

Study paper on State of Indian Telecom Network

1. Introduction:

1.1 In a multi-operator scenario, Interconnection plays a vital role in ensuring an efficient, effective and healthy network. It enables customers of one operator to access the customers of other operators. Unavailability of adequate Interconnection between networks of service providers results in non-completion of calls, which causes disruption of service and inconvenience to the subscribers of the network of both the interconnecting operators, and deterioration in the Quality of Service provided by the service provider and is against the interest of the consumers and service providers. Interconnection is defined as “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”. As per Section 11(1)(b)(iii) of the TRAI Act, 1997, the Authority is mandated to “ensure technical compatibility and effective inter-connection between different service providers”.

1.2 Presently there are 47 million fixed line connections and 65 million mobile connections. In the fixed line arena, BSNL and MTNL are the incumbents in their respective areas of operation and continue to enjoy the dominant service provider status in the domain of fixed line services. For example BSNL controls 79% of fixed line share in the country. On the other hand, in the mobile telephony space, Airtel controls 21.4% subscriber base followed by Reliance with 20.3%, BSNL with 18.6%, HUTCH with 14.7% subscriber base (as per June 2005 data). Interconnection has to be available between all the operators. From the numbers and the market shares indicated above, it is evident that when it comes to calls between mobile and fixed line customers and vice versa, connectivity of all the networks with BSNL in particular becomes crucial. In the case of mobile to mobile calls, interconnectivity of various networks with each other and in particular with those who have a large market share becomes important.

1.3 In the last two years, there has been an exponential growth in cellular mobile services. However, the provision of interconnection has not kept pace with this growth leading to increase in inter-network congestion and poor quality of service to the customers.

1.4 This Paper discusses the status of interconnection between various operators, the various steps taken by TRAI in ensuring effective interconnection and the constraints experienced by TRAI in ensuring effective interconnection between service providers.

2. Present state of Congestion in the network--Consequences of ineffective interconnection between BSNL and private operators

2.1 With the exponential increase in the number of subscribers in last two years and the number of operators in each service area, the issue of efficient and adequate interconnection between operators has become very important. TRAI has been monitoring the provision of interconnection between various operators. Considering its effect on Quality of service, TRAI specified a separate parameter i.e. “ Congestion at POI” in its QoS Regulation issued in July 2005. As per this benchmark, the inter network congestion level for an acceptable Quality of Service is less than 0.5%.The operators are required to submit the data regarding this parameter on monthly basis.

2.2 The result of the monitoring exercise have been shown in two parts in **Annex I**. The first part contains congestion observed for the outgoing calls originated in various mobile networks to other mobile networks as well as long distance networks. In the case of BSNL mobile network (CELLONE), since the connectivity is mainly through BSNL Level 1 TAXs, the congestion covers both mobile to mobile calls as well as mobile to long distance calls. The second part of the Annex I gives the congestion at Level 2 TAXs of BSNL i.e. congestion on mobile to BSNL fixed network calls. It is evident from the data presented in **Annex I** that:

- there is heavy congestion in mobile to mobile calls between all operators
- the congestion problem between mobile operators other than BSNL has by and large started showing up lately but that between private operators and BSNL network, is rather persistent with occasional relaxation but fresh build up indicative of delays in augmentation.
- The magnitude of congestion is alarming and nowhere near the TRAI specified acceptable limit of 0.5%
- The congestion between mobile and BSNLs fixed network is substantial with increasing number of LDCAs showing congestion. **As per the congestion**

report of August 2005, out of total 323 LDCAs, in 145 LDCAs, one or the other operator is having congestion.

2.3 In the month of July 2005, there were about 86 POIs (excluding Tata Teleservice- data not available) having congestion level of more than 10% i.e. twenty times worse than the benchmark. Whereas, in August 2005, the number of such POIs have increased to 122(excluding Tata Teleservice). Taking into account the congestion report of M/s Tata Tele services also, this figure further increased to 153. The worst affected locations where Congestion level on point of interconnections (POI) between Private Operators and BSNL is more than 40%, are listed below:

Bharti	Hutch	Idea
Patna (51.10%) Darbhanga (46.62%) Bhadra (42.83%) Palanpur (94.81%) Mehasana (84.76%) Bhavnagar (79.14%) Surendra Nagar (65.36%) Jammu (84.90%) Solapur(70.88%) Latur(63.25%) Osmanabad(59.15%) Bharatpur(41.98%) Jhalawar(90.52%) Kota(74.93%) Sirohi(60.26%) Ooty(41.00%) Lucknow(66.00%) Barabanki(49%) Agra(46.80%) Haldwani(86.30%)	Jalandhar(86.00%) Sikar(42.06%) Asansole(55.00%) Kharagpore(51.00%)	Agra(55.65%) Bijanore(64.02%) BSNL Kerala(44.52%)

Aircel, Chennai	Reliance Inf.	Tata Tele.
BSNL NLD(82.00%)	Patna (69.90%) Jalna (47.53%) Cuttack (46.26%) Azamgarh (79.19%) Lucknow (58.73%)	Jaipur (79.00%) Bidar (52.50%) Sonipat (44.50%) Yamunagar (59.30%) Ferozpur (40.79%) Nawashar (70.13%) Chandigarh (75.93%) Patiala (56.82%) Aara(65.70%)

		Jamshedpur(71.80%) Patna(87.50%) Deharadun Local (45.20%) Moradabad (88.60%) Meerut (94.50%) Varanasi(72.39%) Jabalpur(46.00%)
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3. Major Reasons of congestion in the Network:

The major reasons for congestion in inter-network calls can be attributed to the following.

- i. Non- availability of adequate interconnection capacity due to –
 - a. Long lead time stipulated in the interconnect agreements for providing junctions.
 - b. Delay in providing interconnection
- ii. Lack of Direct Interconnectivity between the networks

3.1 Long lead time stipulated in the interconnect agreements for providing junctions

3.1.1 Interconnection is the lifeline of telecommunication network. The efficiency and quality of service would suffer if efficient interconnections are not enforced in a timely manner. Technical, financial and commercial terms and conditions of interconnection play a vital role in ensuring effective interconnection between service providers. Right from the inception, TRAI has been taking various steps to facilitate effective and efficient interconnection in a timely and efficient way.

3.1.2 In 1997 in the matter of interconnection dispute between Aircel Digilink India Ltd. and DOT (now BSNL), TRAI had directed DOT to provide interconnection to cellular network operators, subject to integrity of the network and technical feasibility, **within 90 days** of the request being received.

3.1.3 TRAI had mediated in the matter of disagreement between cellular mobile operators and BSNL on signing of interconnect agreement and issued a

determination on 8th Jan 2001, which enabled the parties to resolve disagreements between them. This Determination provided that “BSNL will provide the interconnection requested by the cellular operator **within three months** at the TAXs of both the levels i.e., I & II.

3.1.4 In order to ensure efficient interconnection between service providers, on the basis of detailed consultations with all the stakeholders and as per the international practices, TRAI issued Interconnection (Reference Interconnection Offer) Regulation, 2002. BSNL challenged this Regulation before TDSAT which stayed the operation of the said Regulation and finally decided the case on 27.4.2005, holding that the power of TRAI to fix the terms and conditions of interconnection are subject to licence conditions and the existing interconnection agreements between the operators. TDSAT took this view after making reference to a number of licence conditions contained in the Basic Telephone Services Licence Agreements and Unified Access Services Licence Agreements. Some of these licence conditions stipulate that the operators will mutually negotiate interconnect agreements, subject to the prevailing Regulations, Directions and Determinations issued by TRAI. While interpreting these licence conditions, TDSAT gave more emphasis on the aspect of mutual negotiation rather than the aspect which requires such agreements to conform to the Regulation/ Direction/ Order of TRAI. Also, TDSAT interpreted the amended provision of TRAI Act with regard to interconnection in the light of the decision of Division Bench of Delhi High Court rendered in MTNL case (AIR (2000) DEL 208) which was decided with reference to the unamended provision. As this decision impinges on the effectiveness of TRAI to ensure effective interconnection regime as provided in TRAI Act, 1997 to safeguard the consumer interest, TRAI has filed appeal against it in the Supreme Court (<http://tdsat.nic.in/judgements.htm>)

3.1.5 In order to maintain congestion free network, it is imperative to have minimum lead-time in augmenting the network, with the increase of subscriber base and traffic flow. However, as per the Interconnect agreements entered into by the private CMSPs with the BSNL, the time for the provision of interconnect capacity has been fixed as 12 months, from the date of payment for interconnection for the accepted demand. The agreements between other operators do not have such a

time frame prescribed and the responsiveness to request for interconnection appears to be better. Interconnection issues have arisen not only between BSNL and private operators but also among private operators. One such example is the interconnection issue between Reliance Infocom Ltd. and Tata Teleservices Ltd.. Tata Teleservices Ltd. launched services in twelve new circles under Unified Access Service License during December 2004 and January 2005. Tata Teleservices Ltd. sought interconnection in circles viz. Bihar, Haryana, Himachal Pradesh, Kerala, Madhya Pradesh, Orissa, Punjab, Rajasthan, UP(E), UP(W), Kolkatta and West Bengal circles. Reliance Infocom Ltd. was already operational in these circles and Tata Teleservices Ltd. was new entrant and so sought interconnection. Reliance Infocom Ltd. delayed the process and Tata Teleservices approached TDSAT in the month of August 2005 and during that time subscribers suffered. Subscriber of both the operators were unable call each other directly and calls were routed through third operator by paying extra carriage charge. The matter was resolved in September 2005 and the case was withdrawn from TDSAT.

3.1.6 Due to this long period for provision of interconnection, the operators have not been able to timely augment the interconnect capacity to support the high growth of cellular mobile phones in the recent years. At present the mobile subscriber base is increasing at the rate of about 2.5-3 million subscribers per month. Therefore, in order to keep their network congestion-free, the mobile operator need to increase their capacity as early as possible and the time taken to provide interconnection at new locations or augment the existing interconnection capacity needs to be curtailed to even less than 3 months. It has been our observation that while in some relatively rare cases the interconnection time between some private operators is large, this is particularly so in the case of interconnection with BSNL who as per the Interconnect Agreements insist on the requirement of much larger (12 months) time frames for providing interconnection. This has increased congestion in the network and the situation is continuously getting worse and is impacting the Quality of Service being provided to the consumers. Recently, in order to ensure compliance of terms and conditions of license and effective interconnection between service providers and to protect consumer interest, TRAI, in the discharge of its functions under Section

11(1)(b)(i),(iii)(v) and (vi) of the TRAI Act, 1997 had directed, vide its direction dated 7th June, 2005 and Corrigendum dated 28th July, 2005, all the service providers “to provide interconnection on the request of the interconnection seeker within 90 days of the applicable payments made by the interconnection seeker”. Under its functions under Section (11)(1)(b)(vi), “TRAI is to lay-down and ensure the time period for providing local and long distance circuits of telecommunication between different service providers”. (Refer <http://www.trai.gov.in/dir7jun05.htm>) This Direction has also been challenged by BSNL in TDSAT.

3.2 Delay in providing interconnection

3.2.1 The Interconnect Agreements between BSNL and other CMSPs provides for provision of interconnect capacity within 12 months of making the payment for the required capacity. However, there are large number of cases pending where even after 12 months, the required junctions have not been provided by the BSNL.

3.2.2 The list of interconnection port E1 which were demanded by private operators & are pending for more than 90 days are enclosed in annexure II and III.

3.2.3 Though the list is not exhaustive, it is only an indicator for the need of prompt interconnection at these places for giving better quality of service to the customers. Surprisingly, Out of these 918 pending E1 demands at level II TAXs (at LDCA level), 367 are pending for more than a year. In order to achieve the target of 250 million connections by the year 2007, set by the MOC, there is a greater need for prompt augmentation of the network interconnect capacity at the LDCA level.

3.3.1 Lack of Direct Interconnectivity

3.3.1 In a multi-operator environment, in order to have a smooth, efficient and cost effective traffic flow and also to ensure level playing conditions, it is imperative to have direct connectivity between the networks of different operators. However, BSNL had not allowed such direct inter-connectivity. Due to lack of direct connectivity between BSNL mobile and private mobile operators, the private mobile operators have to route all their calls meant for BSNL subscribers through the Level-1 TAX of BSNL. This not only resulted in extra burden on the consumers in the form of transit charges, but also contributed in increasing the congestion at POIs at Level-1 TAX with the MSC of the private operators.(Annex-II). In order to ensure

effective interconnection between different service providers, to maintain level playing field amongst service providers and in consumer interest, TRAI vide its Direction dated 22.7.2003 directed all service providers that direct connectivity should be made between all service providers within 3 months. BSNL challenged the same before TDSAT, which by its order dated 3.5.2005 set aside the said direction. TDSAT, however, directed BSNL on consideration of level playing field to stop charging 19 paise from cellular operators by way of transit charges for accessing BSNL's CellOne subscriber. TRAI has filed appeal against the said decision in the Supreme Court.

4. Conclusion:

This study has been carried out with a view to understanding and highlighting the reasons for the increasing frustration among the users of mobile services in getting through the calls particularly to certain operators. The study based on the several months of data, clearly brings out the need for ensuring effective interconnection between various operators in view of the rapid growth in the mobile customer base. The study further reveals that to be able to cope with this growing rate without congestion in the network, there is an imperative need to drastically curtail the time needed for providing the interconnection or for meeting the augmentation requests.

It appears that the private operators other than BSNL, have been quicker in responding to the interconnection needs though some of them have lately shown signs of congestion buildup possibly due to the unexpectedly high growth rate. The problem is however extremely acute in interconnection with BSNL, whether it is interconnection to their fixed network or the mobile network. The interconnection links of some operator or the other to BSNLs fixed network in 145 out of 323 LDCAs have congestion while in 49 LDCAs, the congestion level is in the range of 40% to 94.8%. Congestion at Level I TAX which caters to the traffic of BSNLs mobile network (CELLONE) besides long distance calls, is also seen to be high and building up most of the times.

To support the present growth rate of 2.5 – 3 million subscribers every month, the time period for provision of interconnection should be very minimum. Though TRAI has taken measures to reduce the lead-time for provision of

interconnection, because of legal proceedings against these measures by BSNL in the Hon'ble TDSAT and the orders of the Hon'ble Tribunal thereon limiting the powers of TRAI to fix the terms and conditions of interconnectivity, these measures could not take off. On the other hand, if interconnection issues are left for mutual negotiations, the incumbent operator and Operators with significant market power always try to delay interconnection to other players leading to inconvenience and high cost to subscribers and deterioration of network conditions. This is evident from the delay in providing interconnections by BSNL and recent dispute on interconnection between Reliance Infocom Ltd. and Tata Teleservices Ltd. where M/s Reliance Infocom Ltd. had delayed provision of interconnection to M/s Tata Teleservices Ltd. TRAI has appealed to the Supreme Court against the orders which inhibit TRAI from enforcing effective interconnections. Regardless of the appeal in the Supreme Court, for the sake of their customers, BSNL and private mobile operators should take drastic steps for augmenting interconnect capacity in the shortest possible time frame so that the subscribers of both the service providers should not have problems in communicating to each other and the level of POI congestion is reduced to an acceptable level.

Annexure-I

POIs Congestion of M/s Bharti Tele-ventures Limited with Level 1 TAX of BSNL and other operators for the months of April - Aug, 2005					
Name of Circle and POIs	Benchmarks 0.5%				
	April	May	June	July	Aug
Assam					
POI with other operators					
Reliance Telecom			69.00	89.65	77.23
Bihar					
POI with other operators					
Reliance ILD				0.00	17.00
POI with other operators					
Tata				1.70	7.39
POI with Other Operators					
RELIANCE_WLL	0.00	0.62	0.03	0.80	3.55
Tata FIX				1.10	17.47
POI with BSNL					
Patna	14.47	28.03	23.76	35.40	51.10
Chennai					
POI with other operators					
Aircel	8.46	25.59	4.33	18.00	15.00
Hutch	0.00	5.00	2.06	0.00	4.20
POI with BSNL					
Chennai Flower Bazaar	4.31	0.00	4.37	5.00	10.00
Inter Circle Direct POI					
Aircel TN				5.00	2.00
Gujarat					
POI with BSNL					
Bhadra - ahd	16.04	0.92	13.57	24.68	42.83
Gulbai tekra _ahd	6.30	14.16	30.00	37.26	28.86
Himachal Pradesh					
POI with BSNL					
SHIMLA	0.00	0.00	0.00		7.00
Shimla CellOne			0.60	1.20	8.80
J & K					
POI with BSNL					
JAMMU	86.39	88.37	83.20	81.60	84.90
Karnataka					
POI with BSNL					
Bharti NLDO	0.00	0.00	0.00	0.00	2.35
Kerala					
POI with other operators					
Reliance	0.00	0.00	0.00	10.00	10.00
Escotel	10.00	26.92	12.80	11.00	11.00
Maharashtra					
POI with other Operator					
Bharti - Cellone	32.28	31.86	44.83	19.07	41.25
Mumabai					

POI with other Operator					
Bharti - Dolphin	1.20	0.00	0.80	2.00	5.00
NE					
BSNL-STD/Local-Shillong-Home Subs OG			0.00	79.34	17.00
Orissa					
Cuttack	2.37	2.05	2.05	0.00	10.81
Punjab					
POI with BSNL					
JALANDHAR (MTS Nagar)			5.03	3.69	5.63
Rajasthan					
POI with BSNL					
Jaipur	8.41	23.36	20.93	30.86	30.86
Tamilnadu					
POI with other operators					
Reliance	0.00	0.00	0.00	0.00	12.00
Inter Circle Direct POI					
HUTCH Chennai					14.00
UP - E					
POI with FWPO/FWTO					
Bharti- Reliance	0.00	0.00	0.00	0.00	38.50
POI with BSNL					
Lucknow IndraNagar	43.00	36.00	27.50	51.20	35.00
Lucknow IndraNagar AXE	56.00	40.00	0.50	53.20	50.00
Lucknow Keshar Bagh	60.00	60.00	54.50	71.80	66.00
POI with other Operator					
BSNL ILDO-Incoming	0.00	0.00	0.30	0.20	2.00
UP - W					
Agra	52.04	25.30	45.30	56.90	46.80

POIs Congestion of M/s Bharti Tele-ventures Limited with Level 2 TAX of BSNL for the months of April - Aug, 2005					
Name of Circle and POIs	Benchmarks 0.5%				
	April	May	June	July	Aug
Assam					
POI with BSNL					
BSNL-STD/Local-Guwahati-Home Subs			0.00	NA	21.00
BSNL-STD/Local-Guwahati-Inroamers			0.00	40.40	15.08
Bihar					
POI with BSNL					
Gaya	0.01	0.03	1.90	5.20	12.83
Bhagalpur			0.00	5.20	2.53
Chapra			0.29	30.50	35.83
Dharbhanga			18.30	36.10	46.62
Gujarat					
POI with BSNL					
Ahmedabad - Gulbai tekra	0.52	9.25	28.11	29.22	27.32
Surat	10.81	1.83	2.95	7.02	7.43
Palanpur	1.99	94.76	96.11	95.72	94.81
Mehasana	89.44	87.10	89.01	85.19	84.76
Bhavanagar	73.64	91.81	86.44	59.68	79.14
BHUJ	12.56	36.12	2.33	0.93	33.63
JUNAGADH	0.00	34.94	44.46	39.40	33.27
RAJKOT	1.06	34.63	26.74	28.26	23.72
SURENDRANAGAR	24.43	74.78	85.43	82.17	65.36
Himachal Pradesh					
POI with BSNL					
DHARAMSHALA	1.90	11.15	22.30	5.30	13.30
HAMIRPUR	17.60	34.46	23.50	28.00	22.20
Karnataka					
POI with BSNL					
TUMKUR	69.98	25.45	2.43	23.86	15.37
MANDYA	12.17	0.00	3.87	6.71	3.39
HASSAN	38.00	40.36	8.09	34.12	35.67
SHIMOGA	0.64	3.86	0.15	2.95	10.04
BIDAR	2.50	9.93	2.45	1.05	4.58
BELGAUM	4.50	7.36	0.67	8.34	5.08
BIJAPUR	2.00	16.00	4.05	6.36	16.34
KARWAR	36.00	53.00	0.17	1.91	2.50
Kerala					
POI with BSNL					
Alleppy	0.00	7.33	4.74	0.00	3.80
Maharashtra					
POI with BSNL					
Jalgaon	2.32	1.36	0.00	18.98	18.98
Aurangabad	2.22	2.74	4.07	0.00	5.63
Nanded	4.56	4.56	5.12	3.17	36.18

Nagar	7.03	6.36	0.57	6.26	4.17
Dhule	3.21	4.01	1.01	4.54	13.10
Solapur	2.45	2.58	2.01	4.10	70.88
GOA	4.76	5.36	3.83	3.83	30.05
Sangli	3.89	6.38	1.12	0.00	6.01
Latur	0.00	0.00	0.00	0.00	63.25
Akola	0.04	0.38	1.38	8.45	10.28
Amravati	9.87	8.89	44.63	44.63	31.06
Yawatmal	8.65	8.01	9.01	5.55	3.55
Savantwadi	0.05	0.04	0.14	5.65	3.83
Ratnagiri	9.98	8.97	8.97	5.65	3.53
Osmanabad	10.87	11.87	54.34	0.10	59.15
Mumabai					
POI with MTNL Tandem					
Cumballa level 3	0.41	0.00	0.80	2.00	2.00
Vile Parle level 6	0.88	0.00	0.20	0.00	2.00
Orissa					
Balasore	4.92	2.39	2.39	2.39	2.39
Rajasthan					
POI with BSNL					
Alwar	1.25	35.13	27.25	47.60	35.20
Bharatpur		0.04	15.39	45.32	41.98
Bhilwara	0.29	1.44	1.62	11.52	8.40
Bundi	1.13	22.58	13.54	14.25	17.93
Cittorgarh	0.85	0.88	0.00	0.32	3.33
Jhalawar	1.51	41.21	30.01	33.11	90.52
Jhunjhunu	0.86	73.10	62.45	62.15	26.77
Kota	0.95	10.13	23.70	20.09	74.93
Sirohi	1.60	68.03	63.50	62.24	60.26
Tonk	1.54	0.71	1.54	0.34	12.62
Udaipur	1.48	8.41	7.09	6.50	27.65
Tamilnadu					
POI with BSNL					
Coimbatore	11.16	11.42	10.31	15.00	15.00
Dharmapuri	32.00	41.21	30.90	40.00	40.00
Ooty	24.00	33.73	24.80	38.00	41.00
UP - E					
POI with BSNL					
Barabanki	33.00	42.00	38.90	51.20	49.00
Deoria	0.00	0.00	0.00	0.80	7.00
Mirzapur	0.00	1.40	14.90	22.20	20.00
PratapGarh		0.00	0.00		10.00
AzamGarh		0.00	0.10	3.60	13.00
UP - W					
POI with BSNL					
Haldwani	90.00	91.00	89.20	73.80	86.30

POI Conogetion of M/s Idea Cellular with Level 1 TAX of BSNL and other operators (Jan - August, 2005)									
Sr. No.	Name of POIs	Benchmarks (<0.5%)							
		January	February	March	April	May	June	July	August
1	Madhya Pradesh								
	Bhopal	21.30	23.40	22.10	2.50	5.10	4.50	6.60	5.00
2	Andhra Pradesh								
	(i).Idea - Hutch								
	HUTCH HYD	0.00	10.87	3.45	0.69	18.83	3.61	18.67	36.89
	(ii) Idea - Reliance								
	RELIANCE FXD VJA MSC04	0.00	0.00	0.29	0.82	0.90	16.19	50.05	56.86
	(iii) NLD / ILD Operators								
	RELIANCE NLD ILD FIXED	0.00	0.00	0.00	0.00	13.78	30.13	23.58	39.70
4	UP(W)								
	Agra	12.84	61.74	55.29	59.79	30.15	40.86	48.37	55.65

POI Congestion of M/s Idea Cellular with Level 2 TAX of BSNL (Jan - August, 2005)

Sr. No.	Name of POIs	Benchmarks (<0.5%)							
		January	February	March	April	May	June	July	August
1	Madhya Pradesh								
(i)	Idea - BSNL								
	Shajapur								3.10
	Khargone	20.10	27.20	29.20	27.40	26.60	29.30	28.40	31.60
	Khandwa	3.40	7.00	7.40	7.00	7.60	17.30	13.60	12.70
	Rewa								2.70
	Raigarh	19.30	26.80	25.70	24.20	19.30	NA	20.50	28.90
	Guna								8.40
	Morena								2.40
	Narsingpur	1.20	1.00	1.00	0.90	1.00	3.40	2.60	3.90
	Shahdol	3.90	7.50	13.40	16.20	16.90	18.90	19.10	25.80
2	Andhra Pradesh								
(i)	Idea - BSNL								
	KURNOOL	9.14	20.75	9.50	22.05	31.27	27.83	30.07	35.31
	MAHABOONAGAR	33.27	42.22	44.09	39.58	39.75	35.70	31.85	29.73
	NALGONDA	0.73	5.88	9.20	5.44	6.44	6.09	4.91	7.28
	CUDDAPAH	0.00	1.45	6.07	6.87	11.55	20.33	4.24	4.11
	SRIKAKULAM	2.42	4.82	3.51	2.67	5.33	3.50	1.86	1.80
3	Maharashtra								
(i)	Idea - BSNL								
	Jalna	65.90	72.57	71.69	68.00	61.90	63.10	55.70	32.10
	Nagpur	2.10	4.00	15.83	6.30	0.52	7.33	2.40	1.80
	Ratnagiri	13.10	11.10	18.52	16.95	14.20	16.03	11.60	7.30
	Sangli								1.10
4	Gujarat								
(i)	Idea - BSNL								
	ANAND	1.18	5.83	3.34	4.75	11.45	7.94	2.40	1.38
	AMRELI	11.28	27.35	11.24	3.63	5.80	5.52	5.25	5.90
5	Kerala								
	BSNL NLD		50.60	11.72	0.00	2.84	3.02	60.39	44.52
6	UP(W)								
(i)	Idea - BSNL								
	Mainpuri	29.25	71.12	44.71	4.60	0.00	3.01	2.87	11.15
	Bijnaur	15.36	74.73	72.26	73.66	73.72	74.85	72.17	64.02
	Pilibhit	18.38	6.13	40.51	21.42	28.30	25.67	25.45	9.63

POIs congestion of M/s Reliance Infocomm Limited with Level 1 TAX of BSNL for the months of Jan - August, 2005

	Service area and POIs	Benchmarks <0.5%							
		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG
i	Bihar								
	POI with BSNL								
	Patna		31.15%	30.23%	31.15%	36.55%	48.05%	61.57%	69.90%
ii	Haryana								
	POI with BSNL								
	AMBALA	16.41%	30.77%	27.35%	30.77%	1.55%	2.34%	3.29%	0.00%
iii	Orissa								
	POI with BSNL								
	Cuttack	0.00%	4.20%	10.30%	4.20%	34.92%	31.26%	29.67%	46.26%
iv	Rajasthan								
	POI with BSNL								
	JAIPUR	0.00%	14.80%	59.07%	14.80%	12.61%	25.36%	24.43%	15.04%
v	UP - E								
	POI with BSNL								
	Lucknow Indira Nagar		51.82%	49.98%	51.82%	31.69%	8.78%		58.75%
	LUCKNOW Keserbagh		6.45%	14.29%	6.45%	15.47%	14.33%		58.73%
vi	UP -W								
	POI with BSNL								
	AGRA	8.59%	20.86%	26.27%	20.86%	23.06%	27.37%	30.23%	0.02%
vii	West Bengal								
	POI with BSNL								
	Asansol	0.00%	0.00%	2.14%	0.00%	0.95%	0.13%	5.85%	11.63%

POIs congestion of M/s Reliance Infocom Limited with Level 2 TAX of BSNL for the months of Jan - August, 2005

	Service area and POIs	Benchmarks <0.5%							
		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG
i	Andhra Pradesh								
	POI with BSNL								
	CUDDAPAH	0.00%	3.65%	0.00%	3.65%	0.33%	1.08%	1.41%	0.00%
ii	Bihar								
	POI with BSNL								
	Gaya								11.47%
iii	Karnataka								
	POI with BSNL								
	BELGAUM	0.00%	7.63%	3.03%	7.63%	1.35%	2.10%	2.54%	19.59%
iv	Maharashtra								
	POI with BSNL								
	AMRAVATI	7.48%	27.59%	8.35%	27.59%	46.03%	56.86%	26.46%	32.82%
	JALNA	19.91%	40.16%	38.90%	40.16%	42.17%	45.96%	38.81%	47.53%
	RATNAGIRI	2.80%	11.20%	19.83%	11.20%	5.54%	8.04%	5.78%	15.49%
v	Rajasthan								
	POI with BSNL								
	ALWAR	0.00%	31.11%	37.72%	31.11%	41.09%	27.83%	28.63%	35.29%
	CHITTORGARH	9.83%	37.45%	40.00%	37.45%	29.67%	28.43%	7.87%	13.45%
vi	UP - E								
	POI with BSNL								
	AZAMGARH		17.02%	7.77%	17.02%	37.86%	64.76%	71.69%	79.19%
vii	UP - W								
	POI with BSNL								
	NAINITAL	13.81%	9.05%	18.93%	9.05%	30.14%	39.86%	10.58%	15.69%
	Etah								3.73%

POIs Congestion of M/s Reliance Telecom Limited with Level 1 TAX of BSNL for the months of Jan - August, 2005

Sr. No.	Circle	Benchmarks <0.5%							
	POI Name	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG
I	Madhya Pradesh								
	BHOPAL	2.93%	3.00%	3.18%	4.21%	16.09%	16.59%	17.28%	19.13%
ii	Bihar								
	PATNA	12.76%	23.37%	18.21%	12.40%	13.22%	14.99%	4.54%	8.13%
iii	West Bengal								
	ASANSOL	0.00%	3.93%	3.09%	11.46%	3.52%	4.15%	8.87%	16.27%
iv	Himachal Pradesh								
	SHIMLA	5.14%	9.77%	10.90%	12.15%	18.30%	17.80%	20.07%	25.75%
V	Assam								
	GUWAHATI	2.27%	2.84%	2.35%	1.72%	5.02%	9.60%	10.61%	22.00%

POIs Congestion of M/s Reliance Telecom Limited with Level 2 TAX of BSNL for the months of Jan - August, 2005									
Sr. No.	Circle	Benchmarks <0.5%							
	POI Name	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG
I	Madhya Pradesh								
	POI with BSNL								
1	KHANDWA	2.71%	3.03%	0.33%	0.73%	2.02%	1.41%	0.67%	0.53%
2	KHARGONE	0.09%	0.00%	3.23%	1.02%	1.07%	1.56%	1.61%	1.79%
3	CHINDWARA	0.00%	0.00%	1.94%	0.96%	0.45%	1.74%	1.79%	1.87%
4	VIDISA	0.15%	0.00%	0.00%	0.59%	0.18%	1.93%	1.98%	1.71%
5	DURG	3.25%	8.01%	9.74%	11.63%	6.30%	7.17%	4.46%	5.25%
ii	Bihar								
	POI with BSNL								
1	GAYA	12.32%	19.14%	19.50%	14.24%	15.04%	18.02%	18.53%	19.37%
2	MUZAFFARPUR	3.54%	12.19%	12.20%	13.96%	14.90%	15.31%	10.77%	1.66%
3	BHAGALPUR	3.27%	9.96%	11.99%	13.88%	13.09%	16.74%	18.74%	19.87%
4	DARBHANGA	10.16%	10.76%	12.86%	12.88%	13.69%	5.45%	0.00%	4.57%
5	SAHARSA	3.56%	11.56%	14.08%	12.49%	13.54%	12.10%	14.10%	19.11%
6	MOTIHARI	3.93%	11.61%	12.25%	13.41%	15.87%	6.13%	5.38%	12.81%
7	MUNGER	4.13%	12.19%	12.87%	12.53%	11.24%	17.52%	18.75%	21.05%
8	JAMSHEDPUR	3.92%	11.88%	6.35%	12.67%	13.55%	13.84%	19.00%	21.54%
9	DHANBAD	7.40%	10.32%	9.35%	10.11%	16.75%	15.05%	17.00%	19.51%
10	HAZARIBAGH	8.36%	10.21%	7.20%	11.30%	13.67%	14.98%	19.00%	21.56%
iii	West Bengal								
	POI with BSNL								
1	COOCHBEHAR	0.00%	1.31%	1.57%	15.23%	16.59%	14.56%	1.08%	1.07%
2	RAIGANJ	0.00%	0.70%	0.75%	1.40%	1.90%	3.78%	2.97%	2.66%
iv	Himachal Pradesh								
	POI with BSNL								
1	SOLAN	0.00%	0.00%	0.00%	0.51%	1.38%	0.71%	2.30%	2.83%
2	DHARAMSHALA	8.48%	12.62%	12.12%	12.59%	11.00%	17.26%	18.97%	21.78%
3	KULLU	0.78%	0.00%	1.69%	5.91%	11.61%	9.28%	5.64%	2.72%
4	HAMIRPUR	5.27%	9.35%	9.73%	12.78%	14.28%	13.50%	14.27%	18.26%

POIs Congestion of M/s Tata Teleservices with level L1 TAX of BSNL and other operators for the months of July - August, 2005			
Circle	Name of POIs	Benchmark <0.5%	
		July	August
1. Gujarat	POI with BSNL		
	Ahamdabad	9.00	1.00
2. Rajasthan	POI with BSNL		
	Jaipur_Fix	1.00	1.00
	Jaipur NLD	80.00	79.00
3. Punjab	POI with BSNL		
	Chandigarh	43.27	75.93
4. Bihar	POI with BSNL		
	PATNA	81.37	87.50
5. UP - WEST	POI with BSNL		
	Agra	27.70	14.70
6. Andhra Pradesh			
	POI with other operators		
	Airtel	0.00	15.30
7. Tamilnadu			
	POI with other operators		
	HUTCH CHENNAI	1.34	2.08
	Aircell Coimbatore(mob)	0.00	2.23
	Reliance Coimbatore(mob)	0.00	2.98
8. UP - East	POI with BSNL		
	LUCKNOW	4.17	4.17
	LUCKNOW NLD	19.63	19.63

POIs Congestion of M/s Tata Teleservices with L2 TAX of BSNL for the months of July - August, 2005			
Circle	Name of POIs	Benchmark <0.5%	
		July	August
1. Delhi	POI with BSNL		
	Faridabad_Tandem	0.18	1.15
	Ghaziabad	0.02	4.32
2. Gujarat	POI with BSNL		
	Sanand	0.00	1.00
	Gandhinagar	2.00	3.00
	Valsad	3.00	2.00
	Bilimora	4.00	5.00
	Porbandar	4.00	5.00
	Limbdi	1.00	3.00
	Morbi	1.00	1.00
	Veraval	4.00	3.00
	Jetpur	1.00	3.00
	Navsari	2.00	2.00
	Bhuj	1.00	1.00
3. Karnataka	POI with BSNL		
	Anekal Tandem	1.30	2.00
	Mallavalli	0.00	4.00
	Davangere Tandem	27.90	11.00
	Bidar	14.30	52.50
4. Haryana	POI with BSNL		
	SONIPAT TANDEM	10.70	44.50
	YAMUNANAGAR TANDEM	81.70	59.30
	AMBALA TAX(Fixed NLD)	87.80	100.00
	AMBALA TAX(Mobile NLD)	11.45	32.80
	KARNAL TAX(Fixed NLD)	0.00	9.90
	SONIPAT TAX(Fixed NLD)	0.00	37.20
5. Punjab	POI with BSNL		
	Chandigarh Sec. 17 Tandem	7.10	4.70
	Ferozpur Tandem	16.80	40.79
	Nawanshar Tandem	18.81	70.13
	Patiala Tandem	6.36	6.46
	Rajpura Tandem	0.00	9.05
	Amritsar	0.00	5.96
	Jalandhar	0.00	17.23
	Ferozpur	0.18	6.31
	Patiala	3.36	56.82
6. Bihar	POI with BSNL		
	AARAH	76.25	65.70
	AIRTEL	24.32	20.70
	JAMSHEDPUR	76.34	71.80
7. UP - WEST	POI with BSNL		
	Agra	27.70	14.70

	Dehradun	4.10	45.20
	Dehradun	0.00	17.10
	Moradabad	42.40	88.60
	Meerut	77.80	94.50
	BTSOL NLD	0.00	2.60
8. Andhra Pradesh			
	POI with BSNL		
	Sangareddy	2.00	3.00
	Mahaboobnagar	9.00	10.00
	Nandigama	0.00	7.00
	Srikalkulam	0.00	4.00
9. Chennai	POI with BSNL		
	Anna Road Tandem	9.64	5.67
	KK Nagar Tandem	0.37	0.58
10. Tamilnadu			
	POI with BSNL		
	Chengulpet_Farend	10.63	9.12
	Kanchipuram_Farend	9.81	10.11
	Virudunagar_Farend	0.00	2.55
	Dharmapuri	0.00	0.62
	Virudunagar	0.00	0.81
	Virudunagar (mob)	0.00	0.54
11. UP - East	POI with BSNL		
	VARANASI	72.39	72.39
12. Madhya Pradesh & Chhattisgarh	POI with BSNL		
	Indore	5.00	23.20
	Jabalpur	45.00	46.00
	Raipur	32.00	0.63
	Bilaspur	17.00	39.70

POI Congestion of M/s Spice Communications with Level 1 TAX of BSNL and other operators (July - Sept, 2005)					
Sr. No.	Name of POIs	Benchmarks <0.5%			
		May	Jun	July	August
1	Punjab				
	POI with BSNL				
1	Jalandhar	4.15%	6.33%	10.58%	11.21%
	POI with other Operators				
1	HFCL_Basic	0.00%	0.00%	3.37%	1.90%
2	BTSOL_NLD	0.10%	0.00%	3.18%	1.52%
3	VSNL_ILD	0.00%	0.00%	3.81%	4.86%
4	Reliance Basic Punjab				

POI Congestion of M/s Spice Communications with Level 2 TAX of BSNL (July - Sept, 2005)					
Sr. No.	Name of POIs	Benchmarks <0.5%			
		May	Jun	July	August
1	Punjab				
	POI with BSNL				
1	Hoshiarpur	0.00%	0.00%	2.94%	3.48%
2	Kotkapura	2.82%	0.00%	3.50%	2.56%
3	Amritsar	0.00%	0.00%	1.50%	1.93%
4	Bhatinda	0.00%	0.00%	3.17%	2.27%
5	Ludhiana	2.82%	0.00%	3.41%	3.36%
6	Pathankot	1.11%	0.01%	2.18%	3.15%
7	Patiala	0.00%	0.00%	2.99%	2.10%
8	Ropar	0.00%	0.00%	2.23%	1.03%
9	Sangroor	0.00%	0.00%	3.04%	2.79%
	POI with other Operators				
10	HFCL_Basic	0.00%	0.00%	3.37%	1.90%
11	BTSOL_NLD	0.10%	0.00%	3.18%	1.52%
12	VSNL_ILD	0.00%	0.00%	3.81%	4.86%

POI Congestion of M/s Aircel Cellular Limited with Level 1 TAX of BSNL and other operators (July - August, 2005)			
Sr. No.	Name of POIs	Benchmark <0.5%	
		July	August
	Chennai		
	POI with BSNL		
1	BSNL Local	11.00%	27.30%
2	BSNL NLD	91.00%	82.00%
	POI with other operators		
3	Airtel Local	77.00%	74.00%
4	Hutch Local	63.00%	70.00%
5	Rest of TN BPL	25.60%	20.00%
6	Rest of TN TATA	73.00%	73.00%

Annexure-II

Summary of E1 ports pending with Level 1 TAX of BSNL						
Service Area	Service Provider	Place	Pendency			Total pending E1 Ports
			90-180 days	180-365 days	>365 days	
Assam	Bharti	Guwahati		30		30
		FlowerBazaar-Tandem		5		5
Delhi	Bharti	Delhi	90			90
Haryana	Hutch	Ambala		4		4
				8		8
	Idea	Ambala			1	1
				4		4
			6			6
HP	Bharti	Shimla	10			10
J&K	Bharti	Jammu			30	30
Kolkata	Bharti	Kolkata	6			6
Maharashtra	Idea	Nagpur	14			14
MP	Bharti	Bhopal	10			10
Mumbai	Bharti	Fountain TAX	7			7
		Thane TAX	48			48
	BPL	Thane TAX	8			8
			4			4
Orissa	Bharti	Cuttak			4	4
			34			34
			35			35
Punjab	Spice	Jalandhar			22	22
Rajasthan	Hutch	Jaipur	24			24
TamilNadu	Bharti	Coimbatore	10			10

UP-E	Bharti	Lucknow			30	30
	Hutch	Lucknow	16			16
UP-W	Bharti	Agra		30		30
	Hutch	Agra			7	7
West Bengal	Bharti	Asansol			6	6
	Hutch	Asansol	8			8
			330	81	100	511

Annexure-III

Summary of E1 ports pending with Level 2 TAX of BSNL							
Service Area	Service Provider	Place	Pendency			Total Pending E1 Ports	
			90-180 days	180-365 days	>365 days		
Assam	Bharti	Bongaigaon		7		7	
		Dibrugarh		20		20	
		Jorhat		12		12	
		Nagaon		5		5	
		Silchar		10		10	
		Tezpur		5		5	
AP	Bharti	Srikakulam	2			2	
	Idea	Kurnool			1	1	
		Mahaboobnagar			1	1	
		Srikakulam			1	1	
Bihar	RTL	Patna			12	12	
		Hazaribagh			2	2	
		Deogarh			2	2	
		Bhagalpur		4		4	
		Saharsa		2		2	
		Motihari		3		3	
		Munger		3		3	
		Ranchi		4		4	
		Jamshedpur	5			5	
		Dhanbad		3		3	
		Hazaribagh			3	3	
		Reliance Infocomm	Daltonganj			6	6
			Deogarh (Dumka)			8	8
		Saharsa			6	6	
Chennai	Bharti	FlowerBazaar-Tandem		5		5	
Gujarat	Hutch	Vadodara		2		2	

Haryana	Bharti	Gurgaon	1			1
		Hissar	5			5
		Karnal	5			5
		Jind	4			4
		Rewari	2			2
		Rohtak		4		4
		Sonipat	4			4
	Hutch	Gurgaon	4			4
		Jind	5			5
		Karnal	7			7
		Rewari	3			3
		Rohtak	6			6
		Sonipat	2			2
	IDEA	Jind			1	1
		Sonepat	3			3
		Rohtak	2			2
	Gurgaon	1			1	
HP	Bharti	Dharamsala	6			6
		Hamirpur		4		4
J&K	Bharti	Srinagar	5			5
		Rajouri			5	5
		Udhampur			5	5
		Leh		5		5
Karnataka	Bharti	Bellary	5			5
		Bijapur	5			5
		Chickmagalore	2			2
		Hassan	3			3
		Kolar	4			4
		Mandya	3			3
		Mangalore	3			3
		Shimoga	4			4
		Tumkur	4			4
Kerala	Bharti	Calicut		5		5

	BPL	Kannur	3			3	
	Idea	Calicut	7			7	
		Kannur		6		6	
		Alappuzha	4			4	
		Thiruvalla	3			3	
		Tridandrum	6			6	
		Kollam		6		6	
Maharashtra	Bharti	Beed			1	1	
		Goa		2		2	
		Kalyan			2	2	
		Khamgaon			1	1	
		Pen			1	1	
		BPL	Jalgaon		2		2
			Dhule		2		2
			Wardha	1			1
			Ahmednagar	2			2
			Savantawadi		1		1
			Osmanabad	1			1
			Pune	5			5
			Nanded	2			2
		IDEA	Ahmednagar			2	2
			Ahmednagar		2		2
			Amravati			1	1
			Aurangabad			2	2
			Pen	1			1
			Pune	12			12
			Jalna			1	1
			Jalna			1	1
			Ratnagiri			1	1
			Ratnagiri			1	1
			Nashik		1		1
		Sangli			1	1	
MP	Bharti	Bilaspur			1	1	
		Jabalpur	2			2	
		Khargone			2	2	

		Sagar		2		2	
	Idea	Raigarh			1	1	
		Jagdalpur			1	1	
		Indore		3		3	
		Sagar		1		1	
		Khargone		1		1	
		Khandwa		1		1	
		Shivpuri			1	1	
		Shahdol		1		1	
		Ambikapur		1		1	
		Shajapur		1		1	
		Jabalpur		2		2	
		Sidhi		1		1	
		Mandla		1		1	
	RTL	Durg			1	1	
	Reliance Infocomm	Jagdalpur			3	3	
		Panna			2	2	
		Sarguja			5	5	
		Shajapur			3	3	
North East	Bharti	Shillong		14		14	
		Arunachal Pradesh/Itanagar	5			5	
		Manipur/Imphal	6			6	
		Nagaland/Dimapur	9			9	
Orissa	Bharti	Bhawanipatna			1	1	
		Bhubaneswar			23	23	
		Koraput			2	2	
		Koraput			2	2	
		Phulbani			1	1	
		Sambalpur			7	7	
	Reliance Infocomm	Bhawanipatna			3	3	
		Koraput			4	4	

Rajasthan	Bharti	Ajmer		8		8
		Alwar			4	4
		Banswara			1	1
		Bharatpur			1	1
		Bhilwara			3	3
		Bikaner		3		3
		Bundi			2	2
		Chittorgarh			5	5
		Jodhpur		4		4
		Kota			6	6
		Pali marwar			5	5
		Shri ganga nagar			5	5
		Sikar			3	3
		Sirohi			2	2
		Tonk		1		1
		Udaipur		6		6
		Hutch	Ajmer	7		7
			Alwar		4	4
				5		5
			Bharatpur		4	4
			Bhilwara		4	4
			Bikaner		5	5
			Bundi		2	2
			Chittirgarh		4	4
			Chittorgh		5	5
			Churu		2	2
			2		2	
		Jalawar		3	3	
		Jhunjhnu		4	4	
			3		3	
		Kota		9	9	
		Nagaur		2	2	
		Pali		2	2	
				4	4	
		Sikar		4	4	
		Sirohi		4	4	
		SriGanga Nagar		8	8	
				4	4	
		Tonk		4	4	

			2			2
		Udaipur			25	25
				25		25
	Reliance Infocomm	Barmer			3	3
		Jaisalmer			3	3
Tamil Nadu	Bharti	Dharmapuri	2			2
		Ooty	2			2
		Tirunelveli	2			2
		Vellore	4			4
	BPL	Rameswaram		1		1
		Ramanathapuram		1		1
		Thirukovilur		1		1
UP-E	Bharti	Azamgarh			3	3
		Bahraich			2	2
		Balia			2	2
		Banda			2	2
		Barabanki			1	1
		Basti			3	3
		Faizabad			3	3
		Farrukhabad			2	2
		Ghazipur			2	2
		Gonda			2	2
		Hamirpur			2	2
		Jaunpur			2	2
		Lakhimpur			2	2
		Mirzapur			1	1
		Orai (Jalaun)			2	2
		Pratapgarh			1	1
		Raibareilly			2	2
		Sitapur			1	1
		Unnao			2	2
		Varanasi			10	10
	Hutch	Azamgarh			6	6
		Ballia		5		5

		Faizabad		5		5
		Gazipur			1	1
		Gonda	7			7
		Hardoi		5		5
		Mau			6	6
		Orai		6		6
		Shahjanpur		4		4
		Sitapur	4			4
	Reliance Infocomm	Etawah			11	11
		Hardoi			9	9
UP-W	Bharti	Aligarh		2		2
		Almora		2		2
		Badaun	2			2
		Barielly		3		3
		Bijnore	2			2
		Dehradun		4		4
		Kotdwar		2		2
		Mainpuri	2			2
		Meerut		6		6
		Modinagar		2		2
		Moradabad		4		4
		Muzaffarnagar		2		2
		Saharanpur		4		4
		Tehri		2		2
	Hutch	Bareilly			5	5
		Etawah			2	2
		Haldwani			4	4
		Moradabad			4	4
		Pilibhit			2	2
		Srinagar		8		8
	Idea	Haldwani		2		2
		Pilibhit			1	1
		Saharanpur			10	10
		Meerut			2	2
		Budaun			2	2

		Bijnore		2		2
		Mainpuri	2			2
	Reliance Infocomm	Kotdwara			6	6
West Bengal	Bharti	Banukura			3	3
		Kharagpur			4	4
		Puruliya			1	1
		Siliguri			10	10
	Hutch	Coochbehar	2			2
		Gangtok	1			1
		Jalpaiguri	1			1
		Kharagpur	2			2
		Krishnanagar	1			1
		Siliguri	2			2
				231	320	367