase in the demand for available capacity. In that context, the argument that there is a high cost on account of the excess capacity is not tenable. In fact, the situation that the Authority has been trying to address for some time now is one of excess demand. In the above Table, the number of circuits in IPLC given by VSNL is 1807, and this has been mentioned in more than one of their communications.
19. VSNL had submitted cost of procurement of international cable bandwidth since 1987 to 2002 as Rs.810.1 crore with year-wise break up of investment. On these basis, year-wise depreciation has been worked out to arrive the net investment/net block as on 31st March 2004. On the basis of these calculations, it is found that VSNL had recovered 28% of the asset invested in IPLC business up to March 2004. Therefore, adjustment towards capital recovery by way of accumulated depreciation @ 28% has been effected.
20. VSNL has written off Rs.956 crores from its fixed assets, which has been adjusted against their share-premium reserve account. This amount constitutes 40% of net block as on 31st March 2003. This adjustment has also been made in apportioned cost for IPLC.
21. The cost based methodology for tariff determination for IPLC (Half Circuit) and the assumptions involved in that methodology are given in **Annexure-IV**. It would be seen that the cost based tariff for E1 works out to Rs.11.84 lakhs per annum.

VI. Alternative approach

22. To verify our result and for consistency analysis, it would be useful to consider an alternative approach using **Annual Recurring Expenditure (ARE) based methodology** (See **Annexure-V**). ARE method had been used by the Authority earlier also in various tariff fixation exercises.
23. In this methodology, an ARE of 32% on the net investment has been assumed which includes cost of capital @ 15%, depreciation @ 7% and OPEX @ 10%. The tariff per E1

under this approach works out to Rs.11.88 lakhs. It is evident that both methodologies give estimates that are very similar.

VII. Proposed IPLC tariff for E1 capacity

24. Keeping in view the results outlined from the use of alternative methodology, and keeping in view the fact that the tariff will be specified as a ceiling tariff, the tariff for E1 is proposed at Rs.12 lakhs per annum.

VIII. IPLC tariff 'below E1 capacity'

25 The next task is to fix the IPLC (Half Circuit) for capacities that are below E1. The tariff fixation below E1 cannot be directly cost based in the sense that, keeping E1 tariff (proposed) as the basis, we need to work back for each of the capacities below E1 based on the co-efficients available for the purpose. Incidentally, this is the manner in which VSNL also appears to have fixed its tariff for below E1 capacities and thus the ratios are same.

26 The proposed tariff for each capacity is placed at **Annexure-VI**. A comparison of the tariff proposed to be fixed with that of VSNL's latest tariff after taking into account the maximum discount offered is at **Annexure-VII**.

IX. IPLC tariff 'above E1 capacity'

27. We now address the tariff for capacity above E1. The cost based estimates in this paper take E1 as the benchmark capacity. The physical capacity of DS-3 is **21** times that of E1 and of STM-1 is about **63** times. Approximately 51% of the total bandwidth sold is said to be in the E1 capacity but there are reports to say that the higher capacities, particularly DS3 and STM1, will dominate the demand scenario for IPLC in the near future (**Annexure-VIII**). In view of the average cost approach adopted in fixing E1 tariff, it is not possible to apply the increment cost principle for capacities above E1. The tariff offered by VSNL gives the ratio between E1, DS3 and STM1 and that ratio works out to be **1:19:52**. International comparisons show that the prevailing ratio of VSNL is relatively high. The corresponding ratio for tariff abroad is considerably lower in countries like Japan, China, and Singapore. ISPAI has suggested a ratio of 1:4:10 and NASSCOM has suggested 1:7:18. The Authority has also received submissions from various users of international bandwidth who have important investment decisions to make on the basis of comparative costs of such capacity in various countries.

28. As stated above, the existing ratio for VSNL's tariff of E1:DS3: STM1 is 1:19:52. The ratio suggested by ISPAI and NASSCOM is much below the VSNL's price ratio and there is no ITU guideline / price co-efficient available for calculating the tariff of DS-3 and STM.1. Based on cost data supplied by VSNL, it is evident that the average cost of bandwidth has been declining over time, both for investment and operational costs. This trend is likely to continue in the future as well, which implies that the marginal cost of acquiring additional capacity is and will remain substantially below the average cost estimate. In fact, even Table 1 shows that if we focus only on the capacity acquired since 2000, which accounts for above four-fifths of the capacity in that Table, the average investment cost per initial E1 investment is only about 24% of the overall average investment cost per initial E1 investment. This is to be considered with certain other factors, which point to a major reduction in costs compared to the average costs of VSNL. One, the new capacity will have much lower investment and operational costs. Two, considerable high revenues have been generated for the existing capacity, some of which is ten or more years old. Moreover, the market capacity will be augmented substantially in the future, and the ensuing competition would lead to prices comparable to those in other countries competing for investment using international bandwidth. Further, in the future, demand for capacity is likely to be higher for higher capacity bandwidth and thus the prevailing price ratio needs to be revised downward.

29. Based on the fact that investment costs would be much lower than even those given in Table 1 for the capacity since 2000, and that operational costs have been decreasing over time, the overall cost based estimate would be much lower. For example, the investment costs would be much below the 75% fall of average capital related costs that is indicated by Table 1. In fact, with increase in capacity, the capital costs are expected to dramatically decrease further. Despite the sharp decline in these costs during the past few years, and a likely continuation of such major cost decreases, we are considering a decline of 75 %. To this we need to add the major decrease in operational costs, which has taken place and will continue in the future. For these costs, we take a decline of about 26% which is the decline over the period 2001-02 to 2002-03. We combine these estimates with the overall average costs of VSNL which takes all the existing capacity and costs into account. This results in a reduction in overall costs of VSNL by about 60%. Based on these estimates, the ratio of price for E1:DS3:STM1 has been calculated as **1:8:23**.

X. Comparison of Proposed Tariff with the latest VSNL's Offer

30. Table in Annexure-VII gives the comparison of the proposed tariff with the latest VSNL's offer for IPLC (Half-Circuit) in respect of each capacity from 64 kbps to STM-1. It is evident from that table, that the reduction in the price would be in the region of about 40% for E1 and below and about 70% for higher capacities i.e. DS3 & STM1, when compared with the latest VSNL's offer which has discount component.

Questions for Consultation

- (i) Whether tariff for IPLCs(Half Circuit) should be henceforth regulated
- (ii) If the answer to the above is yes, then whether the reduction proposed by the Authority is adequate, less than adequate or too high.
- (iii) Whether the methodology adopted for fixation of ceiling tariff for E1 is appropriate? If not, what is the alternative methodology?
- (iv) Whether the proposal should be in the form of a ceiling or specified level. In addition is it necessary for the Authority to provide a floor?
- (v) Whether the methodology that uses EI capacity as benchmark and multiples for higher capacities are appropriate? Are the multiples themselves acceptable? If not, on what basis revision of the rates of E1:DS3:STM-1 prices should be carried out?
- (vi) What is the duration for which the new tariff should be valid?
- (vii) Whether the same tariff should also be applicable for leasing of IPLCs to ILDOs who will make use of this for carrying Voice traffic by terminating on PSTN.

ANNEXURE-I

IPLC (Half Circuit)Tariff of VSNL

Restorable

(Rupees in lakhs)

Capacity	Existing tariff	Recently filed tariff of VSNL	Percentage reduction
E1 (2Mbps)			
Asia Pacific	27.1	18.33	32
US/UK/Rest of the World	27.5	20.23	26
US Pacific	30.8	-	-
DS3 (45 Mbps)			
Asia Pacific	471.3	289.80	38
US Pacific	471.3	360.90	23
UK/Rest of the World	471.3	324	31
STM1 (155 Mbps)			
Asia Pacific	1365	729.90	47
US Pacific	1365	1000.8	27
Rest of the World	1365	813.60	40

*Discount rates applicable have been factored in.

Source: VSNL

ANNEXURE-II (a)

Comparison of International IPLC price (half circuit)

(Amount in \$)

Route	E1 (2 Mbps)	DS3 (45 Mbps)	STM1 (155 Mbps)
Japan-USA	19200	84000	198000
China-USA	27600	138000	329000
Hong Kong -USA	19200	84000	198000
Singapore - USA	24000	96000	216000
India - USA	44955	802000	2224000

Source:- ISPAI letter No.1178/TRAI-R/ISPAI/03 dated 23rd December 2003.

ANNEXURE-II (b)

Comparison of International IPLC price (half circuit)

(Amount in rupees)

Route	E1 (2 Mbps)	DS3 (45 Mbps)	STM1 (155 Mbps)
Japan-USA	867840	3796800	8949600
China-USA	1247520	6237600	14870800
Hong Kong – USA	867840	3796800	8949600
Singapore – USA	1084800	4339200	9763200
India – USA(*)	2023000	36090000	100080000

Source:-

ISPAI letter No.1178/TRAI-R/ISPAI/03 dated 23rd December 2003.

(*) Recently filed tariff by VSNL for US Pacific.

IPLC TARIFF OF M/s. BHARTI FOR USA

Capacity	Existing tariff of Bharti*	Promotional tariff of Bharti*
E1	Rs.23.4 lakhs	Rs.10.49 lakhs
DS3	Rs.328 lakhs	Rs.215.28 lakhs
STM1	Rs.753.3 lakhs	Rs.427.80 lakhs

- Tariff applicable for Non-Restorable Category.
- Source: Bharti

Annexure IV

1. Calculation of estimated cost of IPLC -(on cost-based methodology)

Particulars	Amount	
Dpreciation	43.41	(Rs. in crores)
Cost of Capital	82.29	(Rs. in crores)
Total Capex	125.70	(Rs. in crores)
Number of E1	1807	
Capex per E1	5.57	(Rs. In lakhs)
O&M per E1	4.02	(Rs. In lakhs)
Supervision & Admin charges per E1	0.48	(Rs. In lakhs)
Cost per E1	10.06	(Rs. In lakhs)
License Fee	1.78	(Rs. In lakhs)
Total Cost per E1	11.84	(Rs. In lakhs)

Capital Investment as on 31/03/04

	Gross Block (Total Investment)	Adjustment for capital recovery @28%	Adjustment for Mgt Decision @40%	Net Block (Net Investment)	Depreciation for the year
Main Cable	824	230.72	237.31	355.97	20.94
Extension Cable	226	63.28	65.09	97.63	5.74
Other network equipment (ITMC&T-Segment)	271.02	75.89	78.05	117.08	16.73
Total Capital Investment	1321.02	369.89	380.45	570.68	43.41

WACC

14.42%

O&M Cost per E1

Cable O&M and restoration	2.80	(Rs. In lakhs)
ITMC O&M	0.40	(Rs. In lakhs)
T-Segment O&M	0.04	(Rs. In lakhs)
Other Assets O&M	0.78	(Rs. In lakhs)
Total O&M per E1	4.02	(Rs. In lakhs)

Cost of Capital (WACC)

Risk-free Return	5%
Market Return	11%
Market Premium Risk	6%
Beta (Based on NSE)	0.73
Cost of Equity	9.38%
Pre-tax Cost of Equity	14.83%
Cost of Debt	8%
Capital Structure	
Equity	94%
Debt	0.06%
Pre-tax WACC	14.42%

Statement of Basis of 28% Capital Recovery as on 31.3.2004**Cost of Procurement of International Cable Bandwidth**

Cable System	Year of Commissioning	Investment (Rs. in million)	Accumulated Depreciation as on 31.3.04	Net Block as on 31.3.04	Initial capacity (E1s)	Capex/E1 (Rs in lakhs)
GULF	1987	451	400.89	50.11	46	98
SMW2	1994	2050	1025.00	1025.00	102	201
FLAG	1997	1250	416.67	833.33	155	81
SMW3	2000	1850	308.33	1541.67	960	19
SAFE	2002	2500	138.89	2361.11	544	46
TOTAL		8101	2289.78	5811.22	1807	
Percentage of Recovery				28%		

ANNEXURE-V

Calculation of estimated cost of IPLC based on ARE methodology

Net Investment/Net block (As on 31st March 2004):Rs.570.68 crores

Average Recurring Expenditure (ARE) : Rs.182.61 crores

Number of E1 : 1807

ARE per E1 : Rs.10.10 lakhs

License fee : Rs.1.78 lakhs

Total cost per E1 : Rs.11.88 lakhs

**ASSUMPTIONS AND METHODOLOGIES USED FOR
CALCULATION FOR IPLC TARIFF**

1. Cost based methodology

1. Accumulated capital recovery as on 31st march 2004.

VSNL had submitted cost of procurement of international cable bandwidth since 1987 to 2002 as Rs.810.1 crores with year-wise break up of investment. On this basis, year-wise depreciation has been worked out to arrive the net investment/ net block as on 31st march 2004. On the basis of these calculations, it is found that VSNL had recovered 28% of the asset invested in IPLC business up to March 2004.

2. VSNL vide their letter dated 11th / 28th August 2003 has given the following figures of their capital investment (Gross Block) in IPLC business up to 31st March 2002.

Main Cable	:	824 crores
Extension Cable	:	226 crores
ITMC&T segment	:	271.02 crores
<hr/>		
Total investment	:	1321.02 crores
<hr/>		

3. Therefore, adjustment towards capital recovery by way of accumulated depreciation at 28% has been effected on Rs.1321.02 crores and the net value comes to 951.13 crores.
4. The Board of Directors of VSNL has decided to revalue their assets to reflect the current cost. By this VSNL has written off Rs.956 crores which works out to 40% of the Net Block as on 31/3/2003. We have taken this factor into account and adjusted 40% of Rs.951.13 crores to get the current cost of investment in IPLC business as on 2004, which comes to Rs.570.68 crores.
5. Depreciation for the year has been calculated on Rs.570.68 crores taking into account the life of main and extension cable as 18 years and the life of ITMC&T segment has been taken as 8 years. The depreciation amount works out to Rs.43.41 crores.
6. Weighted Average Cost of Capital (WACC) has been taken at 14.42% on net investment /net block amount of Rs.570.68 crores, which comes to Rs.82.29 crores.

7. Number of E1 has been taken as 1807. This number has been provided by VSNL in their letters dated 11th August and 10th October 2003.
8. Adjustment of 20% has been effected towards utilisation of capital for satellite-based business. (From the statement submitted by VSNL it is seen that approximately 20% of the total number of E1s are through satellites).
9. After adjustment of the above factor, Capex per E1 works out to Rs.5.57 lakhs.
10. VSNL has submitted that their total O&M expenditure per E1 is Rs.7.41 lakhs. Out of this an amount of Rs.3.39 lakhs per E1 pertains to earth station O&M and the same has not been taken into account since it is not directly related to IPLC. Hence an amount of Rs.4.02 lakhs per E1 has been taken as O&M expenditure.
11. Supervision and administration charges have been taken as 5% on capex plus O&M, which comes to Rs.0.48 lakhs.
12. License fee has been taken 15%.
13. On the basis of above calculation, cost per E1 work out as Rs.11.84 lakhs.

2. Annual Recurring Expenditure based methodology(ARE)

An alternative method has been used to calculate the cost per E1 by using ARE based methodology. In this methodology we have taken an ARE of 32% on the net investment/ net block as on 31st march 2004. As a result of lack of detailed/accurate information on the parameters involved in the analysis, a range of estimates have been used to estimate the cost of E1. The net capital cost/investment/net block is converted into annual streams of expenditure by applying a rate of annual recurring expenditure (ARE). The ARE has been assumed as 32%, which includes the cost of capital, is assumed as 15%, depreciation 7% and opex 10%. ARE method has been used by the Authority earlier in the various tariff fixation exercises.

Calculation of estimated cost of IPLC based on ARE methodology

Net Investment/Net block (As on 31st march 2004):Rs.570.68 crores

Average Recurring Expenditure (ARE) : Rs.182.61 crores

Number of E1 : 1807

ARE per E1 : Rs.10.10 lakhs

License fee : Rs.1.78 lakhs

Total cost per E1 : Rs.11.88 lakhs

ANNEXURE-VI

Proposed Tariff for IPLC (Half Circuit)

Sl.NO.	Speed (Kbps)	Price (in Rs. lakhs)	Price (in US \$)
1.	64	1.17	2588
2.	128	2.12	4690
3.	192	2.96	6549
4.	256	3.69	8164
5.	384	4.76	10531
6.	512	5.76	12743
7.	768	7.61	16836
8.	1024	9.52	21062
9.	E1	12.00	26549
10.	DS-3	96	212389
11.	STM-1	276	610619

Comparison of International IPLC (half circuit) price with proposed tariff

(Amount in \$)

Route	E1 (2 Mbps)	DS3 (45 Mbps)	STM1 (155 Mbps)
Japan-USA	19200	84000	198000
China-USA	27600	138000	329000
Hong Kong –USA	19200	84000	198000
Singapore – USA	24000	96000	216000
India – USA(*)	26549	212389	610619

Source:- ISPAI letter No.1178/TRAI-R/ISPAI/03 dated 23rd December 2003.

(*) Based on proposals contained in this paper.

ANNEXURE-VII

Tariff for IPLC

(in lakhs)

Sl.NO.	Speed (Kbps)	Recently filed tariff of VSNL(*)	Tariff proposed in this Paper	Reduction in %
1.	64	1.99	1.17	41
2.	128	3.61	2.12	41
3.	192	5.03	2.96	41
4.	256	6.27	3.69	41
5.	384	8.07	4.76	41
6.	512	9.78	5.76	41
7.	768	12.92	7.61	41
8.	1024	16.15	9.52	41
9.	E1	20.23	12.00	41
10.	DS-3	361.00	96	73
11.	STM-1	1000.80	276	72

(*) Prices after considering the maximum discount offered.

ANNEXURE-VIII

VSNL data on destination wise, capacity-wise IPLC subscriber base

No. of Circuits (Feb'04)

Speed	USA	UK	Hong Kong	Singapore	Japan	Others	Total
64 KB	55	17	9	23	21	35	160
Less than E1(*)	575	103	27	96	25	59	885
2 MB	543	226	16	37	-	41	863
DS3	7	9	5	3	-	-	24
Grand Total	1,180	355	57	159	46	135	1,932

(*) Other than 64 Kbps

Bandwidth Sold (Feb'04)

Speed	USA	UK	Hong Kong	Singapore	Japan	Others	Total
64 KB	3	1	1	1	1	2	10
Less than E1(*)	441	80	14	52	11	25	623
2 MB	1,086	452	32	74	-	82	1,726
DS3	294	378	210	126	-	-	1,008
Grand Total	1,824	911	257	253	13	110	3,367

(*) Other than 64 Kbps

Source: VSNL