

**Bid Specific Additional Terms & Conditions (ATC)**

**Information to Bidder for the “Supply of Switches, SFPs, Routers, online UPS, Firewall, POE Injector and Wireless Access Point at Kolkata, Guwahati and Patna for RailTel Corporation of India Ltd., Eastern Region**

**Ref: GeM Bid No. GEM/2024/B/4596895**

**Dated: 08.02.2024**

1. The item/items in this bid should be quoted as per the technical specifications. The details of the specifications along with consignee/site details are also available on website [www.railtelindia.com](http://www.railtelindia.com).
2. In the specification wherever support for a feature has been asked for, it will mean that the feature should be available without RailTel requiring any other hardware/software/licenses. Thus, all hardware /software/licenses required for enabling the support/feature shall be included in the offer. The technical specifications are given in Annexure-I
3. OEM or Authorized dealer/ distributor/ Partner should have a registered office in India to provide sales and 24x7 support in India. The certificate to this effect should be submitted. The bidder should be either OEM or his authorised dealer/ distributor.
4. In case of the authorized distributor/partner certificate from the OEM to this effect should be submitted. If OEM is quoting, then OEM should submit the certificate. In the tender, either the manufacturer or its authorized dealer will be considered as valid bidders. In cases where the manufacturer has submitted the bid, the bids of its authorized dealer will not be considered and EMD will be returned.
5. The material offered shall have complete data sheets and detailed description on OEM web sites. Bidder shall provide duly filled and signed Technical Compliance of the offered material, failing which the bid may get rejected.
6. Priced BOM/SOR shall not be submitted with technical bid, if submitted the bid will be summarily rejected.
7. Bidder shall submit the detailed BOM of the equipment offered duly verified and certified by the respective OEM.
8. GSTIN ID of vendor should be provided from where goods will be supplied.
9. **Delivery Period, Consignee, Inspection :**
  1. **Delivery Period :** The bidder has to complete the supply within 60 days from the date of issue of confirmed PO. If material is not supplied within the approved delivery period then penalty of 0.5% of undelivered quantity per week or part thereof for the undelivered portion of SOR subject to the maximum to the 10% of the contract value will be levied.
  2. **Consignee :** Consignee details are available at Annexure-II.
  3. **Inspection:** Inspection shall be carried out by authorized representative of RailTel.
1. Pre-dispatch factory acceptance inspection shall be carried out for the offered material by RailTel’s representative. The supplier/OEM should have test arrangements in India for the purpose of inspection.

2. The supplier/manufacturer bidder will send inspection call letter to RailTel when the material is ready to be supplied and ready for inspection. The Inspection shall be carried out at supplier's/Manufacturer's premises by the Inspecting Authority.
3. In case material/equipment fails during inspection, the fresh lot of same material/ equipment shall be offered without any extra cost, by the manufacturer/supplier. In such a case, total cost of re-inspection including travel, lodging & boarding of the inspecting officials shall be to manufacturer's / supplier's account/cost.
4. Inspection of the material including that of raw material if deemed required shall be conducted by approved Govt. inspecting authority of repute like RDSO or any other agency /representative authorized by RailTel in exceptional circumstances, at the firm's premises. The inspection shall be conducted by inspecting authority as per required test procedures /test plan for ensuring that the material offered meets the required specifications.
5. The material should be offered for inspection within three weeks of issue of purchase order. Travelling, lodging and boarding expenses of RailTel representative and charges for third party inspection if any shall be borne by RailTel, but necessary facilities to carry out test /witness inspection shall be provided by the manufacturer/supplier, free of cost.
6. The manufacturer shall maintain stock register (receipt, issue and balance) and defect records for the raw material. The defect records shall be in standard formats and it shall be compiled on a daily/ weekly/ monthly basis and it shall be analyzed. "NIL" Report shall be segregated from the accepted material. First-in First-out concept shall be implemented in foolproof manner. The batches of the raw material shall be identified and traceable. All relevant documents necessary to ensure trace-ability shall be maintained. The raw material shall be protected from direct exposure to sunlight, moisture, water ingress and heat etc.
7. Finished products shall be tested 100% by the factory QC personnel before being offered to RailTel for acceptance to ensure that it meets all quality requirements as per the relevant specifications. Duly filled in test formats indicating the results of such tests shall be submitted along with material offered for inspection to RailTel.

**10. Estimated cost and Earnest Money Deposit (EMD)/ Bid Security:**

1. Estimated cost : The Estimated cost of the GeM Bid is Rs. 65,30,287.42 (Incl. GST)
2. **Earnest Money Deposit (EMD):**  
Earnest Money Deposit (EMD)/ Bid Security :: Rs. 1,30,700/- EMD can be submitted in the form of Demand Draft/Pay Order/Banker's Cheque drawn in favour of "**RailTel Corporation of India Ltd.**" payable at Kolkata on or before 15:00 hrs. on bid opening date. The Bid received without EMD will be summarily rejected.
3. In addition to clause 10 (2) above, Tenderer has an option for online submission of EMD also. The EMD should be remitted in following account of RailTel Corporation of India Limited before the stipulated time and date of bid submission:

Name of the Bank and Address	Union Bank of India, Chowringhee Road Branch, 1/1 Camac Street, Ground Floor, Kolkata – 700016
Name of the account holder	RAILTEL CORPORATION OF INDIA LIMITED

Account No.	401601010519491
IFSC Code	UBIN0540161

Bidder to indicate bid no. and name of bidding entity in the transaction details field at the time of online transfer. Bidder has to upload scanned copy/proof of the online payment transfer along with bid.

- EMD shall be exempted to Micro & small Enterprises registered for the tendered items/ as per the latest Govt. of India guidelines. **Under MSE category, only manufacturers for offered goods in case of bid for supply of goods are eligible for exemption from EMD. Traders are excluded from the purview of this Policy.** The bidders claiming the preference must submit relevant documents. **The Bid received without EMD /Documentary proof of Exemption of EMD, will be summarily rejected.**

**Sellers under Bid Security/Earnest Money exempted category shall submit “Bid Security Declaration”** as per Form No.3 accepting that if they withdraw or modify their bids during period of validity etc., they will be banned for the period of three-year and shall not be eligible to bid for future tenders in RailTel Corporation of India Ltd. for three years from the date of issue of such orders.

- Earnest Money of the unsuccessful bidder will be discharged/ returned as promptly as possible.
- The successful bidder’s EMD will be discharged upon the bidder’s acceptance of the LOA/ PO and submission of PBG.

**11. Performance Bank Guarantee/ Security Deposit**

- The successful tenderer shall submit account payee demand draft, from a commercial bank, bank guarantee issued/confirmed from any of the scheduled commercial bank in India and not from any cooperative bank or NBFC, or online payment, safeguarding the purchaser's interest in all respects.
- Security Deposit/Performance Bank Guarantee @ 10% of total value of contract rounded off to the nearest higher Rs.1,000/- (one thousand) is required to be submitted within 30 days of issue of notification of award and it should valid for a period of 90 (ninety) days beyond the date of completion of contractual obligations of the supplier, including warranty obligations allowing a claim period of one year (time period between expiry date and claim period) on top of guarantee period.
- The successful tenderer is required to furnish security deposit in the form of identified in para 11.1 above and the same should be submitted within 30 days of issue of LOA/PO failing which a penal interest of 15% per annum shall be charged for the delay period i.e. beyond 30(thirty) days from the date of issue of LOA/PO. The performance security should cover warranty period as per the tender conditions
- The Security Deposit/Performance Bank Guarantee shall be submitted to **RailTel Corporation of India Ltd.** Eastern Regional Office at Salt Lake City, Kolkata.
- A separate advice of the BG will invariably be sent by the BG issuing bank to the RailTel’s Bank through SFMS and only after this the BG will become acceptable to RailTel. It is therefore in own interest of bidder to obtain RailTel’s bank IFSC code, its branch and address and advise these particulars to the BG issuing bank and request them to send advice of BG through SFMS to the RailTel’s Bank.

6. The Security Deposit/Performance Bank Guarantee shall be released after successful completion of contract obligations under the contract, duly adjusting any dues recoverable from the successful tenderer. Payment of Security Deposit in the form of Pay Order/Demand Draft should be made in favor of "RailTel Corporation of India Ltd" payable at Kolkata.
7. Any Performance security up to a value of Rs. 5 Lakhs is to be submitted online transfer only.

**12. Eligibility Criteria for OEM :**

1. The equipment offered by the OEM or equipment of the same series/family from the same OEM should have been satisfactorily working in Government /PSUs/Telecom Service Providers network for at least 12 months as on opening of bid, in India or Abroad. The certificates from the actual users will have to be submitted online.
2. The OEM should have supplied at least 35% of the tendered quantity (rounded to the nearest whole number) of the equipment offered or equipment of the same series/family during last preceding 3 financial years (i.e. current year and three previous financial years) as on opening of bid to Government/PSUs/Telecom Service Providers. OEM should submit self-certificate with proper contact detail of clients along with quantities supplied (Firm Name, Contact person, Designation, Telephone Number, Fax, Official mail id etc.). The same should be issued by authorized signatory.
3. The OEM should have proven facilities for Engineering, manufacture, assembly, integration and testing and basic facilities with respect to space, Engineering, Personnel, Test equipment, Manufacture, Training, Repair, Service Centre Supports for at least past three years in the country from where the proposed equipment are planned to be supplied. In case OEM is located outside India, it should have training repair and service centre facilities in India also. The certificates/Undertaking for the same will have to be submitted online.

(The bidder will have to submit the proof of establishment for the facility)

**13. Eligibility Criteria for Authorised Bidder of OEM:**

- a) The tenderer must have successfully completed any of the following during last 07 (seven) years, ending last day of month previous to the one in which tender is invited:
  - Three similar works each costing not less than the amount equal to 30% of advertised value of the tender, or
  - Two similar works each costing not less than the amount equal to 40% of advertised value of the tender, or
  - One similar work each costing not less than the amount equal to 60% of advertised value of the tender.
- b) (i) In case of tenders for composite Contracts tenderer must have successfully completed any of the following during last 07 (seven) years, ending last day of month previous to the one in which tender is invited:
  - Three similar works each costing not less than the amount equal to 30% of advertised value of each component of tender, or
  - Two similar works each costing not less than the amount equal to 40% of advertised value of each component of tender, or
  - One similar work each costing not less than the amount equal to 60% of advertised value of each component of tender.

# Similar work : “Supply/Supply and Installation of a Work/Project in the field of IT/ICT/Telecom” for any Government department or Public Sector Units or public listed companies, Private TELECOs (as per note below).

(Note: Separate completed works of minimum required values for each component shall also be considered for fulfilment of technical eligibility criteria).

**Note-1:** Separate completed works of minimum required values for each component shall also be considered for fulfillment of technical eligibility criteria. In such cases, what constitutes a component in a composite work shall be clearly pre- defined with estimated tender cost of it, as part of the tender documents without any ambiguity. To evaluate the technical eligibility of tenderer, only components of work as stipulated in tender documents for evaluation of technical eligibility, shall be considered. The scope of work covered in other remaining components shall be executed by tenderer himself.

**Note-2:** Work experience certificate from private individual shall not be considered. However, in addition to work experience certificates issued by any Govt. Organization, PSU or any reputed Telecommunications company (TELCO), work experience certificate issued by Public listed company having average annual turnover of Rs 500 crore and above in last 3 financial years excluding the current financial year, listed on National Stock Exchange (NSE) or Bombay Stock Exchange (BSE), incorporated/registered at least 5 years prior to the date of opening of tender, shall also be considered provided the work experience certificate has been issued by a person authorized by the Public listed company to issue such certificates.

In case tenderer submits work experience certificate issued by public listed company, the tenderer shall also submit along with work experience certificate, the relevant copy of work order, bill of quantities, bill wise details of payment received duly certified by Chartered Accountant, TDS certificates for all payments received and copy of final/last bill paid by company in support of above work experience certificate).

#### 11.2. **Financial Eligibility Criteria:**

The bidder should have minimum cumulative turnover from operation in the previous three financial years and the current financial year, at least 150% of the advertised value of the tender. The tenderers shall submit Certificates to this effect which may be an attested Certificate from the concerned department / client or Audited Balance Sheet duly certified by the Chartered Accountant/Certificate from Chartered Accountant duly supported by Audited Balance Sheet. The contact details of CA/Statutory Auditor along with UDIN No. shall be mandatorily mentioned on copy of certified Balance Sheet/Certificate.

(Note: Client certificate from other than Govt. Organization should be duly supported by Form 16A/26AS generated through TRACES of Income Tax Department of India). The OEM should have proven facilities for Engineering, manufacture, assembly, integration and testing of Battery and facilities with respect to space, Engineering, Personnel, Test equipment, Manufacture, Training, Repair, Service Centre Supports for at least past three years. In case OEM is located outside India, it should have manufacturing, repair, service centre facilities in India also. The certificates/Undertaking for the same will have to be submitted.)

The bidder should not have been blacklisted by any agency /purchaser during the past 5 years.

**15. Warranty:**

The material is to be warranted as follows:

S No.	Material	Period of warranty
1	SFP & SFP+ (SOR item No.1 to 16 )	12 months from date of delivery.
2	Switches (SOR item No.17 to 20)	36 months from date of delivery.
3	10 KVA & 3 KVA UPS System (21 & 22)	36 months from date of delivery.
4	10 KVA & 3 KVA UPS Battery (21 & 22)	24 months from date of delivery.
5	Router (SOR item No.23 & 24)	36 months from date of delivery.
6	Firewall (SOR item No.25)	36 months from date of delivery.
7	PoE Injector (SOR item No.26)	12 months from date of delivery.
8	Wireless Access Point (SOR item No.27)	36 months from date of delivery.

The tenderer shall warrant that materials to be supplied shall be new and free from all defects and faults in material, workmanship and manufacturing and shall be of the highest grade and consistent with the established and generally accepted standards of materials of the type ordered and shall perform in full conformity with the specifications and drawings.

The supplier shall be responsible for any defects that may develop under the conditions provided by the contract and under proper use, arising from faulty materials, design or workmanship such as corrosion, inadequate quantity of material to meet item requirements, inadequate contact protection, deficiencies in design and/ or otherwise and shall remedy such defects at his own cost when called upon to do so by the Purchaser who shall state in writing in what respect the stores are faulty.

**16. SLA: Applicable for SFPs, Switches, Router, Firewall Access Point , UPS, Firewall, PoE Injector and Access Point**

After having been notified of the defects / service requirement during warranty period, Seller has to complete the required Service / Rectification within time limit of max. 2 days. If the Seller fails to complete service / rectification within defined time limit, a penalty of 0.5% of Unit Price of the product shall be charged as penalty for each week of delay from the seller & upto max. of 100% of Unit Price of the product. Seller can deposit the penalty with the Buyer directly else the Buyer shall have a right to recover all such penalty amount from the Performance Security (PBG) or from the running bills.

**17. Variation of Quantities at the Time of Award**

The purchaser reserves the right to increase or decrease the quantity to be ordered up to 30 percent at the time of placement of the contract. The purchaser also reserves the right to increase the ordered quantity by up to 30% of the contracted quantity during the currency of the contract at the contracted rates. Bidders are bound to accept the orders accordingly.

RailTel reserves the right to cancel the tender for full or part quantity tendered without assigning any reason.

**18. Payment Terms:**

- (i) 100% payment on full supply.
- (ii) 80% payment against part supply of the ordered quantity. In case bidder completes the supply order for one SOR, they can claim part payment of 80% against each SOR's completed supply of the said SORs. Balance payment shall be made after full supply.

The following documents are to be submitted for payment:

- i. Original Tax Invoice
- ii. Delivery Challan

- iii. E-way Bill
- iv. Original Consignee's receipt for receipt of goods in good condition
- v. Original Inspection Certificate
- vi. Warranty certificate from OEM
- vii. Proof of PG/SD submission
- viii. Proof of insurance certificate, if material supplied through transporter

Bill passing Authorities :

For material supplied at Guwahati : Territory Manager, Guwahati

For material supplied at Patna : Territory Manager, Patna

For material supplied at Kolkata : Sr. DGM/O&M/Kolkata

Bill paying Authority : General Manager/Finance/ER

19. The tenderer shall submit a notarized affidavit on a non-judicial stamp paper stating that they are not liable to be disqualified and all their statement/documents submitted along with bid are true and factual. Standard format of the affidavit to be submitted by the bidder is enclosed as **Form No. 4. Non submission of an affidavit by the bidder shall result in summarily rejection of his/their bid.** And it shall be mandatorily incumbent upon the tenderer to identify state and submit the supporting **documents duly self-attested** by which they/he is qualifying the Qualifying Criteria mentioned in the Tender Document. It will not be obligatory on the part of Tender Committee to scrutinize beyond the submitted document of tenderer as far as his qualification for the tender is concerned.

The RailTel (RCIL) reserves the right to verify all statements, information and documents submitted by the bidder in his tender offer, and the bidder shall, when so required by the RailTel (RCIL), make available all such information, evidence and documents as may be necessary for such verification. Any such verification or lack of such verification by the RailTel (RCIL) shall not relieve the bidder of its obligations or liabilities hereunder nor will it affect any rights of the RailTel thereunder.

In case of any wrong information submitted by tenderer, the contract shall be terminated. Performance Guarantee (PG) of contract forfeited and agency barred for doing business on RailTel (RCIL) for 3 years.

**20. Marking of Material Supplied:**

The tenderer may indicate the RailTel, Manufacture's Name, Month and Year of manufacturing, Serial numbers by casting/stamping/etching/embossing, at an appropriate place of each piece supplied, without affecting the functional utility and structural stability of the components/material.

**21. Online Submissions:**

The bidder is required to upload and submit the following documents on line before due date & time of bid. The due date & time for closing of the bid is 14:00 Hrs of 29.02.2024 and the bid

will be opened at 14:30 Hrs of 29.02.2024

- (i) Offer letter as per Form No.1
- (ii) EMD submission details./ Bid Security Declaration as per Form No.3.
- (iii) BoQ of the offered materials
- (iv) Clause wise compliance along with all mentioned documents/annexures for all clauses of GeM Bid and ATC (Information to bidder) documents.
- (v) Data Sheet of offered item/equipment.

- (vi) Financial (Certified copies of audited balance sheets/annual reports of last three preceding financial years) and Technical Eligibility Criteria documents.
- (vii) Technical Compliance of all Specification of items as per ATC documents.
- (viii) Certificate from the end user against Eligibility Criteria for OEM para 12
- (ix) Proof of document required against Eligibility criteria of OEM and bidder vide para 12 & 13 respectively.
- (x) MAF/OEM Authorization as per Form No.2
- (xi) Notarized affidavit on a non-judicial stamp paper as per Form No.4.
- (xii) Acceptance of all the conditions of Information to Bidder
- (xiii) Undertaking to Land Border (Form No.6)
- (xiv) Power of Attorney (Form No.7)

Note:

- 1) The bidder is required to give acceptance of all the clauses mentioned in the “Information to the Bidders” document is mandatory. Any deviation / non-acceptance may lead to rejection of the bid.
- 2) Information to Bidder viz. corrigendum /addendum/ amendments etc. for this bid shall be posted on [www.railtelindia.com](http://www.railtelindia.com) only.
- 3) This bid is governed by the Specific Additional Terms & Conditions and General Terms & Conditions laid down by the GeM against GeM Bid No. \_.

In case, if any contradiction between GeM Additional Terms & Conditions and General Terms & Conditions, RailTel Terms & Conditions will prevails.

- 4) After opening of the technical bid no correspondence/submission of document made at the initiative of the bidder will be entertained. However, the purchaser can, if required, ask for clarifications which need to be submitted before a target date. The clarifications submitted as required by the purchaser before the target date will be considered.

## **22 Offline documents:**

Original copy of documents shall be submitted by tenderer offline at RailTel Corporation of India Ltd., 19<sup>th</sup> Floor, Aurora Waterfront Building, Plot No.GN. 34/1, Block GN, Sector-V, Salt Lake City, Bidhannagar, Kolkata-700091 at any point of time whenever asked for verification.

## **23 Constitution of Firm and Power of Attorney**

- 23.1 Any individual(s) signing the tender or other documents connected therewith should specify whether he is signing: -
  - (a) As sole proprietor of the concern or as attorney of the sole Proprietor.
  - (b) As partner or partners of the firm.
  - (c) As a Director, Manager or Secretary in the case of Limited Company duly authorized by a resolution passed by Board of Directors or in pursuance of the authority conferred by Memorandum of Association.
- 23.2 In the case of a firm not registered under the Indian Partnership Act, all the partners or the attorney duly authorized by all of them should sign the tender and all connected documents. The original Power of Attorney or other documents empowering the individual or individuals to sign should be furnished to the Purchaser for verification, if required.
- 23.3 RailTel will not be bound by Power of Attorney granted by the tenderer or by the changes in the composition of the firm made subsequent to the execution of the contract agreement.
- 23.4 In case where Power of Attorney partnership deed has not been executed in English, the true and authenticated of copies of the translation of the same by Advocate, authorized translators

of Courts and licensed Petition Writers should be supplied by the contractor(s), while tendering of the work.

24. **DENIAL CLAUSE** - Supplier will not be entitled to any benefit of upward statutory variations in GST rates Announced after expiry of the original Delivery Period as per purchase order & in Case of reduction in GST rates if any, benefit will be passed on to RailTel at any stage of the contract.

25. **Contact Details for general Information:**

RailTel Contact-I : Shri Aneesh Pratap Singh, Asstt.GM ( Mobile No. : 8730007234)  
Shri Piklu Biswas Asstt.GM ( Mobile No. : 9007044119)  
Shri Deepak Kr. Choudhary Asstt.GM(Mobile No. 7463885512)

RailTel Contact-II : 1. Shri Prakash Ratrey, Jt.GM/TM/Guwahati ( Mobile No. 8730007291)  
Shri Sanjiv Kumar, Sr. DGM/O&M/Kolkata (Mobile No. 9777444110)  
Shri Arbinnd Kumar, Sr. DGM/TM/Patna (Mobile No. 704482111)

26.1 **Public Procurement (Preference to make in India) :**

Public procurement (Preference to Make in India), Order 2017 as amended from time to time and its subsequent Orders/Notifications issued by concerned Nodal Ministry for specific Goods/Products is applicable to this tender.

26.2 **Purchase preference to Micro and Small Enterprises (MSEs):**

Purchase preference will be given to MSEs as defined in Public Procurement Policy for Micro and Small Enterprises (MSEs) Order, 2012 dated 23.03.2012 issued by Ministry of Micro, Small and Medium Enterprises and its subsequent Orders/Notifications issued by concerned Ministry. If the bidder wants to avail the Purchase preference, the bidder must be the manufacturer of the offered product in case of bid for supply of goods. Traders are excluded from the purview of Public Procurement Policy for Micro and Small Enterprises.

26.3 **Bidders sharing a land border with India:**

Office Memorandum F.No.6/18/2019-PPD dated 23.07.2020 by Ministry of Finance, Department of Expenditure, Public Procurement Division shall also apply to this tender. A certificate as per Form No.6 shall be submitted by all the bidders regarding their compliance with this order. If such a certificate given by a bidder whose bid is accepted is found to be false, this would be a ground for immediate termination and further legal action in accordance with law. Registration should be valid at the time of submission of bids and at the time of acceptance of bids. In respect of supply otherwise than by tender, registration should be valid at the time of placement of order.

27 **Trade Receivables Discounting System (TReDS):**

TReDS feature is available on m1xchange portal, URL: <https://www.m1xchange.com>.

- i. RailTel is registered with m1xchange TReDS Platform having Buyer registration Number "BUYER00001496". The URL for m1xchange Platform is <https://www.m1xchange.com> MSE suppliers/vendors are required to register themselves on m1xchange Platform for availing the facility of bill discounting on TReDS portal. The bidder is mandatorily required to submit its TReDS registration number (as provided by M1xchange portal) and GRN (Goods/Service Receipt Note) Number (as provided by RailTel on delivery of Goods/ Service) while submitting the invoices if requires to avail TReDS facility.
- ii. MSE Vendor will bear all costs relating to availing the facility of discounting on TReDS platform including but not limited to Registration charges, Transaction charges for financing, Discounting

Charges, Interest on financing, or any other charges known by any name shall be borne by MSE Vendor.

- iii. MSE Vendor hereby agrees to indemnify, hold harmless and keep RailTel and its affiliates, Directors, officers, representatives, agents and employees indemnified, from any and all damages, losses, claims and liabilities (including legal costs) which may arise from Sellers submission, posting or display, participation, in any manner, on the TReDS Platform or from the use of Services or from the Buyer's breach of any of the terms and conditions of the Usage Terms or of this Agreement and any Applicable Law on a full indemnity basis.
- iv. RailTel shall not be liable for any special, indirect, punitive, incidental, or consequential damages or any damages whatsoever (including but not limited to damages for loss of profits or savings, business interruption, loss of information), whether in contract, tort, equity or otherwise or any other damages resulting from using TReDS platform for discounting their (MSE Vendor's) invoices.

28. **Trusted Telecom Source:**

The guidelines and directives issued by Department of telecommunications, Govt. of India regarding Procurement of Telecommunication equipment from Trusted Sources shall be applicable to this tender. The offered equipment shall be "Trusted Products". The vendor/OEM shall submit declaration for compliance.

**Annexure-I****All Equipment should be:**

- i. Equipped with necessary hardware/software to comply all above required / support features.
- ii Back-to-Back warranty with respective OEMs for both Hardware and Software. The certificates/Undertaking for the same will have to be submitted along with bid from respective OEM. i.e., UL, CE and FCC Certification is not required for PMA. However, they have to produce certificate from standard lab approved/ authorized by Govt. of India that their product is equivalent to UL, CE and FCC and meets all standard and specification of UL, CE and FCC.

**SOR items are furnished below:**

SOR Item No.	Item Description	Item Quantity	Unit of Measure
1	1G Dual Fiber SFP, 10 Km range, as per technical specification of SOR-1	40	nos
2	1G Dual Fiber SFP, 20 Km range, as per technical specification of SOR-2.	40	nos
3	1G Dual Fiber SFP, 40 Km range, as per technical specification of SOR-3.	50	nos
4	1G Dual Fiber SFP, 80 Km range, as per technical specification of SOR-4.	24	nos
5	10G Dual Fiber SFP+ 10Km range, as per technical specification of SOR-5.	10	nos
6	10G Dual Fiber SFP+, 20Km range, as per technical specification of SOR-6.	30	nos
7	10G Dual Fiber SFP+, 40Km range, as per technical specification of SOR-7.	30	nos
8	10G Dual Fiber SFP+, 80Km range, as per technical specification of SOR-8.	16	nos
9	1G BiDi SFP, 20 Km range, as per technical specification of SOR-9.	40	pairs
10	1G BiDi SFP, 40 Km range, as per technical specification of SOR-10.	60	pairs
11	1G BiDi SFP, 80 Km range, as per technical specification of SOR-11.	40	pairs
12	10G BiDi SFP+, 20Km range, as per technical specification of SOR-12.	30	pairs
13	10G BiDi SFP+, 40Km range, as per technical specification of SOR-13.	90	pairs
14	10G BiDi SFP+, 60Km range, as per technical specification of SOR-14.	50	pairs
15	10G BiDi SFP+, 80Km range, as per technical specification of SOR-15.	16	pairs
16	1G Electrical SFP, as per technical specification of SOR-16.	15	nos

17	Manageable L2 Switch Type-I, as per technical specification of SOR-17	4	nos
18	Manageable L2, Switch Type-II as per technical specification of SOR-18.	14	nos
19	Manageable L2 Switch Type-III as per technical specification of SOR-19.	37	nos
20	Manageable L2 Switch Type-IV as per technical specification of SOR-20.	8	nos.
21	10 KVA online UPS system as per technical specification with 3 hrs. backup including battery rack and connecting cable as per technical specification of SOR-21.	1	nos.
22	3KVA online UPS system as per technical specification with 1 hr. backup including battery rack and connecting cable as per technical specification of SOR-22.	2	nos.
23	Router Type-I as per technical specification of SOR-23.	4	nos.
24	Router Type-II as per technical specification of SOR-24.	6	nos.
25	Firewall as per technical specification of SOR-25.	4	nos.
26	POE Injector as per technical specification of SOR-26.	56	nos.
27	Access Point as per technical specification of SOR-27.	10	nos.

**Technical Specifications**

**All Equipment should be :**

- i. With onsite comprehensive warranty of period as indicated in clause.15.
- ii. Equipped with necessary hardware/software to comply all above required / support features.
- iii. Back-to-Back warranty with respective OEMs for both Hardware and Software. The certificates/Undertaking for the same will have to be submitted along with bid from respective OEM.
- iv. UL, CE and FCC Certification is not required for PMA. However, they have to produce certificate from standard lab approved/ authorized by Govt. of India that their product is equivalent to UL, CE and FCC and meets all standard and specification of UL, CE and FCC.

**SOR-1: 1G SFP 10 KM Dual Fiber**

SN	Description	Compliance (Yes/ No)
1	SFP modules should comply with multi-source agreement (MSA), enabling compatibility with other vendors equipment. of CISCO, Juniper, D-Link, Nokia, Ciena, Zyxel, Edge Core and Extreme. etc.	
2	Should support 10 km optical distance on dual fiber.	
3	Should have LC type connector.	
4	Should provide the cost in Nos.	
5	Should have 1 Gigabit Ethernet capacity on single mode fiber.	
6	Should support Digital Diagnostic Monitoring feature with following operating parameters:	
	Transceiver temperature" 0 ~ 70 degC	
	Laser bias current	
	Link Budget : Max. Tx Power – Receiver Sensitivity) 5 dB or better	
	Transceiver supply voltage: 3.3V	
	It shall also provides a sophisticated system of alarm and warning flags	
7	OEM should be having valid ISO 9000	
8	Should have CE and FCC and UL or equivalent regulatory Certificate. UL, CE and FCC Certification is not required for PMA. However they have to produce certificate from standard lab approved/ authorized by Govt. of India that their product are equivalent to UL,CE and FCC and meets all standard and specification of UL,CE and FCC	
9	Operating temperature of the SFP should be minimum 0 to 70°C (23 to 149 °F)	
10	Complies with SFF-8431 SFP+ MSA (Multi-Source Agreements Standards)	

11	Complies with 1270nm /1330nm/1550nm DFB laser transmitter & CPRI Option 7, 8	
12	Should support 9.83G to 11.32Gb/s Multi-Rate & 2-wire interface for management and diagnostic monitor compliant with SFF-8472	
13	Hot-Pluggable SFP Footprint	

**SOR-2: 1G SFP 20 KM Dual Fiber**

SN	Description	Compliance (Yes/ No)
1	SFP modules should comply with multi-source agreement (MSA), enabling compatibility with other vendors equipment. of CISCO, Juniper, D-Link, Nokia, Ciena, Zyxel, Edge Core and Extreme. etc.	
2	Should support 20 km optical distance on dual fiber.	
3	Should have LC type connector.	
4	Should provide the cost in Nos.	
5	Should have 1 Gigabit Ethernet capacity on single mode fiber.	
6	Should support Digital Diagnostic Monitoring feature with following operating parameters:	
	Transceiver temperature" 0 ~ 70 degC	
	Laser bias current	
	Transmitted optical power: 0 ~ -5dBm	
	Received optical power: -13dBm	
	Transceiver supply voltage: 3.3V	
	It shall also provides a sophisticated system of alarm and warning flags	
7	OEM should be having valid ISO 9000	
8	Should have CE and FCC and UL or equivalent regulatory Certificate. UL, CE and FCC Certification is not required for PMA. However they have to produce certificate from standard lab approved/ authorized by Govt. of India that their product are equivalent to UL,CE and FCC and meets all standard and specification of UL,CE and FCC	
9	Operating temperature of the SFP should be minimum 0 to 70°C (23 to 149 °F)	
10	Complies with SFF-8431 SFP+ MSA (Multi-Source Agreements Standards)	
11	Complies with 1270nm /1330nm/1550nm DFB laser transmitter & CPRI Option 7, 8	
12	Should support 9.83G to 11.32Gb/s Multi-Rate & 2-wire interface for management and diagnostic monitor compliant with SFF-8472	
13	Hot-Pluggable SFP Footprint	

**SOR-3: 1G SFP 40 KM Dual Fiber**

SN	Description	Compliance (Yes/ No)
1	SFP modules should comply with multi-source agreement (MSA), enabling compatibility with other vendors equipment. of CISCO, Juniper, D-Link, Nokia, Ciena, Zyxel, Edge Core and Extreme. etc.	
2	Should support 20-40 kms optical distance on dual fiber	
3	Should have LC type connector.	
4	Should provide the cost in Nos.	
5	Should have 1Gigabit Ethernet capacity on single mode fiber.	
6	Should support Digital Diagnostic Monitoring feature with following operating parameters:	
	Transceiver temperature : 0 ~ 70 degC	
	Laser bias current	
	Transmitted optical power: 0 ~ +4dBm	
	Received optical power : -15dBm	
	Transceiver supply voltage: 3.3V	
	It shall also provides a sophisticated system of alarm and warning flags	
7	OEM should be having valid ISO 9000	
8	Should have CE and FCC and UL or equivalent regulatory Certificate. UL, CE and FCC Certification is not required for PMA. However they have to produce certificate from standard lab approved/ authorized by Govt. of India that their product are equivalent to UL,CE and FCC and meets all standard and specification of UL,CE and FCC	
9	Operating temperature of the SFP should be minimum 0 to 70°C (23 to 149 °F)	
10	Complies with SFF-8431 SFP+ MSA (Multi-Source Agreements Standards)	
11	Complies with 1270nm/1330nm/1550nm DFB laser transmitter & CPRI Option 7, 8	
12	Should support 1G to 1.5Gb/s Multi-Rate & 2-wire interface for management and diagnostic monitor compliant with SFF-8472	
13	Hot-Pluggable SFP Footprint	

**SOR-4: 1G SFP 80 KM Dual Fiber**

SN	Description	Compliance (Yes/ No)
1	SFP modules should comply with multi-source agreement (MSA), enabling compatibility with other vendors equipment. of CISCO, Juniper, D-Link, Nokia, Ciena, Zyxel, Edge Core and Extreme. etc.	
2	Should support 60-80 kms optical distance on double fiber	
3	Should have LC type connector.	
4	Should provide the cost in Nos.	
5	Should have 1Gigabit Ethernet capacity on single mode fiber.	
6	Should support Digital Diagnostic Monitoring feature with following operating parameters:	

	Transceiver temperature : 0 ~ 70 degC	
	Laser bias current	
	Transmitted optical power : 0 ~ +5dBm	
	Received optical power : -22dBm	
	Transceiver supply voltage : 3.3V	
	It shall also provides a sophisticated system of alarm and warning flags	
7	OEM should be having valid ISO 9000	
8	Should have CE and FCC and UL or equivalent regulatory Certificate. UL, CE and FCC Certification is not required for PMA. However they have to produce certificate from standard lab approved/ authorized by Govt. of India that their product are equivalent to UL,CE and FCC and meets all standard and specification of UL,CE and FCC	
9	Operating temperature of the SFP should be minimum 0 to 70°C (23 to 149 °F)	
10	Tx/Rx wavelength should be either in the range of 1300nm or 1500nm.	
11	For Tx/Rx wavelength in the range of 1300 nm (eg.1270nm/ 1330nm/ 1550nm) power budget should be minimum <b>25</b> dBm.	
12	Complies with SFF-8431 SFP+ MSA (Multi-Source Agreements Standards)	
13	Complies with 1270nm/1330nm/1550nm DFB laser transmitter & CPRI Option 7, 8	
14	Should support 1G to 1.25Gb/s Multi-Rate & 2-wire interface for management and diagnostic monitor compliant with SFF-8472	
15	Hot-Pluggable SFP Footprint	

**SOR-5: 10G SFP+ 10 KM Dual Fiber**

SN	Description	Compliance (Yes/ No)
1	SFP modules should comply with multi-source agreement (MSA), enabling compatibility with other vendors equipment. of CISCO, Juniper, D-Link, Nokia, Ciena, Zyxel, Edge Core and Extreme. etc.	
2	Should support 10 km optical distance on dual fiber.	
3	Should have LC type connector.	
4	Should provide the cost in Nos.	
5	Should have 10 Gigabit Ethernet capacity on single mode fiber.	
6	Should support Digital Diagnostic Monitoring feature with following operating parameters:	
	Transceiver temperature" 0 ~ 70 degC	
	Laser bias current	
	Link Budget : Max. Tx Power – Receiver Sensitivity) 5 dB or better	
	Received optical power: -13dBm	
	Transceiver supply voltage: 3.3V	
	It shall also provides a sophisticated system of alarm and warning flags	
7	OEM should be having valid ISO 9000	

8	Should have CE and FCC and UL or equivalent regulatory Certificate. UL, CE and FCC Certification is not required for PMA. However they have to produce certificate from standard lab approved/ authorized by Govt. of India that their product are equivalent to UL,CE and FCC and meets all standard and specification of UL,CE and FCC	
9	Operating temperature of the SFP should be minimum 0 to 70°C (23 to 149 °F)	
10	Complies with SFF-8431 SFP+ MSA (Multi-Source Agreements Standards)	
11	Complies with 1310nm DFB laser transmitter & CPRI Option 7, 8	
12	Should support 9.83G to 11.32Gb/s Multi-Rate & 2-wire interface for management and diagnostic monitor compliant with SFF-8472	

**SOR-6: 10G SFP+ 20 KM Dual Fiber**

SN	Description	Compliance (Yes/ No)
1	SFP modules should comply with multi-source agreement (MSA), enabling compatibility with other vendors equipment. of CISCO, Juniper, D-Link, Nokia, Ciena, Zyxel, Edge Core and Extreme. etc.	
2	Should support 20 km optical distance on dual fiber.	
3	Should have LC type connector.	
4	Should provide the cost in Nos.	
5	Should have 10 Gigabit Ethernet capacity on single mode fiber.	
6	Should support Digital Diagnostic Monitoring feature with following operating parameters:	
	Transceiver temperature" 0 ~ 70 degC	
	Laser bias current	
	Transmitted optical power: 0 ~ -5dBm	
	Received optical power: -13dBm	
	Transceiver supply voltage: 3.3V	
	It shall also provides a sophisticated system of alarm and warning flags	
7	OEM should be having valid ISO 9000	
8	Should have CE and FCC and UL or equivalent regulatory Certificate. UL, CE and FCC Certification is not required for PMA. However they have to produce certificate from standard lab approved/ authorized by Govt. of India that their product are equivalent to UL,CE and FCC and meets all standard and specification of UL,CE and FCC	
9	Operating temperature of the SFP should be minimum 0 to 70°C (23 to 149 °F)	
10	Complies with SFF-8431 SFP+ MSA (Multi-Source Agreements Standards)	
11	Complies with 1310nm DFB laser transmitter & CPRI Option 7, 8	
12	Should support 9.83G to 11.32Gb/s Multi-Rate & 2-wire interface for management and diagnostic monitor compliant with SFF-8472	

**SOR-7: 10G SFP+ 40 KM Dual Fiber**

SN	Description	Compliance (Yes/ No)
1	SFP modules should comply with multi-source agreement (MSA), enabling compatibility with other vendors equipment. of CISCO, Juniper, D-Link, Nokia, Ciena, Zyxel, Edge Core and Extreme. etc.	
2	Should support 20-40 kms optical distance on dual fiber	
3	Should have LC type connector.	
4	Should provide the cost in Nos.	
5	Should have 10 Gigabit Ethernet capacity on single mode fiber.	
6	Should support Digital Diagnostic Monitoring feature with following operating parameters:	
	Transceiver temperature : 0 ~ 70 degC	
	Laser bias current	
	Transmitted optical power: 0 ~ +4dBm	
	Received optical power : -15dBm	
	Transceiver supply voltage: 3.3V	
	It shall also provides a sophisticated system of alarm and warning flags	
7	OEM should be having valid ISO 9000	
8	Should have CE and FCC and UL or equivalent regulatory Certificate. UL, CE and FCC Certification is not required for PMA. However they have to produce certificate from standard lab approved/ authorized by Govt. of India that their product are equivalent to UL,CE and FCC and meets all standard and specification of UL,CE and FCC	
9	Operating temperature of the SFP should be minimum 0 to 70°C (23 to 149 °F)	
10	Complies with SFF-8431 SFP+ MSA (Multi-Source Agreements Standards)	
11	Complies with 1310nm DFB laser transmitter & CPRI Option 7, 8	
12	Should support 9.83G to 11.32Gb/s Multi-Rate & 2-wire interface for management and diagnostic monitor compliant with SFF-8472	

**SOR-8: 10G SFP+ 80 KM Dual Fiber**

SN	Description	Compliance (Yes/ No)
1	SFP modules should comply with multi-source agreement (MSA), enabling compatibility with other vendors equipment. of CISCO, Juniper, D-Link, Nokia, Ciena, Zyxel, Edge Core and Extreme. etc.	
2	Should support 60-80 kms optical distance on double fiber	
3	Should have LC type connector.	
4	Should provide the cost in Nos.	
5	Should have 10 Gigabit Ethernet capacity on single mode fiber.	
6	Should support Digital Diagnostic Monitoring feature with following operating parameters:	

	Transceiver temperature : 0 ~ 70 degC	
	Laser bias current	
	Transmitted optical power : 0 ~ +5dBm	
	Received optical power : -22dBm	
	Transceiver supply voltage : 3.3V	
	It shall also provides a sophisticated system of alarm and warning flags	
7	OEM should be having valid ISO 9000	
8	Should have CE and FCC and UL or equivalent regulatory Certificate. UL, CE and FCC Certification is not required for PMA. However they have to produce certificate from standard lab approved/ authorized by Govt. of India that their product are equivalent to UL,CE and FCC and meets all standard and specification of UL,CE and FCC	
9	Operating temperature of the SFP should be minimum 0 to 70°C (23 to 149 °F)	
10	Tx/Rx wavelength should be either in the range of 1300nm or 1500nm.	
11	For Tx/Rx wavelength in the range of 1500 nm (eg.1490nm/1550nm) power budget should be minimum <b>25</b> dBm.	
12	Complies with SFF-8431 SFP+ MSA (Multi-Source Agreements Standards)	
13	Complies with 1550nm DFB laser transmitter & CPRI Option 7, 8	
14	Should support 9.83G to 11.32Gb/s Multi-Rate & 2-wire interface for management and diagnostic monitor compliant with SFF-8472	

**SOR-9: 1G SFP 20 KM. Bi-Di**

SN	Description	Compliance (Yes/ No)
1	SFP modules should comply with multi-source agreement (MSA), enabling compatibility with other vendors equipment. of CISCO, Juniper, D-Link, Nokia, Ciena, Zyxel, Edge Core and Extreme. etc.	
2	Should support 20km optical distance on single fiber.	
3	Should have LC type connector.	
4	Should provide the cost in Pair. (BX U & D).	
5	Should have 01 Gigabit Ethernet capacity on single mode fiber.	
6	Should support Digital Diagnostic Monitoring feature with following operating parameters:	
	Transceiver temperature" 0 ~ 70 degC	
	Laser bias current	
	Transmitted optical power: 0 ~ -5dBm	
	Received optical power: -13dBm	
	Transceiver supply voltage: 3.3V	
	It shall also provides a sophisticated system of alarm and warning flags	
7	OEM should be having valid ISO 9000	

8	Should have CE and FCC and UL or equivalent regulatory Certificate. UL, CE and FCC Certification is not required for PMA. However they have to produce certificate from standard lab approved/ authorized by Govt. of India that their product are equivalent to UL,CE and FCC and meets all standard and specification of UL,CE and FCC	
9	Operating temperature of the SFP should be minimum 0 to 70°C (23 to 149 °F)	
10	Complies with SFF-8431 SFP+ MSA (Multi-Source Agreements Standards)	
11	Complies with 1310nm/1550nm DFB laser transmitter & CPRI Option 7, 8	
12	Should support 1G to 1.25Gb/s Multi-Rate & 2-wire interface for management and diagnostic monitor compliant with SFF-8472	

**SOR-10: 1G SFP 40 KM. Bi-Di**

SN	Description	Compliance (Yes/ No)
1	SFP modules should comply with multi-source agreement (MSA), enabling compatibility with other vendors equipment. of CISCO, Juniper, D-Link, Nokia, Ciena, Zyxel, Edge Core and Extreme. etc.	
2	Should support 20-40 kms optical distance on single fiber	
3	Should have LC type connector.	
4	Should provide the cost in Pair.(BX U & D).	
5	Should have 01 Gigabit Ethernet capacity on single mode fiber.	
6	Should support Digital Diagnostic Monitoring feature with following operating parameters:	
	Transceiver temperature : 0 ~ 70 degC	
	Laser bias current	
	Transmitted optical power: 0 ~ +4dBm	
	Received optical power : -15dBm	
	Transceiver supply voltage: 3.3V	
	It shall also provides a sophisticated system of alarm and warning flags	
7	OEM should be having valid ISO 9000	
8	Should have CE and FCC and UL or equivalent regulatory Certificate. UL, CE and FCC Certification is not required for PMA. However they have to produce certificate from standard lab approved/ authorized by Govt. of India that their product are equivalent to UL,CE and FCC and meets all standard and specification of UL,CE and FCC	
9	Operating temperature of the SFP should be minimum 0 to 70°C (23 to 149 °F)	
10	Complies with SFF-8431 SFP+ MSA (Multi-Source Agreements Standards)	
11	Complies with 1270nm/1330nm/1550nm DFB laser transmitter & CPRI Option 7, 8	
12	Should support 1G to 1.25Gb/s Multi-Rate & 2-wire interface for management and diagnostic monitor compliant with SFF-8472	

**SOR-11: 1G SFP 80 KM Bi-Di**

SN	Description	Compliance (Yes/ No)
1	SFP modules should comply with multi-source agreement (MSA), enabling compatibility with other vendors equipment. of CISCO, Juniper, D-Link, Nokia, Ciena, Zyxel, Edge Core and Extreme. etc.	
2	Should support 60-80 kms optical single fiber	
3	Should have LC type connector.	
4	Should provide the cost in Pairs.(BX U & D).	
5	Should have 01Gigabit Ethernet capacity on single mode fiber.	
6	Should support Digital Diagnostic Monitoring feature with following operating parameters:	
	Transceiver temperature : 0 ~ 70 degC	
	Laser bias current	
	Transmitted optical power : 0 ~ +5dBm	
	Received optical power : -22dBm	
	Transceiver supply voltage : 3.3V	
	It shall also provides a sophisticated system of alarm and warning flags	
7	OEM should be having valid ISO 9000	
8	Should have CE and FCC and UL or equivalent regulatory Certificate. UL, CE and FCC Certification is not required for PMA. However they have to produce certificate from standard lab approved/ authorized by Govt. of India that their product are equivalent to UL,CE and FCC and meets all standard and specification of UL,CE and FCC	
9	Operating temperature of the SFP should be minimum 0 to 70°C (23 to 149 °F)	
10	Tx/Rx wavelength should be either in the range of 1300nm or 1500nm.	
11	For Tx/Rx wavelength in the range of 1300 nm (eg.1270nm/1330nm/ 1500nm) power budget should be minimum 25 dBm.	
12	Complies with SFF-8431 SFP+ MSA (Multi-Source Agreements Standards)	
13	Complies with 1270nm/1330nm/1550nm DFB laser transmitter & CPRI Option 7, 8	
14	Should support 1G to 1.25Gb/s Multi-Rate & 2-wire interface for management and diagnostic monitor compliant with SFF-8472	

**SOR-12: 10G SFP+ 20 KM Bi-Di**

SN	Description	Compliance (Yes/ No)
1	SFP modules should comply with multi-source agreement (MSA), enabling compatibility with other vendors equipment. of CISCO, Juniper, D-Link, Nokia, Ciena, Zyxel, Edge Core and Extreme. etc.	
2	Should support 10/20 km optical distance on single fiber	

3	Should have LC type connector.	
4	Should provide the cost in pair (BX U & D).	
5	Should have 10 Gigabit Ethernet capacity on single mode fiber.	
6	Should support Digital Diagnostic Monitoring feature with following operating parameters:	
	Transceiver temperature" 0 ~ 70 degC	
	Laser bias current	
	Transmitted optical power: 0 ~ -5dBm	
	Received optical power: -14dBm	
	Transceiver supply voltage: 3.3V	
	It shall also provides a sophisticated system of alarm and warning flags	
7	OEM should be having valid ISO 9000	
8	Should have CE and FCC and UL or equivalent regulatory Certificate. UL, CE and FCC Certification is not required for PMA. However they have to produce certificate from standard lab approved/ authorized by Govt. of India that their product are equivalent to UL,CE and FCC and meets all standard and specification of UL,CE and FCC	
9	Operating temperature of the SFP should be minimum 0 to 70°C (23 to 149 °F)	
10	Complies with SFF-8431 SFP+ MSA (Multi-Source Agreements Standards)	
11	Complies with 1270nm & 1330nm DFB laser transmitter & CPRI Option 7, 8	
12	Should support 9.83G to 11.32Gb/s Multi-Rate & 2-wire interface for management and diagnostic monitor compliant with SFF-8472	

**SOR-13: 10G SFP+ 40 KM Bi-Di**

SN	Description	Compliance (Yes/ No)
1	SFP modules should comply with multi-source agreement (MSA), enabling compatibility with other vendors equipment. of CISCO, Juniper, D-Link, Nokia, Ciena, Zyxel, Edge Core and Extreme. etc.	
2	Should support 20-40 kms optical distance on single fiber	
3	Should have LC type connector.	
4	Should provide the cost in pair (BX U & D).	
5	Should have 10 Gigabit Ethernet capacity on single mode fiber.	
6	Should support Digital Diagnostic Monitoring feature with following operating parameters:	
	Transceiver temperature : 0 ~ 70 degC	
	Laser bias current	
	Transmitted optical power: 0 ~ +4dBm	
	Received optical power : -15dBm	
	Transceiver supply voltage: 3.3V	
	It shall also provides a sophisticated system of alarm and warning flags	

7	OEM should be having valid ISO 9000	
8	Should have CE and FCC and UL or equivalent regulatory Certificate. UL, CE and FCC Certification is not required for PMA. However they have to produce certificate from standard lab approved/ authorized by Govt. of India that their product are equivalent to UL,CE and FCC and meets all standard and specification of UL,CE and FCC	
9	Operating temperature of the SFP should be minimum 0 to 70°C (23 to 149 °F)	
10	Complies with SFF-8431 SFP+ MSA (Multi-Source Agreements Standards)	
11	Complies with 1270nm & 1330nm DFB laser transmitter & CPRI Option 7, 8	
12	Should support 9.83G to 11.32Gb/s Multi-Rate & 2-wire interface for management and diagnostic monitor compliant with SFF-8472	
13	For Tx/Rx wavelength in the range of 1300 nm (eg.1270nm/1330nm) power budget should be minimum <b>19</b> dBm.	

**SOR-14: 10G SFP+ 60 KM, Bi-Di**

SN	Description	Compliance (Yes/ No)
1	SFP modules should comply with multi-source agreement (MSA), enabling compatibility with other vendors equipment. of CISCO, Juniper, D-Link, Nokia, Ciena, Zyxel, Edge Core and Extreme. etc.	
2	Should support 40-60 kms optical distance on single fiber	
3	Should have LC type connector.	
4	Should provide the cost in pair (BX U & D).	
5	Should have 10 Gigabit Ethernet capacity on single mode fiber.	
6	Should support Digital Diagnostic Monitoring feature with following operating parameters:	
	Transceiver temperature : 0 ~ 70 degC	
	Laser bias current	
	Transmitted optical power : 0 ~ +5dBm	
	Received optical power : -22dBm	
	Transceiver supply voltage : 3.3V	
	It shall also provide a sophisticated system of alarm and warning flags	
7	OEM should be having valid ISO 9000	
8	Should have CE and FCC and UL or equivalent regulatory Certificate. UL, CE and FCC Certification is not required for PMA. However they have to produce certificate from standard lab approved/ authorized by Govt. of India that their product are equivalent to UL,CE and FCC and meets all standard and specification of UL,CE and FCC	
9	Operating temperature of the SFP should be minimum 0 to 70°C (23 to 149 °F)	
10	Tx/Rx wavelength should be either in the range of 1300nm or 1500nm.	
11	For Tx/Rx wavelength in the range of 1300 nm (eg.1270nm/1330nm) power budget should be minimum <b>22</b> dBm.	

12	Complies with SFF-8431 SFP+ MSA (Multi-Source Agreements Standards)	
13	Complies with 1270nm & 1330nm DFB laser transmitter & CPRI Option 7, 8	
14	Should support 9.83G to 11.32Gb/s Multi-Rate & 2-wire interface for management and diagnostic monitor compliant with SFF-8472	

**SOR-15: 10G SFP+ 80 KM Bi-Di**

SN	Description	Compliance (Yes/ No)
1	SFP modules should comply with multi-source agreement (MSA), enabling compatibility with other vendors equipment. of CISCO, Juniper, D-Link, Nokia, Ciena, Zyxel, Edge Core and Extreme. etc.	
2	Should support 60-80 kms optical distance on single fiber	
3	Should have LC type connector.	
4	Should provide the cost in pair (BX U & D).	
5	Should have 10 Gigabit Ethernet capacity on single mode fiber.	
6	Should support Digital Diagnostic Monitoring feature with following operating parameters:	
	Transceiver temperature : 0 ~ 70 degC	
	Laser bias current	
	Transmitted optical power : 0 ~ +5dBm	
	Received optical power : -22dBm	
	Transceiver supply voltage : 3.3V	
	It shall also provides a sophisticated system of alarm and warning flags	
7	OEM should be having valid ISO 9000	
8	Should have CE and FCC and UL or equivalent regulatory Certificate. UL, CE and FCC Certification is not required for PMA. However they have to produce certificate from standard lab approved/ authorized by Govt. of India that their product are equivalent to UL,CE and FCC and meets all standard and specification of UL,CE and FCC	
9	Operating temperature of the SFP should be minimum 0 to 70°C (23 to 149 °F)	
10	Tx/Rx wavelength should be either in the range of 1300nm or 1500nm.	
11	For Tx/Rx wavelength in the range of 1300 nm (eg.1270nm/1330nm) power budget should be minimum <b>24</b> dBm.	
12	Complies with SFF-8431 SFP+ MSA (Multi-Source Agreements Standards)	
13	Complies with 1270 nm & 1330 nm DFB laser transmitter & CPRI Option 7, 8	
14	Should support 9.83G to 11.32Gb/s Multi-Rate & 2-wire interface for management and diagnostic monitor compliant with SFF-8472	

**SOR-16: Electrical SFP (100/ 1000 Base)**

SN	Description	Compliance (Yes/ No)
1	SFP-GB-GE-T 1000BASE-T Copper Small Form Pluggable (SFP) modules are based on the SFP Multi Source Agreement (MSA). It is compliant with the Gigabit Ethernet and 1000BASE-T standards as specified in IEEE STD 802.3 and 802.3ab.	
2	SFP-GB-GE-10/100/1000BASE-TS FP Copper RJ-45 100m Transceiver.	
3	LAN1000Base-T	
4	Gigabit Ethernet over Cat6/Cat6a Cable	
5	Switch to Switch Interface	
6	Router/Server Interface	
7	Support RX_LOS as Link indication function	
8	Fully Metallic Enclosure for Low EMI	
9	Low Power Dissipation(1.05W Typical)	
10	Compact RJ-45 Connector Assembly 1000BASE-TS FPCOPPER RJ-45 100M TRANSCEIVER	
11	For 100m Reach Over UTP Cat6/Cat6a Cable	
12	Hot-Pluggable SFP Footprint	
13	Support 1000BASE-T Operation in Host Systems	
14	Access to Physical Layer IC via 2-Wire Serial Bus	
15	Compliant with MSA SFP	
16	Detailed Product Information in EEPROM	
17	Compliant with IEEE Std 802.3-2002	
18	Commercial Temperature Range: 0~70°C Extended Temperature Range: -5~85°C Industrial	

**SOR-17: Managed L2 Switch Type-I : L2 Access Switch with 8 Port 10/100/1000 Base TX + 2 x 1G SFP Port :**

Sr. No.	Description	Compliance (Y/N)
1	08 Ports 10/100/1000 Mbps Base T + 02 Port 1G SFP, LED Based	
2	At least 20 Gbps Switching Fabric/Non-Blocking <ul style="list-style-type: none"> <li>• Fragment-Free Switching</li> <li>• Auto MDI/MDIX crossover for all ports</li> <li>• Secure store-and-forward switching scheme</li> <li>• Full/half-duplex for Ethernet/Fast Ethernet speeds</li> <li>• IEEE 802.3x Flow Control</li> <li>• Supports 9,216 bytes Jumbo Frames</li> <li>• Supports IEEE 802.1p QoS (4 Queues, Strict Mode), Port mirroring.</li> </ul>	
3	Port for 802.3x flow control. IEEE 802.3x: Pause Frames/Flow Control.	
4	802.1D spanning tree control/STP/RSTP SupPort, spanning-tree Port Fast guard for fast convergence or similar. <ul style="list-style-type: none"> <li>• Compatible with Per-VLAN Spanning Tree Plus (PVST+), IEEE 802.1s: Multiple Spanning Tree Protocol (MSTP)</li> </ul>	

<p>5</p>	<p>Management features like Web-based GUI, SNMP V2, V3, TFTP Client, VRRP, Radius Authentication, WebAgent , System Log, DHCP/BootP Client. Dual Images and Optical Transceiver Digital Diagnostic Monitoring including threshold TX RX. Radius and TRTAcacs+ authentication.</p> <ul style="list-style-type: none"> <li>• Web-based GUI (supports IPv4/v6)</li> <li>• Command Line Interface (CLI)</li> <li>• Telnet server/client</li> <li>• TFTP client</li> <li>• FTP client (supports IPv4)</li> <li>• ZModem</li> <li>• Command logging</li> <li>• SNMP v1/v2c/v3 (supports IPv4)</li> <li>• SNMP Traps</li> <li>• System log</li> <li>• SMTP (supports IPv4)</li> <li>• RMON v1:             <ul style="list-style-type: none"> <li>- Supports 1, 2, 3, 9 groups</li> </ul> </li> <li>• RMON v2:             <ul style="list-style-type: none"> <li>- Supports Probe Config group</li> </ul> </li> <li>• 802.1AB LLDP             <ul style="list-style-type: none"> <li>- LLDP-MED</li> </ul> </li> <li>• BootP/DHCP client (supports IPv4)</li> <li>• DNS client</li> <li>• DHCP auto-configuration             <ul style="list-style-type: none"> <li>- Supports Option 6, 66, 67, and 150</li> </ul> </li> <li>• DHCP auto-image</li> <li>• DHCP relay             <ul style="list-style-type: none"> <li>- DHCP relay Option 60, 61, and 82</li> <li>- DHCP client Option 12</li> </ul> </li> <li>• PPPoE circuit-ID tag insertion</li> <li>• Multiple image</li> <li>• Flash file system</li> <li>• CPU monitoring</li> <li>• Memory monitoring</li> <li>• SNTP (supports IPv4)</li> <li>• Debug command</li> <li>• Password recovery</li> <li>• Password encryption</li> <li>• Ping</li> <li>• Traceroute</li> <li>• Microsoft® NLB (Network Load Balancing) support (supports IPv4)</li> <li>• Zero Touch Provisioning (ZTP)</li> <li>• Flow</li> <li>• (DNA)</li> <li>• PD Alive</li> <li>• Protocol (DDP)</li> </ul>	
<p>6</p>	<p>802.1Q VLAN, 802.1p Priority queues. Port trunking of all Ports . Voice VLAN, VLAN 1 must be removable. Port /VLAN based statistics. Management VLAN and Native VLAN. LLDP or similar functionality on any VLAN. GVRP IEEE 802.1Q-compliant facilitating automatic (dynamic) VLAN membership configuration.</p>	

7	IEEE 802.3ad: Link Aggregation Control Protocol (LACP), Link Aggregation • 802.3ad (LACP) supPort : - Number of LAGs supPort ed: 50 - Maximum number of Port s per LAG: 4 • Tagged Port s supPort in LAG • Uplink failure detection.	
8	Identification and filtering of L2/L3/L4 based ACL	
9	Console Port, Telnet, SSH, based managements.	
10	IEEE 802.1ad Q-in-Q tunnelling, DHCP snooping , DHCP Option 82	
11	at least 8000 entries in the MAC table. • MAC limiting , Allowed MAC addresses—configurable per Port.	
12	IGMP Snooping, IGMP v1/v2/v3 awareness Snooping, SupPort s 64 Groups & IGMP Snooping Querier [Multicasting].	
13	IEEE 802.3af & IEEE 802.3at on Ethernet Port s & Min.	
14	security features like SSL (HTTPS), Broadcast/Multicast/ Unicast Storm Control, DoS Attack Prevention. Port isolation, Port security, IP+ MAC+ Port binding.	
15	Quality Of Service (QoS) like Priority Queue, Class of Service (CoS), Rate Limiting (Bandwidth Control), Strict Priority Queue (SPQ), Weighted Round Robin (WRR).	
16	IPV4 + IPV6 dual stack configuration. Static routing, • Maximum number of IPV4 unicast routes in hardware: 250 prefixes, Maximum number of ARP entries: 1,000	
17	Rack mountable clams for standard 19/42U Rack inch Rack for each item.	
18	Operating Temperature of the be min -0 to 50 °C (23 to 113 °F).	
19	Storage Temperature of the be min -40 to 70 °C (14 to 158 °F).	
20	AC Power Supply 100 to 240 V AC with 50 to 60 Hz and equipped with 3 pin plug OR DC Power supply -48V + 10% variation, 100W PoE Power Budget.	
21	Surge Protection to ± 2 kV (line-earth) and ± 1 kW, (line-line) on Power input and Surge Protection to ± 2kV on Ethernet Ports.	
22	"OEM be having valid ISO 9000 & ISO 14000 certification on the date of opening of bid" OR "OEM figured in latest Gartner Report in field of Ethernet Switches".	
23	EMI CERTIFICATE of FCC/IC / CE.	
24	SAFETY CERTIFICATE of UL	
25	Operations, Administration, and Management (OAM) • Cable diagnostics • 802.3ah Ethernet Link OAM • Dying Gasp • 802.1ag Connectivity Fault Management (CFM) • Y.1731 OAM	

**SOR-18 Managed L2 Switch Type-II : L2 Access Switch (24 Nos. 10/100/1000 Ethernet Ports + 4 Nos. of SFP+ based 10 GE Ports:**

Sr. No.	Description	Compliance. (Y/N)
1	24 Number of Access /Downlink 10/100/1000 Base-T Ports , +4 Number of Multi-Gigabit Port s ( 10 G SFP+ Port (Uplink) LED Based	
	At least 128Gbps Switching Fabric. • Fragment-Free Switching Auto MDI/MDIX crossover for all ports Secure store-and-forward switching scheme	
	Full/half-duplex for Ethernet/Fast Ethernet speeds IEEE 802.3x Flow Control Supports 9,216 bytes Jumbo Frames Supports IEEE 802.1p QoS (4 Queues, Strict Mode), Port mirroring.	

2	<p>At least 128Gbps Switching Fabric. • Fragment-Free Switching                  Auto MDI/MDIX crossover for all ports                  Secure store-and-forward switching scheme                  Full/half-duplex for Ethernet/Fast Ethernet speeds                  IEEE 802.3x Flow Control                  Supports 9,216 bytes Jumbo Frames                  Supports IEEE 802.1p QoS (4 Queues, Strict Mode), Port mirroring.</p>	
3	<p>PoE with min. 370W PoE Power Budget.</p>	
4	<p>Port Trunking of at least 4 Nos. 10GE Port s.</p>	
5	<p>Syslog, Radius Authentication, WebAgent</p>	
6	<p>Web management GUI, VRRP, CLI, Telnet, TFTP, SNMPv1, SNMPv2/V2C, SNMPv3, NTP, Open flow 1.3, RMON, SSHv2, Single IP Management, DLDP/ UDLD. Optical Transceiver Digital Diagnostic Monitoring including threshold TX RX. It Port /VLAN based statistics. •                  Web-based GUI (supports IPv4/v6)                  • Command Line Interface (CLI)                  • Telnet server/client                  • TFTP client                  • FTP client (supports IPv4)                  • ZModem                  • Command logging                  • SNMP v1/v2c/v3 (supports IPv4)                  • SNMP Traps                  • System log                  • SMTP (supports IPv4)                  • RMON v1:                  - Supports 1, 2, 3, 9 groups                  • RMON v2:                  - Supports Probe Config group                  • 802.1AB LLDP                  - LLDP-MED                  • BootP/DHCP client (supports IPv4)                  • DNS client                  • DHCP auto-configuration                  - Supports Option 6, 66, 67, and 150                  • DHCP auto-image                  • DHCP relay                  - DHCP relay Option 60, 61, and 82                  - DHCP client Option 12                  • PPPoE circuit-ID tag insertion                  • Multiple image                  • Flash file system                  • CPU monitoring                  • Memory monitoring                  • SNTP (supports IPv4)                  • Debug command                  • Password recovery                  • Password encryption                  • Ping</p>	
	<p>• Traceroute                  • Microsoft® NLB (Network Load Balancing) support (supports IPv4)</p>	

	<ul style="list-style-type: none"> <li>• Zero Touch Provisioning (ZTP)</li> <li>• sFlow</li> <li>• Network Assistant (NA)</li> <li>• PD Alive</li> <li>• Discovery Protocol (DP)</li> </ul>	
7	802.1Q VLAN, LACP, STP, MSTP, RSTP, VLAN Layer 2 Protocols.	
8	Basic Layer-3 Protocol from day 1: Static Routing, RIPv1, RIPv2, BGP, OSPFv2, OSPFv3, RIPng, PBR	
9	Layer-3 Protocol from day 1: OSPFv2, OSPFv3, PBR, BGP, BGP4, IS-IS, IS-ISv6, PIM-SM, PIM-SSM, PIM-DM	
10	SupPort Layer-3 Protocol from day 1: MPLS, BGP, BGP4, IS-IS, IS-ISv6, PIM-SM, PIM-SSM, VRF Lite, VRF, PIM-DM, VRRP	
11	Security features: RA Guard, DHCP Snooping, Dynamic ARP Inspection, ACL, 802.1x, RADIUS/ TACACS, Port Security, BPDU Guard, VRF Lite, IGMP snooping	
12	SSH/Telnet Management Port and Console Port (RJ 45/RS 232/USB)	
13	Minimum RAM 1024 MB.	
14	Minimum Flash Memory 1024 MB.	
15	Minimum 12K MTU	
16	Redundant Power supply (i) AC Power Supply 100 to 240 V AC with 50 to 60 Hz , ii) -48V DC supply	
17	At least 64000 entries in the MAC table.	
18	Minimum 4,000 Number of VLAN / VLAN IDs	
19	Minimum 10,000 IPv4 routing table	
20	Minimum 5,000 IP v6 routing table	
21	Minimum 95.24 MBPS Throughput / Forwarding Performance (MPPS)	
22	Quality of Service (QoS) features viz: 802.1p, SP, Queues per Port , WRED/ WTD, Sflow, NTP, Policing / Rate Limiting	
23	IPV6 ready from day1 "OEM a : i) valid ISO 9000 & ISO 14000 certification on the date of opening of bid" or ii) figured in latest Gartner RePort in field of Ethernet Switches"	
24	Comply to following performance parameters: i) Operating Temperature - min -5 to 50 °C , ii) Minimum Operating Humidity (%RH) 10 - 95	
25	EMI CERTIFICATE of FCC/IC /CE	
26	SAFETY CERTIFICATE of UL	
27	The operating system of the Switches series/family shall have MEF-9 & 14 or higher certification from authorized agencies	
28	Minimum onsite warranty of 3 years	
29	ERPS protocol. ITU-T G.8032 v1 & v2, Sub Ring.	
30	Flex Link.	
31	6kv surge for Ethernet Port s	
32	Operations, Administration, and Management (OAM) • Cable diagnostics • 802.3ah Ethernet Link OAM • Dying Gasp • 802.1ag Connectivity Fault Management (CFM) • Y.1731 OAM	

**SOR-19 : Managed L2 Switch Type-III : L2 Switch (24 GE SFP Ports + 4 Nos. of SFP+ based 10 GE Ports):**

Sr. No.	Description	Compliance. (Y/N)
1	24 x GE SFP based Ports. +4 Nos. SFP+ based 10 GE Ports.	
2	At least 128Gbps Switching Fabric. • Fragment-Free Switching Auto MDI/MDIX crossover for all ports Secure store-and-forward switching scheme Full/half-duplex for Ethernet/Fast Ethernet speeds IEEE 802.3x Flow Control Supports 9,216 bytes Jumbo Frames Supports IEEE 802.1p QoS (4 Queues, Strict Mode), Port mirroring.	
3	Port Trunking of at least 4 Nos. GE/10GE Port s. Must SupPort 802.1Q VLAN, 802.1p priority queues. . VLAN 1 must be removable. LLDP or similar functionality on any VLAN.	
4	SuPort Port for 802.3x flow control.	
5	802.1D spanning tree control/STP/RSTP/MSTP parameter. Spanning-tree Port Fast guard for fast convergence or similar functionality.	
6	Management features viz. Web-based GUI, VRRP,SNMP V2,V3, TFTP Client, System Log, DHCP/BootP Client & Dual Images along with Optical Transceiver Digital Diagnostic Monitoring including threshold TX RX. • Web-based GUI (supports IPv4/v6) • Command Line Interface (CLI) • Telnet server/client • TFTP client • FTP client (supports IPv4) • ZModem • Command logging • SNMP v1/v2c/v3 (supports IPv4) • SNMP Traps • System log • SMTP (supports IPv4) • RMON v1: - Supports 1, 2, 3, 9 groups • RMON v2: - Supports Probe Config group	
7	• 802.1AB LLDP - LLDP-MED • BootP/DHCP client (supports IPv4) • DNS client • DHCP auto-configuration - Supports Option 6, 66, 67, and 150 • DHCP auto-image • DHCP relay - DHCP relay Option 60, 61, and 82 - DHCP client Option 12 • PPPoE circuit-ID tag insertion • Multiple image	

	<ul style="list-style-type: none"> <li>• Flash file system</li> <li>• CPU monitoring</li> <li>• Memory monitoring</li> <li>• SNTP (supports IPv4)</li> <li>• Debug command</li> <li>• Password recovery</li> <li>• Password encryption</li> <li>• Ping</li> <li>• Traceroute</li> <li>• Microsoft® NLB (Network Load Balancing) support (supports IPv4)</li> <li>• Zero Touch Provisioning (ZTP)</li> <li>• sFlow</li> <li>• Network Assistant (NA)</li> <li>• PD Alive</li> <li>• Discovery Protocol (DP)</li> </ul>	
8	Auto MDI-II/MDI-X uplink for all the twisted pair Port s.	
9	Port mirroring. jumbo frame. (9216 Byte)	
10	Console Port and Telnet/SSH based management.	
11	At least 16000 entries in the MAC table.	
12	Min. 64 Groups : i) IGMP Snooping, ii) IGMP v1/v2/v3 awareness Snooping, iii) IGMP Snooping Querier[multicasting].	
13	Port -based VLAN, 802.1Q Tagged VLAN & Voice VLAN along with Management VLAN and Native VLAN.	
14	ITU-T G.8032 Ethernet Ring Protection designed for loop protection and fast convergence times (sub 50 ms) in ring topologies.	
15	: i) Surge protection of ± 2 kV (line-earth) and ± 1 kV (line-line) on Power. input and ii) Surge protection of ± 2 kV on Ethernet Port s.	
16	<p>Security features viz.: i) SSL (HTTPS), ii) Broadcast/Multicast/Unicast Storm Control,iii) DoS Attack Prevention, • SSH v1/v2</p> <ul style="list-style-type: none"> <li>• SSL v1/v2/v3</li> <li>• Port Security <ul style="list-style-type: none"> <li>- Up to 64 MAC addresses per port</li> </ul> </li> <li>• Broadcast/multicast/unicast storm control</li> <li>• IP-MAC-Port Binding (IMPB) <ul style="list-style-type: none"> <li>- ARP inspection</li> <li>- IP inspection</li> <li>- DHCP snooping</li> <li>- DHCPv6 snooping</li> <li>- DHCPv6 Guard</li> <li>- IPv6 Route Advertisement (RA) Guard</li> <li>- IPv6 ND snooping</li> <li>- IPv6 ND inspection</li> </ul> </li> <li>• Traffic segmentation</li> <li>• Safeguard Engine</li> <li>• L3 control packet filtering</li> <li>• NetBIOS/NetBEUI filtering</li> <li>• DHCP server screening</li> <li>• DHCP client filtering</li> <li>• ARP spoofing prevention</li> <li>• BPDU attack protection</li> <li>• DoS attack prevention</li> </ul>	

17	Quality Of Service (QoS) features viz.: i) Priority Queue, ii) Class of Service (CoS), iii) Rate Limiting (Bandwidth Control), iv) Strict Priority Queue (SPQ), v) Weighted Round Robin (WRR) or better	
18	IPv4+IPv6 dual stack configuration & working	
19	Comply to following Temperature performance parameters : I) Operating Temperature - min -0 to 50 °C (23 to 122 °F), II) Storage Temperature - min -40 to 70 °C (-40 to 158 °F)	
20	"OEM a :i) valid ISO 9000 & ISO 14000 certification on the date of opening of bid" or ii) figured in latest Gartner Report in field of Ethernet Switches"	
21	EMI CERTIFICATE of FCC/IC /CE	
22	SAFETY CERTIFICATE of UL	
23	The operating system of the Switches series/family shall have MEF-9 & 14 or higher certification from authorized agencies.	
24	Ethernet OAM compliant with IEEE 802.3ah/Y.1731. Must Support ITU-T G.8032 v1 & v2	
25	AC and DC (dual) Power supply arrangement i) AC Power Supply 100 to 240 V AC with 50 to 60 Hz ii) -48V DC supply	
26	Operations, Administration, and Management (OAM) • Cable diagnostics • 802.3ah Ethernet Link OAM • Dying Gasp • 802.1ag Connectivity Fault Management (CFM) • Y.1731 OAM	

**SOR-20 : Manager L2 Switch Type-IV : Layer-2 Access Switch with 24x10/100/1000 Mbps non PoE, 4x1G SFP port :**

SN	Specification	Compliance (Yes/No)
1	The switch should have minimum 24 x 10/100/1000 BASE-T ports, 4 x 1G (minimum) SFP ports.	
2	Switching capacity should be 56 Gbps or better; forwarding rate 41.7 MPPS or better	
3	Should have support for 802.3x flow control.	
4	Should support 802.1D spanning tree control / RSTP support, flow or netflow.	
5	Should support management features like Web-based GUI, SNMP, TFTP Client, System Log, DHCP/BootP.	
6	Should support Auto MDI-II/MDI-X uplink for all the twisted pair ports.	
7	Should support 802.1Q VLAN, 802.1p Priority queues.	
8	Should support port mirroring.	
9	Should support jumbo frame.	
10	Should support console port or telnet and web GUI based management.	
11	Should have AC power supply arrangement as given below in chassis without any external adaptors with redundant power supply (RPS): AC power supply 100 to 240 V AC with 50 to 60 Hz.	

12	Should support 16000 entries in MAC table.	
13	Should support Port-based VLAN, 802.1Q Tagged VLAN & Voice VLAN along with ManagementVLAN.	
14	Should support spanning-tree root guard or similar functionality.	
15	Should support spanning-tree Port Fast guard for fast convergence or similar functionality	
16	Should support security features like SSL (HTTPS)/SSH, Broadcast/Multicast/ Unicast StormControl, DoS Attack Prevention.	
17	Should support Quality of Service (QoS) like Priority Queue, Class of Service (CoS), Rate Limiting (Bandwidth Control), Strict Priority Queue (SPQ), Weighted Round Robin (WRR)/ Shaped Round Robin (SRR).	
18	IPv6 feature should be ready from day 1.	
19	Switch shall be with Rack Mountable clamps for standard 19-inch rack mountable.	
20	Minimum Operating Temperature 0 to 50 degree.	
21	Switch should support LLDP or similar functionality.	
22	Switch should have EMI CERTIFICATE as per EN/FCC/IC/CE.	
23	Switch should have SAFETY CERTIFICATE as per UL/ IEC/EN 60950	
24	Switch should support following SNMP traps or syslog: <ul style="list-style-type: none"> <li>i) Interface UP &amp; Down</li> <li>ii) Optical Power SFP threshold alarms</li> <li>iii) STP Topology Changes and New root bridge</li> <li>iv) LLDP table changes</li> <li>v) Threshold alarms for Temperature</li> </ul>	
25	Should support following for min. 64 Groups: <ul style="list-style-type: none"> <li>i) IGMP Snooping,</li> <li>ii) IGMP v1/v2/v3 awareness Snooping,</li> <li>iii) IGMP Snooping Queried</li> </ul>	
	<b>Note:</b> In the specification wherever support for a feature has been asked for, it will mean that the feature should be available without RailTel requiring any other hardware/software/licenses. Thus, all hardware/software/licenses required for enabling the support/feature shall be included in the offer.	

**SOR-21 : 10KVA Online UPS:**

Sr. No.	Parameter	Specification	Compliance (Yes/No.)
1	Rating in KVA	10.0 KVA	
2	Switching Technology	IGBT-PWM	
3	Input Voltage	AC Three phase 300 V - 450V sinewave 50Hz	
4	Output Voltage	AC Single phase 230V +/-1% 50 Hz	
5	Warranty for UPS (Years)	3 years	
6	Battery/Backup Bank Provided with Online UPS	With Battery	
7	Type of Battery	SMF-VRLA conforming to JISC:8702(Pt.I,II&III), Stationary Lead Acid Batteries (with tubular positive plates) in monobloc container conforming to IS:13369:1992 latest	
8	Backup time (Minutes)	180 Minutes	
9	Minimum Guaranteed VAH	1600 X Per KVA X Per hour of backup time	
10	Warranty for battery (Years) by Battery Manufacturer/ Brand	2 Years	
11	Accessories with Battery	Battery Rack, Cable 6 Mtr. (3 mtr. For input and 3 mtr. for output)	
12	Installation and Commissioning	Not Included	
13	After sales service ( Turn Around Time)	Within 48 hours	
14	Preventive Maintenance	Quarterly	
15	Other Services provided	support on 24 x 7 basis	
16	Inbuilt isolation transformer	With	
17	Overall Efficiency (%)	>/=80%	
18	Overload limit	20% Overload for minimum 5 minute, 50% Overload for minimum 1 minute, 50% Overload for minimum 3 seconds	
19	Total Harmonic Distortion(THD) (%)	3% Maximum @ 100% Linear Load	
20	Other Functional Features	Crest factor on full non-linear load is not less than 3:1,Noise level (1 meter distance from UPS) should be less than 70dB	
21	Accessories	Cabling 6 meters ( input upto 3m and output upto 3m),Rack for Batteries	

22	Protection	Protection for under voltage at battery terminal, Protection of Over voltage, Short Circuit & over load at UPS output terminal, Over temperature protection	
23	Metering	Input Voltage, Output Voltage, Input Current, Output Current, Input Frequency, Output Frequency, Input Power, Output Power, Input Power Factor, Output Power Factor, Battery Voltage and Current	
24	Alarms and Indications	Indicator for Mains presence, Alarm for Low Battery	
25	Additional Features	Pure Sinewave AC Output	
26	Type of Design / Construction	Floor Standing	
27	Enclosure (mm)	1.20 mm Minimum Thickness of M.S. Sheet duly powder coated	
28	Degree of Protection	IP20	
29	Other Constructional Features	Mains ON/OFF MCB	
30	Minimum Operating Temperature	0 degree Celsius	
31	Maximum Operating Temperature	45 degree Celsius	
32	Relative Humidity Non Condensing at 40 deg C	90 percent	
33	Battery Test Report	Type Test Report as per relevant governing specifications from Govt. Lab/NABL accredited lab	
34	Intended Applications	Critical Infrastructure, Network IT Equipment, Support for Data Centres, Network operating centres, Security operation centres, Command and Control centre etc.,	
35	Other Requirements	ROHS compliance, KW rating shall be 0.8 time of KVA rating.	
36	Agree to provide all relevant documents Test Reports/supporting document /reports etc. to the buyer at the time of bidding or on demand	Yes	
37	As per Meity (Government of India) guidelines UPS shall have valid BIS CRS certifications as applicable	Yes (For UPS rating upto 10KVA)	

**SOR-22 : 3 KVA Online UPS:**

Srl. No.	Parameter	Specification	Compliance (Yes/No.)
1	Rating in KVA	3.0 KVA	
2	Switching Technology	IGBT-PWM	
3	Input Voltage	AC Single phase 160V - 260V 50Hz	
4	Output Voltage	AC Single phase 230V +/-1% 50 Hz	
5	Warranty for UPS (Years)	3 years	
6	Battery for Backup Bank	with Battery	
7	Type of Battery	SMF-VRLA conforming to JISC:8702(Pt.I, II&III), Stationary Lead Acid Batteries (with tubular positive plates) in monobloc container conforming to IS:13369:1992 latest	
8	Backup time (Minutes) (hint: NA in case battery not provided)	60 Minutes	
9	Minimum Guaranteed VAH	1600 X Per KVA X Per hour of backup time	
10	Warranty for battery (Years) by Battery manufacturer/ Brand	2 years	
11	Installation and Commissioning or Service	Not required	
12	After sales service ( Turn Around Time)	Within 48 hrs.	
13	Preventive Maintenance	Quarterly	
14	Other Services provided	Service support on 24 x 7 basis	
15	Inbuilt isolation transformer	With	
16	Overall Efficiency (%)	90% or better	
17	Overload limit	20% Overload for minimum 10 minutes	
18	Total Harmonic Distortion (THD) (%)	3% Maximum @ 100% Linear Load	
19	Other Functional Features	Noise level (1 meter distance from UPS) should be less than 70dB, Input power factor at full output load leading to unity with active power factor correction (APFC) >/=0.92	
20	Accessories	Cabling 6 meters ( input upto 3m and output upto 3m)	
21	Protection	Protection for under voltage at battery terminal, Protection of Over voltage, Short Circuit & over load at UPS output terminal, Over temperature protection	
22	Metering	Input Voltage, Output Voltage, Input Frequency, Output Frequency, Input Power, Output Power, Input Power Factor, Output Power Factor	

23	Alarms and Indications	Indicator for Mains presence, Indicator for Battery charging and discharging, Indicator for Output Over Load with Audible Alarm, Indicator for Low Battery Voltage with Audible Alarm, Alarm for Over temperature, Alarm for Low Battery	
24	Type of Design / Construction	Floor Standing	
25	Enclosure (mm)	1.2 mm Minimum Thickness of M.S. Sheet duly powder coated	
26	Degree of Protection	IP20	
27	Other Constructional Features	Static by pass facility, Shall be complete with rack rail kit for mounting of UPS in the rack and shall be housed in rugged enclosure made of steel sheet having 1.2 mm (minimum) thickness, aesthetically finished, duly pre-treated and powder coated, UPS shall be free from workmanship defects, sharp edges, nicks, scratches, burst, etc. All fasteners shall be fixed properly. The equipment shall be complete with all parts and all parts shall be functional	
28	Minimum Operating Temperature	0 degree Celsius	
29	Maximum Operating Temperature	40 degree Celsius	
30	Relative Humidity Non Condensing at 40 deg C	90 percent	
31	Battery Test Report	NA	
32	Intended Applications	Critical Infrastructure, Network IT Equipment, Support for Data Centres, Network operating centers, Security operation centers etc.	
33	Other Requirements	ROHS compliance, KW rating shall be 0.8 time of KVA rating	
34	As per Meity (Government of India) guidelines UPS shall have valid BIS CRS certifications as applicable	Yes (For UPS rating upto 10KVA)	

**SOR-23: ROUTER TYPE-I:**

Sr. No.	Technical Specification		Compliance Yes/No
1	Console	1	
2	USB2.0	1	
3	WAN	2xGE-TX & 2xGE SFP	
4	LAN	8xGE-TX	
5	RST	1	

6	Encryption Engine	Built-in	
7	Throughput	3MPPS	
8	Flash	32MB	
9	DRAM	1GB	
10	NAT Concurrent Sessions	<300K	
11	Full Load	≤31W	
12	Power Supply	100-240VAC	
13	LAN	ARP, ARP proxy, Gratuitous ARP	
14	WAN	PPP, PPPoE (Client/Server)	
15	Routing	Static route, default route	
		RIPv1/v2, OSPFv2, BGPv4,IS-IS	
		Fast Switch, Load-Balance	
		PBR (Policy Based Routing)	
16	Multicast	IGMP V1,V2,V3	
		PIM-DM, PIM-SM	
17	IPv6	IPv6 ND, IPv6 PMTU, IPv6 FIB, IPv6 ACL, IPv6 (authenticate through IPv6 Phasell)	
		IPv6 QoS	
		IPv6 transition: NAT-PT, IPv6 tunnel, 4over6	
		IPv6 tunnel: IPsec v6, GRE, 6to4,	
		ISATAP	
		IPv6 route: IPv6 static route, RIPng, OSPFv3, BGP4+	
18	MPLS	VPLS, MP-BGP, VRF	
		L2VPN, L3VPN	
19	IP Service	ICMP, TCP, UDP, IP Option	
		NAT, PAT, Port-MAP, Private- Service, ALG	
		Ping, Trace Route, Nslookup	
		IP ACL, IMP filter, Fast-Access	
		DHCP Client/Serv/Relay	
		DNS, DNS host, DNS Proxy, DDNS (Peanut Hull/DynDNS/CTC)	
		Helper-Address, UDP Helper	
		IP unnumber, DDR	
		Keep alive, PDP (compatible with CISCO)	
		NetFlow, IP Accounting, IP SLA	
		TFTP Client/Serv, FTP Client	
		SNTP/NTP, job/schedule	
		PNP	
		ALIAS	
		Reverse telnet, VTY binding	
20	Switching	802.1p CoS, 802.IQ VLAN	
		STP, RSTP	
		Keep alive, port mirror, broadcast/ multicast storm control	

		PTP, IEEE1588v2 (Optional)	
21	Network Safety	Authentication, Authorization, Accounting	
		enable, local, Radius, Tacacs+	
		PAP, CHAP, MS-CHAP	
22	Network Security	ACL, NAT	
		ASPF state detection	
		SYN flood, UDP flood or ICMP flood	
		ARP attack protection, ARP-SCAN and DHCP-Snooping	
		Prevention of Ping of Death, Tear-drop, Land-Based, WinNuke, PingSweep, ARP attack and IP-Spoofing	
		IKE, IPsec, DMVPN, EZVPN	
		L2TP, PPTP, GRE, EoGRE	
		VPN Stacking	
23	Reliability	Interface backup	
		Route backup	
		E-Backup, Keep alive Ethernet remote monitoring	
		VRRP, HSRP	
		Bandwidth based load sharing and backup	
		Traffic based load balancing and backup	
		BFD for RIP, OSPF, BGP, MPLS and VRRP	
24	QOS	FIFO, PQ, CQ, WFQ, CBWFQ	
		WRED/RED	
		GTS (Generic Traffic Shaping)	
		GBSC, Layer7filter	
		ACL	
		IP Precedence	
		DSCP	
		MAC	
		802.1p	
25	Management	Console, Telnet, SSH,HTTP/HTTPS,SSL	
		SNMP V1/V2/V3, SYSLOG, RMON, ZTP	
26	Operating Temperature	-10°C~50°C	
27	Operating Humidity	10%~85% (non-condensing)	
28	Storage Temperature	-40°C~85°C	
29	Storage Humidity	10%~95% (non-condensing)	

**SOR-24: ROUTER TYPE-II :**

Sr. No.	Technical Specification		Compliance Yes/No
1	Console	1	
2	USB2.0	1	
3	WAN	4xGE-TX & 4xGE SFP	
4	RST	1	
5	Encryption Engine	Built-in	
6	Throughput	5MPPS	
7	Flash	32MB	
8	DRAM	1GB	
9	NAT Concurrent Sessions	<350K	
10	Full Load	≤15W	
11	Power Supply	100-240VAC (1+1) Power Backup	
12	LAN	ARP, ARP proxy, Gratuitous ARP	
13	WAN	PPP, PPPoE (Client/Server)	
14	Routing	Static route, default route	
15		RIPv1/v2, OSPFv2, BGPv4,IS-IS	
16		Fast Switch, Load-Balance	
17		PBR (Policy Based Routing)	
18	Multicast	IGMP V1,V2,V3	
19		PIM-DM, PIM-SM	
20	IPv6	IPv6 ND, IPv6 PMTU, IPv6 FIB, IPv6 ACL, IPv6 (authenticate through IPv6 Phasell)	
21		IPv6 QoS	
22		IPv6 transition: NAT-PT, IPv6 tunnel, 4over6	
23		IPv6 tunnel: IPSec v6, GRE, 6to4,	
24		ISATAP	
25		IPv6 route: IPv6 static route, RIPng, OSPFv3, BGP4+	
26	MPLS	VPLS, MP-BGP, VRF	
27		L2VPN, L3VPN	
28	IP Service	ICMP, TCP, UDP, IP Option	
29		NAT, PAT, Port-MAP, Private- Service, ALG	
30		Ping, Trace Route, Nslookup	
31		IP ACL, IMP filter, Fast-Access	
32		DHCP Client/Serv/Relay	
33		DNS, DNS host, DNS Proxy, DDNS (Peanut Hull/DynDNS/CTC)	
34		Helper-Address, UDP Helper	
35		IP unnumber, DDR	
36		Keep alive, PDP (compatible with CISCO)	
37		NetFlow, IP Accounting, IP SLA	

38		TFTP Client/Serv, FTP Client	
39		SNTP/NTP, job/schedule	
40		PNP	
41		ALIAS	
42		Reverse telnet, VTY binding	
43	Switching	802.1p CoS, 802.IQ VLAN	
44		STP, RSTP	
45		Keep alive, port mirror, broadcast/ multicast storm control	
46		PTP, IEEE1588v2 (Optional)	
47	Network Safety AAA	Authentication, Authorization, Accounting	
48		enable, local, Radius, Tacacs+	
49		PAP, CHAP, MS-CHAP	
50	Network Security	ACL, NAT	
51		ASPF state detection	
52		SYN flood, UDP flood or ICMP flood	
53		ARP attack protection, ARP-SCAN and DHCP-Snooping	
54		Prevention of Ping of Death, Tear-drop, Land-Based, WinNuke, PingSweep, ARP attack and IP-Spoofing	
55		IKE, IPsec, DMVPN, EZVPN	
56		L2TP, PPTP, GRE, EoGRE	
57		VPN Stacking	
58	Reliability	Interface backup	
59		Route backup	
60		E-Backup, Keep alive Ethernet remote monitoring	
61		VRRP, HSRP	
62		Bandwidth based load sharing and backup	
63		Traffic based load balancing and backup	
64		BFD for RIP, OSPF, BGP, MPLS and VRRP	
65	QOS	FIFO, PQ, CQ, WFQ, CBWFQ	
66		WRED/RED	
67		GTS (Generic Traffic Shaping)	
68		GBSC, Layer7filter	
69		ACL	
70		IP Precedence	
71		DSCP	
72		MAC	
73		802.1p	

74	Management	Console, Telnet, SSH,HTTP/HTTPS,SSL	
75		SNMP V1/V2/V3, SYSLOG, RMON, ZTP	
76	Operating Temperature	-10°C~50°C	
77	Operating Humidity	5%~95% (non-condensing)	
78	Storage Temperature	-40°C~85°C	
79	Storage Humidity	5%~95% (non-condensing)	

**SOR-25: FIREWALL:**

Sr. No.	Technical Specification		Compliance Yes/No
1	Type	NGFW	
2	Form Factor (RU)	1	
3	Features (Multiple Selection)	Layer 3-Layer 4, NAT, VPN, Application Visibility and Control (AVC), User Identity, Next Generation Intrusion Prevention System (IPS), Web Security Essentials/URL Filtering.	
4	Throughput with all features enabled (Under Test Condition) (Mbps)	2300	
5	Throughput (Real World/Prod Performance)(Under Test Condition) (Mbps)	2300	
6	Should have 2.5 Gbps of NGFW throughput	Yes	
7	Concurrent Session/Concurrent Connection	5M	
8	New session/ Connection per second	68K	
9	If Yes, High Availability from day 1 (Multiple Selection)	NA	
10	OEM Warranty (Year)	1	
11	Packet Size (KB)	1024	
12	Number of 1GE Copper interface, 2.5 GbE copper interface.	12	

13	OPTIONAL Facility ADD-ON MODULES 3G/4G module 5G module	Yes	
14	1 x COM RJ45 1 x Micro-USB (cable incl.) 1 x USB 2.0 (front) 1 x USB 3.0 (rear)	Yes	
15	Power-over-Ethernet (fixed)	02 nos	
16	Number of GE Small Form-Factor Pluggable (SFP) interface	2	
17	Number of Lan /WAN Ports	8	
18	Number of Ipv4 VPN Peers supported (Site to Site)	1100	
19	Number of Ipv4 VPN Peers supported (Client to Site)	1100	
20	Number of SSL VPN Peers supported (Client to Site)	300	
21	Type of Storage Disk	SSD	
22	Storage Capacity (GB)	64	
23	Solution should have dual antimalware scanning engine for better security	Yes	
24	Power Supplies (Multiple Selection)	Dual	
25	Type of Processor (Multiple Selection)	x86	
26	High Availability Support (Multiple Selection)	Yes	
27	Interface Expansion slots supported	Yes	
28	Should have Dual processor architecture with minimum 6 GB of RAM & dedicated Marvel NPU with 4 GB RAM for hardware acceleration	Yes	
29	Optional Features facility in hardware for future uses depends on future availability of subscription.	Layer 3-Layer 4, NAT, VPN, Application Visibility and Control (AVC), User Identity, Next Generation Intrusion Prevention System (IPS), Web Security Essentials/URL Filtering.	

30	NGIPS Signature supported	5000	
31	Security Intelligence (Multiple Selection)	IP, URL, Domain	
32	Certification (Multiple Selection)	Common Criteria/NDPP/NSS/ICSALabs	
33	Minimum Operating Temperature (Degree C)	0	
34	External auto-ranging AC-DC 100-240VAC, 2.5A@50-60 Hz 12VDC, 12.5A, 150W Optional second redundant power supply	Yes	
35	Maximum Operating Temperature (Degree C)	40	
36	Minimum Operating Humidity (%RH)	10	
37	Maximum Operating Humidity (%RH)	90	
38	IPv6 Ready from day 1 (Multiple Selection)	Yes	
39	OEM should be present in Gartner MQ for Enterprise Firewall & FIPS Certified	Yes	
40	OEM AOUTORIZATION MAF	Yes	

**SOR-26: POE INJECTOR:**

Sr. No.	Technical Specification	Compliance Yes/No
1	Plug and play non configurable 1 port Gigabit PoE Injector:	
2	i) Ethernet IEEE802.3af/at	
3	ii) Voltage boost up to 55VDC for PoE	
4	iii) Power output upto 30W	
5	iv) Distance supportable upto 100mtrs.	
6	v) LAN Port: 10/100/1000Mbps Auto-Negotiation RJ45 LAN port (LAN In), (1) 10/100/1000Mbps Auto-Negotiation RJ45 PoE port (Power + Data Out), (1) power socket (DC In), auto negotiation	
7	vi) Power Supply: AC Adapter 230v. 1 mtrs, Cat6 cable with both ends terminated on Rj45 connector.	

**SOR-27: WIRELESS ACCESS POINT:**

Srl. No.	Technical specification
<b>Hardware Parameters:</b>	
1	Access Points proposed must include radios for both 2.4 GHz and 5 GHz.
2	Must have a robust design for durability, without visible vents
3	Must include dual band antennas to support both the 2.4GHz and 5GHz operations simultaneously.
4	Proposed access point shall support MDO( Mobile Data offload)
5	Mounting kit should be standard which shall be used for mounting access point
6	Must support operating humidity of 10 to 90% (noncondensing)
<b>Wireless Standard Parameters:</b>	
1	Must support 2X2 multiple-input multiple-output (MIMO) with TWO spatial streams
2	Must support simultaneous 802.11n on both the 2.4 GHz and 5 GHz radios and must support 802.11ac Wave 2 on 5 GHz .
3	Must support data rates upto 800 Mbps on 5Ghz radio and 140mbps on 2.4Ghz radio.
4	Must support 40 MHz and 80 MHz wide channels in 5 GHz.
5	Antenna Gain of Access Points must be +2dBm or better.
	Must support following minimum transmit power for both 2.4Ghz and 5Ghz radios.
	(i) 2.4-Ghz band : +21dBm
	(ii) 5.0-Ghz band: +24dBm
6	AP should support VLAN trunking (802.1q) and VLAN based SSID for user traffic.
<b>RF Parameters:</b>	
1	The Wireless AP should have the technology to improve downlink performance.
2	The AP shall be able to load-balance between 2.4Ghz and 5Ghz band.
3	Must have -90dB to -100dB or better Receiver Sensitivity.
4	Must incorporate radio resource management for power, channel, coverage hole detection and performance optimization
5	Should support configurable carrier sense threshold
<b>Mesh Parameters:</b>	
1	The Wireless Backhaul shall operate in 5Ghz
2	Support Encrypted and authenticated connectivity between all backhaul components
3	Access point shall have wired uplink interfaces i.e. 1X10/100/1000BASE-T Ethernet

<b>Roaming Parameters:</b>	
1	Must support Proactive Key Caching and/or other methods for Fast Secure Roaming.
<b>Security Parameters:</b>	
1	Must support Management Frame Protection.
2	Should support locally-significant certificates on the APs using a Public Key Infrastructure (PKI) or preinstalled certs on AP for authentication
3	Provision of Wireless IPS to filter malicious traffic
<b>Encryption Parameters:</b>	
1	Access Points must support a distributed encryption/decryption model.
2	Access Points must support hardware or software based encryption
<b>Monitoring Parameters:</b>	
1	Must support the ability to serve clients or monitor the RF environment.
2	AP model proposed must be able to be both a client-serving AP and Parallely monitor- Intrusion Prevention services.
<b>Flexibility Parameters:</b>	
1	Should support mesh capabilities for temporary connectivity in areas with no Ethernet cabling.
2	Should support QoS for voice over wireless.
3	Must support Controller-based and standalone(autonomous)deployments
4	Must support 16 WLANs per AP for SSID deployment flexibility.
<b>Operational Parameters:</b>	
1	Must support telnet or SSH or console login to APs directly fortroubleshooting flexibility.
2	Must support automatic detection of dropped connection to controller,
3	Must support automatic failover to secondary controller, upon detectinglost connection to controller
4	Must support DHCP Option 82, defined in RFC 3046, including supportfor Sub-option 01 (Circuit-Id) and Sub-option 02 (Remote Id) fields.
5	With Controller APs (from a data-plane perspective) must support:
	- Ethernet over GRE IPv6 tunnel
	- Automatic detection of failed tunnel termination, with configurableconnection retry and timeout.
6	- Automatic failover to secondary tunnel termination address.
	Support for basic AP monitoring statistics for each radio: Bytes Sent, Bytes Received, Packets Sent, Packets Received,
	Radio Channel Utilization, Noise.
7	Must support data-plane split tunneling in which ACLs may be configured to enable a range of destination net blocks and/or IPs to bypass the data-plane tunnel and be bridged on the wired interface.
8	AP should have capability to split tunnel for both IPv4 and IPv6 tunnel to segregate the management and data traffic.

9	AP should have capability to split tunnel for specific destination IP/Subnet (For implementing policy based Caching solutions) using localNAT and forward user traffic.
10	The AP shall support 200 concurrent Clients per AP
11	APs shall support SNMP v1 Or higher (V2/V3)
<b>Power :</b>	
1	Must support Power over Ethernet/PoE+/UPoE/Power Injector/AC/DC .
<b>Quality of Service:</b>	
1	Shall have the support of 802.11e and WMM
2	Should be Wi-Fi Alliance certified and WPC Approved and ETA Certified
3	Must support QoS to prioritize video ,voice and Data traffic
<b>Environmental and Electrical Specifications:</b>	
1	Must support QoS and Video Call Admission Control capabilities.
2	Access point shall support powering from POE/PoE+/UPoE /Power Injector/AC/DC.
3	Access point shall support pole, wall, and roof mounting options.
4	Geographic orientation flexibility – tilt angle for pole, wall, and roofmounting units
5	The equipment shall support up to 100 MPH sustained winds & 140MPH wind gusts.
6	The Access point shall be IP67 certified.
7	The Access point shall be rated for operation over an ambient temperature range of 0C to +55 C
8	Should Support Surge Protection on Ethernet Ports to meet the requirement at High Voltage Transmission Line running across the Railway Platform. If any OEM/Bidder can't provide inbuilt surge protection in AP, external surge protection must be proposed. Surgeprotection of $\pm 2$ kV on copper Ethernet ports.

**Note:** Wireless Access Point offered should compatible with the Cisco 8540 /Ruckus VSZ-H WLC on existing MPLS network. If the vendor is offering Wireless Access Point non-compatible with above WLC non-compatible Wireless Access Point then the vendor has to supply WLC without any additional cost to RailTel.

**OFFER LETTER**

**Form No-1**

**Principal Executive Director, Eastern Region,  
RailTel Corporation of India Limited,  
19<sup>th</sup> Floor, Aurora Waterfront Building,  
Plot No. 34/1, Block GN,  
Sector-V, Salt Lake City,  
Kolkata – 700 091.**

Ref: GeM Bid No.: GEM/2024/B/4596895 Dated: 08.02.2024

1. It is hereby confirmed that we have understood the terms and conditions of the Tender, have thoroughly examined the specifications, are aware of the nature of the goods & services required and our offer is to supply goods & services strictly in accordance with the requirements, terms & conditions of this Tender. We agree to abide by the terms and conditions of the tender if the contract is awarded to us.
2. We hereby offer to supply the goods and services detailed above or such portions thereof as you specify in the purchase order at the price quoted and agree to hold this offer open for acceptance for a period of 60 days from the date of opening of the bid.
3. Online payment vide transaction No. \_\_\_ dated \_\_\_ for Rs. \_\_\_ in favor of RailTel Corporation of India Ltd, towards EMD has been paid through the details as mentioned in tender notice/ tender document. The full value of Earnest Money shall stand forfeited without prejudice to any other rights or remedies if, I/We withdraw or modify the offer within validity period or do not deposit the security deposit (Performance Bank Guarantee) within 30 days after issue of Purchase Order.

SIGNATURE OF SUPPLIER (S)

Date:

CONTRACTOR (S) ADDRESS

SIGNATURE OF WITNESS:

- 1.
- 2.

**Format of Manufacturer Authorisation form (MAF)**

**Principal Executive Director, Eastern Region,  
RailTel Corporation of India Ltd.  
19<sup>th</sup> Floor, Aurora Waterfront Building,  
Plot No. 34/1, Block GN,  
Sector-V, Salt Lake City,  
Kolkata – 700 091.**

**Subject: Manufacturer Authorisation form (MAF) to M/s ..... for .....**

**Ref: GeM Bid No. GEM/2024/B/4596895 dated:08.02.2024**

Dear Sir,

We, M/s....., are established and reputed manufacturer and service provider of .....(Product details) having our registered office at .....

We hereby authorise M/s ..... (bidder name), Office ..... to participate in the above referred bid and subsequently upon award of the bid to execute the “Supply of SFPs, Switches, online UPS Firewall, POE Injector and Wireless Access Point” our range of products against your above said bid.

We further extend our warranty for ..... years for our range of products offered by M/s .....against the above-said bid.

Thanking you,

Best regards,

**Authorised Signatory**

\*\*\*\*\*

**FORMAT BID SECURITY DECLARATION**

(On Non-judicial stamp paper of Rs. 100/-)

Whereas, I/We \_\_\_\_\_ (Name of Agency) has submitted bid for \_\_\_\_\_ (Name of Work and Tender No.) and whereas Earnest Money Deposit is being exempted in the aforesaid tender to give relief to the bidders as per Govt. of India guidelines as the bidder being \_\_\_\_\_

I/We hereby submit the following “Bid Security Declaration” in lieu of exemption from submitting Earnest Money Deposit :-

1) If I/We withdraw or modify my/our bid during the bid validity period (including extended validity of tender) specified in the tender documents;

Or

2) If, after the award of work, I/We fail to accept LOA/PO, or to sign the contract agreement or fail to submit performance guarantee or fail to commence the work within stipulated time period prescribed in tender documents;

Or

3) If I/We furnish any incorrect or false statement / information/ document;

Or

4) If I/We hide any relevant information or do not disclose any material fact in the tender;

Or

I/We may be disqualified and banned for a period of three years and shall not be eligible to bid for future tenders in RailTel Corporation of India Ltd. for the period of three years from date of issue of such orders.

(Signed by the Authorized Representative of Firm)

Name of Authorized Representative

Name of Firm

Date

**Form No.4**

**FORMAT FOR AFFIDAVIT TO BE UPLOADED BY TENDERER ALONG WITH THE TENDER DOCUMENTS**

(To be executed in presence of Public notary on non-judicial stamp paper of the value of Rs.100/-. The stamp paper has to be in the name of the tenderer)\*\*

I..... (Name and designation)\*\* appointed as the attorney/authorized signatory of the tenderer (including its constituents),  
M/s. \_\_\_\_\_ (hereinafter called the tenderer) for the purpose of the Tender documents for the work of \_\_\_\_\_ as per the tender No. \_\_\_\_\_ of (RailTel Corporation of India Ltd., Eastern Region), do hereby solemnly affirm and state on the behalf of the tenderer including its constituents as under:

- (i) I/We the tenderer (s) am/are signing this document after carefully reading the contents.
- (ii) I/we the tenderer(s) also accept all the conditions of the tender and have signed all the pages in confirmation thereof.
- (iii) I/We hereby declare that I/We have downloaded the tender documents from RailTel's website www.railtelindia.com or GeM Portal www.gem.gov.in. I/We have verified the content of the document from the website and there is no addition, no deletion or no alteration to the content of the tender document. In case of any discrepancy noticed at any stage i.e. evaluation of tenderer's, execution of work or final payment of the contract, the master copy available with the RailTel Administration shall be final and binding upon me/us.
- (iv) I/We declare and certify that I/we have not made any misleading or false representation in the forms, statements and attachments in proof of the qualification requirements.
- (v) **I/We also understand that my/our offer will be evaluated based on the documents/credentials submitted along with the offer and same shall be binding upon me/us.**
- (vi) **I/We declare that the information and documents submitted along with the tender by me/us are correct and I/we are fully responsible for the correctness of the information and documents submitted by us.**
- (vii) I/We undersigned that if the certificates regarding eligibility criteria submitted by us are found to be forged/false or incorrect at any time during process for evaluation of tenders, it shall lead to forfeiture of the tender EMD besides banning of business for five year on entire RailTel Corporation of India Limited. Further, I/we (*insert name of the tenderer*) \*\* \_\_\_\_\_ and all my/our constituents understand that my/our offer shall be summarily rejected.
- (viii) I/we also understand that if the certificates submitted by us are found to be false/forged or incorrect at any time after the award of the contract, it will lead to termination of the contract, along with forfeiture of EMD and Performance Guarantee besides any other action provided in the contract including banning of business for five year on entire RailTel Corporation of India Limited.

**DEPONENT SEAL AND SIGNATURE  
OF THE TENDERER**

VERIFICATION

I/We above named tenderer do hereby solemnly affirm and verify that the contents of my/our above affidavit are true and correct. Nothing has been concealed and no part of it is false.

**DEPONENT SEAL AND  
SIGNATURE OF THE TENDERER**

Place:

Dated:

\*\* The contents in Italics are only for guidance purpose. Details as appropriate are to be filled in suitably by tenderer. Attestation before Magistrate/Notary Public.

**Form No. 5**

**PROFORMA FOR PERFORMANCE BANK GUARANTEE BOND**

(To be in accordance with Stamp act)

**[To be used by approved scheduled commercial bank, (either Private or PSU) but not from any cooperative Bank or NBFC]**

1. In consideration of the RailTel Corporation of India Limited 19th Floor, either private or Aurora Water Front Building, GN. 34/1, Block GN, Sector-V, Salt Lake City, Bidhannagar, Kolkata-700091 (Herein after called RailTel) having agreed to exempt .....  
.....(Hereinafter called “the said Contractor(s)”) from the demand, under the terms and conditions of an Purchase Order/LOA No.....dated.....made between.....  
.....and..... for (hereinafter called “ the said Agreement”) of security deposit for the due fulfillment by the said Contractor (s) of the terms and conditions contained in the said Agreement, on production of a Bank Guarantee for Rs. ....  
.....(Rs ..... only). We ..... (indicate the name of the Bank) hereinafter referred to as “the Bank”) at the request of .....  
..... Contractor(s) do hereby undertake to pay the RailTel an amount not exceeding Rs..... against any loss or damage caused to or suffered or would be caused to or suffered by the RailTel by reason of any breach by the said Contractor(s) of any of the terms or conditions contained in the said Agreement.
2. We ,.....Bank do hereby undertake to pay the amounts due and payable under this Guarantee without any demur, merely on demand from the RailTel stating that the amount is claimed is due by way of loss or damage caused to or would be caused to or suffered by the RailTel by reason of breach by the said Contractor(s) of any of terms or conditions contained in the said Agreement or by reason of the Contractor(s) failure to perform the said Agreement. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs .....  
.....
3. We,..... bank undertake to pay to the RailTel any money so demanded notwithstanding any dispute or disputes raised by the Contractor(s) / Bidder(s) in any suit or proceedings pending before any court or Tribunal relating thereto our liability under this present being, absolute and unequivocal. The payment so made by us under this Bond shall be a valid discharge of our liability for payment there under and the Contractor(s) / Bidder(s) shall have no claim against us for making such payment.
4. We,..... Bank further agree that the Guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Agreement and that it shall continue to be enforceable till all the dues of the RailTel under or by virtue of the said Agreement have been fully paid and its claims satisfied or discharged or till RailTel certifies that the terms and conditions of the said Agreement have been fully and properly carried out by the said Contractor(s) and accordingly discharges this Guarantee. Unless a demand or claim under the Guarantee is made on us in writing on or before the..... We shall be discharged from all liability under this Guarantee thereafter.
5. We,..... (indicate the name of Bank) further agree with the RailTel that the RailTel shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the Agreement or to extend time of to postpone for any time or from time to time any of the powers exercisable by the RailTel against the said contractor(s) and to forbear or enforce any of the terms and conditions relating to the said Agreement and we shall not be relieved from

our liability by reason of any such variation, or extension to the said Contractor(s) or for any forbearance, act or omission on the part of RailTel or any indulgence by the RailTel to the said Contractor(s) or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have affect of so relieving us.

6. This Guarantee will not be discharged due to the change in the Constitution of the Bank or the Contractor(s) Supplier(s).
7. We, ..... (indicate the name of Bank) lastly undertake not to revoke this Guarantee during its currency except with the previous consent of the RailTel in writing.
8. We, the.....Bank further agree that this guarantee shall be ivokable at our place of business at ..... /Kolkata (indicate detailed address of local Kolkata branch with Code No.). The branch at Kolkata being advised accordingly.
9. Notwithstanding anything contained herein,
  1. Our liability under the Bank guarantee shall not exceed Rs. .... (In Rupees)
  2. This Bank Guarantee shall be valid up to .....and
  3. We are liable to pay the guaranteed and or any part thereof under this Bank Guarantee only and only if you serve upon is a written claims or demand or before ..... (date of expiry of guarantee).

Dated the                      day of                      2024

for .....  
(indicate the name of the Bank)

**Witness**

1. SignatureName
2. Signature Name

\*\*\*\*\*

**Form No. 6**

**Undertaking for Land Border**

**Certificates related to Guidelines issued by Ministry of Finance through OM no.  
6/18/2019-PPD dated 23.07.2020**

- (i) Certificate to be provided by Tenderer on their letter heads:

“I have read the clause regarding restrictions on bidder of a country which shares a land border with India; I certify that this bidder is not from such a country or, if from such a country, has been registered with the Competent Authority, I hereby certify that this bidder fulfils all requirements in this regard and is eligible to be considered. [Where applicable, evidence of valid registration by the Competent Authority shall be attached.]”

**Format for Power of Attorney**

**POWER OF ATTORNEY**

[To be executed on non-judicial stamp paper of the appropriate value in accordance with relevant Stamp Act. The stamp paper to be in the name of the company who is issuing the power of attorney.]

We, M/s. \_\_\_\_\_ (name of the firm or company with address of the registered office) hereby constitute, appoint and authorize Mr. or Ms. \_\_\_\_\_ (Name and residential address) who is presently employed with us and holding the position of \_\_\_\_\_, as our Attorney to do in our name and our behalf all or any of the acts, deeds or things necessary or incidental to our RFP for the Project \_\_\_\_\_ (name of the Project), including signing and submission of the RFP response, participating in the meetings, responding to queries, submission of information or documents and generally to represent us in all the dealings with Client or any other Government Agency or any person, in connection with the works until culmination of the process of bidding till the Project Agreement is entered into with \_\_\_\_\_ (Client) and thereafter till the expiry of the Project Agreement.

We hereby agree to ratify all acts, deeds and things lawfully done by our said Attorney pursuant to this power of attorney and that all acts, deeds and things done by our aforesaid Attorney shall and shall always be deemed to have been done by us.

(Add in the case of a Consortium)

Our firm is a Member or Lead bidder of the Consortium of \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_.

Dated this the \_\_\_\_\_ day of \_\_\_\_\_ 2024

(Signature and Name of authorized signatory)

\_\_\_\_\_

**Annexure- II****Consignee Details**

SOR Srl. No.	Item Description	Qty. to be supplied to Consignee at Guwahati	Qty. to be supplied to Consignee at Kolkata	Qty. to be supplied to Consignee at Patna	Total Quantity
1	1G Dual Fiber SFP, 10 Km range	20		20	40 nos
2	1G Dual Fiber SFP, 20 Km range	20		20	40 nos
3	1G Dual Fiber SFP, 40 Km range	20		30	50 nos
4	1G Dual Fiber SFP, 80 Km range	20		4	24 nos
5	10G Dual Fiber SFP+ 10Km range	10			10 nos
6	10G Dual Fiber SFP+, 20Km range	20		10	30 nos
7	10G Dual Fiber SFP+, 40Km range	10		20	30 nos
8	10G Dual Fiber SFP+, 80Km range	10		6	16 nos
9	1G BiDi SFP, 20 Km range	20		20	40 pairs
10	1G BiDi SFP, 40 Km range	40		20	60 pairs
11	1G BiDi SFP, 80 Km range	20		20	40 pairs
12	10G BiDi SFP+, 20Km range	30			30 pairs
13	10G BiDi SFP+, 40Km range	50		40	90 pairs
14	10G BiDi SFP+, 60Km range	30		20	50 pairs
15	10G BiDi SFP+, 80Km range	10		6	16 pairs
16	1G Electrical SFP	15			15 nos
17	Manageable L2 Switch Type-I	4			4 nos
18	Manageable L2 Switch Type-II	4	10		14 nos
19	Manageable L2 Switch Type-III	3	16	18	37 nos
20	Manageable L2 Switch Type-IV			8	8 nos
21	10 KVA online UPS	1			1 no
22	3KVA online UPS system	2			2 nos
23	Router Type-I		4		4 nos
24	Router Type-II		6		6 nos
25	Firewall		4		4 nos
26	POE Injector		56		56 nos
27	Wireless Access Point		10		10 nos

**Consignee Address at Kolkata:**

Senior Manager(Tech.)/Store, RailTel Corporation of India Ltd.,  
C/o. Central Warehousing Corporation, Kishori Mahan Banerjee Avenue,  
Panhati, Dhanhal, Kolkata – 700 1124.

**Consignee Address at Guwahati:**

Sr. Manager(Tech.)/Stores, RailTel Corporation of India Ltd., 3<sup>rd</sup> Floor, Ramanand Tower, (Federal Bank Building) Opp. Hotel Nandan, GS Road, Palton Bazar, Guwahati - 781008  
Mob No. 8730007291

**Consignee Address at Patna:**

Asstt.GM, RailTel Corporation of India Ltd., 2<sup>nd</sup> Floor, Telecom Hub/Patna, Near RRI Building,  
Karbigahia, End of Patna Jn. Railway Station, Patna – 800 001.

**General Conditions:**

**1. Tenderers Address**

Tenderer shall state in the tender his postal address fully and clearly. Any communication sent to the Tenderers by post at his said address shall be deemed to have reached the tenderer duly & timely, not withstanding the fact the communication could not reach the tenderer at all or in time for whatever reason. Important documents shall be sent by Registered post.

**2. Law governing the contract.**

The contract shall be governed by the law for the time being in force in the Republic of India. Compliance to regulations and bye-laws-The contractor shall conform to the provision of any statute relating to the works and regulations and bye-laws of any local authority and of any water and lighting companies or undertakings, with whose system the work is proposed to be connected and shall before making any variation from the drawings or the specifications that may be necessitated by so confirming give to the Engineer notice specifying the variation proposed to be made and the reason for making the variation and shall not carry out such variation until he has received instructions from the Engineer in respect thereof. The Contractor shall be bound to give all notices required by statute, regulation or bye-laws as aforesaid and to pay all fees and taxes payable to any authority in respect thereof.

**3. Force Majeure clause:-**

If at any time, during the continuance of this contract, the performance, in whole or part, by either party, of any obligation under this contract shall be prevented or delayed by reason of any war, hostility, act of the public enemy, Civil Commotion, Sabotage, Fires, Floods, Earth quakes, explosions, strikes, epidemics, quarantine restrictions, lockouts, any statute, statutory rules/regulation, order of requisitions issued by any Government Department of Competent Authority or acts of God (here-in-after referred to as event) then provided notice of the happening of any such event is given by either party to the other within twenty one days from the date of occurrence thereof, neither party shall, by reason of such event, be entitled to terminate this contract nor shall either party have any claim for damage against the other in respect of such non- performance or delay in performance, and the obligations under the contract shall be resumed as soon as practicable after such event has come to an end or ceased to exist, Provided further that if the performance in whole or part of any obligation under this contract of prevented or delayed by reason of any such event beyond a period as mutually agreed to by the RailTel and the Contractor after any event or 60 days in the absence of such an agreement whichever is more, either party may at its option to terminate the contract provided also that if the contract is so terminated under this clause the RailTel may at the time of such termination take over from the Contractor at prices as provided for in the contract, all works executed or works under execution.

#### **4. Illegal Gratification:**

Any bribe, commission, gift or advantage given, promised or offered by or on behalf to the contractor or his partner, agent or servant or anyone on his behalf to any officer or employees of the RailTel, or to any person on his behalf in relation to obtaining or the execution of this or any other contract with the RailTel shall, in addition or any criminal liability which he may incur, subject the contractor to the rescission of the contract and all other contracts with the RailTel and to the payment of any loss or damage resulting from such decision and the RailTel shall be entitled to deduct the amounts so payable from any moneys due to the Contractor (s) under this contract or any other contracts with the RailTel. The contractor shall not lend or borrow from or have or enter into any monetary dealings or transactions either directly or indirectly with any employee of the RailTel and if he shall do so, the RailTel shall be entitled forthwith to rescind the contract and all other contracts with the RailTel. Any question or dispute as to the commission or any shall offence or compensation payable to the RailTel under this clause shall be settled by the Regional General Manager of RailTel, in such a manner as shall consider fit and sufficient and his decision shall be final and conclusive. In the event of rescission of the contract under this clause, the contractor will not be paid any compensation whatsoever except payment for the work done up to date of rescission.

#### **5. LABOUR**

Wages to Labour- The contractor shall be responsible to ensure compliance with the provisions of the Minimum Wages Act, 1948 (hereinafter referred to as the "said Act") and the Rules made there- under in respect of any employees directly or through petty contractors or sub contractors employed by him on road construction or in building operations or in stone breaking or stone crushing for the purpose of carrying out this contract. If in compliance with the terms of the contract, the contractor supplied any labour to be used wholly or partly under the direct orders and control of the RailTel whether in connection with any work being executed by the contractor or otherwise for the purpose of the RailTel such labour shall, for the purpose of the clause, still be deemed to be persons employed by the contractor. If any moneys shall as a result of any claim or application made under the said Act be directed to be paid by the RailTel, such moneys shall be deemed to be moneys payable to the RailTel by the Contractor and on failure by the contractor to repay any moneys paid by it as aforesaid with seven days after the same shall have been demanded, the RailTel shall be entitled to recover the same form any moneys due or accruing to the contractor under this or any other contractor with the RailTel.

#### **6. TERMINATION OF CONTRACT OWING TO DEFAULT OF CONTRACTOR:**

The purchaser may, without prejudice to any other remedy for breach of contract, by written notice of default, sent to the Tenderer, terminate this contract in whole or in part.

- a) If the tenderer fails to deliver any or all of the goods within the time period(s) specified in the contract.
- b) If the tenderer fails to perform any other obligation(s) under the contract; and
- c) If the tenderer, in either of the above circumstance(s) does not remedy his failure within a period of 30 days (or such longer period as the Purchaser may authorize in writing) after receipt of the default notice from the Purchaser.

**7. RIGHT OF RAILTEL AFTER TERMINATION OF CONTRACT OWING TO DEFAULT OF CONTRACTOR:**

- a) The contractor shall have no claim to compensation for any loss sustained by him by reason of his having purchased or procured any materials or entered into any commitments or made any advances on account of or with a view to the execution of the works or the performance of the contract and contractor shall not be entitled to recover or be paid any sum for any works thereto not actually performed under the contract, unless or until the Engineer shall have certified the performance of such work and the value payable in respect thereof and the Contractor shall only be entitled to be paid the value so certified.
- b) The Engineer or Engineer's Representative shall be entitled to take possession of any materials, tools, implements, machinery or buildings on the works or on the property on which these are being or ought to have been executed, and to retain the employ the same in further execution of the works without the contractor being entitled to any compensation for the use and employment thereof or for wear and tear or destruction thereof.
- c) The Engineer shall, as soon as may be practicable after removal of the contractor fix and determine expert or by or after reference to the parties or after such investigation or enquiries as he may consider fit to make or institute and shall certify what amount (if any) has at the time of termination of the contract been reasonably earned by or would reasonably accrue to the Contractor in respect of the work then actually done by him under the contract what was the value of any unused or partially use materials, any constructional plants and any temporary works upon the site. The legitimate amount due to the contractor after making necessary deductions and certified by the Engineer should be released expeditiously.

**8. SETTLEMENT OF DISPUTE AND ARBITRATION:**

Any dispute or difference whatsoever arising between the parties out of relating to the construction, meaning, scope, operation or effect of this contract or the validity or the breach thereof shall be settled by a sole arbitrator in accordance with provisions contained in Arbitration and Conciliation Act, 1996 as amended and the award made in pursuance thereof shall be binding on the parties. The venue of such arbitration or proceedings thereof shall be New Delhi.

- All arbitration proceedings shall be conducted in English. Resources against any Arbitral award so rendered may be entered into court having jurisdiction or application may be made to such court for the order of enforcement as the case may be.
- The arbitrator will be appointed by the Chairman & Managing Director of RailTel Corporation of India Ltd.
- Each of the parties agree that notwithstanding that the matter may be referred to Arbitrator as provided therein, the parties shall nevertheless pending the resolution of the controversy or disagreement continue to fulfill their obligation under this agreement so far as they are reasonably able to do so.

(END OF TENDER DOCUMENT)

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