

Consultation Paper No. 10/2008



Telecom Regulatory Authority of India

Consultation Paper

On

Carrier Selection

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PREFACE

Market liberalization promotes greater investment in telecommunication network of a country. It has been seen that when telecommunications segment is opened up for competition, both incumbents and new entrants invest more, innovate and offer new services at lower prices. The competition forces them to expand into hitherto unserved markets and earn profits on volume and service quality rather than through high margins. In this situation of buyers' market, the customer gets the maximum benefit.

Liberalization of the market is marked by the entry of new players in segments of telecommunications business where opportunity for making profit exists. Long distance segment has traditionally subsidized the local segment and is considered to be one of the lucrative segments. Opening up of this segment should lead to good competition. In India even though the long distance segment has been opened to competition and entry conditions have been considerably eased more needs to be done. If the access service providers are asked to allow customers carrier selection then the carriers can offer innovative plans, offer competitive pricing, earn higher revenue, expand and give competition to the established players. It is for these reasons that new market entrants in long distance telephony regard the full implementation of carrier selection, particularly carrier pre-selection (CPS), as being indispensable to the achievement of full market liberalisation and the development of effective competition.

Carrier Selection provides customers with an easy way to change services providers and obtain better services at competitive prices. Competition brought in by carrier selection is important to bring in operational efficiencies in the long distance segment and also to offer choice, quality and affordable prices to the consumers. Availability of carrier selection is an important prerequisite for

a vibrant competition. A fully liberalized voice telephony market without the means for customers to express choice would in reality not have the necessary requirement to create an effective environment for competition.

A number of developments have taken place over the last few years that necessitate a fresh look at this unfinished task to take a final view of implementation of carrier selection in the country. One of the developments that has happened is the deployment of Intelligent Network (IN) platforms by access service providers. Using these the access providers, both fixed and mobile, are offering services like toll-free, televoting, virtual calling cards etc. The virtual calling card allows customers to make all types of calls from any of the phones of the service provider from whom the card has been bought. To take this accessibility a step further, TRAI issued a regulation in November 2006 to mandate service providers to allow access to each other IN based services like toll free and virtual calling cards. The present consultation on carrier selection intends to take this a step further and allow customers to also choose their long distance carrier.

Consultations on carrier selection were earlier done in December 2001 and Directions for its implementation were issued in July 2002. One of the primary reasons for putting the carrier selection direction on hold was the huge cost of upgradation of the incumbent's network and general reluctance of NLDOs/ILDOS in sharing this cost. In the present paper we explore another option – issue of calling cards by

long distance operators(NLDOs/ILDOS) to give customers choice of the carrier for their national and international calls.

Significant number of stakeholders are of the view that the domestic long distance segment is not as competitive as that of the access segment. With this background certain issues relating to promoting competition in the national and international long distance sector are discussed in this Consultation Paper. Comments of the stakeholders are solicited for relevance of carrier selection in the present scenario including the comments on how the various implementation issues described in the paper can be addressed.

The Authority requests for written responses from all the stakeholders by 6th June, 2008. It would be appreciated if the response is accompanied with an electronic version of the text through e-Mail. The responses can be sent to and clarifications sought from Mr. Lav Gupta, Pr. Advisor (FN), TRAI on Tel. No. 011-23216930 email:lavgupta@traigov.in and lavgupta@gmail.com or from Mr. Arvind Kumar telephone:011-23220209 and email traifn@yahoo.co.in.

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Chairman

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Chapter 1

Introduction to Carrier Selection

1. Introduction

1.1 What is in it for the service providers?

Liberalization of the market is marked by entry of new players in segments of telecom business, like long distance calls, where opportunity for making profit is perceived. New NLD/ILD entrants take time to establish their networks. In addition, they need commercial agreements with access providers to give them traffic so that they can earn revenue and expand their network. A requirement on the incumbent operator and other established access/integrated operators to implement carrier selection can enable a new entrant to immediately attract customers and therefore earn revenue, expand network and give effective competition. NLDOs and ILDOs get direct access to the customers for voice services. They can launch innovative plans and offer competitive pricing thereby benefiting customers financially. It is for these reasons that new market entrants regard the full implementation of carrier selection, particularly carrier pre-selection (CPS), as being indispensable to the achievement of full market liberalisation and the development of effective competition.

1.2 What is in it for the customers?

By making choice of the access provider the customer has already indicated his/her preference for the local calls but in prevalent regime he does not have control over how his national and international calls are routed. Through carrier selection the customer gets flexibility of choosing his national and/or international service provider. These facilities enable consumers

to avail themselves of telecommunications services best suited to their specific needs, particularly in terms of price and quality. Consumers can use carrier selection service to select the carriers of their choice without needing to replace their existing telephone line. Carrier selection can help competition by reducing the cost to consumers of switching operators. However, to be effective the process of implementing it needs to be worked out in a transparent way which is easy for the consumer to understand as well as imposes minimum costs.

1.3 Need for carrier selection

Competition brought in by carrier selection is important to bring in operational efficiency in the long distance segment and also to offer choice, quality and affordable prices to the consumers. TRAI had understood the need for carrier selection quite early in the path to liberalization. An elaborate consultation process and several rounds of meetings were conducted with the stakeholders before a direction was issued in July 2002 to the access providers and long distance operators to implement carrier selection in their respective networks. Due to various reasons discussed in Chapter 2 implementation of this direction has been held up.

A number of important developments have taken place during the intervening period that make the environment today a lot different from what existed then. In general there is more appreciation of the issues involved in carrier selection on the part of the stakeholders. IUC & ADC regime was instituted in 2003 and reviewed every year thereafter. Entry barrier for the NLDOs /ILDOs were eased and as a result the number of long distance operators has increased from 2 to 21 as on 10.1.2008 IN based virtual calling cards have also been launched by some

of the access service providers giving flexibility to the customers for making calls from any phone in their own network, even without owning one. IN regulation issued by TRAI in November 2007 takes it a step further and enables use of calling cards of any service provider in any network. Tariff has been generally under forbearance but 'One India' plan offers inter-circle call rate of Re 1 per minute. ADC has been reduced consistently both in the domestic and international long distance sector. In the domestic sector the ADC has been totally removed. Following this at least one major service provider has reduced the national call charges to Rs 1.50 per minute.

There is viewpoint of many stakeholders that the domestic long distance segment does not appear to be as competitive as that of the access segment. With this background certain issues relating to promoting competition in the national and international long distance sector are discussed in this Consultation Paper. In view of the above stakeholders comments are solicited for relevance of carrier selection in the present scenario including the comments on how the various implementation issues listed above can be addressed. Hence the consultation.

2. What is carrier selection?

2.1 Definition

The changing telecommunications environment has enhanced the importance of being able to choose the service providers that perform functions on a call. As per ITU¹ The term **carrier selection** is used when the decision is controlled by the **calling party** *This ability to designate a specific service provider for a specific portion of a call may be achieved through the use of a prefix, presubscription, signalling, database analysis, or*

embedding the identification in the number itself. At each hand-off point of a call, the current provider must determine the next provider to which to route the call.

ITU-T E.164 recommendation - supplement 1
SERIES E: OVERALL NETWORK OPERATION, TELEPHONE SERVICE, SERVICE OPERATION AND HUMAN FACTORS
Operation, numbering, routing and mobile services – International operation – Numbering plan of the international telephone service
“**Alternatives for carrier** selection and network identification”

2.2 Types of carrier selection

There are two main types of carrier selection, namely "call-by-call carrier selection(CS)" and "carrier pre-selection (CPS)". Both of these methods allow consumers to choose a different carrier for carrying long distance calls rather than the choice being made by their access service provider(usually incumbent or an established player). These methods are described below:

2.2.1 Call-by-call Carrier Selection or Carrier Selection (CS)

Call-by-call carrier selection refers to the ability of the subscriber to choose an operator on a per-call basis while making long distance calls. The choice is usually indicated by a carrier access code (CAC) (for India DOT has decided it to be '10XY') which is dialled before the called number. 'XY' is the 2-digit Carrier Identification Code(CIC) to identify the long distance carrier. Thus CS is exercised by the subscriber by dialing four additional digits '10XY' after '0' (for NLD calls) & '00' (for ILD calls). The originating switch uses the CAC to route the call to a specific trunk group) and the call is transferred to the selected carrier via the closest point of interconnection. It is then the responsibility of the selected operator to check that the subscriber is authorized to use its services and also make arrangement for charging the subscriber for the call.

2.2.2 Carrier Pre-selection (CPS)

With Carrier Pre-Selection, the consumer selects a default operator and the code of the operator is programmed into the exchange subscriber data of the access provider providing connection to the subscriber. The choice of this carrier applies to each long distance call made by the consumer. Subscriber is not required to dial '10XY' before the number.

Pre-selection of carrier is usually made off-line by the consumer and the access network provider programmes it into the subscriber data. The choice of this carrier applies to each call and the carrier selection prefix is not needed.

However, CPS in contrast to carrier selection requires a deliberate choice to change carrier, that is, to no longer take long distance service from the access provider. In turn this requires informing the access provider/existing carrier of this choice and registering with a new carrier.

2.2.3 Carrier Pre-selection with override

It is possible to have a combination of CS and CPS. With this option in place, a pre-selected carrier is used unless the user overrides the pre-selection on a dynamic basis by dialling CAC. This method is known as Carrier Pre-selection with Override (CPSO).

2.2.4 Calling cards by NLDOs/ILDOS

Though strictly not a method of carrier selection in the traditional sense, cards issued by long distance carriers offer

consumers capability of making call from any access network and still route calls through their preferred carrier. More about this method would be discussed in Chapter 4.

3. How it can be implemented

3.1 Type of Calls that Qualify for Carrier Selection

The following is list of the type of calls that have been considered by various countries for carrier selection:

- International
- National
- National and international
- Between mobile and fixed
- Local

Each country has to determine what model is appropriate for its situation. Depending on a countries telecommunications policy all or any combination of these can be utilized. Carrier selection for local call would effectively mean unbundling of local loop.

3.2 Options for implementation

3.2.1 Call-by-Call Selection with Default Carrier

This is the most straightforward option and can be implemented in fixed and mobile networks without much of hardware or software upgradation. It can be implemented both for post paid and prepaid subscribers.

This method is technology independent and in principle could be implemented in all networks. It is not expensive to implement and can be done in a short time frame. New carriers can focus on their market strategies to get more customers. On the

negative side the customers need to dial extra digits to select a carrier other than their own access provider. It favours the default carrier selected by the access provider of the customer.

3.2.2 Preselection with Call-by-Call Selection

This method is fair to the new entrant since the consumer does not have to dial extra digits to select a new carrier. It is simple to use. The customer can still make a selection on per call basis but if no selection is made then preselected carrier carries the call. The negative aspect is that it takes time for the switches, signalling and billing systems to be adapted. The access service providers and the carriers have to make their network compatible to preselection. It is usually the incumbent having legacy systems who would have to do the upgradation work. There are extra administrative costs when customers change their presubscribed carrier

3.2.3 Call-by-Call, no default carrier, no preselection

This method gives equal opportunity to all the carriers to get subscriber traffic. It is also fair to the new entrants. It is inexpensive to implement. On the negative side calls will fail if customer does not dial selection code prior to a call. Customers have to dial additional digits for every long distance or international call

4. How do customers decide preferred carrier

There are fundamentally two methods used for customers to decide their preferred carrier – Balloting and Marketing

4.1 Balloting

The process of deciding the pre-selected long distance carrier by ballot is used normally when the CPS is first introduced.

Balloting can be carried out on service area basis and would normally be a protracted process sometime taking months. As usually CS precedes CPS, the customers can meanwhile select carrier through this process. Through a ballot consisting of names of all the participating NLDOs/ILDOs customers are asked to make their choice and return their ballots to the regulator and any other selected agency. In case enough ballots are not returned reballoting may be provided for either suo-moto or on request of a majority of new entrants. Customers who do not return their ballots continue with their existing service provider.

Balloting is important in that the option of choosing a carrier is put directly before the consumers. This is important in view of the fact that the lack of consumer awareness and a tendency not to make an active choice strengthens the incumbent's position. Commercial campaigns by new entrants can be very costly to them. In that sense, it is important to design balloting in a way that induces consumers actually to make a choice.

Advantage is that it gives new entrants publicity and exposure. When customers are directly faced with the issue of making a choice they make decisions faster than if the process is left to the market. On the downside, balloting is expensive to conduct and also since a large proportion of customers may make a choice through ballots the capacity may be exceeded.

4.2 Marketing

When the competition has sufficiently developed or consumer awareness could be raised sufficiently by other means like advertising then balloting is not used. Canada adopted this approach. The advantages of this approach are that no time

consuming and cumbersome balloting is needed. Subscribers are not forced to make a choice and new entrants can select their target customer base according to marketing plan. On the disadvantage side it gives the incumbent a built-in advantage.

5. Carrier Selection and Regulation

Incumbents would naturally be resistant to losing their advantageous position. The incumbent in many countries still holds an advantageous position in its negotiation with new entrant operators as the former has the necessary technical and economic information for CPS. It is also the incumbent that has to take the necessary steps to activate CPS from the administrative and technical perspective. This gives the incumbent a significant advantage that new entrants have difficulty in overcoming without recourse to the regulator. In addition, because the incumbents have no economic incentives to disclose the information and to co-operate with new entrants, regulators are required to intervene to ensure that CPS is implemented properly and necessary regulations are complied with. Regulators are also required to oversee the market once CPS has started, particularly to oversee the behaviour of incumbents, to see if the rules and agreements are observed properly, enforce them using penalties as appropriate, and sort out differences as they arise.

Another issue that the long distance carriers and access provider have to resolve through mutually negotiated agreements is billing the customer. This agreement would tackle issues like who will bill the customer, whether there will be a common or a composite bill, who will collect the payment, if any revenue sharing is involved then what will be the arrangement,

what will be complaint handling mechanism etc. Regulators should intervene only if negotiations on billing fail.

Regulator must establish rules to provide carriers with economic disincentive to engage in slamming (changing carrier not authorized by the subscriber) and should slamming take place, the responsible operators are obliged to pay penalties.

Chapter 2

Past efforts and issues in implementation of Carrier Selection

1. Introduction

Move towards giving choice of long distance carrier has been there since telecom sector in India was opened to competition. UASL contains stipulation of installation of network capable of carrier selection. On recommendations of TRAI, Carrier Access Code (CAC) and Carrier Identification Codes have been allocated by DOT. After due consultations directions were issued to service providers to implement carrier selection. The following sections describe the sequence of activities that have taken place in the past and contentious issues that will be dealt with in Chapter 3.

2. Licencing and regulatory framework

A free choice to customers for selecting their long distance carrier has been incorporated in the terms and conditions of various licence agreements

| | | |
|---|---|----------------------|
| (a) New Basic Service Licence | : | Clause 2.4,16.1,17.3 |
| (b) Cellular Licence (Fourth Operator): | : | Clause 27.5 |
| (c) Unified Access Service Licence | : | Clause 23.3, 26.5 |
| (d) NLD Licence | : | Clause 17.1 |
| (e) ILD Licence | : | Clause17.1 |

These Licence conditions stipulate mandatory interconnection whereby the subscriber could have a free choice of selecting his long distance carrier.

3. Developments so far

3.1 Reference from Department of Telecommunications (DOT)

DOT vide its letter dated 24th August 2000, requested TRAI to issue necessary regulations in the areas covering carrier pre-selection (CPS) or carrier access code (CAC) to be dialled by the subscriber for dynamic selection of NLDO, in accordance with the guidelines for issue of NLD Licenses. DOT also mentioned about the need for formulating a numbering plan having Carrier Access Code on priority and requested for indicating the date of implementation of this code.

3.2 TRAI recommendations to DOT

A high level Committee was set up by the TRAI to examine all the relevant issues relating to the implementation of NLD guidelines. The Committee had representatives of DOT, BSNL, MTNL, ABTO, COAI, C-DOT, TEC as its member. For exploring different aspects of Carrier Selection, study groups were formed. Recommendations of the committee were submitted to the Authority on 7th March 2001. Based on the report of the committee, TRAI forwarded its recommendations on **19th June 2001** to DOT for Allotment of Codes to NLD Operators for introduction of Dynamic Call by Call Selection of NLD Carriers by subscribers. The Authority recommended:

- Adoption of “10” as the NLD Service Code (NLDSC)
- 20 codes ('40' to '59') to identify NLD Carriers
- Authority felt that no. of NLD Operators would be less than 20 for the planning period of five years and mentioned that the position would be reviewed after that period

3.3 Allotment of Carrier Identification Codes (CIC) by the Licensor

In NNP 2003 the following modifications were made:

Prefix 0010 shall be used for selection of international carrier and 010 for national carrier. Carrier identification code was decided to be of 2 digits giving 100 codes out of which '00' to '09' have been reserved for future use. The allotment would start from code '10'. Each service provider would be given 2 codes, one for toll quality and another for non-toll quality network.

For intra circle long distance calls the carrier access code shall be the same applicable for NLD service. The CIC from '10' to '79' shall be allotted to NLD service providers. For the NLD service providers who are also basic service operators, same CIC shall be applicable for intra circle calls. CIC from 80 to 99 shall be allocated to the BSOs who are not licenced to provide NLD service.

3.4 Initial steps for introduction of carrier selection

In the year 2002, there were only two operational NLD operators BSNL and BTSOL (Bharti Telesonic Limited). TRAI, vide its letter No. 310-9(4)/2001-TRAI dated **25th January 2002** addressed to BTSOL, suggested an interim solution before implementation of carrier selection that distribution of NLD traffic can be achieved by passing all default traffic of 24 hours (00/24 hrs) to the two operators (BTSOL/ BSNL) on alternate days, by the Access Providers (CMSOs/BSOs). It was advised to BTSOL that suitable technical arrangements may be made in this regard by mutual discussions with the Access Providers. This was

challenged in Hon'ble TDSAT by BSNL and Telecom Watchdog vide appeal no. 3 of 2002 and 4 of 2002 respectively. Directions given by TRAI vide its letter dated 25th January 2002 were stayed by Hon'ble TDSAT on 31.01.2002. Finally Hon'ble TDSAT adjourned this case to enable TRAI to come to a final decision and made it clear that the order passed by Hon'ble TDSAT will not influence TRAI in any way in coming to its final decision.

3.5 **TRAI Direction on implementation of Carrier Selection**

Implementation of Carrier Selection was discussed in the Consultation Paper 2001(5) dated 14th December 2001 on "Interconnection between Access Providers & National Long Distance Operators". Technical issues were discussed in the High Level Technical Committee. Based on inputs provided by Technical committee as well as stakeholders, on **24th July 2002**, TRAI issued Direction to Access Providers (BSOs/CMSOs) & National/International Long Distance Operators regarding the implementation of Carrier Selection in their respective networks (available at tra.gov.in).

3.5.1 Time frame of implementation

1. National Long Distance Calls

| Type of Access Provider | Call by Call Carrier Selection: Outer Time Limit | Carrier Pre-Selection: Outer Time Limit | Service Areas to be covered | Routing to announce ment machine at the end of |
|--------------------------------|---|--|--|---|
| CMSOs | 3 months | 6 months | In service areas where POPs have been established by new NLDOs | 6 months |
| BSOs | 3 months | 9 months | In stations where POPs have been established by new NLDOs | 9 months |
| | Within 3 months of the establishment of POP | Within 9 months of the establishment of POP | In the remaining stations in which new NLDOs establish POPs as per rollout plan shared with BSOs | Within 9 months of rollout. |

| (2) International Long Distance Calls | | | | |
|--|-----------|-----------|---|-----------|
| CMSOs | 6 months | 6 months | In service areas where new ILDOs can pick up ILD traffic directly from CMSOs or POPs of NLDOs | 6 months |
| BSOs | 18 months | 18 months | At stations where Carrier Pre-selection has already been implemented for NLD calls | 18 months |
| | 18 months | 18 months | For other stations as per rollout plan shared with BSOs | 18 months |

3.5.2 Cost of implementing Carrier Selection and its Recovery

On the question of implementation cost the Authority decided that cost determination and recovery should conform to overall framework of interconnection regulations. Access provider and NLDO/ILDO would mutually negotiate the set up cost and manner of reimbursement. Integrated service providers should maintain separation of account of access and long distance

services and should also reflect payment made by long distance operations to access operations.

It was also decided that if the operators concerned fail to reach an agreement within thirty days of the setting up of the POP by NLDO/ILDO in the concerned service area, they should approach the Authority for a determination on the issue.

3.6 Relaxation by DOT for the implementation of call by call selection or pre-selection in BSNL network

DOT vide its letter dated **27th November 2002** gave relaxation for the implementation of call by call selection or pre-selection in BSNL network for a period of 12 months.

This letter also stated that this relaxation will stand withdrawn in case Bureau Model Interconnect Settlement or upgraded CDR Billing System is put in place earlier. Meanwhile, the present arrangement of routing the call as default was allowed to continue.

On level playing considerations, Authority deferred the implementation of the CS directive for all the operators.

3.7 MTNL request for sharing of set up cost

In March 2003 MTNL requested TRAI to intervene for payment of set up cost for the system modification in the Switches of MTNL to enable them to implement Carrier Selection for NLD and ILD Services in their networks. They stated that the estimates for set up costs amounting to **Rs. 732 crores.**

DOT had appointed a Committee consisting of officers from DOT and TEC to determine the cost implication of the required up-

gradation of BSNL's switches to be able to introduce carrier selection by means of CAC and carrier pre-selection. This Committee in its report in November 2003 indicated an estimate of **Rs.1968 crores** with the break up as follows:

| S.No. | Item | Cost(Rs.Crores) |
|--------------|-------------------------|-------------------------|
| 1. | New Technology exchange | 340.67 |
| 2. | C-DOT Exchanges | 402.77 |
| 3. | E-10-B replacement cost | 783.14 |
| 4. | Billing System | 441.32 |
| | Total | 1967.90 |

No separate calculations were done for implementing only call-by-call carrier selection.

3.8 Examining possibility of carrier selection at Delhi and Mumbai

Meanwhile, it was felt that perhaps carrier selection could be implemented in Delhi and Mumbai to begin with. Discussions with MTNL revealed that out of nearly 45 lakhs subscribers, 8 lakhs customers are on E-10-B and FETEX 150 exchanges which require upgradation before carrier selection can be made available to all customers.

MTNL also wanted that Bills should be generated by NLDO Directly. This had problems because NLDOs (including BSNL) did not have the capability for CDR based billing.

3.9 Meeting with Service Providers

TRAI had a series of meetings with various providers on 3.1.06, 4.1.06 and 5.1.06 for reviewing the current status on readiness of implementation of carrier selection in their networks. Points emerged during these meetings are covered in next section on implementation issues.

3.10 Amendment in IUC Regulation

On 23rd Feb 06 IUC Regulation was also amended and ceiling for carriage charge was prescribed as 0.65 p instead of a distance based fixed carriage charge regime prevalent at that time.

3.11 Review with new NLDs

As the situation was continuously evolving and a number of new NLDs had signed licence agreements after the announcement of the new guidelines in December 2005, it was felt that the situation should be watched and reviewed later after consulting new NLD operators.

In the meeting held on 18.09.2006 in TRAI, only VSNL supported the traditional method of Carrier selection and mentioned that the required cost for up-gradation needs to be looked into the present scenario. BSNL was of the opinion that at this point of time there is no need for carrier selection. M/s Bharti & Reliance felt that customers could be given a choice through calling cards.

Among the new entrants only RAILTEL favoured the carrier selection and willing to share the cost of implementation in access providers network on pro rata basis.

3.12 Recent meeting

A meeting was held in TRAI on 19.7.2007 with representatives of TEC, MTNL, BSNL and some fixed and mobile service providers to discuss implementation of carrier selection in the changed scenario specially focusing on the following points:

- Work involved in call-by-call carrier selection and preselection in terms of upgradation of equipment in both fixed and mobile networks
- Implementation of carrier selection for prepaid mobile and roaming subscribers
- Other related issues

As a follow-up of the meeting these organizations were asked to submit their comments of the issues in writing. Important issues raised by them are summarized below:

3.12.1 Cost of implementation

BSNL and MTNL have indicated that huge cost of replacement/upgradation of switches of the *fixed network* for offering carrier selection. BSNL has estimated a cost of over Rs 2500 crores and MTNL about 171 crores. For *mobile network* BSNL says that some MSCs do not support carrier selection and cost of replacing them would be around Rs 100 cr. While MTNL has not indicated any estimated cost but they have said that preselection is not supported by Huawei and Lucent GSM MSC and Motorola CDMA MSC.

Both BSNL and MTNL have sought compensation for the cost incurred in case carrier selection is mandated.

3.12.2 CDR billing system

CDR billing systems of BSNL and MTNL have not been commissioned. CDR billing system of BSNL is under installation and would take about 2 years to be implemented while that of MTNL is likely to be commissioned by end of the year.

3.12.3 Billing and commercial issues

Billing issues would be complicated. NLDO could do billing for long distance calls in which case subscriber would get two bills. If NLDO makes arrangement with the access provider then cost will be passed on to the subscriber. In case of default the access provider would not be ready to disconnect the subscriber if dispute is for long distance calls.

3.12.4 Ensuring fair returns to access provider

The access providers are of the opinion that if carrier selection is desired then TRAI should fix origination charge so that they are assured of reasonable returns. This, they say, is necessary as in some cases after paying 30 paise termination and 65 paise carriage only 5 paise is left with the access provider.

3.12.5 Opinion against carrier selection

Long distance tariffs have reduced considerably and carrier selection may not be relevant in the present scenario. Increased competition is leading to price advantages that a customer would get with carrier selection without the accompanying problems.

3.12.6 Limited scope of implementation

Implementation may not be possible for prepaid and roaming subscribers due to various technical problems.

4. Implementation Issues

From the above discussion, it is obvious that from time to time TRAI has tried to assess the status of readiness of implementation of Carrier Access Code/ Carrier Pre Selection in service providers network. Various meetings were convened with service providers and they were also asked to furnish submissions regarding Carrier Selection, cost repercussions and their preparedness. Various implementation issues highlighted by service providers are given below:

4.1 Billing by NLDO/ILDO

The NLD license conditions regarding billing stipulates that the licensee shall be responsible to its customers and shall ensure fulfillment of its obligation in this regard. It also stipulates that a billing handling charge as mutually agreed with NLD service providers may be payable to Access Providers. It means that NLD operator may have to do the customer billing and also may set its own tariff for carriage of long distance calls. Under these circumstances appropriate business processes and arrangements have to be worked out between Access and Long distance service providers.

4.2 Difficulty in estimation of upgradation cost

- During the meeting BSNL, MTNL and other Access Providers indicated that still lot of up-gradation may be required in their switches for implementation of CPS.
- MTNL highlighted that they still have problem in FATEX switches (6% in Mumbai) which does not support CPS. E10B switches (7-8% in Delhi) also cannot support CPS.
- BSNL indicated that for implementation of CPS E10B/FATEX switches will have to be replaced and in most of their switches the upgradation will be required for implementation of CPS. Even for implementation for CPS for mobile networks also upgradation will be required.

It was felt at that time that under these circumstances, the estimation of upgradation cost will always be a matter of dispute between the NLD/ILD operators and Access Providers, which may lead to delay in implementation of CPS.

4.3 Issues related with Pre-Paid Mobile Users:

Over 80% of the mobile users are pre paid users. The pre paid subscriber is charged online and at present their billing is controlled by Access Providers for all types of calls i.e. local/STD/ISD through IN platform. All the tariff tables are defined in IN system. However, in the scenario of CAC/CPS if NLD/ILD bills the customer then the control of call and its termination depending on the balance should be decided. Even in cases where the billing is done by the access provider, Charging Matrix in IN platform may need to be revised each time when new NLDO is added or a particular NLDO changes its tariff plan. If tariff changes for any particular SDCA then also IN

charging matrix has to be changed. In pre-paid extra digit analysis cost is also needs to be taken into account.

4.4 Issues related with roaming subscriber

For the roaming subscribers, the definition of routing was said to be complex and it will be difficult to implement carrier preselection. The NLDO and ILDO will be decided LSA (Licenced Service Area) wise and in case of roaming it may happen that the NLDO/ILDO operator may not be present in the visiting LSA.

4.5 Impact of Carrier Selection on IUC

After implementation of Carrier Selection, Origination charges, which are under forbearance right now, may have to be specified by TRAI to avoid unreasonable demand of Originating Access Provider on one hand and also to ensure reasonable returns.

4.6 Responsibility of poor QoS

In case of Carrier Selection, subscriber experiences only the end-to-end QoS which would depend upon the quality of service provided by 3 to 4 operators involved in end-to-end completion of a call i.e. the originating access provider, the NLDO / ILDO for long distance carriage and the terminating access provider. In this scenario the access providers will have no control over the end-to-end QoS & would not be liable to be held accountable for the poor end-to- end quality of service. On the contrary, if the long distance carrier is chosen by the Access Provider, he could be held fully accountable to the subscribers for end-to-end quality of service.

4.7 Less Margins available with NLDO

It is also mentioned, with implementation of CS, subscribers can select NLDO, who can decide & offer competitive long distance tariff. It has been argued by some that due to significant reduction in carriage charges and fixed termination charges of Rs. 0.30 per minute, very less margins are available for NLD operator in order to offer differential tariffs to the subscribers. Flexibility in fixing the tariff by NLDO is also dependent on settlement of origination charges between NLDO and Access Providers. From the point of view of the access providers, if the NLD tariff is decided by them, as at present, in the highly competitive market the customers are likely to get the best tariff packages, as access provider can better bargain the carriage charges, if traffic in bulk is offered to a particular NLDO. Implementation of the CS would require considerable capital expenditure for set up/Up-gradation cost in Access Providers network, which has to be borne by the NLDO and ILDO and will ultimately be recovered from the subscribers in the form of higher carriage charges. Otherwise also majority of the Long Distance Operators have reiterated their unwillingness to share any setup/up-gradation cost on this account.

Chapter 3

Carrier Selection in the present environment

1. Motivation for fresh consultation

The telecom sector has grown at a phenomenal rate in the last few years. The Indian telecom consumers have shown increased propensity to call long distance within and outside the country. All the types of long distance traffic have registered increase. Roaming in mobile and national and international long distance in both mobile and fixed have increased at an overall rate of overall rate of 34% and 14% respectively, in terms of revenue in last one year. It would be pertinent to say that the availability of service has improved and the cost of provision of service has gone down. Though some of it could be attributed to technological advancements the role of policy and regulatory decisions taken by DOT and TRAI has been significant. A number of regulatory policy measures like fixation of cost based Interconnection Usage Charges (IUC), periodical review of the IUC regime resulting in reduction of carriage charges, review of Access Deficit Charges (ADC), USO policy, reduction in prices of leased circuits, reduction in the applicable license fee, availability of international bandwidth, tariff ceilings where necessary etc., implemented from time to time have resulted in increased availability and affordability of telecom services. The present situation, therefore, is quite different from the one that prevailed when the Authority issued a direction in July 2002 for implementation of Carrier Selection.

In August 2007 the Authority decided that the time had come to involve the stakeholders in a fresh and comprehensive consultation process to take a final view on implementation of

Carrier Selection in India. By August 2007 several developments had taken place because of which fresh consultations seemed to be the appropriate course of action.

2. Past obstacles and present position

Earlier work on implementation of carrier selection has been described in Chapter 2. The key issues that resulted in protracted consultations and holding up of implementation are as follows:

2.1 Cost of implementation of carrier selection

The incumbent operators i.e. BSNL and MTNL projected costs to the tune of Rs. 1968 Crores and Rs 732 crores respectively for upgradation of their network to make it suitable for carrier selection. This, they had argued, should be paid for by the NLD operators who are going to become the beneficiary of the investment by way of business diverted from the incumbents. As per the causation principle also, which was agreed to be used by TRAI, this cost was to be borne by the NLD/ILD operators. These operators were, of course, in general reluctant to bear such cost.

2.2 Non availability of CDR based billing platform with BSNL

The subscriber database is available with the access providers. It is technically possible for the NLDOs to install their own billing systems for billing long distance usage for postpaid customers. However, the NDLOs would need the database of customers to be transferred from access providers for which there may be resistance as a number of NLDOs are also access providers and will fear poaching of their customers. For prepaid

customers the situation is a little more complicated. The credit details are maintained by the access providers and checking for available credit, debiting etc. is done online. It would be well nigh difficult for NLDOs to replicate this and they would need arrangements with access providers for billing such customers. The access providers therefore need to have a proper CDR billing system. BSNL has said that their CDR billing system is under installation and will take 2 years more to be implemented). The issues like who will bill the customer, will there be a single point payment, how to deal with bad debt of NLDOs as they access provider may not disconnect the customer in such case etc. are also relevant.

2.3 Billing in case of prepaid is IN based and in control of access provider

Charges for all types of calls are debited from the subscribers credit. The prepaid connections/recharge vouchers are issued by the access providers who maintain the database of all the subscriber payments. The NLD/ILD operators would have to depend on the access providers for making requisite payment from the prepaid collections leading to coordination and cost issues.

2.4 In case of prepaid subscribers, change of plans by NLDOs and addition of new NLDOs will result in change of IN charging matrix

The charging matrix in the IN platforms of the access providers would reflect tariff plans of all the NLDOs. When the plans change or new NLDOs start service the charging matrix would have to be modified. This requires extra provisioning work to be done at the access provider end and would perhaps reflect as

extra cost in the agreement between access providers and NLDOs. There also could be technology limitations in terms of matrix size.

2.5 Should NLDOs to NLDO handover of traffic be allowed?

The question that needs to be considered is whether NLDOs who do not have point of presence in an access area should be allowed to participate in carrier selection process for that access area. If they are not allowed then true competition would not emerge whereas if they are then they would be required to handover the call to another NLDO for completion of the call(NLDO to NLDO transit). The same would be true if the selected NLDO is not present in the terminating SDCA.

In case of fixed line traffic, BSNL has agreement/arrangement that originating traffic should be picked up from the SDCA tandem. Therefore subscribers of BSNL will be able to make choice only if the desired NLDO is present in the SDCA. For the fixed line terminating traffic, NLDOs can pick up the traffic terminating in the fixed network only if they are present in the terminating SDCA. Therefore carrier selection would be limited to a few SDCAs. These problems could perhaps be solved by allowing NLDO to NLDO transit.

For mobile network intra circle mobile to mobile no carrier/carrier selection would be required as the whole circle is treated as a local area. For intra circle mobile to fixed call termination there is no issue currently as these are being treated as local calls by mobile operators. For inter-circle mobile to mobile there is no major issue for carrier selection as long distance traffic is being taken/handed over at GMSC of the mobile operator and most NLDOs carrying voice traffic have

presence at circle level and for those who do not have presence, NLDO to NLDO transit will facilitate call completion.

2.6 Difficulty of implementation in case of roaming

Service providers have indicated that for roaming subscribers routing would be complex and it would not be possible to implement carrier selection. Also at present roaming agreements with foreign operators are made by access providers and accordingly they are charging their customers for roaming calls, when incoming call from home network are routed through the subscriber's preselected ILD carrier, there might be impact on these roaming agreements.

In the recent meeting it was indicated that the customer paying for the call should get the benefit of carrier selection. In case of roaming subscribers pre-selection for incoming calls from home network can be implemented. For outgoing calls while roaming dynamic carrier selection would be possible.

2.7 Origination charge

Access providers have indicated that as the carriage and termination charge is prescribed as 30 paise per minute and ceiling on carriage charge is 65 paise per minute, then if the call is Re 1 per minute the access provider is left with only 5 paise per minute as origination. Any origination less than termination may not be construed to be a fair deal for the access provider. This system needs to be looked into so that access provider is assured of reasonable returns. It may be required to be fixed taking into account the equipment cost, customer acquisition cost, billing cost, bad debts etc.

Since the last directions on carrier selection were issued in July 2002 discussions have been held with BSNL, MTNL, private access service providers, NLDOs/ILDOS, equipment vendors, TEC, CDOT a number of times to seek resolution of all the issues. It can be said that stakeholders better appreciate many of the issues now and any new consultation would be approached in a more mature manner.

2.8 Developments since issue of last carrier selection consultation paper in 2001

As has been said before, over the last few years a number of new developments have taken place that entreat us to have a fresh and decisive relook at the complete issue of carrier selection including its contemporary relevance, scope of implementation, time frame of implementation, cost recovery, billing issues etc. **The following are the key developments:**

2.8.1 Change in NLD/ILD licence conditions, lowering of entry barrier: resulting in larger no of NLDOs

These are discussed in section 3.0

2.8.2 Ceiling on carriage charges

Carriage charges were earlier regulated based on the distance and ranged from 20 paise to Re 1.10 per minute. In the IUC regulation amendment dated 23.2.2006 a ceiling of 0.65 paise per minute on carriage charges by NLDO was prescribed. With this development some of the stakeholders felt that the margins for NLDOs may not be vary high to make carrier selection very lucrative.

2.8.3 IN regulation: VCC needs to be implemented

IN regulation of November 2007, mandates access providers to allow access to IN services of all operators. This when implemented for calling cards, would allow subscribers to use calling cards of one access provider from another access provider's network. The long distance calls then may be carried by NLDO selected by the IN service provider selling the card or by the originating access provider depending on the arrangement. This would give customers some form of choice of the long distance carrier.

2.8.4 Developments in VoIP and NGN

IP networks offer possibility of reduction of cost for voice calls. As traffic moves over from TDM to VoIP costs will come down. NLDOs may also gain from setting up IP backbone and carrying voice/VPN traffic on it. In the traditional TDM networks transmission is more expensive and these require a multi-layered switch architecture for reducing the overall cost. IP networks reduce the transmission costs to a large extent. As carriers migrate their voice traffic on to IP network the cost comes down substantially. Therefore, cost based interconnection charges would help in bringing the correct regulatory framework in facilitating faster deployment of NGNs in the market.

A development that reinforces the belief of dominant position of IP is the thrust with which NGN is being pursued all over the world. A number of service providers have already started deploying NGN overlay in their respective networks. The NGN deployment in long distance segment will pave the way for non-

relevance of time based charging thus making the present system of carriage charges outdated.

Service providers have still not indicated firm plans for full migration to NGN, any upgradation in the existing network involving significant capex should be carefully planned. This will hold true for new options like carrier selection and needs to be seen in the light of plan for migration to NGN.

DOT has already allocated codes for non-toll quality services to NLDOs/ILDs for use in carrier selection.

3. Status of Competition in Voice Traffic NLD/ILD Segment

With a view to promoting growth of ILD and NLD service and also encouraging competition, the Government has already liberalized the norms for NLD and ILD license, the brief details are as follows:-

- i) Entry Fee for new NLD licence was reduced from the level of Rs. 100 crore to Rs. 2.5 crore. Similarly Entry Fee for ILD licence was reduced from Rs. 25 crore to Rs. 2.5 crore.
- ii) Annual licence fee for both NLD and ILD licences was reduced from the 15% to 6% of AGR w.e.f. 1.1.2006.
- iii) Roll out obligations removed for NLDOs and ILDOs.
- iv) Net worth and Paid up capital requirement reduced from Rs 2500cr and Rs 250 cr to Rs 2.5 crores.
- v) NLD/ILD service providers have been allowed to only access the subscriber directly for provision of leased circuits/closed user groups.

- vi) The Government has decided to do away with IP II and ISP with VPN service licences. Existing IP-II/ ISP with VPN licensees have been allowed to migrate to NLD/ILD service licence. IP-II licensees not interested in migrating to NLD/ILD are not permitted to provide National/International leased line/bandwidth to individual subscribers as per existing IP-II licence guidelines. Similarly IP-VPN licensees not interested in migrating to NLD/ILD shall not be permitted to carry voice traffic over VPN network.

Subsequent to these developments a number of players were encouraged to take NLD/ILD License. As on 10.01.2008 there were 21 licensed NLDOs and 14 licensed ILDOs. Most of the new entrants are not carrying the voice traffic and only offering Leased Line/Bandwidth/VPN services. It may also be seen that the service providers who are also access providers and have taken NLD/ILD license are mainly carrying the traffic originated from their access network. Thus the competition in voice traffic is not getting the benefit of large number of new entrants.

It may be noted that almost all the NLDOs/ILDOs have been allocated Carrier Identification Code for toll and non-toll quality services however in the absence of implementation of carrier selection, customer is not getting the benefit of competition and the allocated codes are not utilized.

4. Prevalence of relatively higher tariff in the long distance segment

In India, market forces are encouraged to determine the prices for the services and tariffs for telecommunication services are under forbearance except for fixed lines in rural areas, national roaming tariffs in case of mobile phones and tariff for leased circuits. Fixed line tariffs for rural areas have been prescribed by TRAI in the form of Standard Tariff package. However, flexibility rests with the operators of fixed line service in rural areas to offer alternative tariff packages to suit different segments of the population.

On review it is seen that the inter-circle tariffs offered by the various service providers, in most of the tariff plans, range from Rs. 2.40 per minute to Rs. 2.75 per minute. A few exceptions are recent announcement by a service provider of STD calls @ Rs 1.50 per minute and One India Plan in which STD call tariff is as low as Re 1 per minute. Increasingly it is seen that while mobile operators have contributed to enhanced levels of competition in the local call segment in a big way, as far as long distance calls are concerned competition does not appear to be very effective despite several favorable regulatory and policy measures.

5. Scope of carrier selection

As described in Chapter 1 section 3.2 carrier selection can be implemented primarily in two ways – call by call carrier selection(CS) and carrier pre selection(CPS).

In case of CS the subscriber makes a selection of long distance carrier for each call by dialing a carrier selection service code followed by the preferred carriers access code. In India ‘10’ has been decided as the carrier selection service code and as per the

NNP 2003, the carrier identification codes are in the range 00-99. If a subscriber dials '010' or '0010' followed by 2-digit carrier code the national or international call will be carried by the selected carrier. In case the subscriber dials a national and international number without making such a choice then the call may be carried by the default NLD/ILD chosen by the access provider. The default carrier is usually the access provider if CPS has not been implemented. TRAI's direction dated 24th July 2002 envisaged that in all cases of long distance calling, in which the subscriber has not pre-selected his carrier and has also failed to dial the four-digit pre-fix i.e. Carrier access code (CAC), the calls will be routed by the Access Providers (BSOs/CMSOs) to a recorded announcement. Through the announcement, the subscriber shall be requested to select his long distance carrier either on the basis of Call by Call or Pre-selection. If he does not make the choice, the announcement will request him to do so. In effect, therefore, consequent upon the full implementation of Carrier Selection i.e., both Call by Call /Pre-selection, there will be no default traffic. However, it is now felt that having a default carrier is in the interest of the subscriber who should not be forced to dial extra digits on every long distance call. If default Carrier procedure is not followed, users will be forced to dial additional digits on all NLD/ILD calls. This may lead to adverse public reaction, increased dialling errors and other problems.

The alternatives as envisaged in the directions issued in July 2002 for selection of the default carrier is to specify it by policy or allow it to be selected at the discretion of the Access Provider. The Access Provider may also choose to distribute such traffic amongst available NLDOs. No changes are required in the current Network in case the option of default Carrier Selection is left to the discretion of the Access Provider. If the Carrier

Selection Code is not dialled, feeding a recorded announcement asking the subscriber to consult the directory or a special service operator to find out the 'CAC' of a NLD of his choice, is technically feasible. However, this could cause some annoyance to the customers and also increase the total processing time for such calls, with some adverse affect throughput of the switches.

CS is relatively easier to implement, is less expensive and is supported by most existing exchanges. On the flipside, with CS the customer would have to dial extra digits to get the benefit of carrier selection. Also billing from multiple NLDO may be involved. As per recent comments from BSNL, MTNL, CDOT, TEC and others for implementing CS no major software or hardware upgradation would be required mainly subscriber data creation would be required. Some resources like extra E1 streams, digit storage and analysis resources, signaling resources may be required. If subscriber directly dials CIC of ILDO then the choice of NLDO is made by ILDO.

In CPS the subscriber makes a choice of preferred carrier in advance and all calls are routed through this carrier. This method would involve upgradation of hardware and software of most of the switches specially in the incumbents' network. The advantage is that no extra digits are to be dialed. If only one preselected carrier is allowed then there would be atmost two bills. As discussed in section 7 even this could be resolved by mutual agreement.

In 24th July 2002 direction, the subscriber was having the facility to pre-select separately national and international carrier. However selection of both NLD and ILD carriers for an international call was not mandated. The Authority's decision was based on appreciation of the fact that giving simultaneous choice of NLDO and ILDO to the subscriber will require major

system modifications in the Access Provider's network and the absence of simultaneous pre-selection is not likely to be a serious disadvantage. Another problem would be dialing of two more digits if both NLDO and ILDO are to be selected. This could get very confusing for the subscriber and give rise to billing complaints.

In the absence of simultaneous selection of national as well as international carrier default carrier needs to be decided. For specifying default carrier following options are available for consideration of stakeholders:

- (i) When the codes are not dialed or subscriber has not pre-selected the national/international long distance carrier, default Carrier Selection may be left to the discretion of Access Provider.
- (ii) As the tariff for ILD calls is being offered by the ILDO to the subscriber directly, there instead of allowing preselection of NLDO also it would be better to leave the choice of NLDO on the ILDO.

5.1 Carrier selection implementation for mobile subscribers

Implementation of CS and CPS for post-paid customers would not be a problem. However, keeping in view that more than 80% of the mobile users are prepaid it would be important to include these subscribers also in the purview of carrier selection. Traffic matrix in the IN platforms would need to be configured according to the plans of all the NLD operators. Some of the switches may require upgradation.

In case of roaming subscriber an additional level of complexity is introduced. The subscriber may have a carrier preselection

agreement in his/her home network but not in all the networks where he could roam. However, CS should be possible without much difficulty. It is also possible to offer carrier selection to the roaming subscriber in case of calls incoming from the home network.

- Q1. Is there a case for implementation of carrier selection in today's environment?**
- Q2. Should carrier selected be implemented only in fixed, only in mobile or both.**
- Q3. Should only call-by-call carrier selection (CS) or both CS and Carrier Pre-Selection (CPS) be implemented in the fixed and mobile networks?**
- Q4. In case both CS and CPS are implemented then in view of no major network changes in CS should it be implemented first? Give your suggestions for a reasonable time frame of implementation of CS and CPS.**
- Q5. For what type of calls described in Chapter 1 section 3 should carrier selection be implemented?**
- Q6. In case of CS what should be the policy for default carrier considering the cost and benefits to the customer.**
- Q7. If it is to be implemented in mobile network, should CS and CPS be implemented for both prepaid and post paid customers?**

Q8. In what way should carrier selection be implemented for roaming customers?

Q9. With reference to section 4 of Chapter 1, how do you think the customer should exercise the initial choice?

Q10. With reference to section 5.4 of Chapter 1, in the event of implementation of carrier selection, what should be the procedure followed for activation of CS/CPS to avoid slamming?

6. Recovery of cost relating to carrier selection

6.1 Cost of implementing Carrier Selection

Countries like UK, Finland, Ireland, Bahrain, Gibraltar, Malta etc that have implemented pre-selection have identified three broad categories of cost as outlined below.

a) Network upgradation cost refers to cost of modifying networks, augmenting resources and support systems in order to implement CS/CPS. This would involve switch upgradation/replacement costs, transmission equipment and link augmentation cost, provisioning, billing and other support system cost. This is a one off cost that is incurred upfront by the incumbent operator prior to implementation of pre-selection.

b) Operator specific enabling cost refers to cost incurred by individual operators in setting up commercial agreements.

c) Per line enabling cost refers to administrative cost incurred by individual operators in relation to individual customer lines.

6.1.1 Upgradation cost in Indian scenario

Both the incumbent BSNL and MTNL are projecting large investments for upgrading both hardware and software of the existing exchanges and procurement of CDR billing system for implementing Carrier Selection. As the upgradation would be because of regulatory requirement of carrier selection and not because of their business plan, BSNL and MTNL seeking assurance for these upgradation investments

6.2 Cost apportionment

Some basic guiding principles have been used by regulators like Ofcom of UK and ComReg of Ireland to apportion the types of cost that have been identified above. The basic principles have been summarized below:

- a) **Cost causation** - the party whose actions caused the cost to be incurred should bear the cost;
- b) **Distribution of benefits** - the parties benefiting from the process/service should bear the cost;
- c) **Effective competition** - the cost recovery mechanism should not deter effective competition;
- d) **Cost minimisation** - the cost recovery mechanism should ensure that operators have made effort to minimise cost by adopting technically efficient solutions;

- e) **Reciprocity** - if services are provided on a reciprocal basis, charges should also be reciprocal; and
- f) **Practicability** - the cost recovery mechanism should be practical and uncomplicated.

The capital cost of implementation of carrier selection is normally borne by all the service providers who are going to be benefited by this regime i.e. all the long distance service providers. Operational or per line cost and operator specific cost should be borne by the individual operators who actually incur the cost. This is consistent with cost causation principle. Other countries such as Ireland have adopted a similar approach.

Hence, allocating the cost among all operators in line with the distribution of benefits principle may be more appropriate as other operators will benefit from the modification of networks and support systems carried out by incumbent operator.

6.3 Difficulty in estimation of cost

The cost associated with implementation of Carrier-Selection and how the cost is apportioned among service providers is the most contentious issue in its implementation. Estimation of upgradation cost is dependent on the network elements to be upgraded/augmented and from the discussions it appears that an accurate apriori assessment is rather difficult. The actual cost can be found out only after the implementation has been done. Any assessment on assumptions will always be a matter of dispute between the NLD/ILD operators and Access Providers.

In the direction issued by TRAI on 24th July 2002, cost causation principal was used i.e. long distance operators were treated as the cause for the up-gradation required in the access providers' network therefore they were required to share the cost. The past experience shows great reluctance on the part of majority of long distance operators in sharing the network up-gradation cost required for upgrading Access Providers' network for implementation of carrier selection. This can be taken as a factor because of which the interest of consumers and competition suffers.

6.4 Cost recovery method

There are two main methods to recover network upgradation cost, viz up-front cost recovery or spreading the cost over all relevant originating call minutes.

- (i) Upfront Cost recovery method:** The upfront cost recovery method requires the incumbent operator to estimate the system provisioning cost, which will be apportioned to existing long distance service providers. If upfront recovery method is adopted, new service providers who may enter the market in future will not bear the system provisioning cost. This will create advantage for new service providers as they have lower barriers to market entry. Alternatively, some formula needs to be worked out by which the existing long distance operators bear major part of the cost and some percentage is deferred to be borne by operators who enter after implementation of the regime.
- (ii) Spreading the cost over all relevant originating call minutes:** At present the origination charges are under forbearance. Keeping in view the implementation of Carrier

Selection, Origination charges, which are under forbearance right now, may required to be specified by TRAI to avoid unreasonable demand of Originating Access Provider(or to protect access provider as carriage and termination are fixed). In addition to cost based origination charges, component for recovery of upgradation cost may be included. Thereafter all the long distance operators may be required to pay this component collected from various access providers, to incumbent operator. The advantage of this method is that this approach requires all service providers, existing as well as new, to contribute towards the network and system modification cost. If this method is adopted, the incumbent operator would still bear a significant proportion of the cost and this will subsequently create incentive for incumbent operator to minimize cost. The disadvantage of this method are:

- (a) Specifying the origination charges higher than the cost based charges,
- (b) Difficulties in reconciliation of the payments collected by long distance operators and paid to incumbent operator,
- (c) Incumbent wants clear mandate to start upgradation work for implementation of carrier selection and the upgradation cost in advance. Due to this method the recovery will be after the implementation of carrier selection.
- (d) Because of inclusion of additional component, there will be very little margin left with the NLDOs/ILDOS to offer competitive packages to the subscribers.

6.4.1 Cost Recovery-In Indian Scenario

At present around 21 service providers are licensed to provide NLD/ILD services in the country. However, all the service providers are **not** carrying voice for access providers. It is also possible that many NLD/ILD service providers are interested in carrying the voice traffic of their group access provider companies and may not be interested to carry the voice traffic of other service providers. After implementation of carrier selection in the access providers network, they would be depending on the default traffic of their own access providers, if any. Therefore it is again for consideration of the stake holders that if cost of upgradation is recovered through beneficiaries then this cost is required to be equally distributed among all existing NLD/ILD service providers or those who providing only VPN/data service they may be exempted. This is also for consideration that if they start providing services in future or for new NLDOs starting service after implementation then how these operators should contribute.

Q11. What should be the mechanism for determination of up-gradation costs? Please suggest the cost recovery method in the present environment?

Q12. If the cost is recovered from NLD/ILD service providers then should it be equally distributed among all NLDO/ILDO or there should be difference between NLD/ILD carrying voice traffic and not carrying voice traffic. How would a new entrant in long distance segment contribute towards this cost?

7. Time frame

TRAI's directive dated 24th July 2002 envisaged the implementation of Call-by-Call Carrier Selection and Carrier-Pre Selection, in a time frame spread over a period of 3 to 18 months depending upon type of Carrier Selection and type of long distance services.

For call by call selection of NLD calls, 3 months were prescribed for both CMSOs and BSOs, whereas for pre-selection of NLD calls, 6 months for CMSOs and 9 months for BSOs were prescribed. For call by call and pre-selection of ILD calls 6 months were prescribed for CMSOs and 18 months were prescribed for BSOs.

The time frame of implementation may require considering past experience and practical situations existing today which may inter alia include Work involved in Call by Call carrier selection and carrier pre-selection in terms of upgradation of exchange, hardware/software and other utilities both for mobile as well as fixed network. In its recent comments BSNL mentioned that the CMTS's MSC in Western Zone can not support the Carrier Selection and the supplier, M/s Lucent has already stopped the manufacturing and technical support. As such it will be not be possible to cover a large network of CMTS in this zone under Carrier Section, unless all the Lucent's MSC are replaced at huge cost. Therefore in such cases consideration of time for identification of vendors, tender process, supply time etc. may also required. However based on the inputs received from the operators, the implementation of Call by Call Carrier Selection may not take much time. In most of the Mobile Switching Centers (MSCs), it should be possible to implement, Call by Call Carrier Selection by man machine commands, as these systems have adequate storage capacity to store the extra four digits (CAC) dialed by the subscribers.

Stakeholders detailed comments are solicited for time frame of implementation of carrier selection, depending upon type of Carrier Selection, network e.g. fixed/mobile and type of long distance services. It also needs to be decided that once carrier selection has been implemented in how much time it should be made available to the customer on valid request. Other issues like how frequently the customer should be allowed to change preselected carrier, should call by call be available to all customers by default also need to be commented on.

Q13. What should be the reasonable time frame for implementing carrier selection separately for fixed and mobile, CS and CPS in both the networks and prepaid and post paid in case of mobile?

8. Billing Issues:

If the long distance operator were to bill long distance calls separately then the customers would receive two bills in case of pre selection and multiple bills in case of call-by-call selection, depending on the number of carriers chosen. The long distance operators would have to have their own arrangements for delivery of bills, recovery of dues, settlement of disputes etc. Alternatively, the long distance providers may have commercial agreements with the access service providers for handling billing matters. The cost of doing this may perhaps be passed on to the customers. However, the business model would work if in the balance customers are able to optimize their cost and reduce their overall bills.

Q14. Should the billing be necessarily done separately by NLDO/ILDO or left for mutual agreement between access and long distance service providers?

9. Interconnection issues in implementing carrier selection

The question that needs to be considered is whether NLDOs who do not have point of presence in an access area should be allowed to participate in carrier selection process for that access area. If they are not allowed then true competition would not emerge whereas if they are then they would be required to handover the call to another NLDO for completion of the call(NLDO to NLDO transit). The same would be true if the selected NLDO is not present in the terminating SDCA.

In case of fixed line traffic, BSNL has agreement/arrangement that originating traffic should be picked up from the SDCA tandem. Therefore, subscribers of BSNL will be able to make choice only if the desired NLDO is present in the SDCA. For the fixed line terminating traffic, NLDOs can pick up the traffic terminating in the fixed network only if they are present in the terminating SDCA. Therefore carrier selection would be limited to a few SDCAs. These problems could perhaps be solved by allowing NLDO to NLDO transit of traffic.

In almost all LDCA there is presence of existing NLDOs. One alternative to make carrier selection most effective is the mandating NLDO to NLDO interconnection at least for LDCA to SDCA traffic at mutually negotiated terms and condition.

In case of mobile network, for intra circle mobile to mobile calls, no carrier/carrier selection would be required as the whole circle is treated as a local area. For intra circle mobile to fixed

calls, in case carrier is allowed, NLDO to NLDO handover of traffic may have to be permitted. For inter-circle mobile to mobile there is no major issue for carrier selection as long distance traffic is being taken/handed over at GMSC of the mobile operator and most NLDOs carrying voice traffic have presence at circle level and for those who do not have presence, NLDO to NLDO transit will facilitate call completion.

10. Implementation of carrier selection for intra-circle calls

Though it is the right of Access Service Providers to carry intra circle long distance calls, however, NLDO is permitted to carry these calls as per mutual agreement with the originating service provider. Stakeholder may consider two alternatives, first, not to allow carrier selection in case of intracircle calls and second, to allow NLDO to NLDO handover of traffic so that the NLDO selected by the access provider can complete the calls in case it does not have presence in originating or terminating SDCA.

11 Effect of carrier selection on IUC

At present tariffs are offered by access providers, therefore, to keep tariff under forbearance, TRAI has left origination charges under forbearance. All other charges which are required to be paid between service providers are being regulated by TRAI for certainty in the agreements between interoperator settlement. After implementation of Carrier Selection tariff would be determined by NLDO therefore it is for the consideration of the stakeholders that for certainty in the interoperator settlement origination charge are required to be mandated by TRAI or should be left for mutual negotiation.

Q15. Should access provider make arrangement for selection of the NLDO/ILDO who is not present in SDCA.

Q16. If the answer to Q 15 is yes then what arrangement do you propose for carriage of calls upto the point of presence of selected NLDO?

Q17. Should NLDO to NLDO interconnection/handover of traffic be mandated in the event of carrier selection being implemented?

Q18. In the event of implementation of carrier selection, would any change in the interconnection usage charge regime is required e.g. mandating origination charge, forbearance on carriage charge etc.?

Q19. Should there be any requirement to specify minimum criteria for NLDO/ILDOs, based on their coverage etc. to become eligible for selection as carrier. If yes, please provide detailed suggestions.

Chapter 4

Calling cards by Long Distance Operators

1. Introduction

The Authority has from time to time taken various initiatives to sort out the issues and implement Carrier Selection to provide choice to the consumers. After reduction of entry fee and emergence of various new entrants in long distance sector, a meeting was convened with all NLDOs and ILDOs including the new entrants on 18.09.2006. From the discussions it emerged that only two NLDO/ILDOs (VSNL & RAILTEL) were agreeable to share the cost. Some of the long distance operators were of the opinion that the choice to customer should be provided through access providers' or NLD operators' calling cards based on IN platforms.

Prior to release of IN Regulations, introduction of Calling Cards by access providers and interoperability of such cards (cards sold by any operator being usable from any telephone of any access provider) in a multi operator scenario was presented as alternative means of promoting competition and providing choice to consumers. To enhance the competition and to provide the maximum benefit to the subscribers, the Authority notified Regulation on Intelligent Network (IN) Services in Multi Operator, Multi Network Scenario on 27th November, 2006. The IN regulation is one of the light touch regulation of the Authority and provides option for choice of the architecture based on mutual agreement. The IN regulation makes it mandatory for the access providers to allow their customers to access other access service providers' IN services. Special focus is on toll free and calling cards. Though the toll-free access has by and large been made available, the use of calling cards of other service providers have not been implemented by the access service

providers. The Authority intends to pursue this vigorously. It is believed that this move would be in the interest of both the consumers and the service providers. Once this implemented it would be possible to use the calling cards of one access service provider in other access service providers' networks effectively giving choice of access and possibly of NLD networks. The subscriber also indirectly gets the choice of NLD network if calling card holder of one access provider can call from another access providers' network and the originating service provider carries the call. Even if the architecture for interconnection is based on handing over at local POI then the call is carried by the NLDO selected by the service provider whose calling card is being used. The prime purpose behind the Carrier Selection i.e. choice of Long Distance operator by consumer may therefore get addressed to some extent through sharing of Intelligent Network platform among multiple access service providers.

As said above, though the service providers have entered into agreements for allowing each other's toll free calls they have not yet done so for calls through calling card. It could be a conscious arrangement among service providers not to provide choice to the consumers and get the advantage of fixing higher long distance tariff to the consumer. So, to argue in favour of cards by NLDOs, by allowing NLDO to market their cards directly to the customer will remove the motivation for any such coordinated arrangement.

1.1 Status of calling cards by access providers

After issue of IN regulation in November 2006 several rounds of discussions were held with the service providers for implementation of the regulation for toll-free and virtual calling cards. Most of the agreements for toll-free have been done.

However, since some agreements could not be signed within a reasonable period of time, the Authority had to issue a 'decision' prescribing standard access charges. It is seen that while the service providers took up toll-free implementation with some enthusiasm, virtual calling cards have not yet been implemented. The service providers have been addressed and asked to making necessary arrangement for use of virtual calling cards of other service providers in their network at the earliest possible. It is believed that this implementation would be beneficial both for service providers and customers. The Authority therefore intends to pursue and enforce this vigorously.

2. Calling Cards by NLDOs

In view of the above, it might be useful to explore alternative means of promoting competition by allowing customers to select carrier for domestic long distance calls. Introduction of Calling cards by NLDOs could be one of the methods. This would not only allow consumers to make calls to anywhere from any of the phones but may also result in more competitive pricing of long distance services.

There are various possible problems that might come in the way of implementation of the NLDO Calling Card System. The following are the main issues for further examination by stakeholders:-

- (i) NLDO licence is meant for carriage of long distance traffic. Licensing conditions do not permit NLDOs to directly access the consumer for voice services. If NLD operators are to be allowed to issue calling cards then the licence

conditions may have to be suitably modified. Charging of any additional entry fee also needs to be looked.

- (ii) All kinds of calls are possible through calling cards. Besides the basic local and long distance, value added services like toll free, televoting, Universal Access Number(UAN) etc would be possible. The access providers may not be in favour of letting others take away their creamy layer. If NLD are to be allowed only domestic long distance call then other calls have to be barred. This issue requires deliberation.
- (iii) Continuing the argument in (ii) above, the service currently offered by access providers through IN platforms are potentially available across the country. NLD/ILD are national licences and they may be allowed all the IN services on payment of extra licence fee. This will improve the viability of IN services for NLD operators and encourage them to invest in IN infrastructure. However in the situation where some operators have paid Rs 100cr and others Rs 2.5 crores finding a common ground might prove difficult.
- (iv) NLDO operators would be able to sell cards in all the circles without even commensurate increase in infrastructure. Access providers are able to sell only in their circles.

3. Advantages of Calling Cards:

The advantages of calling cards are as follows:

- (i) Consumers can control their expenses. No deposit or activation charges are required.

- (ii) Cards of different denominations can be made available so that consumers can choose one to suit his/her requirement.
- (iii) Calling cards can be used to make long distance calls even from an STD-barred phone.
- (iv) In the situation where IN regulation has been implemented for calling cards, they give convenience to the customer to make local and long distance calls from any phone of any service provider, even a PCO.
- (v) Consumer will have the flexibility to choose the most competitive NLDO.
- (vi) Consumer can get competitive prices as NLDOs can offer innovative plans

4. Disadvantage of Calling Cards

- i) Larger number of digits need to be dialed by the customer
- ii) The card may carry some administrative charges and taxes
- iii) Unused minutes after the expiry of the validity of the card are not carried forward.

5. Interconnection issues that need to be resolved

- All NLDOs do not have presence in all SDCA. In such a case for carrying traffic terminating in SDCA where an NLDO is not present the traffic may have to be handed over to another NLDO who has presence in the terminating SDCA.
- For taking originating traffic from an SDCA the NLDO should have a presence in that SDCA. If this is not the case then traffic would need to be carried by another NLDO and picked up by the selected NLDO at its point of presence.

- Q20. Should the licence conditions of NLDOs/ILDOs be amended to allow them direct access to customers through calling cards for making national/international calls.**
- Q21. Should NLDOs be allowed to sell calling cards only in those service areas where they have point of presence?**
- Q22. Should NLDOs be allowed to sell calling cards only for national long distance and ILDOs for international long distance calls?**
- Q23. Should access providers be mandated to give connectivity to NLDO/ILDOs for accessing customers through calling cards**
- Q24. Should NLDOs/ILDOs be allowed to market national/international calling cards to promote competition in these segments to the benefit of the consumers?**
- Q25. Should there be restriction on making local calls using these cards in the service area for which they are sold?**
- Q26. How should it be ensured that only permitted services are offered in the market?**
- Q27. Would this require any change in the interconnection regime?**

Chapter 5

Issues for Consultation

- Q1. Is there a case for implementation of carrier selection in today's environment?**
- Q2. Should carrier selected be implemented only in fixed, only in mobile or both.**
- Q3. Should only call-by-call carrier selection (CS) or both CS and Carrier Pre-Selection (CPS) be implemented in the fixed and mobile networks?**
- Q4. In case both CS and CPS are implemented then in view of no major network changes in CS should it be implemented first? Give your suggestions for a reasonable time frame of implementation of CS and CPS.**
- Q5. For what type of calls described in Chapter 1 section 3 should carrier selection be implemented?**
- Q6. In case of CS what should be the policy for default carrier considering the cost and benefits to the customer.**
- Q7. If it is to be implemented in mobile network, should CS and CPS be implemented for both prepaid and post paid customers?**
- Q8. In what way should carrier selection be implemented for roaming customers?**

- Q9. With reference to section 4 of Chapter 1, how do you think the customer should exercise the initial choice?**
- Q10. With reference to section 5.4 of Chapter 1, in the event of implementation of carrier selection, what should be the procedure followed for activation of CS/CPS to avoid slamming?**
- Q11. What should be the mechanism for determination of up-gradation costs? Please suggest the cost recovery method in the present environment?**
- Q12. If the cost is recovered from NLD/ILD service providers then should it be equally distributed among all NLDO/ILDO or there should be difference between NLD/ILD carrying voice traffic and not carrying voice traffic. How would a new entrant in long distance segment contribute towards this cost?**
- Q13. What should be the reasonable time frame for implementing carrier selection separately for fixed and mobile, CS and CPS in both the networks and prepaid and post paid in case of mobile?**
- Q14. Should the billing be necessarily done separately by NLDO/ILDO or left for mutual agreement between access and long distance service providers?**
- Q15. Should access provider make arrangement for selection of the NLDO/ILDO who is not present in SDCA.**

- Q16. If the answer to Q 15 is yes then what arrangement do you propose for carriage of calls upto the point of presence of selected NLDO?**
- Q17. Should NLDO to NLDO interconnection/handover of traffic be mandated in the event of carrier selection being implemented?**
- Q18. In the event of implementation of carrier selection, would any change in the interconnection usage charge regime is required e.g. mandating origination charge, forbearance on carriage charge etc.?**
- Q19. Should there be any requirement to specify minimum criteria for NLDO/ILDOs, based on their coverage etc. to become eligible for selection as carrier. If yes, please provide detailed suggestions.**
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Q25. Should there be restriction on making local calls using these cards in the service area for which they are sold?

Q26. How should it be ensured that only permitted services are offered in the market?

Q27. Would this require any change in the interconnection regime?

List of Acronyms

| Acronym | Expansion |
|----------------|--------------------------------------|
| ADC | Access Deficit Charges |
| BSO | Basic Service Operator |
| CAC | Carrier Access Code |
| CDR | Call Data Record |
| CIC | Carrier Identification Code |
| CMSO | Cellular Mobile Service Operator |
| CPS | Carrier Pre-Selection |
| CPSO | Carrier Pre-Selection with Override |
| CS | Call by Call Carrier Selection |
| ILD | International Long Distance |
| ILDO | International Long Distance Operator |
| IN | Intelligent Network |
| ISD | International Subscriber Dialling |
| ISP | Internet Service Provider |
| IUC | Interconnect Usage Charges |
| LDCA | Long Distance Charging Area |
| MSC | Mobile Switching Centre |
| NGN | Next Generation Networks |
| NLD | National Long Distance |
| NLDO | National Long Distance Operator |
| NLDSC | National Long Distance Service Code |
| PCO | Public Call Office |
| QoS | Quality of Service |
| SDCA | Short Distance Charging Area |
| SDCC | Short Distance Charging Center |
| STD | Subscriber Trunk Dialling |
| TDM | Time Division Multiplexing |
| USO | Universal Service Obligation |
| VCC | Virtual Calling Card |
| VoIP | Voice Over Internet Protocol |
| VPN | Virtual Private Networks |