

# **Chapter 13**

## **Interconnect**

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### **What Is Interconnection?**

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 their customers, services and networks of their service providers.

### **How Is Interconnection Determined?**

- Regulatory Authority of a given country may adopt one or a mixture of the following approaches to different interconnection issues.
- Commercial negotiation between parties. If parties fail to agree, they may appeal to general competition and anti trust law.
- Commercial negotiation subject to regulatory intervention if the parties fail to agree.
- Commercial negotiation with the help of established framework for negotiation by the Regulatory Authority and it has to prove the agreement or intervened if the parties fail to agree.
- The Regulatory Authority prescribes specific issues from the outset, and parties negotiate over the remaining issues.

### **Regulatory Principles For Interconnection**

The regulatory principles for interconnection are:

- Transparency
- Non-discrimination
- Cost based tariff
- Without regulatory intervention and direction, interconnection negotiations do not usually proceed successfully
- Delays and failures during negotiations
- The regulators can intervene by applying benchmarks or best practices from other countries

### **Technical Aspects Of Interconnection**

Some of the technical and operational aspects of interconnection are:

- The number and the location of points of interconnection
- Network management across points of interconnection
- Equal technical access
- Co-location and sharing of infrastructure
- Quality of Service
- Interconnect Services

**Characteristics of interconnection**

- Interconnection is mandatory;
- It should be non discriminatory;
- It should be made available in a timely manner;
- Interconnection charges shall be cost based, unless as may be specified otherwise;

**Interconnect Agreement**

As per interconnect agreement, the demand note for technically feasible number of E1s should be issued to the interconnection seeker within 30 days.

The POI should be commissioned with live traffic within 3 months time from the date the payment has been made by the interconnection seeker.

If it is not feasible to provide any ports immediately, the interconnection seeker should be informed of the same in writing along with expected time frame of feasibility. If the other party agrees, demand note should be issued accordingly.

**Provisioning of POIs**

- The Circle office as a nodal point should handle the applications submitted by various operators for POI and issue of demand note/ advice note.
- The SSA Heads may be advised to speed up the process of feasibility report. This can be done if there is proper co-ordination between Circle office and SSA.
- The nodal officer for POI should review the pending feasibility reports from SSAs regularly to ensure that response to the interconnection seeker in the form of demand note for full or part of the requirement as per feasibility report is issued in timely manner.
- Once the interconnection seeker has made the payment as per the demand note for E1s and space/ power (Infrastructure) requirements, the advice note should be issued immediately.
- In order to avoid the delay in commissioning of POI, the infrastructure and necessary power requirements should be made available to interconnection seeker promptly once the advice note has been issued.
- Efforts should be made to observe a time limit of 3-5 days for completing both the above works unless some additional works are to be carried out.
- Circle office should also maintain database of spare capacity of E1 ports capacity available in the switches designated for POI. This will help in sanctioning POIs without asking for feasibility out of the spare E1 capacity

earmarked, if any, for interconnection purposes after taking case of expected requirement for expansion/ augmentation of BSNL own services.

- Designate tandem exchange in each SDCC well in advance for providing connectivity to NLDOs/ BSOs. This will not only reduce the time taken in issuing demand note for interconnection to BSOs/ NLDOs, but also help the BSO/NLDO to plan and ensure that their transmission link is available near the SDCC tandem exchange timely.
- The testing team for each SSA consisting of representative from SSA and Inspection(T&D) Circle, should be nominated well in advance so that some time saving is achieved.
- CGM Inspection(T&D) Circle, may work out necessary arrangements in this regard. Wherever required, separate representatives for transmission A/T and switching A/T should be nominated.
- The SSA representative should be well conversant with the framework of the interconnect agreement specially relating to the traffic routing and charging at the POI for each type of service.
- Inspection(T&D) Circle may make their representative available as per schedule. Efforts should be made to complete both, transmission and switching A/T within 7 days from the date of start of testing.
- In order to save time and effectively utilize the technical manpower, POI configuration by the SSA may be carried out just before start of switching A/T so that same person may become part of the switching A/T team.
- Acceptance testing time schedules should be prepared in advance for transmission as well as switching on Quarterly basis taking into account the POIs likely to come up for acceptance testing in near future.
- If there are no pending points in A/T report, prompt clearance for commercial traffic may be given by Circle Office to the concerned SSA Head along with POI clearance certificate.
- In case of any pending points, the same should be communicated to the interconnection seeker without delay.
- Minor pending points not affecting the quality of service, measurements and integrity of the network, should not delay the flow of commercial traffic subject to the undertaking from the seeker that the pending points will be cleared within 15 days time failing which BSNL will have right to discontinue the service.
- All efforts should be made to commission the POI within 30 days from the date when the interconnection seeker submits the application, excluding the time taken by the interconnection seeker for completing the concerned activities marked in the line diagram.

- The periods mentioned in the interconnection agreement are upper limit. However, efforts should be made to reduce the time taken for commissioning of POI.

### **Augmentation of POIs**

- For augmentation of junctions at POI, traffic measurements shall be taken by BSNL and private operator during agreed route busy hour for seven days on quarterly basis.
- Based on the route busy hour traffic printouts, the number of junctions may be calculated as per Erlang Table for the Grade of Service (0.005) as per interconnection agreement including 25% additional junctions for future traffic requirements.
- However, the provision of E1s shall be subject to the terms and provisions of interconnection agreement and guidelines given above.
- The POI capacity on the basis of traffic should be reviewed regularly and the number of E1s may be reduced if not justified as per traffic requirement, as per the provisions of interconnection agreement if BSNL/ other operator requirements are pending.
- TRAI (Telecom Regulatory Authority of India) vide its notification number 409-5/2003-FN dated 29.10.2003 had issued Regulation, which has been, implemented w.e.f. 01.02.2004.
- Due to non-availability of CDR based billing platform, IUC applicable for the calls handed-over to BSNL at the PoI (Point of Interconnect) have been converted into different pulse rates as per Appendix B. The pulse rates have been calculated at a per MCU (Metered Call Unit) rate of Rs 0.10 for all calls except outgoing ISD calls which shall be measured at a rate of Rs 1.20 per MCU.

### **Point Of Interconnection (POI)**

It is a point at which the GMSC of fully mobile network of UASL/ CMSP and gateway switch of BSNL or local / tandem / TAX exchange of the basic service network of UASL/ BSO/ NLDO/ ILDO and local / Tandem / TAX of BSNL are interconnected by the facility of interconnection seeker and where the specified network-network interface standards are applicable.

### **Point Of Presence (POP)**

It means setting up of switching centre and transmission centre of appropriate capacity for basic telephone service by UASL/ BSO/ NLDO at the SDCA level to provide, on demand, service of prescribed quality and grade of service in a non-discriminatory manner.

- Cellular Mobile Service Provider (CMSP) – POI at Level-II/ Level-I TAXs (In case of Metro Cities, POI at SDCC Tandem also)
- National Long Distance Operator (NLDOs) – SDCC Tandem
- International Long Distance Operator (ILDOS) – Level-I TAXs
- Universal Access Service Provider (UASP) – Mix of CMSP and BSO
- Basic Service Operators (BSOs) – POI at SDCC Tandem/ Level-II TAX
- Firming up of demand/ forecast by the interconnection seeker at least 12 months before the date on which the required connectivity is required in a prescribed format.
- Provisioning of transmission links at permitted interface points is the responsibility of the interconnection seeker.
- Provisioning of transmission links by BSNL against payment of prescribed charges subject to technical feasibility, if requested by Interconnection seeker.
- About 55000 EIs are working as POI with various private operators.
- At about 1700 places POI exists in BSNL network either at SDCC or LDCC level.
- Approx. Rs. 2978 Crores revenue from POI business (p.e. Mar.2010)
- BSNL on receiving the interconnect capacity shall intimate, within a period of 15 days from the date of receipt of appropriate demand, either the acceptance or otherwise an alternative proposal for meeting the demand.
- In case, an alternate proposal is not made within such 15 days, the interconnect policy demand shall be deemed to have been accepted.
- In case an alternative proposal is made, both parties will meet to firm up the mutual agreed proposal within next 15 days.
- After the acceptance of interconnect capacity demand, BSNL will issue a demand note on the interconnect capacity demand within 15 days to the interconnection seeker, who will pay such demand note within 15 days of its issue date.
- Interconnect capacity demand will be treated as firm demand from the date of receipt of payment of demand note.
- The time scale for the provision of capacity shall be 12 months from the date of the receipt of firm demand.
- After placement of the firm demand to provide the interconnect capacity, if BSNL fails to provide the connectivity within 12 months from the date of payment of demand note, BSNL has to pay, on demand, to interconnection seeker, liquidated damages as prescribed in the interconnection agreement and vice versa.

To summarise, demand note for technically feasible no. of E1s should be issued to interconnection seeker within 30 days.

POI should be commissioned with live traffic within 12 months time from the date payment has been made by interconnection seeker.

If it is not feasible to provide ports immediately, interconnection seeker shall be informed of the same in writing along with expected time frame of feasibility. If other party agrees, demand note should be issued accordingly.

### **Main Reasons for Delay in POIs Provisioning**

BSOs, NLDOs and ILDOs normally complain about general delay in commissioning of POIs. Main reasons for delay intimated by them are as follows:

Delay in issue of demand note due to non-receipt of feasibility report from SSAs.

Delay in nomination/ declaration of a local exchange (in case of non-availability of separate SDCC tandem) as SDCC tandem for providing connectivity to NLDOs/ BSOs

Delay in provision of infrastructure and power after payment of demand note.

Delay in constitution of testing team or nomination of representative on behalf of BSNL for acceptance testing.

Non-availability of interconnection agreements and test schedules in concerned SSAs.

Non-availability of A/T wing representative in time due to pre-occupation in other acceptance testing works.

Approval of A/T report by circle office.

- The circle office as a nodal point should handle the applications submitted by various operators for POI and issue of demand note/ advice note.
- The SSA Heads may be advised to speed up the process of feasibility report. This can be done if there is proper co-ordination between circle office and SSA.
- The nodal officer for POI should review the pending feasibility reports from SSAs regularly to ensure that response to the interconnection seeker in the form of demand note for full or part of the requirement as per feasibility report is issued in timely manner.
- Once the interconnection seeker has made the payment as per the demand note for E1s and space/ power (Infrastructure) requirements, the advice note should be issued without delay.
- In order to avoid the delay in commissioning of POI, the infrastructure and necessary power requirements should be made available to Interconnection seeker promptly once the advice note has been issued.

- Efforts should be made to observe a time limit of 3-5 days for completing both the above works unless some additional works are to be carried out.
- Circle office should also maintain database of spare capacity of E1 ports capacity available in the switches designated for POI. This will help in sanctioning POIs without asking for feasibility out of the spare E1 capacity earmarked, if any, for interconnection purposes after taking case of expected requirement for expansion/ augmentation of BSNL own services.
- Designate tandem exchange in each SDCC well in advance for providing connectivity to NLDOs/ BSOs. This will not only reduce the time taken in issuing demand note for interconnection to BSOs/ NLDOs, but also help the BSO/NLDO to plan and ensure that their transmission link is available near the SDCC tandem exchange timely.
- The testing team for each SSA consisting of representative from SSA and T&D Circle, should be nominated well in advance so that some time saving is achieved.
- CGM Inspection(T&D) Circle may work out necessary arrangements in this regard. Wherever required, separate representatives for transmission A/T and switching A/T should be nominated.
- The SSA representative should be well conversant with the framework of the interconnect agreement specially relating to the traffic routing and charging at the POI for each type of service.
- Inspection(T&D) Circle may make their representative available as per schedule. Efforts should be made to complete both, transmission and switching A/T within 15-20 days from the date of start of testing.
- In order to save time and effectively utilize the technical manpower, POI configuration by the SSA may be carried out just before start of switching A/T so that same person may become part of the switching A/T team.
- Acceptance testing time schedules should be prepared in advance for transmission as well as switching on quarterly basis taking into account the POIs likely to come up for acceptance testing in near future.
- In case of any pending points, same should be communicated to the interconnection seeker without delay.
- Minor pending points not affecting the quality of service, measurements and integrity of the network, should not delay the flow of commercial traffic subject to the undertaking from the seeker that the pending points will be cleared within 15 days time failing which BSNL will have right to discontinue the service.



- If there are no pending points in A/T report, prompt clearance of commercial traffic by Circle Office to concerned SSA Head along with POI clearance certificate.
- All efforts should be made to commission the POI within 30 days from the date when the interconnection seeker submits the application, excluding the time taken by the interconnection seeker for completing the concerned activities marked in the line diagram.
- The periods mentioned in the Interconnection Agreement are upper limit. However, efforts should be made to reduce the time taken for commissioning of POI.

Activity 1

Submission of Application by Private Operator to CGM Office.

Activity 2 (15-20 Days)

Feasibility Report Submission by Field Units to CGM Office.

Activity 3 (5-7 Days)

Issue of demand Note for Port Charges/ Space/ Power/ Infrastructure.

Activity 4

Payment of Demand Note by Private Operator.

(Activity 5) (3-5 Days)

Issue of advice Note & Availability of Infrastructure.

(Activity 6)

Extension of Tx Link to BSNL premises/ Testing Document Submission

(Activity 7) (5-7 Days)

Transmission A/T as per Interconnection Agreement

(Activity 8) (2 Days)

Signing, Forwarding & Approval of Tx A/T Report

(Activity 9) (3 Days)

Wiring up to Switches & Switch Configuration in BSNL

(Activity 10) (7-10 Days)

Switching A/T as per Interconnection Agreement

(Activity 11) (3 Days)

Signing & Forwarding of Switching A/T Report Interconnection Agreement

(Activity 12) (3 Days)

Approval of A/T Report by CGM Office

(Activity 13) (2 Days)

Start of Live Traffic on POI

**Summary Of TRAI Regulations *w.e.f. 1<sup>st</sup> April 2009***

- (i) Termination charge for all types of domestic calls has been reduced to 20 paise per minute from 30 paise per minute.
- (ii) Termination charge for incoming international calls would be 40 paise per minute against the existing charge of 30 paise per minute.
- (iii) Ceiling on carriage of domestic long distance calls retained at 65 paise per minute. Reporting requirements have been prescribed.
- (iv) No origination charge has been specified. The origination service provider shall retain origination charges from the residual after payment of other IUC.
- (v) Transit/Carriage charge from Level-II Trunk Automatic Exchange to Short Distance Charging Area(SDCA) would be 15 paise per minute.
- (vi) Intra SDCA and TAX transit charges to be lower than 15 paise per minute.
- (vii) IUC for SMS shall continue to be under forbearance. However, these charges should be transparent, reciprocal and non-discriminatory. Reporting requirements have been prescribed.
- (viii) Termination charge for 3G voice calls shall be same as 2G voice calls.

### **Questions For Assessing “Transfer Of Learning**

- Question 1.** How is interconnection determined?
- Question 2.** Explain technical aspects of interconnection.
- Question 3.** What are the characteristics of interconnection?
- Question 4.** What are the salient features of interconnect agreement?
- Question 5.** What do you understand with the term POI?
- Question 6.** Explain procedures for augmentation of POIs.
- Question 7.** What do you understand with the term POP?
- Question 8.** What are the main reasons for delay in POIs provisioning?
- Question 9.** What are the main activities after submission of application by a private operator to CGM Office, BSNL.
- Question 10.** What are the available time limits for completion of vital activities for provision of POI?

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