



**INDIAN INSTITUTE OF TECHNOLOGY BOMBAY  
MATERIALS MANAGEMENT DIVISION  
Powai, Mumbai 400076.**

**(PR No. 1000041740)**

**(Rfx No. 6100001841)**

**Technical Specifications for 10 Gbps dedicated (1:1; uncompressed, unfiltered and unshared) Premium Internet Bandwidth with protected single last mile at Computer Centre, IIT Bombay, Mumbai for 4 Months**

**Special Terms & Conditions:**

1. The duration of contract is for a period of four months, extendable subject to satisfactory performance. Bandwidth Contract under this tender will be for four months and it may be extended during the subsequent period, subject to satisfactory performance in the bandwidth contract period with the approval of the Competent Authority.
2. IITB reserves the right to buy any quanta of bandwidth from any single or combination of ISP's on account of technical, security, redundancy reasons.
3. IITB reserves the right to call for tenders from all or any of the ISP's for providing Internet Bandwidth Services. IITB would add, delete, or modify any categories as per the requirements of Internet bandwidth service demands that may arise from time to time in the Institute. In particular IITB reserves the right to buy any quanta of bandwidth services outside this tender also.
4. It is mandatory that the selected ISP respond to service enquiries (e.g. enquiries relating to new service contract negotiations or Quality-of-Service (QoS) issues on ongoing contracts). The ISP must respond with an appropriate regret letter in the event of failure to meet such service requirements. The ISP, on receipt of the enquiry, and not responding to the enquiries, may possibly get blacklisted as non-responsive.
5. The prospective ISP must abide by all rules and regulations put forward by TRAI from time to time.
6. IITB reserves the right to cancel, suspend, or modify the operation or scope of this tender process in part or full at any time without assigning any reasons thereof.
7. Unless IIT Bombay explicitly makes a written request to extend the service duration of the circuit that is proposed to be set up through the service orders placed upon the bidder during the scope of this tender, it will be deemed to have been terminated automatically at the end of its service duration (i.e. four months from the date of commissioning). In effect either party (i.e., IIT Bombay and the empaneled ISP) is at liberty to cancel the contract at any point of time during the service period with one-month advance notice period without any early termination charges.

## Scope of Work

Computer Centre, IIT Bombay (herein after referred to as CC) plans to setup a panel of Internet Service Providers (herein after interchangeably referred to as either ISP or bidder) for sourcing Internet Bandwidth Services.

### **Service Description:**

The Internet Bandwidth Service comprises protected circuits carrying telecommunications traffic between CC at one end and any arbitrary point on the worldwide Internet at the other end.

### **Definitions:**

**“Protected Circuit” means exclusive physical communication channel (i.e., multiplexing ratio 1:1) which is established between CC and ISP. This physical channel serves as a conduit to create logical telecommunication channel dynamically between CC and any arbitrary point on the worldwide Internet. This combination of physical and logical structures is exclusively available to CC in terms of the agreed and paid for channel capacities in full duplex mode. In addition, the ISP will have no right to inspect the information flow in terms of contents and other characteristics on this channel.**

### **REQUIREMENTS & SPECIFICATIONS:**

<b>Sr. no</b>	<b>Technical Specification for Internet Leased Line Connection</b>	<b>Complied (Yes/No)</b>	<b>Additional Info if any</b>
1	The bidder should have a valid Category “A” ISP license from Govt. of India (Attach a copy of license).		
2	The Internet connectivity leased line should have fully dedicated (1:1), unshaped & high-quality symmetric bandwidth without any compression factor through optical fiber cable.		
3	The bidder should have fully resilient and self-healing network architecture, on fiber medium, from the international gateway in India upto the international Points of Presence. (Detailed architectural layouts need to be included with the bidder's proposal as annexure.)		
4	All the POPs from where the ILL bandwidth is provided to CC should have redundancy of equipment's, links, power, back-haul IP connectivity etc. In particular, network redundancy has to be built to protect the circuit from cable cuts. (Pl. enclose details for the same.)		

Sr. no	Technical Specification for Internet Leased Line Connection	Complied (Yes/No)	Deviations if any
5	The bidder should describe all the key peering/transit arrangements (in terms of ISP names, locations, link capacities, etc).		
6	The connectivity from the POPs of service providers to CC premises shall be through Optical Fibre Media. The landing point for the service will be as determined by CC which may be shifted free of cost by ISP within a radius of 500 meters during the contract period.		
7	All the equipment supplied by the bidder should be capable of handling up to 10Gbps to allow for potential upgrades that may be required during the service period. Further, the end of life of equipment as declared by the manufacturer of such equipment's should not be within the service period.		
8	Any software and hardware required for establishing the purchased bandwidth will be provided by bidder to make leased line fully functional.		
9	The bidder must announce and advertise in full the aggregate IP address pool or prefix allocated to CC by APNIC over eBGP and also should be able to provide prefixes in full.		
10	The bidder should be able to provide IPv6 services in dual stack mode.		
11	The bidder should furnish a detailed network schematics diagram of total solution proposed showing connectivity from ISPs Internet PoP to required locations of the CC.		
12	The bidder should submit technical literature explaining the proposed implementation diagram with the technical bid.		
13	The bidder should have direct number to register complaints round the clock (24x7), Maintenance support service (24 hours and 7 days a week) and independent Network Operation Centre with 24x7 supports to take care of the ILL link management requirements.		
14	The service provider network should be backed by availability of service centres /service personnel in Mumbai to attend faults.		
15	Bidder has to provide facility to CC, to monitor the SLA (Service level Agreement) parameters and log the trouble tickets online. CC should also be able to obtain standard		

Sr. no	Technical Specification for Internet Leased Line Connection	Compliance (Yes/No)	Deviations if any
	reports on the ILL bandwidth utilization (in Mbps, in frames/sec), errors (frames/sec), discarded (frames/sec), multicast (frame/sec), bandwidth availability, packet loss (in %), latency of links etc. through any network monitoring tool / web browser provided by service provider.		
16	<p>CC will consider the successful provision of the link subject to satisfactory Acceptance Test. The methodology for the test will be at the discretion of the CC. However, the same will be shared with the bidder.</p> <p>Following tests should be adopted:</p> <ul style="list-style-type: none"> <li>a) Average round-trip latency up to the ISPs 1st Tier 1 peering point.</li> <li>b) Domestic Latency during peak traffic hours (i.e., from 10:00 hrs. to 12:00 hrs. and 23:00 hrs. to 01:00 hrs. IST).</li> <li>c) International Latency during peak traffic hours (i.e., from 10:00 hrs. to 12:00 hrs. and 23:00 hrs. to 01:00 hrs. IST).</li> <li>d) Packet Loss &lt; 1%.</li> </ul> <p>For specific criteria and parameters, refer to the SLA parameters and evaluation matrix provided elsewhere in this document.</p> <p><b>Facilities of testing above parameters will be provided by the bidder.</b></p>		

### **SERVICE LEVEL GUARANTEE:**

1. The Service Provider shall provide the 1:1 round the clock ILL connectivity.
  2. **Packet Losses:** Less than 1 % (average over 1000 ping) at any given point of time to any part of Country / ISP Internet gateway.
  3. **Network Round-Trip Latency:** Less than 100 ms from the Institute to ISP's tier 1 peering point. Latency will be randomly checked on daily basis. In case of non-adherence to the latency limit, the link will be considered as down with effect from time of detection till the time is restored and passes latency tests unflinching for one hour. The test will be conducted every fifteen minutes.
  4. The **latency guarantee conditions** for the protected circuit being purchased are specified in terms of upper limit on **average round-trip transmissions** between a designated hub router located at CC and the following well known websites located in the different geographical locations:
    - www.google.com
    - www.monash.edu.au
    - www.mit.edu
    - www.berkeley.edu
    - www.iitg.ac.in
    - www.nus.edu.sg
  5. Latency shall be measured by using Linux utility 'mtr'. Average sample measurements will be taken randomly during a calendar month between IIT Bombay and the above sites. The measurement interval will be of 10 minutes duration. The observed packet loss should be less than 1% to all the above destinations. Round-trip latencies figures must not exceed 250 MS for any of the above sites. If the latency and packet loss SLA parameters are not honored during one random measurement events (described above), the measurement will be repeated immediately for 15 minutes. If the SLA parameters are violated again, a 1% penalty on monthly bill will be imposed for every such failure.
  6. **Network Availability (uptime):** More than 99.5 % per calendar month.
  7. National Backbone should be available on the same ISP.
  8. Reports for performance, monitoring / usage to be submitted by the ISP on monthly basis or as per requirement of the Institute.
  9. **Uptime Calculation:** Uptime over a calendar month shall be calculated as,  
(Total Time over a month – Total Down Time over a month) X 100 /Total Time over a month.
- Deduction in payment will be made for downtime in the monthly bills raised by the ISP.

10. The response time for attending the faults will be 1 hour after they are reported to the ISP. The ISP will rectify the faults within 8 hours failing which, depending on the nature of the fault the ISP will arrange temporary replacements if feasible.

**11. Downtime penalty in % on monthly payment:**

Sr. No.	Uptime (in %)	Penalty (in %) on monthly bill
1.	≥99.5%	0
2.	> 99 to < 99.5	10
3.	> 98.5% to < 99	20
4.	> 98 to < 98.5	30
5.	> 95 to < 98	50
6.	> 90 to < 95	70
7.	< 90%	100

Downtime due to the following situations will not be considered for the purpose of penalty:

- a) Link down due to power failure / or any situation which are beyond the control of service provider. In any case, the maximum time to repair must be 8 hours during disruptions like cable cuts, etc.
- b) Due to scheduled maintenance by the Service Provider, with prior approval of Institute. Scheduled Maintenance shall mean any maintenance on the circuit of which CC is notified 48 hours in advance. Notice of Scheduled Maintenance will be provided to CC's designated point of contact by a method elected by telephone, email, or fax.

12. Maximum Time to Repair (MTTR), Packet loss and Link failover will be calculated using MRTG portal hosted at IITB or through ISP portal.

13. Service disruption due to on site customer premises equipment (CPE) failures will be counted against the SLA guarantees.

**PROACTIVE MONITORING:**

**The ISP's** proactive outage reporting guarantee is to notify customer within 30 minutes after **the ISP's** determination that the service to IIT Bombay is unavailable. **The ISP's** standard procedure will be to ping the router at IIT Bombay every five minutes. If the router does not respond after two consecutive five-minute ping cycles, **The ISP** will deem the service unavailable and will contact the designated point of contact by a method elected by **the ISP** (telephone, email, or fax).

**INSTALLATION & COMMISSIONING:**

Circuit commissioning during installation or upgradation should be completed within 8 weeks from the date of issue of the Letter of Intent (LOI) / Purchase Order (PO). All the aspects of safe delivery, installation, commissioning and uplink of the connectivity shall be the exclusive responsibility of the Service Provider.

If the Service Provider fails to commission the circuit on or before the committed date, then the penalty for late circuit commissioning at the rate of 1% per week of the total annual contract value subject to maximum of 10% of total annual contract value will be deducted. CC reserves the right to cancel the contract if the commissioning of the circuit is delayed beyond the said 2 weeks.

**TERMS OF PAYMENT:**

1. The payment will be made on monthly arrears basis based on fulfillment of SLA parameters after adjustment of penalty (if any) due to non-compliance of SLA or due to late circuit commissioning of link.
2. The payment of charges will be made within 30 days only after the successful completion and acceptance of the link by CC.
3. Monthly Bills are to be sent to Dy. Registrar (MM), IIT Powai, Mumbai - 400 076 on a post-paid basis.
4. Apart from the monthly recurring service charges, no other charges are payable by IIT Bombay.
5. Payments will be suspended if an SLA dispute is not resolved within one month of the complaint from IIT Bombay.
6. Payment shall be made by Cheque or such other mode / electronic fund transfer offered by the Bank.

## CERTIFICATE

I hereby certify that the above agency has not been ever blacklisted by any Central/State Government/Public Undertaking/Institute on any account.

I also certify that the above information is true and correct in any every respect and in any case at letter date it is found that any details provided above are incorrect, and contract given to the above agency may be summarily terminated and blacklisted.

Date:

(Authorize Signatory)

Place:

Name:

Designation:

Contact No.:

Seal / Stamp of the Company