Consultation Paper No.14/2006

TELECOM REGULATORY AUTHORITY OF INDIA

Consultation Paper
on
Measures to Enhance Competition in
Domestic Leased Circuits (DLC) market in India

17th November 2006

TRAI House
A2/14, Safdarjung Enclave
New Delhi - 110029

Preface

The Domestic Leased Circuits (DLC) is the key telecommunication resource used by various operators, corporates and individuals for data, voice, video and Internet connectivity. It is provisioned by various Access Providers, National Long Distance Operators and Infrastructure Providers (IP-II). Effective competition in this segment can make a positive contribution to the overall competitiveness of the economy by driving costs down for businesses and offering consumers a wider range of products and services at more competitive prices.

Telecom Regulatory Authority of India (TRAI) has observed that effective competition in the Domestic Leased Circuits segment in all areas is still lacking. Therefore, there appears to be an urgent need for deliberation on measures to enhance competition in this segment.

This consultation paper discusses various issues related to promotion of competition in country's Domestic Leased Circuits (DLC) market and seeks valuable views of the various stakeholders including Service Providers, Consumers/Corporate users, Consumer Organizations and others interested parties on the subject.

It is requested that the views and comments on this consultation paper may be furnished through e-mail/fax/letter by 15th December 2006. For further clarification, Shri S.N. Gupta, Principal Advisor (Fixed Network), TRAI may be contacted on telephone number **26166930**, fax number **26103294** or e-mail trai09@bol.net.in This paper is also available on TRAI's web site at http://www.trai.gov.in

17th November 2006 **Nripendra Mishra**

New Delhi **Chairman**

TABLE OF CONTENTS

1. INTRODUCTION

1.1 Domestic Leased Circuits (DLC) are important elements in the telecom market that are commonly used by telecom service providers for the provision of telecom services to wholesale and retail customers, and by corporate users to communicate with their domestic and international offices. Internet Service Providers (ISPs) also make use of DLCs for connecting their customers to their Node for provision of leased line Internet access. Such leased lines are and will remain a key component for the economic growth of the country. In addition these are crucial building blocks for e-business, e-governance, Internet access, BPO and IT industry.

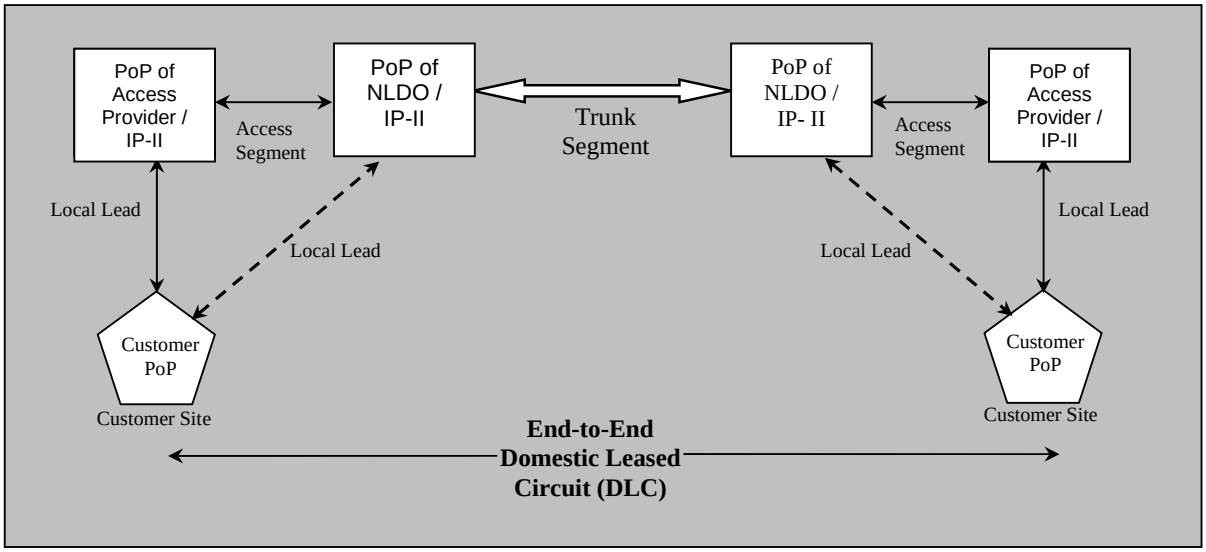
1.2 Telecom Regulatory Authority of India, (herein after referred as 'Authority') has facilitated a generally competitive, service-based, multi-operator market. However, it also recognizes that there are many segments of the market where it may not be economically feasible, due to technical or financial constraints, for service providers to build all the elements of telecom infrastructure. The Authority has therefore adopted other appropriate regulatory measures to promote competition, by making service providers with significant market power, to offer their services and the sharing of bottleneck infrastructure facilities, with the new entrants on cost based leasing, this providing the new entrants with 'Build or Buy' option.

1.3 The new telecom service providers are generally dependent on the transmission infrastructure in the form of leased circuits from the existing/incumbent operators. The telecom services provided by the service providers to their end users largely depend on the quality and timely availability of such leased circuits. Competition in supply of all segments of end-to-end connectivity is vital to deliver retail products at a reasonable price to users. New entrants generally find it difficult to compete in some of the segments of domestic leased line market, specially the "last mile".

1.4 The main providers of the DLCs are National Long Distance Operators (NLDOs) in addition to Infrastructure Providers Cat-II (IP-II)* and Access Providers. The prevailing National Long Distance (NLD) licensing conditions related to provision of DLCs are given below:

- "NLD service Licensee shall be required to make own suitable arrangements / agreements for leased lines with the Access Providers for last mile."
- "NLD Service Providers can access the subscribers directly only for provision of Leased Circuits/Close User Groups (CUGs). Leased circuit is defined as virtual private network (VPN) using circuit or packet switched (IP Protocol) technology apart from point to point non-switched physical connections/transmission bandwidth."
- "Public network is not to be connected with leased circuits/CUGs."
- NLD service Licensee can provide bandwidth to other telecom service licensee also.

1.5 The schematic diagram indicating various elements of a Domestic Leased Circuit (DLC) is given below.



IP- II: Infrastructure Provider- II
NLDO: National Long Distance Operator
PoP: Point of Presence

Figure1. Schematic diagram of various elements of a Domestic Leased Circuits (DLC)

* As per the latest guidelines of DOT dated 14th December 2005, the IP-II category has been abolished and no new IP-II licenses will be granted and the existing IP-II players have option to migrate to NLD/ILD service license by paying the requisite licensing fee of Rs.2.5 crore for each licence. IP-II licensees not interested in migrating to NLD/ILD shall not be permitted to provide national/international leased line/bandwidth to individual subscribers as per existing IP-II license guidelines.

The various elements of an end-to-end Domestic Leased Circuit (DLC) include the following segments:

- Local Lead (To the nearest Point of Presence (PoP) of Access Provider or NLDO)
- Access Segment
- Trunk Segment

2. PRESENT DLC SCENARIO IN INDIA

2.1 Background:

2.1.1 The NLD segment was opened for competition in India in the year 2001 and further liberalized since beginning of year 2006. Many new players have entered this segment to offer domestic bandwidth (DLC) to the customers.

2.2 Present Market Situation

2.2.1 As on date, domestic bandwidth is provided to the end users by following categories of Operators in the country:

a) National Long Distance Operators (NLDOs)
b) Unified Access Service Providers (UASP)

2.2.2 The four NLD operators already providing the facility in the country are:

i) M/s.Reliance Infocomm Limited
ii) M/s.Bharti
iii) M/s.VSNL
iv) M/s.BSNL

Recently M/s MTNL, M/s Power Grid Corporation of India, M/s RailTel Corporation of India, M/s HCL Infinet Ltd., M/s i2i Enterprises Ltd., M/s TULIP IT Services Ltd., and M/s Sify have also acquired the NLD Licence.

2.2.3 The NLD operators such as M/s BSNL, M/s MTNL, M/s Reliance Infocomm Ltd. and M/s Bharti who are also Unified Access Providers (fixed/mobile operators) are providing 'last mile' connectivity through optical fiber or wireless media. As such these NLD operators can always provision end-to-end connectivity for their customers including 'last mile' access i.e. 'local lead'.

2.2.4 Besides NLDOs, some IP-II providers are also providing domestic bandwidth to other operators. The four IP-II providers licensed to offer domestic leased circuits only to other service providers are:

1. GAILTEL
2. Tata Power Co. Ltd.
3. Hughes Escorts Comm. Ltd. (through VSAT)
4. Delhi Metro Rail Corporation (DMRC)

2.2.5 In India, the incumbents have the most extensive transmission network in terms of geographic coverage. The total transmission infrastructure of incumbents is of the order of 4,50,000 Kms which is about 68% of the total transmission infrastructure (of the order of 6,60,000 route Kms) available in the country. On the other hand all the other NLDOs and private operators together have a transmission capacity of 1,50,000 Kms only. The network of all the erstwhile IP-II together extends to about 60,000 Kms. The availability of DLC providers in different categories across various circles is given at **"Annex- A1"** and the details of Domestic Transmission Infrastructure are available at **"Annex- A2".**

2.3 Existing License Fee Structure for various DLC Providers:

2.3.1 Recently, the licensor has taken a number of initiatives to reduce the entry barriers for the DLC providers such as NLDO by way of substantially reducing the entry fee/license fee applicable to such service providers. As per the new guidelines issued by DOT on 14th December 2005, the NLDOs are subjected to following licensing conditions in the form of entry fee and annual license fee (revenue share) including USO contribution w.e.f. 1/1/2006:-

Entry Fee (Rs. in crores)		**Annual License Fee (Revenue Share) (Including 5% for USO)**	
Old	**New** (w.e.f.1.1.2006)	**Old**	**New** (w.e.f.1.1.2006)
Rs.100 crores	Rs.2.5 crores	15%	6%

2.3.2 Earlier, based on the Recommendation of the Authority dated 30th January 2004 Government reduced the license fee payable by the IP-II licensees from 15% to 6% with effect from 24th June 2004. Now NLD operators have also to pay annually 6% license fee (instead of 15% earlier) while for other licensees like Basic Service Operators (BSOs), Cellular Mobile Service Providers (CMSPs) and Unified Access Service Providers (UASPs), the license fee varies from 6 to10% of AGR as per the service area of operation**^**.

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^The old cellular licensees (1st and 2nd CMTS licensees) in telecom circles have been given additional concession for a period of 4 years w.e.f. 1st April 2004 in the license fee. This is 8% of 'Adjusted Gross Revenue' (AGR) for Category 'A' Circles, 6% of AGR for Category 'B' Circles and 5% of AGR for Category 'C' Circles.

3. COMPETITION SCENARIO IN DLC MARKET IN INDIA

3.1 Other than NLDOs, the key players who are active in the DLC segment include Access Providers and IP-II providers. The state of competition in the DLC market in India has been succinctly summarized in a report by Gartner (22nd February 2005, ID No.G00126348) an independent research agency as follows:

> **"*A limited number of players compete and only incumbent carrier BSNL can provide comprehensive national coverage. However, there is measured competition in key routes. As a result prices have decreased, but prices are still high compared with competitive markets, including a comparable developing market such as China."***

Excepting the 'trunk segment' connecting metros and major cities (hereinafter called as 'select routes'), the DLC services market in India lacks effective competition. Incumbent is still the only operator having capacities in large part of the country including in rural and remote areas. Private operators with NLD, UASP/BSO and IP-II licenses have not found it attractive enough to go beyond the 'select routes'. 'Select routes' linking metros and major cities has thus witnessed competition which is evident from the competitive discount rates offered by the operators on the ceiling tariffs revised by the Authority in April 2005. The Table: 1 below shows the Domestic leased line tariff cap and the percentage discount offered by some operators for E1, DS-3 and STM-1 links for distances greater than 500 Kms.

Capacity (For distances >500 Kms)	**Annual Tariff Cap (May 2005) [Rupees in Lakhs]**	**% Discount offered by some operators**
E1	8.50	25% to 42%
DS-3	61.59	35% to 48%
STM-1	165.20	

Table: 1 The Domestic Leased Line tariff for E1, DS-3 and STM-1 Links

3.2 The discounts offered as given in the Table above are generally on routes that witness intense competition and not on each and every route. Signs of lack of competition are evident in both ends of the end-to-end DLC i.e. local lead/"within city" circuit. Here again, the incumbents (BSNL/MTNL) are the major players having dominance in the market, MTNL operating in Mumbai and Delhi and BSNL in rest of India.

3.3 Evidence of lack of competition in the local lead/"within" city circuit segment has been brought to the notice of the Authority from time to time. The non availability of local leads which has been represented by various stakeholders/service providers appears to be the main bottleneck for promotion of competition in DLC market. Other phenomena that obstruct emergence of competition in the local lead / "within city" circuit segment as reported to the Authority from time to time by the user groups are as under:-

- A very large proportion of access market in the fixed line services is still with the incumbent.
- Absence of interconnect regulation that could facilitate provisioning of multi-operator leased circuit services in a seamless manner.
- Regulatory costs in obtaining ROW and other associated costs in laying of cables in the city limits particularly in metros and major towns are reported to be prohibitively high which act as barriers for the new operators from emerging as competitors.

3.4 In view of the above, the Authority considers it appropriate to continue with the tariff regulation in the DLC market until such time the competition becomes adequate and effective. The long term goal of the Authority is to establish effective competition in the sector such that regulation of tariff may not be required. Recently, the DLC market has witnessed an increase in the number of players (15 operators) in general but competition is still not effective in all the segments. Thus, the consumers' choice for service providers for end to end connectivity is still limited. This coupled with the absence of interconnection regulation governing leased lines of different service providers results in end-users to rely solely on what is offered by the operator having

Point of Presence (PoP) nearest to its premises. The possible measures to promote competition as suggested by various stakeholders from time to time include the following:-

- Interconnection regulation for different operators pertaining to provisioning of multi-operator, built-up leased circuits.
- Intervention by Authority in this area by notifying guidelines as well as cost based ceilings for interconnection charges/co-location charges payable by alternative service providers like competing NLD licensees.
- Mandating a wholesale tariff to be provided initially on a retail-minus price basis.

These issues are deliberated upon in the subsequent chapter.

4. REGULATORY ISSUES

4.1 Authority recognizes that DLC is a key telecommunication resource for corporates and that the effective competition for this segment can make a positive contribution to the competitiveness of telecom services in the country. The present state of competition in DLC market in the country has already been discussed in Chapter 3. It is observed that despite reduction in the barriers to entry to NLD market, competition for end to end services in DLC segment is still not effective.

4.2 The main regulatory issues concerning DLC segment that arise out of current situation considered essential to be discussed are:

1. **Need for the operator with Significant Market Power (SMP) to provide 'local lead' for DLC and also to provide leased line resources for Closed User Group (CUG) to other NLD operators.**

2. **To Consider DLC as an Interconnection element among different service providers.**

These issues are deliberated in detail in the subsequent paras.

4.3 The local lead i.e., the 'last mile', the Access part of the Telecom Network, provides the vital link between the customer and the Local exchange. This link has traditionally been provided over the access network consisting of a pair of copper wire connecting the Customer Premises Equipment (CPE) using Pulse Code Modulation (PCM) technology. Nowadays optic fiber/wireless based media is also deployed as local lead for the higher capacity links. The deployment of Access Network based on copper/optic fiber requires long rollout period and large initial investments, making the 'local lead' the most capital intensive element of the telecom infrastructure.

4.4 As the cost of installing 'local lead' infrastructure for a new operator can be substantial, it is in the national interest of economic efficiency that the

existing infrastructure is fully utilized. Additionally, in the absence of uniform, clear and enforceable guidelines for various processes such as right of way (ROW), civic clearances etc., different state governments adopt different rules, criteria, costs and time frames causing significant amount of effort and delays to the operators in getting the requisite clearances. Also, 'last mile' connectivity to sparsely distributed households is more costly than in densely populated areas. The new entrants find it difficult as well as uneconomical and hence are reluctant to build their own 'local lead' infrastructure.

4.5 Recently DoT has taken a decision not to issue any more IP-II licenses and the existing IP-II license holders have been given option to switch over to NLD license/ ILD license. As per new guidelines for NLD license, the NLD operators can access the subscribers directly for the provision of leased circuits/Data circuits for Closed User Group (CUG) for which they are expected to build up their own Access Network for end to end connectivity. Therefore, the DLC can be provided by Access providers, NLD operators as well as Infrastructure providers-II (IP-IIs).

4.6 In case of erstwhile IP-IIs, which have been utility companies mainly, the network has been setup for captive usage purposes, and as they have lot of spare bandwidth available in the network, many a time they offer very low price for leasing such bandwidths. Such situation results in making the telecom operators difficult to compete with IP-II's and in turn result in reluctance of the integrated access providers and NLDOs to provide 'local lead' to the erstwhile IP-II providers making it difficult for them to provide end-to-end connectivity to their customers. To overcome such eventualities, some regulatory interventions may be needed for healthy competition to be established. The issue for consideration in this scenario would be as to whether it is appropriate to mandate the incumbent operators to provide "local lead" to new NLD operators when they also have the option to create their own local network, i.e. whether a build or buy option for 'last mile' for new entrants should be made mandatory or should it be left to the mutual commercial agreement, among the service providers.

4.7 In addition to setting up of the access network being costly and cumbersome, its operation and maintenance cost is also high. Due to distributed geographical area, the average utilization of the resources for 'local lead' is very poor. Additionally the leased line seekers generally require Service Level Agreement (SLA) to ensure guaranteed QoS to their end users. This further requires higher maintenance cost and more resources on part of 'local lead' providers to meet the SLA requirements. In view of this, the combined long distance leased line tariff along with 'local lead' charges may make a business case and not the provision of 'local lead' alone. Therefore there is also a need to discuss whether sharing of 'last mile' infrastructure in above scenario could discourage creation of Access network creating shortage in this segment, in future.

4.8 Another issue which needs deliberations with stakeholders is pertaining to Closed User Group (CUG) which is basically used for internal communication within a group of organizations with commonality of interest and not to provide any telecom service to any third party. Customers such as corporate offices need private data network in the form of CUG to connect their various branch offices by taking telecom resources from UASLs, NLDOs, International Long Distance Operators (ILDOs), Very small Aperture Terminal (VSAT) operators etc.

4.9 Earlier, the leased line resources for most of the CUG networks have been provided by the incumbents i.e. BSNL & MTNL because of their countrywide presence together. As per existing practice of BSNL, the interconnection of the CUG built by leasing resources from private/new operator, to the CUG formed by BSNL/MTNL resources is not encouraged. Also partial built up of CUG by leasing resources from different service providers is not being allowed even though both BSNL and MTNL are provisioning CUGs jointly by sharing each other's infrastructure. Thus most of customers have no option but to depend on only BSNL/MTNL for engineering their CUG networks.

4.10 In the competitive scenario of multiple operators, customer needs to have resources from operators of their choice for expanding their network, ensuring quality of service, improving redundancy and optimising resources for reducing the cost. Authority received representations from number of enterprises/

corporate users for the review of current terms and conditions of incumbents, which are not permitting to engineer their CUG network by obtaining leased lines from private service providers.

4.11 Based on the recommendations of the Authority, Department of Telecom (DoT) issued instructions regarding utilization of resources by CUG customers through multiple licensed service operators for establishing CUG networks (Copy of letter of DoT at "**Annex- A3"**). This indicate that a leased line with circuits taken from different operators on different segments is entirely permissible and that this has to be done through mutually agreed commercial agreements between the operators. It has also been stated, therein that it should be the responsibility of the operators to ensure that the telecom resources are used for genuine and lawful purposes.

4.12 Even though the instructions to permit utilization of resources from multiple service providers for forming CUGs have been issued by licensor, the new operators are finding it difficult to procure the support of incumbents because of various factors discussed in this paper. The new operators are also unable provide nationwide CUG networks for corporate, as they are dependent on incumbent for local leads to offer complete solution to the customers. The most important issue in this regard is the incumbent's reluctance to permit the partial built up of circuits as well as the CUG because of fear of security breach as well as concern regarding non-genuine usage of resources.

4.13 As directed by licensor, an arrangement of telecom resources from various service providers for setting up CUG networks is to be resolved by the service providers by entering into a mutually agreed commercial arrangement. Incumbent has been making the plea that they cannot permit their network resources to be used in CUG provided by other service providers on the ground that the incumbent has to ensure genuine and lawful use of the resources. It is understandable that the multiple operator networks can promote competition in the domestic leased circuit market and unless and until the issues leading to prevailing situation are addressed, the new telecom service providers may not be in a position to offer their services to the CUG customers in a cost effective manner.

4.14 As the incumbent is reluctant to provide `local lead' connection as well as partial built up option to the competing service providers for the provision of leased circuits to their customers, these operators are finding it difficult to provision the resources for CUG/ Data Networks in a proper/ timely manner to their customers. Under such circumstances the prospective customers of competitive service providers become dependent on incumbent for building their CUGs and hence even though there may be several operators in DLC market, it still lacks effective competition for end-to-end connectivity. To address this issue there is a need to deliberate on the option of making one of the service providers who is the prime provider of CUG resources, responsible for the security issues pertaining to CUG. Such service provider may have the mutual back to back arrangement with the other service providers in this regard.

4.15 Another issue which is relevant in this context is the need or otherwise for interconnection regulations for DLC segment. As is widely relevant in case of network industries such as telecommunication, a provider with significant market power can easily foreclose potential competitors by refusing/delaying the necessary resources in the absence of enabling interconnection regulations. The same is true in the Domestic Leased Circuit segment also.

4.16 The experience in telecom regulation has established that the interconnection of two networks provides opportunities for both the incumbent and new entrants to expand their business and also helps in building redundancy in the network thereby improving availability for the end user. An accepted regulatory principle in many counties is to ensure that the service provider with Significant Market Power (SMP) publishes a Reference Interconnect Offer (RIO) stipulating the various technical and commercial conditions including a basis for applicable Interconnection Usage Charges (IUC). Taking into account the above practice and experience regarding interconnect issue, presently the Authority has mandated interconnection for voice services. Many regulators abroad like France, Singapore, Belgium and EU have mandated interconnection for data services as well. Therefore, it needs to be deliberated upon as to whether treating DLC resources as an Interconnection element can help improving the effective competition in this segment, as a forward looking approach.

4.17 The international practices regarding measures to enhance competition in Domestic Leased Circuit are given at **Annex-A4**. A Gist of regulatory intervention by treating DLC as an interconnection element by some international regulators pertaining to this segment is given below:

- *France telecom regulator (ARCEP) concluded that the France Telecom holds significant market power in retail leased line market, wholesale leased line market and wholesale trunk segments of leased line markets and it mandated the incumbent to include interconnection leased lines, into its Reference Interconnection Offer (RIO).*
- *The Singapore Telecom Regulator (IDA) determined that Local Leased Circuits (LLC) tail circuits i.e. Partial Private Circuit (PPCs) should be made available as an Interconnection Related Service ("IRS") and should be cost based. This is because it is not likely to be economically feasible for a new entrant to duplicate the extensive reach of the incumbent's LLC network in Singapore.*
- *The Malaysian Communications and Multimedia Commission (MCMC) observed that the characteristics of competition in the provision of leased lines service vary on a rout-by-route basis and decided that competition needs to be assessed on a case-by-case basis, taking into consideration the specific characteristics of the given leased line route.*
- *Belgian Telecom Regulator concluded that Belgacom is having Significant Market Power in Retail level leased lines market (Market 7), Whole sale terminating segment of leased lines market (Market 13) and hence imposed the obligations to non discrimination, access and interconnection, transparency, separation of accounts, price control and cost accounting system. However as it has no SMP in wholesale trunk segments of leased line market (Market 14) and hence no obligation is imposed.*

4.18 Therefore, as seen from the above international practices and as a forward looking approach, there appears to be a need to discuss as to whether the operator with SMP in DLC market can be regulated for DLC provision as well similar to mandated interconnection for voice services. One approach for this could be to include DLC as an interconnection element in the RIO, which needs to be deliberated upon.

5. SUMMARY OF ISSUES FOR CONSULTATION

In this consultation paper some licensing and regulatory issues have been brought out and response from the various stakeholders is solicited on these. For better appreciation of the needs of various affected parties there is a need to provide relevant evidence and reasoning in supporting the comments/proposals made on the following issue:-

1. **What are the factors that limit competition in the DLC market in India?**

2. **(a) Should the operator with Significant Market Power (SMP) be mandated to provide local lead for DLC and also for engineering CUGs to other operators when they also have option to create their own Access network?**
   (b) If so, justify with reasons. If not please give reasons.

3. **Whether it is appropriate to make the prime service provider responsible for the security issues in case of usage of resources from multiple service providers in a CUG Network?**

4. **Whether there is a case for considering provision of DLC as an interconnection element to be included in RIO?**
   If yes, what should be the broad terms and conditions of the interconnection regulation for DLC services? If No, please provide reasons.

5. **Suggest any other measures that could be considered for promoting effective competition in DLC market?**

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6. List of Abbreviations Used

Sl.No.	Abbreviations	Description
1	ACCC	Australian Competition and Consumer Commission
2	ARCEP	Autorité de régulation des télécommunications Electroniques el des Postes (France)
3	BSO	Basic Service Operator
4	BTA	Botswana Telecommunications Authority
5	ComReg	Commission for Communication Regulation (Ireland)
6	CRTC	Canadian Radio Television and Telecommunications Commission
7	CUG	Closed User Group
8	DLC	Domestic Leased Circuit
9	DPLC	Domestic Private Leased Circuit
10	DWDM	Dense Wavelength Division Multiplexing
11	EC	European commission
12	ERG	European Regulatory Group
13	FBO	Facility Based Operator
14	GIS	Geographic Information System
15	ICT	Information Communication Technology
16	IDA	Infocomm Development Authority (Singapore)
17	ILDO	International Long Distance Operator
18	ILEC	Incumbent Local Exchange Carriers
19	IP-II	Infrastructure Provider-II
20	IRS	Interconnection Related Service
21	ISPs	Internet Service Providers
22	LLC	Local Leased Circuit
23	MIC	Ministry of Information and Communication (South Korea)
24	NLDO	National Long Distance Operator
25	NRA	National Regulatory Authority (EU)
26	OFC	Optical Fiber Cable
27	Ofcom	Office of Communications (UK)
28	OFTA	Office of the Telecommunications Authority (Hong Kong)
29	PoP	Point of Presence
30	PPC	Partial Private Circuit
31	QoS	Quality of Service
32	RIO	Reference Interconnection Offer
33	ROW	Right of Way
34	SLA	Service Level Agreement
35	SMP	Significant Market Power
36	UASL	Unified Access Service License
37	UASP	Unified Access Service Provider
38	USO	Universal Service Obligation
39	VSAT	Very Small Aperture Terminal

ANNEX-A1

CIRCLE-WISE PROVIDERS OF DLC IN DIFFERENT CATEGORIES

S.No.	Circle	Public Sector Operator	IP-II (4 Operators)	Private Sector Operators (9 Operators)
1	Andaman & Nicobar	**1**	**0**	**0**
2	Andhra Pradesh	**1**	**3**	**5**
3	Assam	**1**	**2**	**0**
4	Bihar	**1**	**3**	**3**
5	Chattisgarh	**1**	**2**	**3**
6	Gujrat	**1**	**3**	**5**
7	Haryana	**1**	**3**	**4**
8	Himachal Pradesh	**1**	**2**	**0**
9	Jammu & Kashmir	**1**	**2**	**0**
10	Jharkhand	**1**	**3**	**3**
11	Karnataka	**1**	**3**	**5**
12	Kerala	**1**	**2**	**4**
13	Madhya Pradesh	**1**	**3**	**3**
14	Maharashtra	**1**	**3**	**4**
15	North-East-I	**1**	**2**	**0**
16	North-East-II	**1**	**2**	**0**
17	Orissa	**1**	**3**	**3**
18	Punjab	**1**	**2**	**7**
19	Rajasthan	**1**	**3**	**6**
20	Tamil Nadu	**1**	**3**	**5**
21	Uttaranchal	**1**	**1**	**3**
22	UP-E	**1**	**3**	**3**
23	UP-W	**1**	**3**	**4**
24	West Bengal	**1**	**3**	**3**
25	Delhi	**1**	**3**	**4**
26	Mumbai	**1**	**4**	**4**

ANNEX- A2

Domestic Transmission Infrastructure					
S.No.	**Service Provider**	**OFC in Route Km**	**No. of PoPs**	**Equipped Capacity in Mbps**	**Utilised Capacity in Mbps**
	Incumbent Operators				
1	BSNL	452715			
2	MTNL	8772			
	IP-II Operators (Including those who converted to NLDOs)				
3	Railtel	29025	2458	2800	1700
4	Powergrid	20044	70		
5	GAIL	8500			
6	VSNL Broadband	1017	10	112640	107520
	Private Operators				
7	Reliance	66930	2704	1273408	704152
8	Bharti	33594	327	506700	320000
9	VSNL	17397	270	569825	370604
10	TATA	8000	338	2480	2015
11	HFCL	3000	130	12500	7500
12	Shyam	2842			
13	Hutch	6942	143	622	622
14	Aircel	1740	43	2016	1940
15	SPICE	1087	44	966	666
16	Idea	295	9	126	126
	Total	**661900**	**6546**	**2484083**	**1516845**

(Source: As reported by operators)

ANNEX –A3

The contents of DoT (Department of Telecommunication) circular no. 824-42/2000-LR dated 15.07.2003 is reproduced below:

Government of India
Ministry of Communications & IT
Department of Telecommunications
Sanchar Bhavan, 20, Ashoka Road,
New Delhi – 110 001
(LR Cell)

No. 824-42/2000-LR Dated 15.07.2003

To
All Basic / NLD / ILD Operators

Sub: Utilization of resources by CUG customer through multiple licensed service operators for setting up of CUG network.
Ref: Your letter dated -----

The above matter has been considered by Department of Telecommunications and I am directed to intimate you in this regard as follows:-

1. Under the terms and conditions of existing licence, wherever permitted, operators are free to provide leased lines to their customers for setting up of Closed User Group (CUG) network. CUG may be a network of leased lines connected in a particular configuration. Customers do not require any approval / permission from DoT for availing the facility of leased lines through licensed telecom operators.
2. The arrangement of telecom resources from various service providers for setting up CUG network as requested by customer is to be resolved by entering into mutually agreed commercial agreements between the operators.
3. DTS circular No. 112-8/94-PHC (Pt) Dated 31.05.2000 will not be applicable in the multi operator scenario.
4. It shall be responsibility of operators to ensure that the telecom resources are used for genuine and lawful purposes.

Sd/-
(Rajvir Sharma)
Director (LR-III)
Tel. 23036509

Copy to: 1. DDG (BS), Sanchar Bhavan, DoT, New Delhi
2. Secretary, TRAI, A-2/14, Safdarjung Enclave, New Delhi – 110 029

ANNEX-A4

INTERNATIONAL SCENARIO OF COMPETITION IN DLC MARKET

The International DLC competition scenario and the measures taken by some of the regulators abroad in enhancing the competition in DLC market are given below:

A.01 France- Autorité de régulation des télécommunications (ARCEP):

As part of the outcome of a dispute resolution procedure between a new entrant and the incumbent, the ARCEP issued a decision in February 2002 on a number of leased line issues in dispute. More importantly, at the same time it mandated the incumbent to introduce interconnection leased lines, into its Reference Interconnection Offer (RIO), and to modify the conditions for delivery including the penalty clauses applicable.

ARCEP also concluded that the France Telecom holds significant market power in retail leased line market, wholesale leased line market and wholesale trunk segments of leased line markets.

The summary of the 15th February 2002 decision of the France Telecom regulator is given below:

- The development of competition on the data transmission market across France will be stimulated by allowing France Telecom's competitors to complete their own medium- and high-speed leased lines networks. This will allow them to connect their own clients' premises, when located beyond their own networks, via an interconnection service offered by France Telecom for all of France.
- To include a leased-line interconnection service in the RIO for L-33.1 operators. The incumbent to provide leased lines between 64kbit/s and 2Mbit/s, with price reductions of between 10% and 20% compared with Transfix 2.0 (France Telecom's retail offer).
- The price drop will allow operators to lower their prices to their own business clients with an offer competing with the incumbent operator's, while improving their financial situation.

- The interconnection offer approved by ARCEP concerns medium-speed leased lines (64 kbit/s to 2 Mbit/s) and allows operators to cover all of France with 123 interconnection points. Pricing and technical conditions to be reviewed annually by ARCEP.

A.02 European Regulator Group (ERG):

During 2002, many regulators have adopted regulatory measures to ensure proper wholesale offers for leased lines, in some cases including interconnection of leased lines, in the reference interconnection offers. Service level agreements and penalties in case of delays in deliveries have also been adopted. ERG will monitor effective application of adopted measures and assess non-discrimination and cost-orientation.

A.03 European Commission (EC):

(i) Leased lines:

The highlights of the recent (29/3/2005) recommendations of the commission on the provision of leased lines in the European Union and pricing aspects of wholesale leased line part circuits is given below:

- Where a national regulatory authority (NRA) determines that a relevant market is not effectively competitive, it shall identify undertakings with significant market power and shall impose appropriate specific regulatory obligations on such undertakings, or maintain or amend such obligations where they already exist.
- National Regulatory Authorities should:

(a) ensure that the prices associated with the provision of a leased line circuit reflect only the costs of the underlying network elements and the services being requested including a reasonable rate of return. In particular, the tariff structure may include one-off connection prices covering the justified initial implementation costs of the service being requested (e.g. specific equipment, line conditioning, testing and human resources), and monthly prices covering the on-going cost for maintenance and use of equipment and resources provided;

(b) ensure that any of the price ceilings for leased line circuits based on the price data and methodology given in the Commission services working document are respected unless there is reliable evidence from

cost accounting analysis as approved by the national regulatory authority that the recommended ceiling would result in a price level below the efficient costs of the underlying network elements and the services being requested including a reasonable rate of return.

(ii) Closed User Groups:

With regard to Closed User Groups(CUGs), The European Commission in EU Directive 90/388/EEC defined CUGs as:

"those entities not necessarily bound by economic links, but which can be identified as being part of a group on the basis of a lasting professional relationship among themselves, or with another entity of the group, and whose internal communications needs result from the common interest underlying this lasting relationship. In general, the link between the members of the group is a common business activity". Examples of activities likely to fall into this category are fund transfers for the banking industry, reservation systems for airlines, information transfers between universities involved in a common research project, re-insurance for the insurance industry, inter-library activities, common design projects, and different institutions or services of intergovernmental or international organizations.

As regards corporate and closed user group networks, Directive 90/388/EEC on competition in the telecommunications markets and Directive 90/387/EEC on open network provision, already require that access to telecom operators' infrastructure should be cost-oriented. Directive 92/44/EEC requires in particularly that leased lines must be offered on a cost-oriented basis. Given this obligation, and, given that Member States must comply with it anyway, the opening of alternative supply is not expected to alter the market position of telecom operators in this area substantially.

(iii) Network Security :

The Council Decision 2001/264/EC (Council's Security Regulations), applying to Member States and the Council, and the Commission Decision 2001/844/EC (Commission Provisions on Security), applying to the Commission, define a common set of rules on how to treat EU classified information.

IDABC is a Community programme managed by the European Commission's Enterprise and Industry Directorate General. IDABC stands for Interoperable Delivery of European eGovernment Services to public Administrations, Business and Citizens. To achieve its objectives, IDABC issues recommendations, develops solutions and provides services that enable national and European administrations to communicate electronically while offering modern public services to businesses and citizens in Europe.

IDABC Security Studies aim to ensure that the results of relevant research and analysis are shared to enhance security systems and procedures and that security is approached in a thorough and consistent manner across European networks.

The IDABC Public Key Infrastructure for Closed User Groups (IDA PKICUG) offers an effective, standards-based end-to-end security solution. The IDA PKICUG establishes a trust infrastructure at the pan-European level and can provide all the necessary services for the management of electronic certificates (creation, revocation, renewal) for members of IDA sectoral networks. IDA electronic certificates can also be used when no national Certification Authority (CA) exists, or when for any reason the users do not wish to use the services of the national CA. It should be complementary and interoperable with the infrastructures set up by the Member States, the European Institutions, and the European Commission, and able to harmonise the mutual recognition of certificates delivered by these infrastructures.

A.04 Singapore- Infocomm Development Authority (IDA):

The IDA conducted a consultation exercise in 2003 and as a result published a paper on 16th December 2003 entitled “Designation of Singapore Telecommunication Limited’s Local Leased Circuits as a Mandated Wholesale Service”. The IDA concluded that competition did not exist in the Wholesale and Retail markets for Local Leased Lines and decide to intervene. The IDA defined two markets - a retail market and a wholesale market and concluded that SingTel was dominant in both markets. The IDA considered that facility based competition was the best method to achieving its objectives of ensuring sustainable and effective competition. The IDA

therefore determined that LLC tail circuits i.e. Partial Private Circuit (PPCs) should be made available as an Interconnection Related Service ("IRS") and should be cost based. This is because it is not likely to be economically feasible for a new entrant to duplicate the extensive reach of the incumbent's LLC network in Singapore.

- IDA concluded and designated that SingTel's local leased circuits (LLC) as a mandated wholesale service under the Code of Practice for Competition in the provision of Telecommunication Services for a period of two to three years at IDA mandated prices in order to allow new entrants time to build and acquire a customer base and directed SingTel to make corresponding modification to its Reference Interconnect Offer (SingTel RIO) to include its offer of LLCs as a mandated wholesale service.
- The requirement for SingTel to allow Facilities-Based Operators (FBOs) to co-locate equipment at SingTel's exchanges for access to SingTel's LLCs. This will still ultimately encourage new entrants to roll out their infrastructure and networks thereby reducing their reliance on SingTel's network.

A.05 Malaysia:

The Malaysian Communications and Multimedia Commission observed that the characteristics of competition in the provision of leased lines service vary on a rout-by-route basis and decided that competition needs to be assessed on a case-by-case basis, taking into consideration the specific characteristics of the given leased line route.

A.06 Japan:

Japan defines operators as Type I or Type II. Type I operators were subject to price ceiling, and any tariff changes needed to be approved by the regulator before implementation. All regulations pertaining to Domestic Private Leased Circuits (DPLC) were abolished in April 2004 as the regulator determined that the market for DPLCs was now competitive.

A.07 Botswana- Botswana Telecommunications Authority (BTA):

Botswana Telecommunications Authority (BTA) ruled in a case related to competition in leased line market in Botswana wherein a complaint lodged by USKO Botswana (USKO), an Internet Service Provider (ISP), duly licensed in terms of the Telecommunications Act, 1996 [No. 15 of 1996] (the "Act") against the Botswana Telecommunications Corporation (BTC), having Significant Market Power, for refusing to provide leased line connection between USKO and its client.

The summary of the ruling is reproduced below:

"17 In the premises, and having duly considered all the factors relevant to this dispute including submissions by the concerned parties, I hereby order and direct that –

17.1 BTC should provide leased lines to USKO Botswana and WUC as requested within 30 days of the date of this ruling"

A.08 Belgium:

Belgian Telecom Regulator concluded that Belgacom is having Significant Market Power in Retail level leased lines market (Market 7), Whole sale terminating segment of leased lines market (Market 13) and hence imposed the obligations to non discrimination, access and interconnection, transparency, separation of accounts, price control and cost accounting system. However as it has no SMP in wholesale trunk segments of leased line market (Market 14) and hence no obligation is imposed.

A.09 United States of America:

- There are broadly two types of carrier - local carriers like Verizon and Bellsouth who typically provide private lines within their network footprints and long distance carriers like AT&T, and Sprint who provide long distance and international services.
- Each State sets its own regulation; some States have deregulated local private circuits, which allows carriers and customers to negotiate prices. In other States private circuits are only deregulated in Metropolitan areas.
- Capacities of T1 (1544 Kbps) and above are considered competitive and wholesale customers negotiate their own contracts for prices.

- T1s primarily used for data traffic are considered non-regulated at wholesale levels as well.
- T1s largely used for voice traffic were required to be unbundled by the incumbent local exchange carriers (ILECs) - though this is currently being contested in the courts.

A.10 United Kingdom- Office of Communications (Ofcom):

Ofcom published a market review into leased lines in July 2004 entitled "Review of the retail leased lines, symmetric broadband origination and wholesale trunk segments markets". In this market review Ofcom made the following decisions:

Retail low bandwidth <8Mbps - circuits are subject to the following regulations:

- Obligation to supply on reasonable request the minimum set of retail leased lines;
- Requirement not to unduly discriminate;
- Cost orientation and a cost accounting system to take effect only if BT breaches its voluntary undertaking not to raise the combined prices of a basket or these services by more than RPI before June 2006;
- Requirement to publish a reference offer (obligation to publish current prices, terms and conditions; and same day price notification); and
- Requirement to publish information concerning delivery and repair times.

Retail high bandwidth >8Mbps - not regulated

Wholesale all bandwidths - are subject to the following regulations:

- A general obligation to provide access on reasonable request;
- Requirement not to unduly discriminate;
- Basis of charges obligations (cost orientation and a cost accounting system);
- Price control (not for trunk market);
- Accounting separation obligations;

- Requirement to publish a reference offer;
- Obligations to give notice of changes to prices, terms and conditions;
- Obligations relating to requests for new network access.
- A direction under the general access condition to provide Partial Private Circuits (PPCs) at a range of bandwidths, Radio Base Station (RBS) backhaul link products, and Local Loop Unbundling (LLU) backhaul products, subject to specific terms and conditions;
- A direction under the cost orientation condition covering pricing matters relating to PPCs and LLU backhaul; and
- A direction under the quality of service condition to require specific information in respect of PPCs.

A.11 South Korea - Ministry of Information and Communication (MIC)

- The MIC has typically encouraged facilities based competition.
- In the Domestic Leased line market, KT and Dacom (originally part of KT) dominated until 1994 but since the entry of Thrunet in 1996 there has been significant market entry, there are now 12 license holders.

A.12 Australia - Australian Competition and Consumer Commission (ACCC)

ACCC currently applies a cost orientation requirement on the sale of local access leased lines.

A.13 China

All leased line rates set by the Government.

A.14 Ireland- Commission for Communication Regulation (ComReg)

For Domestic Private Leased Circuit (DPLC) ComReg is currently conducting a consultation exercise on both the wholesale market and retail market for leased lines. ComReg is likely to find that Eircom has SMP in both markets, and has proposed the following remedies:

Wholesale

- Access to and use of specific network facilities – the provision of Wholesale leased lines and access to Eircom's network facilities for interconnection with PPCs.
- Non discrimination.

Retail leased lines <2Mbps

- Non discrimination
- ComReg believes that this market is competitive and proposes to remove all regulation in this market.

A.15 Greece- The Hellenic Telecommunications & Post Commission (EETT)

In Its Regulation regarding the issues of the provision of Leased Lines in Article 3 and Article 10, it is stated that:

1. Any organizations that are designated as having significant market power in the Leased Lines market are required to communicate to EETT an Offer within thirty (30) days from the publication of the EETT decision assigning them the status of an organization having significant market power. Any organizations that have already been designated as having significant market power in the Leased Lines market are required to communicate to EETT an offer within thirty (30) days from the publication of this decision.

2. The Offer shall pertain both to the Provision of Wholesale Leased Lines Services and the Provision of Retail Leased Lines Services.

3. The Obligated Organization must comply with the principles of competition, as enforced by applicable law. In particular, it shall apply similar terms in similar cases to Organizations that provide similar services. In addition, it shall provide Leased Lines to other Telecommunications Organizations under the same terms and the same level of quality as those of the lines provided for its own telecommunications services or, depending on the case, for the telecommunications services provided by its Subsidiaries or for the telecommunications services provided by its partners.

4. The provision of Retail Leased Lines Services may not be effected under conditions that are more advantageous than those of Wholesale Leased Lines Services.