

Telecom Regulatory Authority of India
Draft Notification

New Delhi,
the 2nd December 2005

No. 416-2/2003-FN

In exercise of the powers conferred upon it under section 36 read with paras (ii), (iii), (iv), (vi) and (vii) of Clause (b) of Sub Section (1) of Section 11 of the Telecom Regulatory Authority of India Act, 1997, the Telecom Regulatory Authority of India hereby makes the following Regulation, namely:-

Title, Extent and Commencement

1. Short title, extent and commencement:
 - (i) This Regulation shall be called “The Intelligent Network Services in Multi Operator, Multi Network Scenario Regulation, 2005 (herein after called the ‘Regulation’).
 - (ii) The Regulation shall cover the commercial and technical arrangements under which licensed Access Service Providers shall connect their equipment, networks and services to enable their customers to have access to the Intelligent Network of other Service Providers.
 - (iii) The Regulation shall come into force from the date of its publication in the official Gazette.

Definitions

2. In this Regulation, unless the context otherwise requires:
- (i) “Act” means the Telecom Regulatory Authority of India, Act 1997.
 - (ii) “Authority” means the Telecom Regulatory Authority of India.
 - (iii) "Interconnection" means the commercial and technical arrangements under which Service Providers connect their equipment, networks and services to enable their customers to have access to the customers, services and networks of other Service Providers.
 - (iv) Intelligent Network (IN) means an network architecture for the operation and provision of new services which is characterized by extensive use of information processing techniques; efficient use of network resources; modularization and reusability of network functions; integrated service creations and implementation by means of the modularized reusable network functions; flexible allocation of network functions to physical entities; portability of network functions among physical entities; standardized communication between network functions via service independent interfaces; service subscriber control of some subscriber-specific service attributes; service user control of some user-specific service attributes; standardized management of service logic.
 - (v) Service Switching Point (SSP) consists of the hardware switch and basic call control software with the added functionality of Intelligent Network. In addition to providing users with access to the network and performing any necessary switching functionality, the Service

Switching Point allows access to the set of Intelligent Network capabilities. The Service Switching Point contains detection capability to detect request for Intelligent Network based services. Intelligent Network software provides the capability to separate basic calls from Intelligent Network -based calls when they arrive at switch. Intelligent Network calls contain *events* and *triggers*, and when one of these is detected the SSP temporarily suspend call processing and initiate a series of transactions with the Service Control Point (SCP) using SS-7, to determine how it should process the call.

- (vi) Service Control Point (SCP) means a real time database that stores customer records. When accessed by an enquiry from the Service Switching Point, the Service Control Point executes one of the range of software routines customized for particular applications. Following the execution of the code, the Service Control Point sends instruction back to the Service Switching Point on how to process the call.
- (vii) Words and expressions used in this Regulation and not defined herein but defined in the Act or the Regulations made there under shall have the same meanings assigned to them in the Act or the Regulation.

3. Interconnection Usage Charges

Interconnection Usage Charges shall continue to be governed by “The Telecommunication Interconnection Usage Charges Regulation, 2003 as amended from time to time except to the extent modified by this Regulation.

4. Technical and Commercial Arrangement:

- (i) It shall be mandatory for all licensed Telecom Service Providers to provide interconnection of their Service Control Point to all Access Providers so that subscribers of all Access Providers could have a free choice of using the Intelligent Network Services of other licensed Service Providers.
- (ii) It shall be mandatory for all licensed Service Providers to provide interconnection of their Service Control Point at Signal Interconnect Level to the Service Switching Point of other Access Service Providers and all Service Switching Points and Service Control Points shall be capable of resolving the Access Codes allotted as per National Numbering Plan 2003 by National Numbering Plan Administrator for the services available in Intelligent Networks in multi-operator multi-network scenario.
- (iii) In no case, the Access Service Provider shall block its consumers from accessing Intelligent Network Services of his choice that are available in multi-operator multi-network scenario.
- (iv) Call Data Records shall be generated at the Service Switching Point and Service Control Point for the purpose of reconciliation.
- (v) Based upon the service features and network architecture, the charging, billing and sharing of revenues may be decided by the concerned Service Providers through mutual commercial arrangement while being consistent with prevailing Regulations, Directions and Orders of the Authority and prevailing licence conditions.

- (vi) Principles laid down in Telecommunication Engineering Center's relevant Generic Requirements as amended from time to time read along with licensing conditions and TRAI's Regulations and Directions, shall be applicable for the multi-operator multi-service scenario.
- (vii) All Service Providers involved shall ensure that there shall be no dilution in the Quality of Service standards applicable to the underlying Bearer Network. As the Set of Intelligent Network services currently defined are all Circuit Switched or Packet Switched Voice Services, the Quality of Service (QoS) already mandated for voice services, shall apply.
- (viii) The Numbering plan for the Intelligent Network Services shall be as per applicable National Numbering Plan. All Service Providers shall ensure that Intelligent Network Services in Multi-Operator Multi-Network scenario are launched after getting adequate access code allocations from the National Numbering Plan Administrator (Licensor).
- (ix) Intelligent Network Service shall be provided only by the Access Providers as required by the present licensing conditions. Provided National Long Distance Operators/ International Long Distance Operators may also provide some of the Intelligent Network Service like Calling Cards, only if the mandated interconnection between all Service Switching Points and Service Control Points are in place and mutual agreements with all the Access Providers exist for the commercial terms and conditions. In other words, Service Control Point of National Long Distance Operators/ International Long Distance Operators is interconnected with Service Switching Points of all Access Providers and commercial agreements exist, thereby ensuring that National Long Distance Operators/ International

Long Distance Operators do not have direct connectivity with the subscribers as required by the present licensing conditions.

- (x) All licensed service providers for Intelligent Network services shall enter into necessary agreements/arrangements within 90 days of implementation of this Regulation so as to conform to the framework specified under this Regulation. The agreements/arrangements as agreed to and signed by the Intelligent Network service providers shall be submitted to TRAI for registration within 15 days from the day immediately after the entering into such agreement. In case service providers fail to enter into necessary agreements/ arrangements within the stipulated time, they should intimate this fact to the Authority with complete details thereof.

5. Explanatory Memorandum

This Regulation contains at Annex A, an Explanatory Memorandum to provide clarity and transparency to matters covered under ‘the Regulation’.

6. Interpretation

In case of any doubt regarding any provision of this Regulation, the clarification given by the Authority shall be final.

By Order
(Rajendra Singh)
Secretary

ANNEX – A

EXPLANATORY MEMORANDUM

1. Intelligent Network (IN) as a concept was born amidst the inability of the competing Service Providers to offer differentiating Services to their subscribers in the face of dissimilar Service implementation in the Switching Systems supplied by different vendors. Intelligent Network is Telecommunication Network Architecture for provisioning of Advanced Services quickly.
2. Intelligent Network (IN) Services add value to Voice and Data Bearer Services through Number Translation, Alternate Billing. These features are provided with the help of Network databases (also known as Service Control Points – SCPs) endowed with query-response protocols using which the underlying bearer Network entities such as PSTN/ ISDN Switches, Mobile Switching Centers and Media Gateways communicate with it. The bearer Network entities designated to communicate with the SCPs are known as the Service Switching Points (SSPs).
3. With respect to the physical Architecture, the SCPs and the SSPs can be within the same Node, co-located or remotely located over the SS7 signaling Network. The rest of the bearer Network entities are independent of the IN Nodes. This independence lets the Network providers to utilize the same IN Infrastructure for a variety of Networks viz. Fixed, WLL-F, WLL-M, Cellular Mobile, VoIP and IP. Therefore, Intelligent Networks provide twin advantages of new revenue streams and investment protection.
4. With the induction of new Basic and Cellular Operators in the Indian Telecommunication network, a Multi Operator environment has emerged and therefore authority decided to constitute an

Expert Committee vide its Order no. 416-2/2003-FN, dated 28th February 2003 on IN Services in Multi-Operator Multi-Service scenario. The Committee included members from TRAI, DOT, TEC, CDOT, NLDOs & ILDOs (BSNL, VSNL, Reliance, BTSOL), MTNL, and other Access Providers were represented through Associations of Operators, i.e. COAI and ABTO (now AUSPI).

5. The Authority had asked the Committee mainly to finalize necessary Technical and Regulatory inputs as may be required for the introduction of Intelligent Network (IN) Services based on the IN platform and Inter-Network accessibility in a Multi-Service Multi-Operator environment in the country along with consideration of Network Architecture, Interconnection, Interoperability and Charging and Billing issues.
6. The Committee held a number of meetings to deliberate upon the issues and submitted its Report. In its Report, the Committee observed that from a Regulator's perspective, Intelligent Network (IN) Services pose a challenge due to
 - Non-availability in many cases of B number, i.e. Called Party Number at the Originating Network Interfaces,
 - Alternate billing options, i.e. Calling Party pays in full or part,
 - Called party pays in full or part or a third party pays, and,
 - Distributed location of Functional Entities,
 - Difficulties in transparent application of the Interconnect regime that could be termed as equitable and mutually beneficial to the Interconnecting operators.
7. Authority analyzed the Committee's Report in great detail and observed that there is consensus among all Service Providers for sharing their Intelligent Network (IN) platform. The Authority also

observed that there is consensus among all service providers on all issues except Architecture.

8. Authority examined all the pros and cons of all the three Architecture Options (Annex B: Figures 2 to 4) suggested by the Committee in the background of the present License conditions of various categories of Service Providers.
9. IN Services as defined in TEC Generic Requirement (GR) document are shown in Annex C, Table 1. The Table also defines present allocation for Intelligent Network (IN) Services in the National Numbering Plan 2003 and Rental/ Revenue Share components. An illustration for Freephone Service is also shown in Figure 1.
10. In most of the countries, Intelligent Network (IN) Services are easily accessible by all the users. As such, any subscriber of any Access Provider is able to access the Intelligent Network (IN) Services provided by any other Service Provider from anywhere in the Access Provider's Network. In contrast, in India at present subscribers are able to access the Intelligent Network (IN) platform of their own Service Provider only.
11. All telecom Service Providers in India operate their Network under the provision of their respective licenses granted by Department of Telecommunication. The operators have been granted ample freedom by the licensor to deploy technology of their individual choice within their Network. Intelligent Network (IN) Service is not a separate Service. Neither NTP 99 recognizes this as a separate Service nor licensor has categorized it as a separate Service. It is a Network Architecture wherein centralized logic is built in to enable the Service Providers to provide services to its

customers in their licensed Service Areas as per the terms and conditions of their License conditions.

12. Authority examined all three architecture in great detail and observed that three architectures came as a consequence of differences in the Points of handover of calls and present License condition.
13. Authority further noted that only Option 1 (Figure 2 and 5) as suggested by the Committee permits access to IN Services in Multi-Operator Multi-Network platform for all subscribers throughout the country including fixed rural subscribers of BSNL even at remote places. Availability of called party's B number is also ensured in this option with the Originating service provider. This option is consistent with the Security considerations also. Authority has also observed that this option gives more incentive to Access Providers.
14. Option 2 and 3 as suggested by Committee could have created more competition in Long Distance and International Long Distance Service sector but license conditions and security considerations ruled out these options. Moreover, Carrier Selection implementation is already under the review exercise undertaken by the Authority. Non-availability of B number with Originating service provider would have posed serious issues of security considerations.
15. In issuing this Regulation, the Authority has noted that Intelligent Network Service shall be provided only by the Access Providers as required by the present licensing conditions. Provided National Long Distance Operators/ International Long Distance Operators may also provide some of the Intelligent Network Service like Calling Cards, only if the mandated interconnection between all

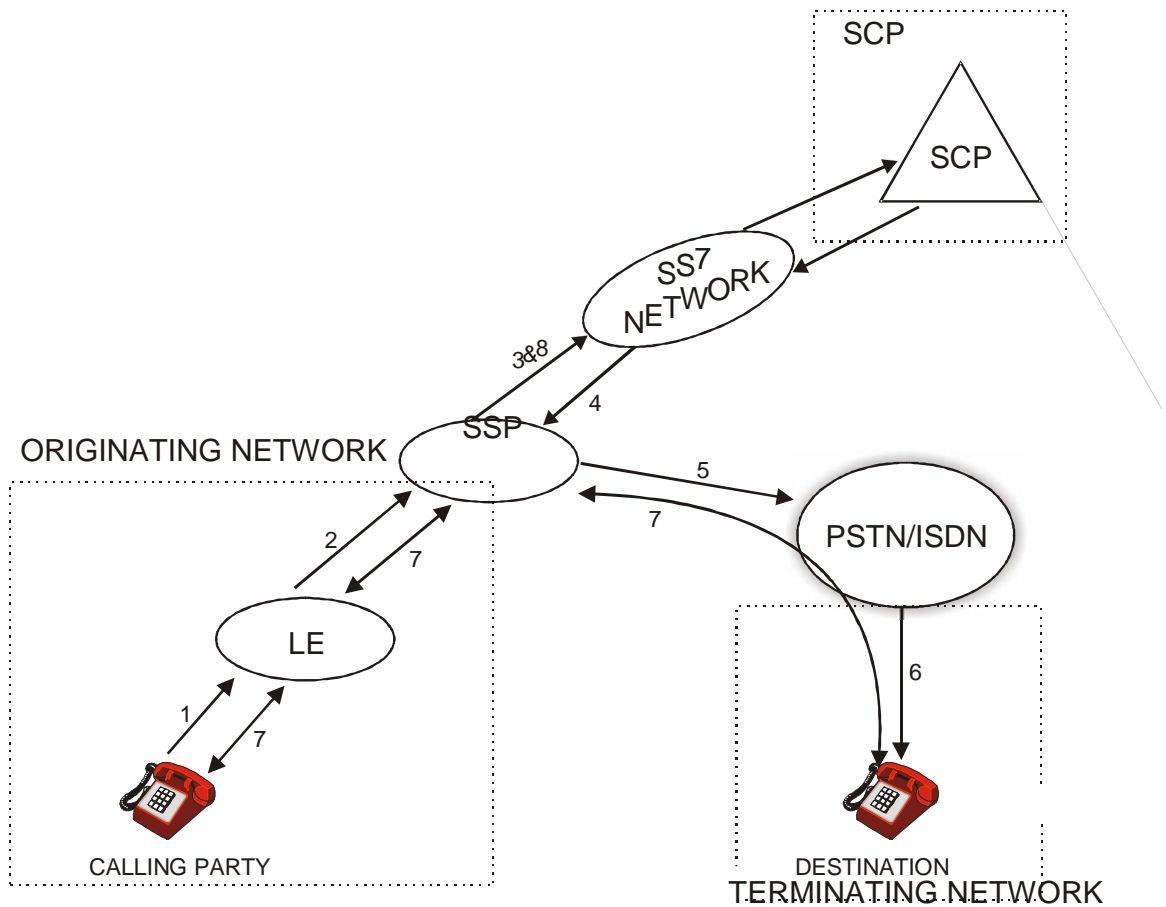
Service Switching Points and Service Control Points are in place and mutual agreements with all the Access Providers exist for the commercial terms and conditions. In other words, Service Control Point of National Long Distance Operators/ International Long Distance Operators is interconnected with Service Switching Points of all Access Providers (Figure 5) and commercial agreements exist, thereby ensuring that National Long Distance Operators/ International Long Distance Operators do not have direct connectivity with the subscribers as required by the present licensing conditions. In future, if direct access to the subscribers gets authorized either through the implementation of Unified Service License approach or as a separate amendment of the present National Long Distance / International Long Distance license conditions, then National and International Long Distance Operators will also be able to provide other types of IN Services. The Authority has further noted that already competing long distance tariffs are available to the customers and further reduction in long distance and international long distance tariffs may be possible after the implementation of Carrier selection and carrier Pre selection by the Service Providers. Thus the Authority expects that the regime notified under this regulation will facilitate early deployment of Intelligent Network by Access Providers and many new IN Services would be available to the subscribers throughout the country.

16. Authority has noted that all the members of the Committee were of the opinion that Charging, Billing and Sharing of the Revenue depends on the service features and therefore, it may be decided by the concerned Service Providers through mutual commercial arrangement. The Authority accordingly, accepts the observations of the Committee in this regard.

17. Intelligent Network (IN) Services as such, is not a separate class of Service. Neither NTP 99 recognizes this as a separate Service nor licensor has categorized it as a separate Service. It is only a different means of providing a service. Therefore, Interconnect Usage Charges as applicable from time to time will apply for the services provided by operator in multi-operator multi-network scenario. Interconnect Agreement between Service Providers shall include Intelligent Network (IN) access.
18. Authority is also of the view that Call Data Records (CDRs) should be generated at the Service Switching Point (SSP) and Service Control Point (SCP) for the purpose of reconciliation. The Call Data Records (CDRs) for Intelligent Network (IN) calls can have additional parameters on Intelligent Network (IN) Services as per details worked out by concerned Service Providers.
19. All Service Providers involved shall ensure that there shall be no dilution in the Quality of Service standards applicable to the underlying Bearer Network. As the Set of IN services currently defined are all Circuit Switched or Packet Switched Voice Services, the Quality of Service (QoS) already mandated for voice services, shall apply.
20. The Numbering plan for the Intelligent Network Services shall be as per applicable National Numbering Plan. All Service Providers shall ensure that IN Services on Multi-Operator Multi-Network platform are launched after getting adequate Access Code allocations from the National Numbering Plan Administrator (Licensor).

ANNEX B

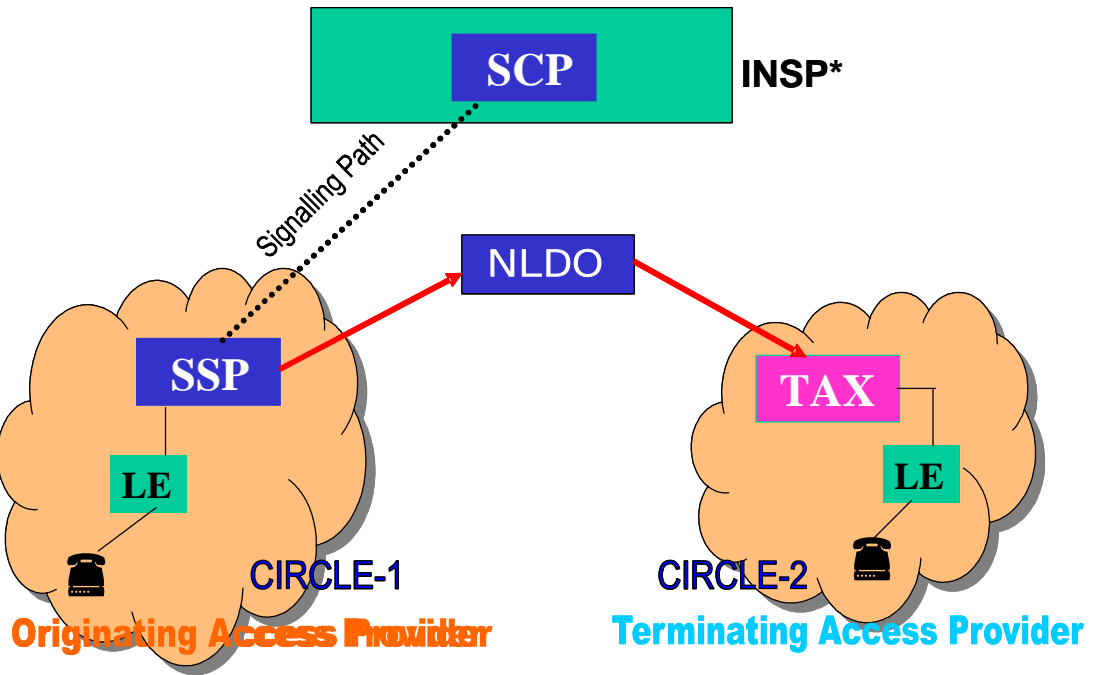
FIGURE 1



- 1 Service user dials the Freephone Number e.g.: 1600331234
- 2 Call gets routed to the SSP through the PSTN/ ISDN
- 3 SSP launches query to the SCP
- 4 SCP responds with the translated destination number e.g.: 011-701 8925
- 5&6 SSP routes the call through the PSTN/ISDN to the destination
- 7 Conversation takes place and then the call is disconnected
- 8 SSP sends call details and charging information to the SCP for logging, or alternatively in some models the charging information is generated by the SCP itself.

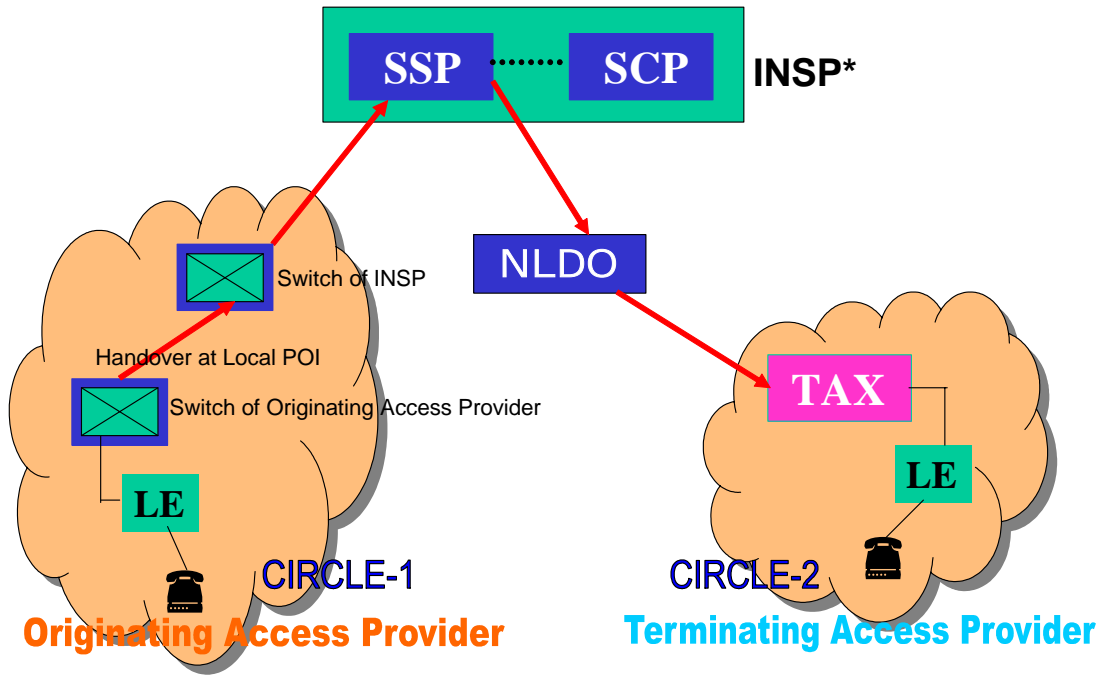
Figure: FREEPHONE CALL FLOW

FIGURE 2
OPTION -1



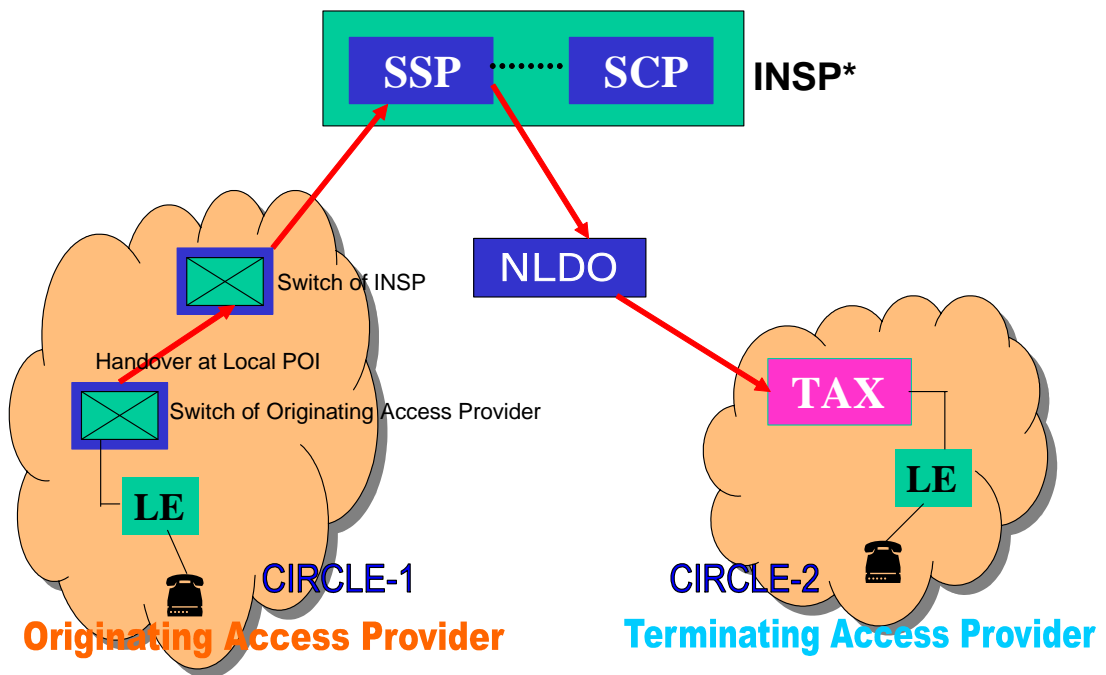
* Intelligent Network Service Provider (Any Access Provider/NLDO/ILDO)

**FIGURE 3
OPTION -2**



* Intelligent Network Service Provider (any access provider in the same service area)

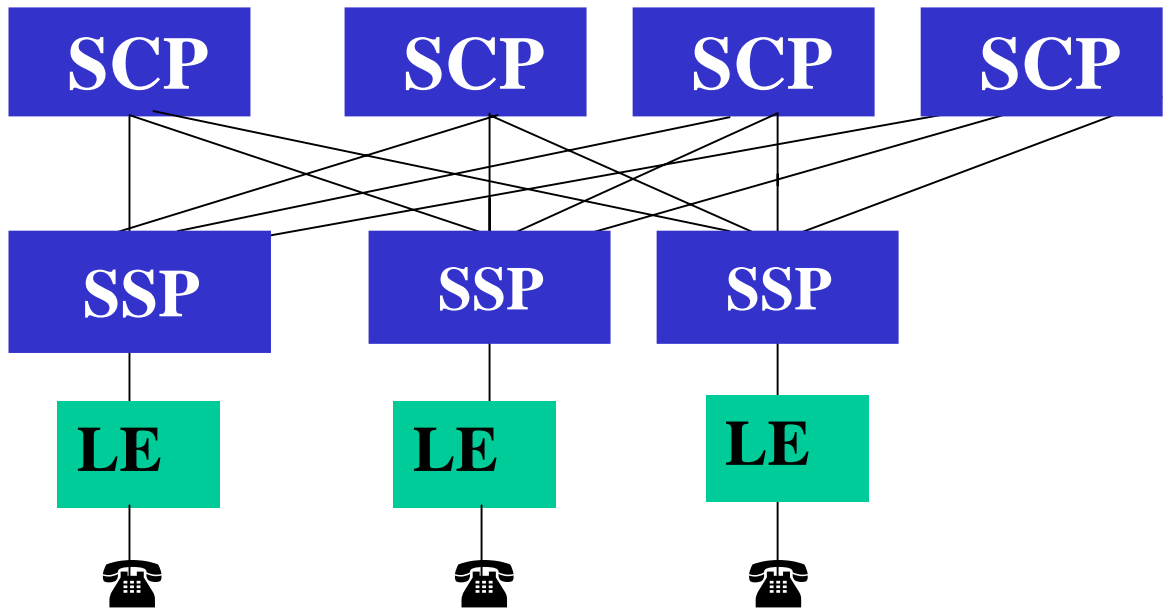
**FIGURE 4
OPTION -3**



* Intelligent Network Service Provider (Any Access Provider/NLDO/ILDO)

FIGURE 5

Opertor1 Operator 2 Operator 3 NLD/ILD
(Access Provider) (Access Provider) (Access Provider) (if Agreement)
(INSP)



ANNEX C

Table 1
IN Services as Defined in TEC GR's

IN Service	Paying Party	Old Levels	Level as per National Number Plan 2003	Network Charge	Information Charge	Rental/ Revenue Share
Freephone (National)	Called	1-600	1-800	Yes	No	Rental
Universal Access (Local)	Calling	1-901	1-860	Yes	No	No
Universal Access (Long Distance)	Calling & Called	0-901	0-901	Yes	No	Rental
Virtual Private Networks (VPN)	Group ID	1-901	1-801	Yes	No	Rental according to VPN size.
Tele-voting (Chargeable to caller)	Calling	1-902	1-803	Yes	No	Yes. (subscriber)
Tele-voting (not chargeable to caller)	Caller	1-603	1-861	Yes	No	Yes. (subscriber)
Prepaid calling (VCC, ACC, CCC)	Card	1-602 (VCC) 1-604 (ACC)	1-802 (VCC) 1-804 (ACC)	Yes	No No	No No
Premium Rate	Calling	0-900	0-900	Yes	Yes	Yes
Universal Personal Telecommunication	Calling & Called	0-902	0-902	Yes	No	Yes