जवाहरलाल नेहरू उन्नत वैज्ञानिक अनुसंधान केंद्र
जक्कूर, बेंगलुरु - 560064 कर्नाटक, भारत
विज्ञान एवं प्रौद्योगिकी विभाग, भारत सरकार के अधीन एक स्वायत्त संस्थान
सम विश्वविद्यालय संस्था

Jawaharlal Nehru Centre For Advanced Scientific Research
Jakkur, Bengaluru - 560064 Karnataka, INDIA
An autonomous institution under Department of Science and Technology, Govt. of India.
An Institution Deemed-to- be-University

JNCASR

Azadi Ka Amrit Mahotsav

September 5, 2022

Revised Technical Specifications

For

Internet Leased Line through Dual Portal Fibre Connectivity

Technical Specification for dual path fiber connectivity	
Service	Required
Type of Service	**Internet Leased Line**
Types of Service Providers	**Class A**
Bandwidth Capacity (In Mbps)	**1000 Mbps**
DDoS With Internet Lease Line Services	1Gbps
license of the Lease Line (ILL):	Unified
Latency Within India	≤70 ms
Latency Outside India	**≤325 ms**
Packet Drop (In Percentage) :	**≤ 1.0%**
Leased Line in ring topology	**Yes**
Type Of Media	**Fiber**
Link Type (Manageability) :	**Managed**
Static IP's Required ipv4 & ipv6 (For ILL Static IP Required)	32 Nos
Dual Path fiber connectivity through different hub locations	Yes

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24/7 NOC proactive Monitoring support and provide immediate notification about any network/fiber failure to customers through mail/phone	Yes
Customer Support portal to raise Ticket & monitor network graph	Yes
Router &Networking Accessories: **(Cisco/Aruba/Huawei)**	Provided by seller

Technical Scope

The Agreement covers the following under the Scope of this Agreement:

I. **TECHNICAL & FUNCTIONAL REQUIREMENTS**

The scope of work includes supply, installation, configuration, provisioning, commissioning, management & monitoring of the proposed Internet circuit. This broadly includes the following

a) Bidder has a 24x7-support service & registered branch in Bangalore, which will provide round-the-clock monitoring, fault reporting, and maintenance action of the Bidder Network

b) Provisioning of Last Mile from the Service Provider's nearest two different POP by single service provider to JNCASR. The last mile should be on fiber.

c) Termination, Configuration & Commissioning of the links with a router (**High spec-Cisco/Aruba/Huawei**), and all the configuration level changes in Router, to be done for commissioning of the link will be in the Bidder scope.

d) Sustenance services for Internet links and all equipment provided by Bidder during the entire contract period.

e) bidders shall provide the rack to house the Fiber and all indoor equipment, if required. The bidder has to do a site visit in advance and check for the space suitability for housing the rack. Rack may have to be shipped in knocked down format and assembled again in Switch/Server room

f) The Service Provider shall provide 24x7 service supports for call logging and fault rectification for the Internet circuit which means support for the physical link as well as associated hardware supplied to make the circuit functional. The escalation matrix shall be provided by Bidder

g) IPv6 Compliance: The network should be fully IPv6 compliant. It should be possible to run both IPv4 & IPv6 concurrently on the network i.e. Dual Stack. Internet IP Addresses for both IPV4 (32 usable IPs) & IPV6 (32 usable IPs) are to be provided

h) The bidder must provide IP ADDRESSES and Reverse DNS entries.

i) The Service Provider shall provide JNCASR with 32 nos. globally valid IPv4 Addresses and 32 nos. globally valid IPV6 Addresses from its pool.

j) All IPs provided by Bidder shall have Reverse DNS entries enabled from day one so that any Mail Servers being implemented with Bidder's IP shall have Reverse DNS entry so that other servers on Internet do not reject Mails from these servers for lack of DNS entry

k) Network Management & Support: The Service Provider shall do proactive monitoring and fault management of the network on an End-to-End basis remotely from its own Network Operations Centre (NOC) and provide the report through standard MRTG reports available through Web access or some other online means

l) Internet Service Provider has to perform periodic maintenance of equipment provided to the customer.

m) Internet Service Provider has to provide static public Ip's from the dedicated whitelisted subnet

n) Supply, Installation, and configuration of end equipment like fiber circuits, etc.

o) Contract period should be for an initial period of ONE year which can be extended for further period of 2 more years based on the performance of the Vendor.

p) JNCASR reserves right to cancel the contract any time, if the services of the Vendor are not satisfactory by giving one month's notice period.

q) ILL should be provided to Jawaharlal Nehru Centre for Advanced Scientific Research, Jakkur Post, Bangalore 560064.

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II. INSTALLATION

a) The Bidder shall carry out total installation work as per the requirements of the complete project.

b) Necessary power and communication cables for complete H/W installation including interfacing cables required for inter-connection of different equipment supplied by Bidder are in the scope of Bidder and shall be supplied at no extra cost.

c) The installation work shall be carried out in a neat workman-like manner by skilled, experienced and competent workmen.

d) All skilled & unskilled labor, materials, equipment, instruments, hardware, tools, consumables, fasteners, accessories, etc. whether specifically mentioned or not in the specification but required for complete installation and testing in all respects will be in the scope of the Bidder and no extra cost shall be paid for the same.

III. INTERFACE EQUIPMENT

A. Rack for housing fiber circuit and associated equipment like modem, battery, etc. and Router, if required. The Rack shall be installed in the Switch/Server room at JNCASR. Bidder to visit the site to ascertain the requirement for this.

B. Bidder should specify any other equipment (if required) for interfacing. It shall be the Bidder's responsibility is to configure and demonstrate the total solution so that it performs satisfactorily.

C. It shall be successful Bidder's responsibility to interface the circuit with existing available

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IV. ACCEPTANCE TEST PROCEDURE (ATP):

a. ATP shall be conducted by the Service Provider to establish that the connectivity and all hardware and software has been supplied by the Bidder strictly as per the specifications and is in perfect working conditions.

b. Once the system is fully installed (as per technical & functional requirements) and is made operational, its operation and performance would be observed for a duration of two continuous working days. The ATP would start on a mutually agreed date and time after the preliminary observation of two days.

c. At least one representative of the Service Provider shall be present during the entire ATP, if required. Bidder's representative should be capable of performing all tests,

interpret the meaning of each diagnostic and satisfy JNCASR representative(s) with

satisfactory answers.

The following procedure would be followed during the ATP:

a. The complete system with all its hardware and software would be operated continuously for two continuous working days on 24 hours per day basis. Requisite requirements of IP number, reverse DNS entry, etc. shall be tested

b. An overall availability of 99.5 % would be ensured by the Bidder during ATP for the leased line and the interface equipment. If any equipment or the leased line is not available for more than 2.5 hours or if it is found at the end of ATP that its availability is less than 99.5 %, JNCASR would not accept that particular equipment or the leased line, and its ATP would restart (from zero) after making necessary rectifications/replacements. If any equipment or the leased line is not operating to its full specifications, it shall be treated as down for the purpose of computation of its availability. However, downtime shall not be counted for problems because of the equipment (H/W & S/W) from sources other than the Bidder

c. During the physical verification, it would be established that all hardware and software have been supplied as per JNCASR technical specifications.

d. All problems/deficiencies as pointed out by JNCASR shall be immediately attended to by the Bidder.

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e. JNCASR shall issue an ATP certificate on successful completion of ATP, provided that overall availability of 99.5% has been achieved and no hardware or software problem/ deficiency reported during the ATP is pending. Further, no major hardware or software problem/deficiency which indicates that the supplied hardware/software is of poor quality and/or faulty design was detected during the ATP

1. Service Level Commitment Parameters

Internet Service Provider shall constantly monitor the health of the Network. The Network Performance will be measured against the following parameters

In case the Internet Service Provider fails to deliver the Service Levels within the definitions contained in this Agreement, the Customer shall be eligible for the Service Credit Claims against the respective Parameters.

- ✓ Average Round Trip Delay or Latency
- ✓ Network Availability
- ✓ Packet Delivery

2. Planned Outages

Planned preventive network maintenance may be scheduled by Internet Service Provider as below

Where possible, all planned outages will be carried out during the maintenance window between 0000hrs to 0600hrs, and Internet Service Provider will inform by Phone and email about maintenance activity to customers at least 24 hours in advance.

- In case of emergency and customer services are affected partially or fully, Internet Service Provider will evaluate the criticality and carry out maintenance to restore service immediately with prior notice.

- Customers shall allow Internet Service Provider to carry out maintenance activities as and when required. Internet Service Provider will carry out repair and maintenance activity on non-receipt of confirmation from customers and shall not be responsible for loss of service.

3. FORCE MAJEURE

3.1 Neither Party shall be liable to the other under this Agreement, for failure to perform any obligations under this Agreement, or for any loss or damage which may be suffered by

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the other Party due to any cause beyond the Party's reasonable control including without limitation any act of God, earthquake, flood, drought, a war, military operations, acts of terrorism or riot.

3.2 If the event described in clause 1. any issues continue for a period of thirty (30) days or more, either Party may give the other Party notice to terminate this Agreement.

4. Problems & Violation Reporting Process

All Customer Complaints have to be logged with the Internet Service Provider. contact numbers have to be given. Whenever the Customer calls up the Helpdesk, the Internet Service Provider Support person will open a Trouble Ticket immediately. Customer shall provide

- Company name
- Name and contact details of person reporting the problem, in case they are different from ones in Internet Service Provider 'S database
- Circuit ID or line reference
- Description of problem
- Results of troubleshooting tried

The problem and above details will be logged and Trouble Ticket number issued to the Customer. This Trouble Ticket number needs to be quoted for any status on the problem. The Trouble Ticket shall be closed by Dovish Network Team upon resolution of the problem and email confirmation of same to the customer. In case, the customer in not reachable through telephone, same will be communicated via email and recorded for closing the Trouble Ticket.

The Trouble Ticket when closed is saved in database for reference purpose and for the calculation of uptime performance of the links. The same shall be used to calculate the uptime deviations if any (penalty clause). Any imposition of penalty conditions or claims would always be with reference to the Trouble Ticket number as a standard and would not be taken in to consideration if otherwise. Customer may refer to the Escalation Matrix (attached as Schedule III) in case the problem is not resolved within the prescribed timeframe.

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5. Penalty Clause:

Internet Service Provider shall always strive to meet SLC performance levels. However, in case of any Degradation of Service at any point of time during this agreement period, Internet Service Provider would bear the penalty conditions within the scope of this agreement. Penalty applicable in case of degradation of services shall be as given in the table below. Period of Degradation of Service would include downtime for all the performance parameters

Parameter	Service Level	Rebate (Hours) in terms of extension of service
Degradation of Service	>99.50%	1: 1
	>98.00%	1: 1.5
	Less than 97.00%	1: 2

- 1:1 ratio shall mean that for every 1 hour of Degradation of Service, as measured by Internet Service Provider network, Internet Service Provider will extend the service by 1 hour.
- 1:1.5 means for every 1-hour Degradation of Service, as measured by Internet Service Provider network, Internet Service Provider will extend the service by 1.5 hours.
- 1:2 would mean that for every 1-hour Degradation of Service, as measured by Internet Service Provider 'S network Internet Service Provider will extend the service by 2 hours.

6. Suspension of Service on Regulatory Violations

Customer shall not use capacity offered, for any illegal, immoral purpose, as finally determined by courts of competent jurisdiction in India and the user shall indemnify Internet Service Provider in respect of any liability incurred by Internet Service Provider in this respect.

Terms and Conditions:

1. **Network Availability**

i. **Definition**

Network Availability is the percentage of the total available time to the total time under consideration for an IP Port subscribed by Customer, where total available time is the sum of the usable time for an IP Port.

ii. **Exceptions**

For the purpose of calculating Outage Time for an IP Port in this SLC, the followings shall be disregarded:

a) During the first Day when a new IP Port is implemented and accepted by the Customer.
b) Outage Time is due to the Customer's equipment and/or the circuit that connects Customer's premises to the IP Port.

c) Planned outage for which reasonable notice is given to the Customer and the Customer agrees to release the IP Port to Internet Service Provider.
d) Faults reported by the Customer, but no fault is found or confirmed by Internet Service Provider.
e) The periods when the Customer's staff are not available to confirm service operation after clearance of fault.
f) The periods taken by the Customer to confirm working condition of the IP Port after fault clearance by Internet Service Provider.
g) The periods when interruptions are caused by events beyond Internet Service Provider's reasonable control - Incidents of disaster and Force Majeure.

iii. Measurement

The Network Availability is calculated as follows:

$$\frac{(\text{Total time taken} - \text{Total outage time}) \times 100}{\text{Total time taken}}$$

The downtime is the sum of complete Outage in service availability time in minutes for an IP Port that is unable to provide the service subscribed by the Customer. During such Outage Time said IP Port is not capable of transmitting and receiving all of the Customer's IP data, considered from the time when the Customer reports a fault condition and releases said IP Port to Internet Service Provider for testing action, to the time at which Internet Service Provider returns or attempts to return said IP Port to the Customer. If during testing action, Internet Service Provider confirms that said IP Port is able to provide the Service subscribed by the Customer, this period shall not be considered as Outage Time and shall be excluded.

iv. Service Level

Parameter	Service Level
Quarterly Network Service Availability	99.5 %

2. Average Round Trip Delay (or Latency)

i. Definition

The "Average Round Trip Delay (or Latency)" shall mean the average time (in milliseconds) for a 32 byte diagnostic packet to transit from Internet Service Provider Gateway Router to

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Peering Router at the Foreign end and return within the Backbone Network.

ii. Exceptions

Average Round Trip Delay (or Latency) does not include delays caused by:

a) Delays in transit occurring in the local loop circuit between a Internet Service Provider Router and the Customer's site (as the delay varies with the physical distance and the line access speed);
or
b) Any equipment used to interconnect the local loop circuit to the Customer's site or Internet Service Provider Router

iii. Measurement

Specially generated delay measurement packets are used by Internet Service Provider to measure Backbone Network Transit Delay. The measurement frequency is fifteen (15) minutes. The measured data from the Gateway Router is collected by Internet Service Provider Network Management System.

iv. Service Level

For Dedicated Internet Bandwidth

Parameter	Service Level
Average Round Trip Delay (or Latency) to U.S.A.	Maximum of 325ms

3. Packet Delivery

i. Definition

The "Average Backbone Network Packet Delivery" shall mean the average successful packet delivery from Internet Service Provider Gateway Router to Peering Router at the foreign end.

ii. Exceptions

Internet Service Provider shall not be responsible for packet loss due to congestion on the Customer access link.

iii. Measurement

Internet Service Provider will use ICMP Ping utility to measure delivery of packets. Delivery

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of packets will be calculated from Internet Service Provider gateway router at connecting pop to router at foreign end. Testing would be done with sample size of 20000 packets of 32 bytes each. Successful echo reply from foreign end will be treated as successful packet delivery.

iv. Service Level

Parameter	**Service Level**
Backbone Network Packet Delivery	<2%

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Support & Response Times

S. No.	Customer location	Sesrvice-Level Agreement	iticality Priority 1	Priority 2	Priority 3
	1 PoP Locations	rvice hours	x 7	x 7	x 7
		sponse Time	30 min	30 min	30 min
Definitions:					
	Response Time: The time within which Bidder guarantees to start the Remote troubleshooting in the event of problem(s) in customer network and the TAC being logged in.				
	Priority				
	Priority 1:	The entire network is down affecting all users			
	Priority 2:	A part of the network is experiencing problems affecting only limited users			
	Priority 3:	The problem has minimal impact on day-to-day work. Troubleshooting scheduled on a manually agreed timeframe			