

Telecom Regulatory Authority of India

CONSULTATION PAPER

ON

“MEASURES TO PROMOTE COMPETITION IN
INTERNATIONAL PRIVATE LEASED CIRCUITS (IPLC)
IN INDIA”

6June 2005

**TRAI House,
A-2/14, Safdarjung Enclave,
New Delhi-110 029**

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PREFACE

International Private Leased Circuit (IPLC) is one of the most significant elements of International Connectivity for International Telecom Services like ILD, Internet, Broadband and ITES. This resource is key to success of BPO, ITES and broadband services in the country leading to growth of employment and GDP. The international connectivity consists of distant end IPLC (half circuit), near end IPLC (half circuit) and Access to submarine Cable Landing Station. At the time of opening up of International Long distance telecom service to private sector in the year 2002, the Government had realized that Submarine Cable Landing Station is essentially a 'bottleneck facility' and the fact that access to international connectivity would be severely affected by monopolistic position of the incumbent ILD operator.

Authority has observed that IPLC segment is still lacking competition needed for creating proper environment for growth of various telecom services and requires some regulatory intervention. There appears to be an urgent need to enhance competition in international connectivity segment and analysis of measures to promote competition.

During the consultation process initiated by the Authority for Fixation of Ceiling Tariff for IPLC, it emerged that a separate consultation is necessary to address issues relating to promotion of competition in IPLC segment in India in general and those arising out of Cable Landing Station facilities as a 'bottleneck facility', reselling etc.

This paper discusses various issues related to promotion of competition in IPLC market and solicits the valued comments of stakeholders.

The paper has also been put on TRAI's website (www.trai.gov.in). For further clarification, stakeholders may contact Sh. S. N. Gupta, Advisor (Converged Network) on phone 011-26167914, Fax: 011-26160822 and email trai09@trai.gov.in. The comments through email/ fax/letter may be sent by 30th June 2005.

Pradip Baijal
Chairman, TRAI

New Delhi
6th June 2005

1. INTRODUCTION

1.1 Competition in ILD Sector

1.1.1 International Long Distance Services (ILD) were traditionally provided by Department of Telecom through its overseas division (OCS). Subsequently Videsh Sanchar Nigam Ltd (VSNL) was incorporated in 1986, as an independent company for international long distance telecom service. VSNL had landing stations at Mumbai and Cochin for providing international connectivity to customers & telecom operators for various telecom and data services. It is worth mentioning that the submarine cable systems are the main source of IPLCs, other being satellite based systems, which are not very popular.

1.1.2 Competition was introduced in the year 2002 in the ILDO segment. Despite this, the IPLC tariffs in India have not come down to the levels witnessed in other countries in Asia reflecting the lack of effective competition in the market. On these grounds, stakeholders have represented to the Authority to take steps to facilitate more competition in this segment. One of the voluntary associations submitted to the Authority that, ILDOs are bound by the conditions of license to offer bottleneck facilities to all users and other ILDOs. The access to international cable capacity is a bottleneck at this time, as India has limited number of landing stations. It was also represented that ILDOs especially those owning landing facilities should be made to offer a discounted rate to other ILDOs so as to generate the higher order capacity utilization and also to encourage sharing of this `bottleneck facility`.

1.2 Evolution of International Submarine Cable Systems

1.2.1 Submarine Cables traditionally were sponsored by consortium of owners, mainly the dominant or monopoly operators from a large number of countries. The defining legal document of these consortia has been the Construction and Maintenance Agreement (C&MA), which the owners negotiate among themselves. International submarine cables known as `Club Cables` classically were owned by consortia of national carriers and these ownership patterns produced small number of cables owned by small group of carriers operating in monopolistic environment. Initially these submarine cables were utilized by partners entirely to provide International Connectivity for their own needs. The consortia members had joint control over these `club cables` and offered services mainly in reciprocal relations on half circuit basis and sold wholesale capacity mainly for shore to shore or shore to mid-point connectivity.

1.2.2 Correspondent operating agreements defined the terms and conditions for such activities and without the operating agreement in a country, the carrier could not correspond with its foreign counterpart or terminate service to or from that country. With the growth of telecom services all around the globe, this pattern of 'cable clubs' is changing and now submarine cables system are being established by individual telecom operators from different countries (known as privately owned cables). This shifted the ownership pattern from consortia of dominant telecom operators to a private ownership model of new operators who finance the construction of cable and then sell the capacity to whomsoever demand it. This also facilitates carriers need for full circuits (end-to-end) especially for data and private leased circuits.

1.3 Need for Competition in IPLC segment

1.3.1 Many representations have been received during the year regarding high charges for the international connectivity as well as allegedly anti-competitive behavior by the dominant operator. These representations have been of following types:

- i. Higher and commercially non-competitive charges for international bandwidth by the incumbent hampering the growth of Broadband and Internet in the country.
- ii. Problem faced by Indian ISPs in accessing the international carriers' cable directly at the landing station of incumbent.
- iii. Delays and problems faced in co-location of the equipment by new ILDOs at the incumbent ILDOs premises.
- iv. Non-permissibility of reselling of international bandwidth in India.
- v. Differential tariff charged for IPLC resources provided to ILDO and ISPs.
- vi. Higher charges for access to international capacity.
- vii. Non-availability of sufficient & reliable international bandwidth at competitive prices for growth of BPO and ITES sector.
- viii. Need for restoration facilities as a backup for Chennai-Singapore cable to enable customer traffic to be transferred on a alternate cable in case of failure.

1.3.2 The observations made on the above highlight that there is lack of effective competition in the IPLC segment and suitable measures are required to bring down the costs of IPLC for the end users. Generally, following methods have been utilized by regulators to achieve this objective:

- i. Fixing up of ceiling tariff for various capacities of IPLC, in case the market price is much higher in comparison with the international benchmarks and general trend in telecom.
- ii. Permitting resellers in the IPLC market, which are essentially non-facility based operators.
- iii. Removing barriers for access to cable landing stations.
- iv. Facilitating mutual sharing of landing station infrastructure as well as international cable capacities among the carriers.

1.3.3 Regarding (i) above, Authority has recently fixed ceiling tariff for various capacities based on the cost of the incumbent operator, though IPLC tariffs in other countries still appear to be lower. Through this exercise the differentiation in the pricing of IPLC based on usage by ILDOs and ISPs has also been removed, the ceiling tariff being cost based. (This order has been set aside by TDSAT and remanded to TRAI for further examination. TRAI has filed an appeal before the Supreme Court against TDSAT's order)

1.3.4 Regarding (ii) above, as per the ILDO license conditions, resellers are not permitted in the sector but ILD service providers are permitted to offer IPLC to other operators on lease. Initially, it was justified on the ground that such provision may delay the setting up of enough ILD infrastructures in the country. Experience from other countries indicate that resellers can play a very important role in encouraging the competition provided enough infrastructure in the segment has been developed. Hence, the issue of introduction of resellers in IPLC segment needs to be urgently discussed.

1.3.5 Regarding (iii) above, the licensor while opening up the sector had foreseen the possibility of landing stations being misused by a monopoly owner of these stations to delay development of competition. There appears to be need to facilitate the access to cable landing station by new service providers as well as by the new international cable carriers. This aspect has been discussed in more detail in the following sections of this chapter.

1.3.6 Regarding (iv) above, the infrastructure sharing among the owners of cable landing stations as well as international submarine cables can enable the restorability of the capacity in case of failure by a cost effective manner like swap arrangements. It can also enable the existing owners of cable landing stations to have access to multi-capacity, multi-directional submarine cable systems.

1.3.7 In addition to above, there could be some other methods of encouraging competition in this segment, which stakeholders can bring out for consideration.

1.4 'Essential/Bottleneck Facilities' Nature of Submarine Cable Landing Station

1.4.1 Normally the submarine cable operator or the owner manages and controls the landing station also. For consortia cable typically the consortia member in each country where the cable lands, manages the landing station. In future, it is always possible that a situation could arise wherein change of ownership of submarine cable and / or change in the ownership of landing stations could take place impacting the relationship between these two entities. It is thus evident that under circumstances of monopoly or limited number of cable landing stations or other circumstances there could be a need for regulating the access to submarine cable landing station.

1.4.2 The provision of access to submarine cable at the landing station gives rise to following requirements:

- a) The new operators have access to the information about available capacity in the same way as the consortium members.
- b) With respect to IRU (Indefeasible Rights of Use) agreements, which is long term leasing arrangement, it has to be ensured that activating IRU capacity is not unduly delayed by consortia members.
- c) The tariff conditions must be transparent and non-discriminatory to consortia-members or non-members.
- d) Restoration and maintenance services need be ensured/provided through a Service Level Agreement (SLA).

1.4.3 Regulators in various countries have felt the necessity of issuing explicit directives/regulations/order for access to submarine cable capacities. These generally include:

- a) Circumstances under which submarine cable landing facilities are considered as bottleneck facilities.
- b) Close monitoring and scrutinizing the situation of possible anti-competitive behaviour in order to ascertain whether the incumbent operator continues to control most of the submarine cable landing facilities in its country.
- c) Charges for Landing Facility, Access & Collocation.
- d) Time Limit for Provision of Landing Facility & Access.

2. PRESENT SCENARIO IN INDIA

2.1 In the recent years there has been significant acceleration in the liberalization of National telecommunication infrastructure. The reduction of restrictions has meant that areas reserved for monopoly or restricted provision in the telecommunication sector are now open to competition. The benefits of infrastructure competition can be:

- Competition can bring substantial benefits to users, in terms of increased choice, greater innovation and better quality of service.
- Competition encourages improvements in the efficiency of public telecommunication services,
- Liberalization stimulates significant gains in the size of the telecommunication market.

2.2 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, BSNL and Data Access. Bharti Infotel owns a landing station facility at Chennai. Bharti Infotel has reported that their capacity for the IPLC is limited to non-restorable category. As of now, Reliance Infocomm has not yet established their own cable landing facilities. M/s Data Access and M/s BSNL do not own cable-landing facilities. Thus, the prevalent market structure for provisioning of IPLC in India is such that there are only three active players (who currently own the cables) and only two of them have cable-landing facilities. It is gathered that in many countries the number of such players is very large and most of them are Non-Facility Based Operators, i.e., without owning the cable landing systems. Further, at present, resellers in the ILDO market are not permitted in India as per the license conditions and the focus till now has been on building additional international capacity.

2.2.1 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, as these operators have to compete in their service market with owners of IPLC which could charge prices much above costs unless regulated. For instance, the IPLC providers are also Internet Service Provider and thus they compete with other Internet service providers who use international bandwidth resources to compete with IPLC 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 these IPLC providers.

2.2.2 At the time of opening up the sector for competition, VSNL, the incumbent operator was the only operator in the international telecom market. Therefore, enabling provision for new entrants was incorporated in the ILD licences which states as under:

"Equal access to bottleneck facilities for international bandwidth owned by national and international bandwidth providers shall be permitted for a period of five years from the date of issue of the guidelines for grant of licence for ILD service or three years from the date of issue of first licence for ILD service, whichever is earlier, on the terms and conditions to be mutually agreed".

This provision has since lapsed in February 2005, i.e., after completion of 3 years time period after issue of first private licence for ILD services in February 2002.

2.3 Control of international capacities, cable landing stations and associated facilities by only few operators can enable the owners to stall or delay entry of competitive operators. Problems can also be faced by operators who have acquired capacity in a cable system from other international carrier and wishing to access this capacity at the landing station of an ILDO. Discussions with industry sources suggested that establishing an international cable system including landing facilities in India not only requires a huge amount of investment but is also a time consuming process involving various clearances including security clearance, maritime clearance, civil authorities permissions etc. Thus, the control of access to the cable landing stations makes it possible for the owner of the access facility to impose non-price constraints affecting the competition.

2.4 The licensor issued first ILD license in Feb. 2002 and therefore, the new ILDOs were entitled for equal ease of access to bottleneck facilities at Submarine Cable Landing Station of the incumbent operator upto Feb. 2005. As per the license, the terms and conditions of such access were to be mutually agreed. However, it is observed that there is no standard/published access agreement, which the new service providers can easily make use of for availing of access to international cable capacity. In these circumstances there is always a scope for delay/denial of access to the capacity acquired by the competing operators or any other service provider.

2.5 Also it is observed that problems were faced by new service providers including ISPs to have timely access to international

capacity at a competitive tariff. Additionally, non-tariff issues like provision of data security monitoring system, provision of grooming service and co-location are known to result in delay in provisioning of capacity. Also, some industry organizations have represented that there is a shortage of high quality reliable international connectivity at competitive price.

2.6 Thus in order to enable timely provision of international capacities at affordable price to meet the need of all the end users and industry at large there is a need to facilitate further competition through different regulatory interventions.

2.7 Existing ILD Operators & Ownership of Cable Landing Systems

At present there are following five operators in international telecom segment:

1. Videsh Sanchar Nigam Limited (VSNL)
2. Reliance Infocomm Limited (RIL)
3. Bharti Infotel limited (Bharti)
4. Data Access Limited.
5. Bharat Sanchar Nigam Limited (BSNL)

2.7.1 **VSNL** is the incumbent operator in ILD segment whereas other four were granted License by the Government after April 2002. At the time of disinvestments, the incumbent operator owned and controlled landing stations at Mumbai and Cochin. VSNL has since commissioned a cable (TIC) from Chennai to Singapore with a designed capacity of the order of 5.1 TBPS. They now have a landing facility at Chennai also.

2.7.2 **Bharti** also owns jointly with overseas partner cable capacity from India (Chennai) to Singapore with its landing station at Chennai. This cable of Bharti from India to Singapore is non-restorable i.e. without any backup or ring. The total designed capacity of this cable is of the order of 8.4 TBPS. This cable has already come into operation in the year 2003. It is understood that mutual negotiations are undergoing for a long time now, between the two ILDOs having similar cables for reciprocal backup arrangements on commercial terms.

2.7.3 **Reliance Infocomm Limited (RIL)** has also started its ILD operations from 2003 onwards. RIL is also laying a submarine cable (FALCON) from Egypt to Hong Kong via India and it is likely to be commissioned by the end of 2005. The total designed capacity of this cable system would be of the order of 3 TBPS. RIL is also setting up a landing station at Mumbai.

2.7.4 **Data Access Limited** had started its ILD operations in the year 2003 but owns no cable landing station of its own. It was making use of Satellite media predominantly and at present the operator is not providing any services and has suspended its operations.

2.7.5 **Bharat Sanchar Nigam Limited (BSNL)**, which is a PSU ILDO, is planning to have its own landing station at coast of Tamil Nadu to connect to Sri Lanka.

2.7.6 The landing station for various cables, their capacities and ownership details are given in the table below:

Submarine Cable	Landing Station	Capacity	Landing Station Owned by
SWM3 & SWM4	Mumbai, Chennai	20 GB	VSNL
SAFE	Cochin	5 GB	VSNL
FLAG	Mumbai	10 GB	VSNL
i2i, SMW4	Chennai	8.4 TB	Bharti
TIC	Chennai	5.1 TB	VSNL
Falcon	Mumbai (Expected by Oct 2005)	3.0 TB	Reliance

(Source- Operators)

1 TB = 1000 GB

2.7.7 The Landing station owners provide access to submarine cable bandwidth purchased by the service providers from cable consortium/carriers as provided under landing party signatory agreement signed between cable owners and landing station party.

2.7.8 Access and O & M Charges of Incumbent:

The present 'Access charges' and 'O & M charges' levied by incumbent for provisioning of IPLC (Re-storable) are as under:

- i) Access Charges per year Rs.75 Lakhs per STM1
(One Time Initial Charges)
- ii) O & M Charges per year Rs.22.5 Lakhs per STM1

(If the capacity is bought on lease from the owner of cable landing station, then Access as well as O & M Charges are included in the tariff for the various capacity of the circuit).

- iii) The submarine cable carrier is required to pay additional access charges to landing station operator in respect of

facilitation of direct access to the cable by the domestic service providers. These charges are mutually negotiated between the cable carrier and the landing station owner.

2.7.9 It can be seen from the foregoing paragraphs that the prevalent market structure in IPLC section in India is such that at the moment there are only three active players (owning international cables) and only two of them have cable landing station facilities. As per an analysis done, during the last 3 years of opening up of ILDO sector, Incumbent has largely maintained its dominance in the IPLC market. At the moment only one of the four new ILDOs have set up landing station. The landing station of one more ILDO is under construction. The ability of the new entrant to access capacity on these cable system is still very limited and they are likely to face problems in accessing international capacity and also other issues relating to Co-location and Access charges.

2.7.10 At present, resale of international capacity is not permitted in India but an ILDO is permitted to offer international bandwidth on lease to other operators. A comparison of the number of international bandwidth providers in different countries is given in the table below. The contrast between the situation in India and other countries is clearly apparent.

Country	Number of international bandwidth providers
UK	33
USA	32
Germany	32
France	34
South Korea	14
India	3

* *Source: ERNST & YOUNG/ NRAs website*

2.7.11 From the above it appears that the effective competition is yet to emerge in the IPLC market. Also, the ownership of cable landing station to provide restorable international capacity is still restricted and not really competitive at present. Situation is likely to improve by the end of the year by which time 4 ILDO operators of the country will own at least one landing station each.

2.7.12 Presently, only one ILDO has dedicated access to multiple capacity cable systems with full restorability (backup). Competition can be infused only through facilitating an environment in which all ILDOs can access any international cable capacity through any of the cable landing stations in the country. Further, new ILDOs, who do not have such facility, should be enabled to have access to cable

capacity through cable landing stations that already exist and those that are likely to be established. Such ILDOs would then be provided an environment where there is a choice between 'Buy (Lease)' and 'Build'.

2.7.13 Also, presently there is no mutual agreements between the owners of different cables and landing stations for infrastructure sharing. Such arrangement if facilitated can enable the operators to have redundancy (backup) for their capacities on exchange (swap) basis in a very cost effective manner. This can also help them to offer better Service Level Agreements (SLA) to their customers.

3. INTERNATIONAL SCENARIO

3.1 Introduction

3.1.1 Different countries have adopted different strategies to address the issue of opening of competition in international telecom market. The strategy to be adopted in a particular situation depends upon the level of competition in the market. Initially, the competition is opened up for international cable capacities for facility-based operators as these are highly capital intensive systems and after that only option of non-facility based operation considered. The regulators in some of the developing countries have considered resale of IPLC as one of the options to curb the anti-competition/ discriminatory practices of the incumbent/ founding member signatories. In some countries, resellers in form of non-facility based operators or service-based operators have been permitted to increase the competition. This has been done in those international segments where enough infrastructures have already been created.

3.1.2 As per the information available, it is recognized by regulators in many countries that "Submarine Landing Station is an essential bottleneck facility" and there is a potential for the owner of the cable landing station to deny access to cable landing stations and thereby prevent competition from new entrants. In order to prevent the misuse of dominant power by the incumbent operator, various countries have forced various obligations on the incumbents owning submarine cable system. Even though there has been no specific regulation governing access to cable stations, National Regulatory Authorities (NRAs) have applied the general interconnect agreement/directives to cover this segment also.

3.1.3 The obligation on the incumbent include requirement to publish Reference Interconnect Offer (RIO) covering terms and conditions for having access to submarine cable at the landing station. Some regulators are of the opinion that there is always a possibility of anti-competitive activity in this sector stating that restrictions relating to the access to cable for new entrants could impact conditions for free competition. Once the cable is made operational by traditional consortia model of submarine cables, it is usually impossible to enter consortium on the same equity basis as the original participants of the consortia. Any third party wishing to acquire access must obtain it from the existing incumbent either by trying to access circuits already allocated to consortium members or to obtain the capacity held in common / reserve pool. The prices of international cable capacity as well as access charges are generally higher as compared to the cost of network elements used /cost based tariffs. Regulators all over the world have been confronted with issues relating to access to submarine cable and associated costs/tariffs.

3.1.4 In most of the countries with government ownership of the incumbent, the original infrastructure like cable landing station, etc. were built with government funding which would not necessarily be commercially viable in other circumstances. Not only this, these telecom networks along with the landing station require significant investment and most of this will be sunk cost. Significant sunk costs create an asymmetry in the market between incumbent and potential new entrants that the former could exploit to deter entry of new operator. To address this effect, it is always appropriate for the telecommunication markets to have proper regulation to check anti-competitive behaviour of incumbent.

3.1.5 The modus-operandi of regulation in this segment in some of the countries is discussed in following paragraphs.

3.2 Singapore

3.2.1 Infocom Development Authority (IDA), the telecom regulator of Singapore has taken several initiatives for bringing competition in International Telecom services. The new licensing framework in Singapore is streamlined for the fully competitive telecommunication environment to ensure minimal market entry barriers and to facilitate the entry of new operators and the expansion of service scope by existing licensees. The licensing framework is based on the following two broad categories: -

- a) **Facilities-Based Operators (FBOs):** Operators who deploy any form of telecommunication networks, systems and facilities to offer telecommunication switching and/or transmission capacity and/or services to existing licensed telecommunication operators; businesses; and/or consumers must apply for a Facilities-Based Operator (FBO) license.
- b) **Services-Based Operators (SBOs):** Operators who lease telecommunication network elements (such as transmission capacity, switching services, ducts, fibre) from FBO licensees to provide telecommunication services to third parties or resell the telecommunication services of FBOs parties must apply for a Service Based Operator (SBO) license.

3.2.2 Telecommunication services or networks, which would require FBO license, include any terrestrials telecommunication infrastructure for the carriage of telecommunication or its broadcast traffic (e.g. submarine cable, satellite information gateway and domestic telecommunication networks).

3.2.3 SBOs are licensed under two categories – either the SBO (individual) License or SBO (Class) License. Generally, operators who lease international transmission capacity for the provision of services will be licensed individually. This includes services such as International

Simple Resale (ISR), resale of leased circuits, public Internet access and virtual private networks.

3.2.4 IDA has also defined the 'Dominant Operator' and the rules for providing interconnection, to new operators for cable landing station at cost based principles. The incumbent operator was mandated to publish Reference Interconnect Offer (RIO) as per the guidelines of "Code of Competition" already approved by IDA.

3.2.5 IDA designated the connection service at submarine cable landing stations as unbundled network elements under the 'Code of Practice for Competition' in the provision of telecommunication service. IDA has taken this decision in the interest of facilitating competitive entry in the international telecom facilities in particular. The code of practice for competition has been amended from time to time for making various telecom services competitive so as to facilitate the entry of new operators. The IDA has also defined the dominant licensee for its code of practice for competition and every dominant operator / licensee is required to publish Reference Interconnect Offer (RIO) to include the offer of connection service as a UNS (unbundled Network Service) on a unbundled basis. In this context SingTel, the dominant licensee for international telecom service was directed to amend its RIO for the purpose of offering connection service to competing operators to have 'easy access' to the submarine cable capacities. IDA had already directed the incumbent to remove restrictions as well as enhance an interconnection rights at its cable landing station to encourage greater choice, competitive pricing and service offerings.

3.2.6 IDA has also designated Local Leased Circuits (LLC) as a mandated wholesale service under the court and incumbent is mandated to allow co-location in its premises. As an interim measure to bring about more competition in wholesale and retail LLC market, IDA has mandated wholesale service to be priced on a 'retail-minus' basis with specified discounts.

3.3. Hong Kong

3.3.1 Hong Kong's international telecom services have historically been provided on a monopoly basis. Hong Kong Telecom International (HKTi) was holding an exclusive licence, which was issued in 1981, and this licence was due to expire in 2006. The Government has been progressively reforming the telecommunications sector in Hong Kong. Consequently the Government opened a dialogue with Hong Kong Telecom (HKT) in an attempt to explore the possibilities of achieving a mutually agreed early termination of the HKTi External Telecom Service Licence. The Government also invited comments from other three FTNS licensees (Hutchison Communications, New T & T and New World Telephone). The agreement to terminate the HKTi exclusivities prompted

the Government to assess the issues of policy and regulation. The Government's objective was to ensure that a fair competitive environment is created for international telecom services in Hong Kong.

3.3.2 In Hong Kong, the international bandwidth market is now characterized by installation of new capacity, low barriers to entry, commodity nature of bandwidth services and permissions for reselling and retail-minus pricing for wholesale.

3.3.3 OFTA mandated that HKTI would provide access and co-location at its submarine cable landing station or virtual co-location in a non-discriminatory and fair manner for a period of two years to competitive operators.

3.4 Malaysia

3.4.1 Malaysian Communications and Multimedia Commission (MCMC) had also undertaken a consultation process to determine whether a licensee is engaging in anti-competitive conduct in contravention of Communication and Multimedia Act 1998. The Communication and Multimedia Act 1998 in Malaysia has strict provisions to control the anti-competitive behaviour by dominant operator. The commission procedure is first to secure compliance with the provisions of the Act and thereafter to prevent or deter anti-competitive conduct in the telecommunications markets. Besides this, part VI of Malaysian Communications and Multimedia Commission Act, 1998 of Malaysia contains a large number of prohibitions against anti-competitive conduct/ products.

3.4.2 The Commission also determines that if a licensee is in a dominant position in a telecom market as defined in the Act, then it will direct the licensee to cease a conduct in that market which has, or may have, the effect of substantially lessening competition in any communications market.

3.5 UK

3.5.1 UK regulator observed that large submarine cable capacity has been installed or are planned and technological developments promise significant increases in the capacity of optical fibre. Therefore, regulator has issued resale licenses to more than 100 operators. Competition from these International Simple Resale (ISR) operator has increased, with greater number of routes where ISR was permitted. It is estimated that at least 30 license holders are already competing actively. Regulator has also mandated retail-minus pricing for wholesale broadband access.

3.5.2 In 1997 / 1998 the then UK Regulator (OFTEL) investigated several cases concerning allocation and pricing of capacity on submarine cables.

3.5.3 In mid-1997, the regulatory authority conducted an inquiry into the status of Mercury, referred to as Cable & Wireless ("CWC") the parent company. OFTEL examined whether Mercury was a "well Established Operator" in the international telecommunications markets between the UK and the USA, Canada and Germany. OFTEL looked at the following factors:

- (i) Whether entrants face difficulty in obtaining correspondent agreements with overseas operators;
- (ii) Limitations on cable capacity. New entrants are likely to wish to purchase IRUs on existing cables, but this will only be possible to the extent that capacity is available.
- (iii) Limitations on cable station access;
- (iv) New entrants will require backhaul from the cable landing station to their existing infrastructure.

3.5.4 Based on these factors, OFTEL held that Mercury is not well established in the market for international services to other operators on the USA route and in the markets for international retail services on the USA, Canadian and German routes, but would continue to be characterized as Well Established on the Canadian and German routes for wholesale capacity.

3.6 France

3.6.1 The French licensing structure generally requires entities, including submarine cable operators, to obtain individual licences to provide networks or services open to the public. The French Regulator (ART) has avoided the possibility of vertical price squeeze by directing the incumbent not to give more favorable conditions of operation to its own subsidiary vis-à-vis its competitor.

3.6.2 In October 1997, ART launched a public consultation to review its policy with respect to submarine cable. This review aimed at establishing regulatory guidelines regarding access to submarine cable systems.

3.6.3 Following this consultation, ART announced in December 1997 that it will guarantee each operator the same conditions for accessing and using submarine cables as well as guarantee access to landing stations that interface with cables and the mainland infrastructure. ART noted its concern that there was a possibility of anti-competitive activity in this sector, stating that restrictions relating to the access of new entrants to the submarine-cable market could threaten conditions for free competition. In its decision, ART identified the following key objectives:

- A need to ensure equal access to international facilities for all operators;
- The development of France as a major platform for international traffic;
- Transparency in the regulatory authority framework and legal security.

3.7 Germany

3.7.1 The German Regulator (RegTP) has mandated the incumbent to provide sufficient discount to the competitor under retail-minus pricing for encouraging the competition in Broadband and leased lines.

Under the German regime, licenses are required for the operation of transmission lines going beyond the limits of property which are used to provide telecommunications services for the public and/or voice telephony services on the basis of self-operated telecommunications networks. The establishment of submarine cable systems itself is not subject to telecommunications licensing. However, competitors complained to the Regulator in the past that there were no transparent mechanisms in place for granting cable-landing rights to new operators. The Commission's Fourth Implementation report noted with regard to access to Deutsche Telekom's ("DT") submarine cable systems in Germany:

"Notwithstanding the fact that Deutsche Telekom has concluded access agreements with a limited number of international carriers, DT has shown reluctance to grant access to its sea-cable headends to new entrants for technical reasons and because of insufficient space, and/ or does not allow for appropriate security measures to enable the collocation of equipment. Furthermore, DT does not offer, as a telecommunication service, the provision of a permanent right of use of a pre-defined transmission capacity on its sea-cable systems. The regulator (RegTP) has not yet defined the obligation of DT to ensure that its cable landing stations provide enough capacity to deal with all requests for interconnection within its competence to define the conditions of 'special access'.

3.7.2 Upon request from RegTP, Deutsche Telekom filed an application for approval regarding its conditions for international-carrier-connect-communications (ICC) agreements with other operators. RegTP considered the ICC as special network access and approved DT's conditions. It published in its official gazette the conditions of the special network access agreement that are expected to become part of a number of agreements (DT's standard offer) in its general terms and conditions. Apart from those ICC conditions, there are no specific license conditions for DT with respect to submarine cable systems. In particular DT is only

required to provide transmission capacities to the "possible and feasible extent" in a non-discriminatory and fair manner.

3.8 Canada

3.8.1 Canadian Radio & Telecommunication Commission (CRTC), The Canadian Regulator, has addressed this issue of resale in 1997-98 and has permitted resale of incumbent's telecom services.

3.8.2 CRTC was also confronted with anti-competitive and non-discriminatory practices at the time of liberalizing international telecommunication service/ operations. The Government's decision to terminate monopoly of Teleglobe was made in 1997 and CRTC immediately sought proposals from competing service providers on the regulatory regime that should be put in place to create a level – playing field for the stand-alone new operators, national long distance operators etc., at the time of opening of international telecom services for competition.

3.8.3 Teleglobe was a dominant service provider and was also owning cable landing stations. After considering the comments of other service providers and also existing interconnection regulations/ policy, the CRTC decided that till such time sufficient alternatives to the facilities of Teleglobe are available to the other service providers, Teleglobe should be under positive obligation to provide interconnection. Teleglobe was also mandated to share its services and facilities in a non-discriminatory and fair manner.

3.9 USA

3.9.1 Federal Communication Commission (FCC), the US regulator, has mandated retail-minus pricing for wholesale services with an objective of creating competitive retail market. It has also mandated incumbent operators to make available shared as well as unshared co-location space to the competitors.

3.9.2 Regarding cable landing stations, it is observed that entities that controlled the 'Wet Link' portion of submarine cable have strongly affected competition on particular routes of submarine cable. The wet link portion connecting any two landing station in different countries, along with landing stations are two important portion of a submarine cable link. In this respect, FCC has examined several cases of dominant and anti-competitive behaviour of incumbent and has given many directives to facilitate access to landing stations.

4. TECHNICAL ISSUES

4.1 Elements of International Private Leased Circuits (IPLC)

4.1.1 The international connectivity normally consists of distant-end half-circuit IPLC, near-end half circuit IPLC and submarine cable landing station. An international submarine cable system can normally be divided into the "wet" portion of submarine cables, the landing stations or "headends", and backhaul facilities for domestic connectivity. These are described below: -

4.1.2 **The Wet Portion:** This element is the submarine optical fibre cable itself. From regulatory perspective, it is relevant to consider three aspects of this i.e. the construction, provisioning and support/maintenance of cable facilities. There are several barriers to entry into submarine cable markets, e.g. long lead times, limited number of undersea cable supply and limited expertise available for laying submarine cables in addition to requirements for many clearances from Govt. agencies. The process of planning and installing a cable system is very complicated and can be compared to any other complex project management.

4.1.3 **Cable Stations or Headends:** Cable landing stations are the point at which international submarine cables come onshore and terminate. Generally, these are buildings, which contain the onshore end of the submarine fiber optic cable, house the necessary equipment to interconnect and pass traffic to and from the submarine cable, and are the point where the submarine cable is connected to the domestic backhaul circuit. New entrants/ competitors generally have issues like cable owners not selling capacity in a fair and transparent manner, the prices being disproportionate to the cost of facilities and the differential price that the cable owner charge from their associate. This element is most critical in assessing whether there are any barriers to access or not. One more important aspect in the submarine cable is support for cable facilities including repair and restoration.

4.1.4 **Backhaul:** This facility is the "high capacity inland domestic circuit, which is required by operators to link the cable landing station to an operator's existing national infrastructure". In most respects, this capacity is similar to domestic leased circuits (DLC) and is subject to the same rules as for any other domestic infrastructure, including the tariff orders and regulation for DLC.

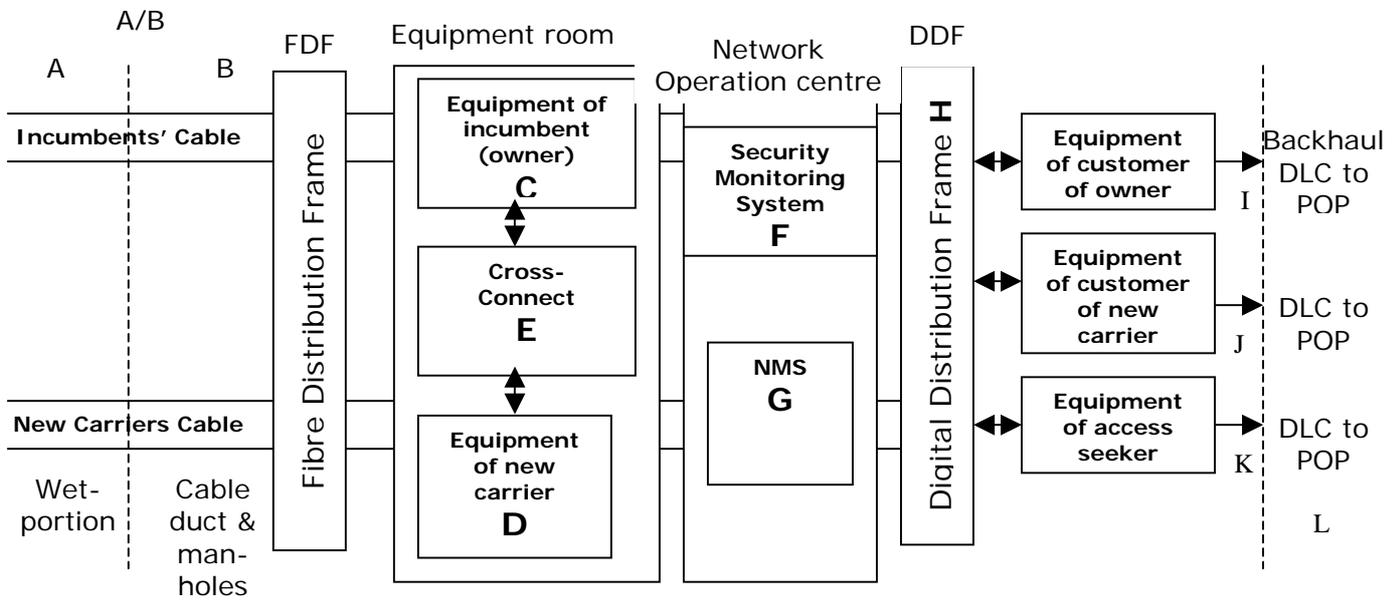
4.2 Elements of Submarine Cable System

4.2.1 Submarine cables traditionally were sponsored by consortium of owners and always the dominant or monopoly operators from a large

number of countries were the founding members of such consortia or cable clubs. The legal document for these consortia has been the Construction and Maintenance Agreement (C & MA), which the consortia members negotiate among themselves. Capacity in submarine cables owned by consortia, has been divided into Minimum Investment Units (MIU). This concept of MIU doesn't apply to private owned cables, which are more prevalent these days. Both consortia and private cable operators sell capacity on cables in terms of Indefeasible Rights of Use (IRU). These IRUs are sold through Capacity Purchased Agreements (CPA) often asking a buyer to obtain a unit of capacity for the remaining design life of a particular cable.

4.2.2 The submarine cable system transactions are based on operator agreements that establish relations between different carriers. The cable transaction involves two or more carriers, each prominent in its own national territory, exchanging traffic and making use of international system of accounting rates and settlements. As a part of this arrangement, the carrier would own half circuits on submarine cable and hand over traffic to each other at a hypothetical mid point on the cable. With the liberalization of telecom sector and with carriers needing full circuit arrangements, especially for data and private line traffic, there is increasing customers demand for end-to-end solutions that includes submarine cable terrestrial link and also local connectivity.

4.3 Schematic Block Diagram of a Submarine Cable System



DLC- Domestic Leased Circuit
 POP- Point of Presence of customer

4.4 Types of interconnectivity with owner

4.4.1 Path A to midpoint A/B:

If a new entrant purchased an IRU for that path, it conceivably could seek interconnection at the midpoint to an incumbent's IRU, on the argument that it was terminating traffic on the incumbent's network at that point. The termination charge would comprise two components: the cost of the interconnect link, which in this case would extend from the mid point A/B of the international circuit to the relevant transit switch in the incumbent's network (point E in the diagram).

4.4.2 Midpoint A/B to landing headend C:

A new entrant that owned "corresponding" IRUs in a cable (i.e., from A to A/B and from A/B to B) could seek interconnection of its IRU transmission capacity at the cable headend for termination of traffic on the incumbent's network. The termination charge would again comprise two components: the cost of the interconnect link, which in this case would extend from the cable headend to the relevant transit switch in the incumbent's network (point C in the diagram).

Generally, the incumbent's RIO should include terms and conditions for such interconnection links. Incumbents are subject to non-discrimination provisions, so that if they offer certain links to their own subsidiaries for certain prices and terms, they cannot discriminate in such offerings to others.

4.4.3 Transit links from landing headend B to new entrants point of presence ("POP")

A new entrant with IRUs in a submarine cable and a point of presence (POP) in the destination country will require backhaul transit capacity from the cable landing station to its point of presence. There may be substantial competing sources of backhaul capacity close to landing headends, so a new entrant might not rely on the incumbent to provide backhaul facilities, but instead may seek a short distance circuit to the nearest source of competing backhaul. That link, represented by the path H to L, is simply leased capacity, which could be supplied by another new entrant or by the incumbent.

4.4.4 Interconnection link C to L:

The link between a new entrant's and the incumbent's network is a domestic interconnection link, and terms and conditions for such interconnection links are normally part of the incumbent's RIO.

4.5 **Transit links from cable headend B and onward to another destination country:**

For the provision of International Telecom services an operator is required to establish connectivity with many operators to provide end-to-end service for its customers. For this purpose the operator has to have corresponding agreement for far end half circuit with other carriers.

4.6 **Grooming Service**

The operators seeking access to a cable landing station may also need to be provided 'grooming service' by the operator of cable landing station. Purpose of this service is to break down higher capacity output from the submarine cable termination into the lower capacity channels for connection to the backhaul facilities of the access seeker. Normally, grooming is not considered to be an access or interconnection service but an operational procedure and treated as a commercial matter between the parties concerned. Grooming service can also be provided through resellers.

4.7 Inter-connectivity with other operator and some of the technical issues involved in provision for international connectivity are:

- i. Access Provision/ Physical inter-connection
- ii. Un-bundled network elements
- iii. Unbundled service offerings
- iv. Essential support facilities
- v. Co-location facilities within the main equipment room
- vi. Grooming service

4.8 **Physical Interconnection:**

The physical inter-connection is necessary for provision of access to international cables. The new entrants will require access to essential support facilities and unbundled network elements at following points of access;

Cable Duct and Manholes
Fiber Distribution Frame

Equipment Room
Network Operation Centre(NOC) Room
Digital Distribution Frame
Backhaul Termination

4.9 Co-location Facilities in the main equipment room

4.9.1 The co-location facilities at submarine cable landing station include building space, power, environment services, security and site maintenance. The incumbent operator has in fact no incentive for offering co-location at its landing station. The dominant operator has to take reasonable measures to accommodate new operators. The cost of co-location space and associated expenditure must be recovered in a equitable manner from various operators who have co-located their equipment.

4.10 Virtual (Distant) Co-location

It may also be noticed that at times a new entrant wants to place its equipment outside the incumbent's landing station and run a interconnection cable to incumbent landing station to connect to the cable system. If the requesting licensee chooses to implement such a configuration, then incumbent must not deny access to the cable system. The dominant operator must offer to allow the physical linking of facilities based networks at any technically feasible point due to space or operational constraints/considerations. Such type of virtual (distant) co-location may be economical for the new operator and incumbent should not deny such access. Under such situations incumbent should provide a transparent process by which a new operator can access the landing station as early as possible and must also agree to make available other elements such as lead-in duct and other links to the cable landing station for the purpose of running an interconnection cable to incumbents' cable landing station.

5. REGULATORY CONCERNS FOR ENCOURAGING COMPETITION

5.1 The Regulatory Concerns

5.1.1 Regulators in many countries have been concerned about the lack of competition in international connectivity market. It has been recognized that there is potential for cable system owner particularly the incumbent to delay the provision of resources through tariff and non-tariff barriers preventing the competition by new entrants. The Primary Regulatory concern is to ensure that the incumbent having control over the cable system do not resort to non-price discrimination like denial/delay in providing access, providing poor quality of service, unreasonable terms and conditions for Access etc.

5.1.2 Therefore, it is felt that there is a need to have consultation over the issue related with introduction of resellers and retail-minus wholesale pricing, facilitation of mutual infrastructure sharing, registration of international cable carriers, Charges for Physical Facilities, Access Charges, O&M Charges, Co-location Charges, Timeframe and other terms and conditions of Access at cable landing stations.

5.2 Resellers (non-facility based operators)

Initially, resellers in the ILDO sector are not permitted in India as the focus was on creation of infrastructure by new players. Normally, reseller or non-facility based operators are introduced to enhance competitions after sufficient infrastructure have been established in the particular segment. The resellers, which are normally, provided with easy entry conditions with light-handed regulation and without need for high capex associated with facility based ILD operation can play a significant role in enhancing the competition without delay. Resellers can also provide some value additions and can serve the retail market more efficiently than the main facility-based operators who can concentrate on providing IPLCs to other operators and resellers.

Regulated wholesale pricing is seen as an effective tool to encourage competition and avoid vertical price squeeze by dominant operators. Normally, a retail-minus pricing system for wholesale is used very efficiently by many regulators because of its simplicity. It requires the regulator to define both the retail price as well as the wholesale discount. Such controls are used with a 'sunset clause' till such time the competition has fully setup and market has matured.

5.3 Infrastructure Sharing among cable system owners

Other mechanism for increasing competition can be through infrastructure sharing among the owners of international cable capacities and the landing stations. Such arrangements can help the operators to provide redundancy (backup) to their customers in case of failures of their own systems. Similarly, mutual infrastructure sharing at the cable landing stations can help an operator owning single landing stations to have access to multiple cable systems at different landing stations. Such arrangements are worked out on exchange (swap) basis with little financial implications among the parties concerned. These are worked out through mutual negotiations among the operators and regulators are required to play facilitating role only in case of the operators unable to reach an agreement.

5.4 Registration of non-ILDO international cable carriers

Some of the international cable carriers have its cable landed at the landing station of an ILDO in India under mutual commercial agreement between them. In future, more of similar such arrangements are likely to happen. As the international cable carriers do not provide a telecom service to end users directly they do not need a license under the existing telecom act and rules. Due to this, the licensor / regulator has no control over such entity and cannot take up with them in case of any default. Therefore, there is a need for consideration whether such entities should be registered / licensed in India under some licensing category like Infrastructure Provider (IP-II) or like Other Service Providers (OSP). It is mentioned that the category of IP-II permits a licensee to offer end-to-end domestic bandwidth to th telecom licensees and not to the end users. OSPs are allowed to provide value-added services without infringing with the services for which a separate telecom license is required.

5.5 Co-location and Access charges

These charges are normally cost-based charges, which are payable by access seekers based on the type of facilities / network elements used. Normally, such charges are filed by the facility owner to the regulator for approval. Such charges consist of charges for physical facilities, access O&M and co-location etc.

5.5.1 Physical Facility Charges

These charges include the charges that a new entrant will be required to pay to avail landing facilities at a cable landing station. These can consist of lease rental for cableway, rental for Fiber Distribution Frame (FDF), equipment room, equipment rack and the Digital Distribution Frame (DDF) in addition to upgradation cost of power system. This charge will generally depend upon the capital costs involved.

5.5.2 Access Charges

The Access charges are paid by the service providers to the owners of the cable landing station so as to access the capacity purchased on IRU basis or a short-term lease from the owners of the cable/ consortia. This charge is based on the cost of various network elements required for provision of access distributed over the complete capacity of the system. This is a one time charge and is generally disputed by the new entrant on the grounds that the incumbent operators who also generally owns landing station fixes a very high amount which is totally disproportionate to the cost of network elements involved in the provision of access.

5.5.3 O & M Charges

The operation and maintenance charge is the annual expense being claimed by the landing station owner from the service providers who uses its facilities for accessing the capacity. Worldwide regulators have mandated that the access charges as well as O & M charges would be based on the corresponding costs of network elements used for such services.

O & M charges are normally be calculated taking into account the total operation cost distributed over the system capacity.

5.5.4 Co-location Charges

These charges include the charges for housing the equipment of the customer in the premises of service providers and can include lease charges for space, equipment room, power supply etc.

5.5.5 Co-location Lead-Time

It is the time which is taken by the landing station owner to permit the new entrant, the physical access. The access lead-time should not be discriminatory and should generally reflect the lead-time taken by the staff of the operator of the cable landing station to provide access for its own equipment.

If an owner of Landing station intends to offer terms and condition which have the effect that the response time would be longer than that which it offers to itself or its associate or affiliates, due consideration needs to be given to this situation. The imposition of such terms and conditions will be anti-competitive because of the competitors of the licensee could not have access to their facilities with the same speed as the licensee in question and that would put them in a disadvantageous position as they would not be able to at least match the quality of service of the licensee providing the access.

5.6 Costing Methodology

Normally for any exercise to arrive at cost based charges following two approaches are used:

5.6.1 Top Down Approach

Under this method costs are picked from the accounting books of the service provider. The advantage of this method is that it is based on actual costs and provides a strong audit trail. However this method has difficulty as relevant costs from account books are not easily available and detailed accounting separation of financial accounts is needed.

Accounting separation is mandatory under TRAI regulation and operators are required to prepare cost sheets for various network elements. However, presently none of the ILDO has prepared separate cost sheets for landing stations as this network segment is merged with some other network elements. Therefore for using such approach cost data from various cable landing station owners will be required.

5.6.2 Bottom-up method

This method involves developing a prototype model, which start from a network engineering model and assess the optimal design to meet the demand. Generally current costs are used to estimate the CAPEX. The drawback of this method is that it may not resemble to the actual cost of the operator. Another problem with this method is to estimate operational costs. Generally regulators use Capex and Opex relationships to overcome this problem.

6. ISSUES FOR CONSIDERATION

A number of questions arise in the context of the points brought out in the paper and the response of the stakeholders is solicited on the issues listed below:

1. What are the different options for increasing the competition in IPLC segment?
2. a. Whether sufficient infrastructure exists in this segment for the reselling option to be considered?
2. b. What should be the licensing conditions of resellers vis-à-vis ILDO?
2. c. Is there a case for regulating wholesale price for IPLCs, which should be retail-minus?
2. d. Should there be a 'sunset clause' for such regulation?
3. How to enable mutual infrastructure sharing for international submarine cables and cable landing stations among the existing owners?
4. a. Whether the submarine cable landing stations can still be considered a 'bottleneck facility' in India?
4. b. In that case how should the equal ease of access to and inter-connection at it by competing operators are to be achieved?
4. c. Upto what timeframe any such regulation be mandated?
5. What are the various non-price discriminatory practices of a cable landing station owner that are required to be brought under regulation in the Indian context?
6. a. How the non-ILDO international carriers whose cable lands at the cable landing station of an ILDO in India should be regulated?
6. b. Should it be as an Infrastructure Provider (IP-II) or through registration with licensor or like Other Service Provider (OSP)?
7. For the purpose of fixing cost based access charges, which method/ approach would be more appropriate? Top-Down, Bottom-Up, Historical Costs, FL-LRIC etc and why?
