TO BE PUBLISHED IN THE GAZETTE OF INDIA, EXTRAORDINARY, PART III, SECTION 4

TELECOM REGULATORY AUTHORITY OF INDIA

New Delhi,
the 27th November, 2006

No. 416-2/2003-FN .-----In exercise of the powers conferred by section 36, read with sub-clauses (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(24 of 1997), the Telecom Regulatory Authority of India hereby makes the following regulations, namely:-

1. Short title and commencement.—(1) These regulations may be called the Intelligent Network Services in Multi Operator and Multi Network Scenario Regulations, 2006 (13 of 2006).

(2) These regulations shall come into force from the date of their publication in the Official Gazette.

2. **Definitions.--**In these regulations, unless the context otherwise requires,-

(a) "Act" means the Telecom Regulatory Authority of India Act, 1997(24 of 1997);

(b) "Access Providers" includes the Basic Operator, Cellular Mobile Service Provider and Unified Access Service Provider;

(c)" Authority' means the Telecom Regulatory Authority of India established under sub-section (1) of section 3 of the Act;

(d) "Basic Operator" means a service provider who has been granted a licence under section 4 of the Indian Telegraph Act, 1885 (13 of 1885) and who provides basic telephone service in accordance with the terms and conditions of the licence;

(e) “Cellular Mobile Telephone Service Provider” means a Cellular Mobile Telephone Service provider who has been granted a licence under section 4 of the Indian Telegraph Act, 1885 (13 of 1885) and who provides Cellular Mobile Telephone Service in a specified service area in accordance with the terms and conditions of the licence;

(f) “Eligible Service Provider” means service provider who has been granted a licence under section 4 of the Indian Telegraph Act, 1885 (13 of 1885) and who is eligible to provide the service in accordance with terms and conditions of licence;

(g) "Interconnection" means the commercial and technical arrangements under which the 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;

(h) “Intelligent Network” means a network architecture for the operation and provision of new services which is characterized by –

(A) extensive use of information processing techniques;

(B) efficient use of network resources;

(C) modularisation and reusability of network functions;

(D) integrated service creations and implementation by means of the modularised reusable network functions;

(E) flexible allocation of network functions to physical entities;

(F) portability of network functions among physical entities; standardised communication between network functions via service independent interfaces;

(G) service subscriber control of some subscriber-specific service attributes;

(H) service user control of some user-specific service attributes; standardised management of service logic;

(i) “Service Control Point” means a real time database ---

(A) which stores customer records;

(B) which executes one of the range of software routines customized for particular applications, when accessed by an enquiry from it ;

(C) which sends instruction back to the Service Switching Point to process the call ;.

(j) “National Numbering Plan” means the National Numbering Plan 2003, or, any such plan, made subsequently by the Government of India, Ministry of Communications and Information Technology, Department of Telecommunication;

(k) “Service Switching Point” means the Switching Point providing the users with access to the network and performing any necessary switching functionality which--

(A) consists of the hardware switch and basic call control software with the added functionality of Intelligent Network;

(B) allows access to the set of Intelligent Network capabilities; and

(C) contains detection capability to detect request for Intelligent Network based services;

(l) "regulations" means the Intelligent Network Services in Multi Operator and Multi Network Scenario Regulation, 2006;

(m) “Unified Access Service Provider” means a Unified Access Service provider who has been granted a licence under section 4 of the Indian Telegraph Act, 1885 (13 of 1885) and who provides Unified Access Service in a specified service area in accordance with the terms and conditions of the licence;

(n) all other words and expressions used in these regulations but not defined, and defined in the Act and the rules and other regulations made there under , shall have the meanings respectively assigned to them in the Act or the rules or other regulations, as the case may be.

3. Provision for interconnection to all Eligible Service Providers. ---All Basic Operators, Cellular Mobile Service Providers and Unified Access Service Providers shall provide interconnection to all the Eligible Service Providers for the purpose of giving an option to subscribers of all Access Providers to exercise option for using the Intelligent Network Services of other Eligible Service Providers.

4. Prohibition to deny to subscribers access to Intelligent Network. --- No Basic Operator, Cellular Mobile Service Provider and Unified Access Service Provider shall directly or indirectly deny its consumers accessing Intelligent Network Services of his choice which are available in multi-operator multi-network scenario.

5. Switches to be capable of resolving the access codes allotted as per National Numbering Plan 2003.----All Basic Operators, Cellular Mobile Service Providers and Unified Access Service Providers shall have switches capable of resolving the access codes allotted as per National Numbering Plan made by the Government of India ,Ministry of Communications and Information Technology, Department of Telecommunication for the Intelligent Network Services available in multi-operator multi-network scenario.

6. Obligation to follow Numbering plan.--- All Eligible Service Providers shall follow the Numbering plan for the Intelligent Network Services in accordance with the National Numbering Plan.

7. Intelligent Network Services to be launched after obtaining access code allocation.--- All Eligible Service Providers shall launch the Intelligent Network Services in Multi-Operator Multi-Network scenario after obtaining adequate access code allocation from the Administrator of the National Numbering Plan or the Licensor, as the case may be.

8. **Network equipment (including circuit or packet switches) to conform to the International Telecommunication Union and Telecommunication Engineering Centre standards and Standards of the industry**.----- All Eligible Service Providers providing the Intelligent Network Services in Multi-Operator Multi-Network scenario shall use such type of network equipment (including circuit or packet switches) which conform to the International Telecommunication Union and Telecommunication Engineering Centre standards and standards of the industry:

Provided that in the case of new technologies where no standards have been determined, all Eligible Service Providers shall deploy type of network equipment (including circuit or packet switches) approved by the Central Government and the Licensor:

9. **Compliance with Quality of Service standards**.---- (1)All Eligible Service Providers engaged in providing, directly or indirectly, Intelligent Network services shall ensure that there shall be no deterioration in the Quality of Service standards applicable to the underlying bearer network.

(2) The Quality of Service standards specified for voice services or applicable to voice services shall apply to Intelligent Network Services, which includes all circuit switched, or Packet Switched Voice Services.

10. **Intelligent Network Services under commercial and technical arrangements or agreement**.----- (1) All Eligible Service Providers shall provide the Intelligent Network Services in accordance with the terms and conditions of the licence granted to them under section 4 of the Indian Telegraph Act, 1885 (13 of 1885):

(2) Without prejudice to the conditions of the licence granted to the Basic Operator, Cellular Mobile Service Provider and Unified Access Service Provider and other telecom service provider under section 4 of the Indian Telegraph Act, 1885 (13 of 1885), such Basic Operators, Cellular Mobile Service Provider and Unified Access Service Provider and other telecom service provider may use resources of any other telecom service provider for Intelligent Network Services under commercial and technical arrangements or agreements entered among themselves as per mutually agreed terms and conditions.

(3) Every arrangement or agreement entered under sub-regulation (2) shall specify architecture for implementation of Intelligent Network Services.

(4) Every arrangement or agreement under sub-regulation (2) shall be entered into within ninety days from the date of commencement of these regulation for providing Intelligent Network Services to subscriber of other telecom service providers:

Provided that in a case any Basic Operator or Cellular Mobile Service Provider or Unified Access Service Provider fails to enter into arrangements or agreement under sub-regulation (2), the Authority may, on an application made by the concerned service provider and having regard to the interest of the service providers and consumers of the telecom sector, extend the said period of three months to six months.

(5) All Eligible Service Providers providing Intelligent Network Services shall furnish call data records of all the calls handled by him as and when required by the Central Government or any authority specified by it or the Authority.

(6) Every arrangement or agreement entered under sub-regulation (2) shall be submitted to the Authority for registration within fifteen days from the date of entering into such agreement.

(7) The arrangements or agreement entered under sub-regulation (2) shall come into force within thirty days from the date of entering into such arrangements or agreements.

(8) In case any Basic Operator, Cellular mobile service provider or Unified Access Service Provider fails to enter into agreements or arrangements within the stipulated time, they shall intimate within fifteen days of such failure to the Authority with complete details thereof and after examining such failure and details furnished by the service providers, the Authority shall specify the interconnection arrangement.

(9) All the provisions of these regulations shall apply to the commercial and technical arrangements or agreement entered into 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.

11. Usage Charges under the arrangements or agreement entered under sub-regulation (2) of regulation 10.— (1) Without prejudice to provisions of the rules made under the Act, other regulations made and directions issued thereunder, the charges and sharing of revenues for the service features , network architecture and resources used for Intelligent Network Services shall be determined on reciprocal basis and on non discriminatory basis by the Basic Operators, Cellular Mobile Service Providers or Unified Access Service Providers themselves under the arrangements or agreements entered under sub-regulation (2) of regulation 10.

(2) Every Basic Operator, Cellular Mobile Service Provider, Unified Access Service Provider and other telecom service provider (here referred to as the first party) shall pay the same charges and share the same revenues for the service network architecture and resources used for Intelligent Network Services referred to in under sub-regulation (1) to the other Basic Operator, Cellular Mobile Service Provider, Unified Access Service Provider and other telecom service provider (hereafter referred to as the second party) which are payable

by the second party to the first party for similar service network architecture and resources used for Intelligent Network Services .

(3) The charges and sharing of revenues under sub-regulation (1) shall be in addition to the interconnection charges specified under the Telecommunication Interconnection Usage Charges Regulation, 2003 (4 of 2003) made under the Act.

Rajendra Singh
Secretary

Note.---. An Explanatory Memorandum below explains the provisions of these regulations.

EXPLANATORY MEMORANDUM

1. Intelligent Network (IN) as a concept was born amidst the inability of the competing Service Providers to offer advanced Services to their subscribers in the face of dissimilar Service implementation in the Switching Systems supplied by different vendors. Intelligent Network is a Telecommunication Network Architecture for provisioning of advanced Services quickly.

2. IN Services add value to Voice and Data Bearer Services through Number Translation, Alternate Billing etc. 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 Centres (MSC) and Media Gateways (MG) 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 and communicate over the SS7 signalling 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. Therefore, IN can 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 (herein after referred as 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 represented through Associations of Operators, i.e. COAI and ABTO (now AUSPI).

5. The Authority had mandated 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 September 2005. In its Report, the Committee observed that from a Regulator's perspective, Intelligent Network (IN) Services pose a challenge due to

- Non-availability of B number, i.e. Called Party Number at the Originating Network Interfaces, in many cases.
- 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 was 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 also examined all the pros and cons of all the three Architecture 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 Appendix-I, Table 1. The Table also defines present allocation for Intelligent Network (IN) Services in the National Numbering Plan (NNP) 2003 and Rental/ Revenue Share components.

10. It was also noted by Authority that, in most of the developed 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 Access 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 full freedom by the licensor to deploy technology of their own choice within their Network. Also, Intelligent Network (IN) Service is not a separate Service, as neither New Telecom Policy (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.

12. Taking all these aspects into account, the authority released a draft IN regulation dated 02.12.2005 to all the stakeholders for consultation. This draft regulation discussed various issues, in particular three different network architecture suggested by IN committee.

13. The regime notified in this draft regulation took account of all the divergent inputs on number of issues provided during the consultation process. The Authority thus had to weigh the various inputs and licence conditions and an attempt has been made to provide a regulation which mainly caters towards benefits to the consumers. This regulation was a step toward the

overall policy framework being developed by the Authority for improving the availability of modern telecommunication services across the country.

14. The draft Regulation recalled many issues in particular wide range of issues arising out of implementing one or other architecture. The extensive comments were received from the stakeholders as written submission and during the meeting held with COAI, AUSPI and BSNL. Authority further analyzed the matter especially regarding Implementation Architecture and decided to have a meeting with the service providers on 08.08.06. Summary of the main comments are as follows:-

15. <u>Summary of the main comments of Stakeholders:-</u>

i) Network architecture wherein the SSP of originating access provider connects to the SCP of the interconnecting operator over CCS-7 link for authentication and other purposes has a number of technological pitfalls, integrating SSPs based on different technologies within existing SCPs is a difficult task.

ii) It would be very difficult and cost prohibitive for any Access Provider to not only procure SCP equipment to cater to its own customer base but also to size it for current and future customer base of all other Access Provider's in the absence of any knowledge of the business plans of the competitor.

iii) For services which rely only on signalling network, and do not rely at all on bearer network, this would require investment on small signalling platforms to be able to screen and account signalling messages and generate CDRs for inter-operator billing.

iv) Appropriate TEC GR does not define the capability set for SCPs supporting all protocols on one platform. In the absence of this and limitations of existing SCPs, implementation and that too uniform implementation across all operators is doubtful.

v) IN service is a value addition over Basic services. Such value added services have so far not been regulated by TRAI. Accordingly, IN services also need a similar treatment.

vi) All efforts should be made for Integrating SSP of all technologies with SCP of different technologies as SSP of one Service Provider interacting with SCP of different Service Providers at signalling interconnect level is the final solution for all kind of IN services. Protocol for IN services needs to standardized.

vii) There is an overlap in the domains of Access Providers and NLDOs and the service can be provided jointly by Access Provider and NLDO. These services will yield the best result if left for mutual arrangements to be made amongst the operators.

viii) Commercial arrangements and revenue share for IN services should be left for the mutual negotiation between the operators.

ix) IN regulations should be in conformity with the various court orders/license agreements/commercial requirements.

x) Security aspect will need to be kept in mind while finalising the IN Regulation.

xi) The issue of interconnect seeker and interconnect provider will need to be addressed.

xii) A list of allowed / not allowed services should be given to help in avoiding potential misinterpretation of the Regulation and subsequent litigations.

xiii) In order to avoid ambiguity and achieve the objective of providing free choice to all subscribers for IN services of all Intelligent Network Service Providers (INSPs), very clear billing, charging and

revenue share guidelines for each type of IN service need to be specified.

xiv) The start up cost for IN services and also for continued investment for platform upgrades for deployment in a Multi Operator, Multi Service environment will have to be borne by INSPs.

xv) The issue who provides intelligent peripherals (like announcement) needs to be addressed.

xvi) How the location based IN services – when accessed by a subscriber of other access provider will be handled.

xvii) Issue of how the national and international roamers could use the IN services needs to be addressed.

xviii) There are chances of misuse, if 18xx call is handed over by the access provider to the INSP. Access provider will not able to know what service INSP is providing, once call is handed over to INSP.

xix) The interest of access provider should be protected.

xx) There are IN service providers (generally vendors) outside India who already have infrastructure and workable architecture for providing these services. These models should be studied and analysed in our context. Option of IN services provided by the third parties should also be explored.

16. Analysis of the issues

The Authority has taken the various comments and inputs into consideration and analysed the matter in details. The views of the Authority on main issues are as follows.

i) The Authority observed that most of the service providers are of the opinion that integrating SSP based on different technologies with an existing SCP of other operators may not be feasible at all times. Inter-working of SSP and SCP of different vendors may require software and hardware modification. This may be time consuming process. This may also add unnecessary cost to the operators. Because of this, most of the service providers are of the opinion that SSP and SCP are to be owned by the Service provider who is providing IN services and All access provider would hand over the 18xx(IN) calls as voice call to the closest POI switch designated for this purpose.

ii) Authority has also noted the points made by the representatives of MTNL that integrating SSP based on different technologies with an existing SCP of other operators would be the final solution for all IN services. Authority has also noted that TEC GR does not define the capability set for SCP supporting all protocols at one platform. Therefore, operator may also require to implement different protocols for fixed line, wireless (WLL(M), WLL(F), Cellular) etc. Therefore Integrating SSP of one service provider with all SCP of all other service providers would be a time consuming process.

iii) In view of the above, Authority is of opinion that exact implementation of the architecture should be left open to the operators. They themselves may decide the Architecture on case-by-case basis.

iv) A crucial factor in favour of leaving architecture open for service providers is that IN service would get implemented quickly at least for Free Phone service and VCC. The Authority has also noted the technical difficulties in implementing location based Intelligent Network Services as well as provision of services through Intelligent Peripherals in case the architecture is specified. IN committee also recognised that Free Phone and VCC (Voice

Calling Cards) should be the first set of IN services to be implemented.

v) Authority has also noted the fact that as of now all operators have dimensioned their IN resources as per their own requirements and subscribers base. Once it is opened for interconnection with other operators there may be requirement of more signalling links and other resources like enhancement of Intelligent Peripherals etc. In fact, requirement of signalling will increase substantially as many IN services rely more on signalling network i.e. tele-voting etc. There may also be some legacy switches in the incumbent's network which may require extensive up-gradation in hardware and software.

vi) Therefore, Authority is of the opinion that one more month after agreement be required to the operators for implementing the IN in multi operator multi network scenario after their mutual agreement take place. Authority expects that at many places implementation may happen in a shorter span where switches do not require much up-gradation or no up-gradation at all.

vii) Authority considered the fact that signalling information may cross the boundaries of the service area to make IN services available nationwide, it may lead to usage of SCPs of NLDOs by Basic Operators / CMSP / UASL as provision of the services by Access Provider is limited to their service areas only. Authority has also noted that as per license conditions NLDOs / ILDOs cannot access subscriber directly. In a communication to one of the NLDOs on 28.10.2005 the licensor had clarified that Toll Free number services and split charge (UAN) services by NLD operator is in contravention to the NLD license conditions because these services are subscriber based and an NLDO cannot directly access the subscriber in terms of clause 2.2 (a) of NLD license.

viii) In this regard, submission has been received from one of the NLDOs on 15.09.06 wherein it was requested that decision on the subject of IN regulation should be in the perspective of its general applicability and need of the industry taking care of the interconnection issues of the IN network/services of the Long distance Service Providers as well. It further mentioned that any restriction on provision of IN based bearer services by the Long distance operators would tantamount to rewriting of the license provision of these Long Distance operators in terms of placing new prohibitions in the license.

ix) Authority has taken note of the submissions of the NLDO and of the view that all service provider should provide the IN services as per terms and conditions of their Licenses and legal position and access the subscriber only if they are permitted to do so by the licensor.

x) During the meeting with Cellular Operators' Association of India (COAI), members of the Association mentioned that charging and revenue sharing guidelines for each type of the IN Services need to be specified. But for this purpose COAI has not been able to provide the relevant data for analyzing the above requirement, yet.

xi) Authority has taken note of the fact that in general members of the Committee were of the opinion that charging, billing and sharing of the revenue depends on the service features and therefore, charging, billing and sharing of revenue for resources used for IN Services may be decided by the concerned service provider through mutual commercial arrangement. The Authority accordingly, accepts the suggestion of the Committee in this regard. However, Authority is also in the process of finalising the standard agreement which would be applicable if service providers are not able to arrive at mutually acceptable agreement within a

specific time. Authority would also ask the relevant data from the service providers shortly.

xii) IN Services as such, is not a separate class of Services Neither NTP' 99 recognizes this as a separate Service nor has licensor categorized it as a separate Service. It is only a different means of providing a service. Therefore, Interconnect Usage Charges (IUC) as applicable from time to time will apply for the IN services provided by operator in multi-operator multi-network scenario. Interconnect Agreement between Service Providers shall include Intelligent Network (IN) access.

xiii) In the interest of security, the Service providers shall make suitable arrangement so that Service providers in mutual association can provide data records of all the calls handled by them as per the requirement of Security Agencies/License Conditions.

xiv) During the meeting, members of the COAI have also raised issue of seeker and provider for IN Services. As mentioned above, IN service as such is not a separate class of service, it is only a means of providing advanced services. Therefore, there is no separate case of seeker and provider in this scenario. Present Point of Interconnection (POI) will continue for IN Services also. There would be only additional requirement of signalling links which may be mutually negotiated among the service providers.

xv) As 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. Therefore, all Service Providers involved will be required to ensure that there shall be no dilution in the Quality of Service (QoS) standards applicable to the underlying Bearer Network.

xvi) The Numbering plan for the IN Services shall be as per applicable National Numbering Plan (NNP). All Service Providers shall ensure that IN Services on Multi-Operator, Multi-Network platform are launched after getting adequate Access Code allocations from the NNP Administrator (Licensor).

APPENDIX-I

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