

RailTel’s Bid Specific Additional Terms & Conditions

Information to Bidder for the “Procurement of Router, Switches, SFP, etc. for Western Region for Customer Delivery”

Ref: GeM Bid No. GEM/2023/B/3541135

Dated: 28.06.2023

- 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*

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TReDS feature available	Yes, on m1xchange portal (url: https://www.m1xchange.com)
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- 1 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. Thus, all hardware required for enabling the support/feature shall be included in the offer. The technical specifications are mentioned in **Annexure-I**.
- 2 OEM or Authorized dealer/ distributor/ Partner/ Trader authorized by OEM specific to this bids should have a registered office in India to provide sales and 24x7 support in India. The certificate to this effect should be submitted.
- 3 In case of the bidder is Authorized dealer/ distributor/ Partner/ Trader authorized by OEM specific to this bid, a certificate from the OEM to this effect should be submitted as per the **Annexure-II** (MAF).

4 GSTIN ID of vendor should be provided from where goods will be supplied.

5 Delivery Period, Consignee Address and inspection

5.1 **Delivery Period:** The supplier will have to supply the material within **120 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/uninstalled quantity per week to the maximum to the 10% of the contract value will be levied.

5.2 **Name of locations for Consignee Address: As per the Annexure-V.**

5.3 **Inspection:**
Post Receipt Inspection at consignee Site before acceptance of stores: Nominated RailTel Executive by CA.

Supplier should also submit data sheet, guarantee and fitment certificate along with the supply of materials.

6 Estimated cost of tender & Earnest Money Deposit (EMD):

6.1 **Estimated cost of tender:** Estimated cost of the Tender is **Rs.1,24,20,967/-** (Incl. GST).

6.2 **Earnest Money Deposit (EMD): Rs.2,48,419/-** with Payment online through RTGS/ internet banking in Beneficiary name RailTel Corporation of India Limited Account No. 11037321307, IFSC Code SBIN0001821, Bank Name: State Bank of India, Branch address: Churchgate Branch, Maharshi Karve Marg, Mumbai- 400020.

6.2.1 Earnest Money shall be exempted to Micro and Small enterprise (MSEs) registered for the tendered items.

6.2.2 For small scale units registered with NSIC under single point registration Scheme and participating in this tender enquiry, following exemptions are available: -

(i) They are exempted from depositing Earnest money.

These exemptions are applicable provided units are registered with NSIC for tendered item and registration is current and valid. Firms claiming these exemptions are required to submit along with their offer, copy of their current and valid NSIC registration certificate for the tendered item, otherwise their offer would not be considered.

6.2.3 Sellers/ Service provider having annual turnover of INR 500 Crore or more, at least in one of the past three completed financial years are exempted from submission of EMD as per GeM GTC with the bid.

6.2.4 The bidder seeking EMD exemption, must submit the valid supporting document for the relevant category. **Under MSE category, only manufacturers for goods and Service Providers for Services are eligible for exemption from EMD. Traders are excluded from the purview of this Policy.**

6.2.5 No exemption is, however, applicable to these units from payment of security deposit/ Performance Bank Guarantee.

6.2.6 **The Bid received without EMD/ documentary proof of exemption of EMD as per above clause will be summarily rejected.**

6.2.7 Earnest Money of the unsuccessful bidder will be discharged/returned as promptly as possible. No interest shall be payable on the EMD.

6.3 RailTel is registered with m1xchange TReDS platform having buyer registration number "BUYER00001496". The URL for m1xchange platform is <https://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.

- 6.4 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.
- 6.5 MSE vendor hereby agrees to indemnify, hold harmless and keep RailTel and affiliates, Directors, Officers, representative, 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 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.
- 6.6 RailTel shall not be liable for any special, indirect, punitive, incidental or consequential damages or any damages whatsoever (including but not limited to damage 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.
- 7 This bid complies with "Public Procurement (preference to make in India) Policy Order, 2017 or latest issued by DIPP and Public Procurement Policy for Micro and Small Enterprises (MSEs) order,2012" or latest issued by MoSME."

The bidders claiming the preference have to submit relevant documents prescribed under relevant order.

8 Security Deposit/Performance Bank Guarantee:

The successful tenderer shall submit security deposit in the form of DD or irrevocable Bank Guarantee from any scheduled bank for due fulfillment of contract as per the details given below:

- i. Security Deposit/Performance Bank Guarantee @ **10%** of total value of Purchase Order is required to be submitted within 30 days of issue of Purchase Order with validity of 3 months beyond warranty. Period, 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. PBG format specified in **Annexure-IV**.
- ii. The security deposit/PBG shall be submitted to RCIL/WR, Mumbai.
- iii. 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.

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 Mumbai.

Note:

1. Any Performance security upto a value of Rs.5Lakhs is to be submitted through online transfer only
2. No interest shall be paid on the amount of Performance Security held by RailTel, at any stage.

9 Eligibility Criteria:

9.1 Technical Eligibility for Bidder:

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.

Definition of similar work: Supply/ Supply and installation of All type of IT/ Telecom equipment with satisfactory working in Government/PSUs/ Telecom Service providers/Public Listed Company in India or outside India.

Note: 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 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 or Bombay Stock Exchange, 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.

9.2 Financial Criteria for Bidder:

The bidder should have minimum cumulative turnover of 150% of tendered value or above during the last 3 financial years (i.e. current year and/or three previous financial years). The bidder should provide Audited Balance Sheets / annual reports as documentary evidence and for current year, the Statutory Auditor's certificate for turnover of current year up to the date of bid opening for which Balance Sheet/P&L may not be available. In case of photocopy of Balance Sheet/P&L the same should be certified by Chartered Accountant as true copy.

9.3 Bidder should have authorization specific to this tender from respective OEM as per **Annexure-II**. If OEM is directly participating in the Bid, self-declaration in this connection required to be submitted.

9.4 Bidder should not have been banned/blacklisted by any Govt./Semi Govt./PSU/State Govt./Any Telecom entity in India for the supply of the material. An undertaking to this effect signed by the authorized signatory to be submitted by the Bidder.

10 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 contract. The purchasers 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.

11 Warranty:

The materials are to be warranted for **3 Years** from date of delivery to the consignee. The tenderer shall warrant that stores 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.

12 Payment Conditions:-

- (i) 100% payment against full supply.
- (ii) 80% payment against part supply. In case bidder completes the supply order for one SOR, he can claim part payment of 80% against each SOR's completed supply of the said SORs. Balance payment shall be made after full supply.
- (iii) The following documents are to be submitted for payment:
 - Original Tax Invoice. (With separate Tax amount, containing POS, RailTel GSTN and Supplier GSTN).
 - Delivery Challan
 - Original Consignee receipt with GRN No.
 - Original Inspection Certificate
 - Transit Insurance Certificate
 - Warranty Certificate of OEM
 - Copy of BG/Proof of BG Submission
 - Certificate of receipt of Goods in good condition from RailTel
- (iv) Any changes in the statutory taxes & duties during the contract period shall be on RailTel account with in the original DOC. Beyond DOC, changes in statutory taxes & duties shall be on RailTel's account only when the delay is an account of RailTel.

- 13** The tenderers 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 **Annexure-III. Non submission of a notarised 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 railway 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).

14 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 as per GeM Bid and the bid will be opened as per GeM Bid.

- (i) EMD.
- (ii) Clause wise compliance along with all mentioned documents/annexures for all clauses of GeM Bid and ATC (Information to bidder) documents.
- (iii) Data Sheet of offered item/equipment.
- (iv) Financial (Certified copies of audited balance sheets/annual reports of last three preceding financial years) and Technical Eligibility Criteria documents.
- (v) Technical Compliance of all Specification of items as per ATC documents.
- (vi) Proof of document required against Eligibility criteria of OEM and Bidder vide para -9.
- (vii) MAF/OEM Authorization as per **Annexure-II**.
- (viii) Notarized affidavit on a non-judicial stamp paper as per **Annexure-III**.
- (ix) Duly notarized Power of Attorney in name of authorized signatory as per Clause No. 18.
- (x) NIL deviation declarations as per **Annexure- VI**.
- (xi) Self-Certification under preference to "MAKE IN INDIA" Policy as **Annexure-VII**.

15 Offline submission:

Original copy of documents shall be submitted by tenderer offline at RailTel Corporation of India Western Railway Microwave Complex, Senapati Bapat Marg Mahalaxmi (West) Mumbai - 400013 at any point of time whenever asked for verification. Incase original are not produced before provided due date, bid may be rejected.

16 Make in India

The provisions of the Public Procurement (Preference to Make in India) Order 2017 dated June 15, 2017 (or subsequent revisions, if any) by Department of Industrial Policy and Promotion, Govt shall apply to this tender to the extent feasible. Minimum Local Content for SOR items shall be 50% for purchase preference as per the Notification No. 18-10/2017-IP dated 29th August 2018 issued by Department of Telecommunications, Ministry of Communications or as per the latest notification. Bidder shall be required to give a self-certification in his bid that the item offered meets the local content and shall give details of the location(s) at which the local value addition is made. Bidder should submit Self Certification under preference to "MAKE IN INDIA" Policy as **Annexure-VII**.

In case of any false declaration, action shall be taken in line with the provisions of the PPP-MIII order.

In cases of procurement for a value excess of Rs. 10 crores, the 'Class-I local supplier/ Class-II local supplier' shall be required to provide a certificate from the statutory auditor or cost auditor of the company (in the case of companies) or from a practicing

cost accountant or practicing chartered accountant (in respect of suppliers other than companies) giving the percentage of local content.

17 Insurance

17.1 The Contractor shall take out and keep in force a policy or policies of insurance from the date, the delivery of material starts (including the transit portion) against all liabilities of the contractor or the Purchaser. The contractor shall take out and keep in force a Policy or policies of Insurance for all materials covered in schedule of requirement irrespective of whether used up in the portion of work already done or kept for the use in the balance portion of the work until such material are provisionally handed over to RailTel. The contractor should ensure the stores brought to site, against risks as required under the Emergency Risk (Goods) Insurance Act in force from time to time up to contract value.

17.2 It may be noted that the beneficiary of the insurance policy should be RailTel or the policies should be pledged in favor of RailTel. The contractor shall keep the policy/policies current till the item/equipment are handed over to the purchaser.

18 Power of Attorney

Power of attorney in favor of the signatory duly authorizing the signatory shall be submitted online before the due date and time of submission of the e-Tender and Original copy is needed to be submitted by the successful bidder as per the clause-15 above.

19 The guidelines and directives issued by Department of Telecommunication, 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.

- Note:**
- 1) The bidder is required to give acceptance of all the clauses of **GeM bid, ATC** and RailTel's Bid Specific **ATC** document. 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 and GeM 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: GEM/2023/B/3541135**
 - 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 in writing which need to be submitted before a target date. The clarifications submitted as required by the purchaser before the target date will be considered.
 - 5) In case, if any contradiction between GeM Bid, Additional Terms & Conditions, RailTel's Bid Specific Additional Terms & Conditions and General Terms & Conditions, RailTel's Bid Specific Additional Terms & Conditions will prevails.

Annexure-I**Technical Specification****1. Equipment should be:**

- i. The Electronics product should have service life for next 08 Years from date of delivery. The certificates/Undertaking for the same will have to be submitted along with bid from respective OEM.
- 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. OEM should have its Service Centre at min 02 locations in major cities in India. Service center details to be shared along with address and contact no. and person.
- v. UL, CE and FCC Certification is not required for PMA. However, Bidder have to produce certificate from OEM that their product are equivalent to UL, CE and FCC and meets all standard and specification of UL, CE and FCC.

S N	Description of Item	Unit	Quantity
1	Router Type I as per Technical specification	Nos	1
2	Router Type II as per Technical specification	Nos	5
3	Router Type III as per Technical specification	Nos	1
4	Router Type IV as per Technical specification	Nos	24
5	Router Type V as per Technical specification	Nos	4
6	Switch Type I as per Technical specification	Nos	4
7	Switch Type II (AC type) as per Technical specification	Nos	3
8	Switch Type III (AC&DC type both) as per Technical specification	Nos	15
9	Switch Type IV (DC type) as per Technical specification	Nos	38
10	SFP+ 10G 10Km Dual Fiber as per Technical Specification	Nos	6
11	SFP+ 10G 40 KM BIDI as per Technical Specification	Nos	79
12	SFP 1G 40 KM BIDI as per Technical Specification	Nos	16
13	SFP 1G 10 KM BIDI as per Technical Specification	Nos	5
14	SFP 1G 20 KM BIDI as per Technical Specification	Nos	4
15	SFP 1G 40 KM dual fiber as per Technical Specification	Nos	6
16	Breakout Cable (LC*4 one end, Single Mode 10 Mtr as per Technical Specification)	Nos	3
17	UTM as per Technical specifications	Nos	2

SOR item 1: Router Type I Technical Specifications

SN	Description	Compliance
1	Router should support minimum 1G/ 10G SFP+ ports (Including 8X10G SFP+ module) and 4 number of 100G interface (excluding XFP/SFP/QSFP) from day one.	
2	Total throughput (Full duplex): Minimum 280 Gbps	
3	MAC Table Size : 64K	
4	IPv4 RIB/FIB : Minimum 1M/128K	
5	IPv6 RIB/FIB : Minimum 512K/32K	
6	MPLS Labels : Minimum 32K	
7	Label Stack : 5	
8	L2/ L3 VPN VRF : Minimum L2 1000, Minimum L3 256	
9	Support of number of queues per system : Minimum 4K	
10	Number of VLAN support : 1000	
11	Operating Temperature : (0 to 40 degree C or better)	
12	Storage Temperature : (-10 to 60 degree C or better)	
13	Router can be of either modular/ fixed type and shall have modular Operating system where it shall support individual restart of critical processes without affecting other processes or rebooting the entire operating system.	
14	All 10G interfaces should support LR, ER and ZR.	
15	Router shall have option checking configuration before committing and option of rolling back to at least five configurations.	
16	Router should have redundant DC (with the operating range of -40 to -72 VDC) power supplies.	
17	Digital Optical Monitoring (DOM) should be supported, optics information retrievable including RX/ TX-power, threshold monitoring/ alarming, inventory.	
18	It shall support role based privileges for the system access and radius authentication for the System admin.	
19	The router should have a Console or Out-of-band Management.	
20	Alerts for environmental or other hardware based alarms should be visibly implemented on the chassis.	
21	All interfaces shall support services like L2VPN, L3VPN, VPLS and multicast VPN for both IPv4 and IPv6	
22	The router should have mechanism to protect itself from DDoS attack.	
23	The router should be IPv6 ready from day one.	
24	The router should support filtering based on different parameters like: src ip, dst ip, src port, dstport, protocol etc.	
25	The router should support Netflow, Jflow or equivalent.	
26	The router should support IP SLA or RPM (or equivalent) for performance measurements, it should also support monitoring of IP SLA/ RPM (or equivalent) probes using SNMP polling (OEM has to provide SNMP MIB information).	

27	Shall support QoS, option of traffic shaping per Interface based.	
28	Shall support following class of service features:	
	a) Classification, policing, marking, shaping, filtering	
	b) Manage congestion using a weighted random early detection (WRED) algorithm.	
	c) RFC 2474, Definition of the Differentiated Services Field in the IPv4 and IPv6 Headers.	
	d) Single Rate Three Color Policer RFC 2697	
	e) RFC 2698, A Two Rate Three Color Policer	
	f) Congestion Management through CBWFQ, Round-Robin or equivalent, WFQ or equivalent.	
	g) RFC 2597, Assured Forwarding PHB Group	
	h) RFC 2598, An Expedited Forwarding PHB	
	i) Router should be able to classify based on 802.1 ad, 802.1 p, EXP and DSCP bits.	
	j) The router shall support traffic interface mirroring in both ingress & egress directions for both IPv4 & IPv6	
29	The router shall support provision for event based scripts that shall be capable of performing actions based on certain triggers.	
30	The router shall support aggregated Ethernet and it shall be possible to bundle Upto 16 links.	
31	Shall support following MPLS features:	
	a) LDP and RSVP signalling	
	b) RFC 5036, LDP Specification	
	c) RFC 3212 OR Constraint-Based LSP Setup using LDP	
	d) RFC 3215, LDP State Machine	
	e) RFC 3478, Graceful Restart Mechanism for LDP	
	f) RFC 2858, Multiprotocol Extensions for BGP-4	
	g) RFC 3063, MPLS Loop Prevention Mechanism	
	h) RFC 3031, Multiprotocol Label Switching Architecture	
	i) RFC 3032, MPLS Label Stack Encoding	
	j) The router should be able to do load-balancing over multiple equal cost MPLS LSP	
32	The Router shall support MPLS Fast Reroute both link protection and Node protection.	
33	MPLS Ping, MPLS Trace Route	
34	Fast Reroute Extensions to RSVP-TE for LSP Tunnels	
35	The router shall Support of Sync-E & PTP technology (License price to be quoted separately)	
36	Shall support MPLS based VPN services:	
	a) L3VPN, L2VPN (Kompella BGP/ Martini LDP),	
	b) Internet draft, draft-ietf-l2vpn-vpls-bgp-08.txt, Virtual Private LAN Service (VPLS) Using BGP for Auto-discovery and Signaling	
	c) RFC 4762 Virtual Private LAN Service (VPLS) Using Label Distribution Protocol (LDP) Signaling	

	d) Next Generation mVPN (P2MP) based on (Draft-ietf-13vpn-2547bis-mcast-01.txt) & mVPN(draft-rosen-vpn-mcast).	
37	The router shall support the following routing features:	
	a) BGPv4, BGP confederations and route reflector	
	b) Dynamic Host Configuration Protocol (DHCP)	
	c) RFC 3101, The OSPF NSSA Option	
	d) RFC 2328, OSPF Version 2	
	e) RFC 3623, OSPF Graceful Restart	
	f) RFC 3630, Traffic Engineering (TE) Extensions to OSPF Version 2	
	g) RFC 1195, Use of OSI IS-IS for Routing in TCP/ IP and Dual Environments	
	h) RFC 2104, HMAC: Keyed-Hashing for Message Authentication	
	i) RFC 2973, IS-IS Mesh Groups	
	j) RFC 3358, Optional Checksums in IS-IS	
	k) RFC 3359, Reserved Type, Length and Value (TLV) Code points in IS-IS	
	l) RFC 3373, Three-Way Handshake for IS-IS Point-to-Point Adjacencies	
	m) RFC 5305, IS-IS Extensions for Traffic Engineering	
	n) RFC 3847, Restart Signalling for IS-IS	
	o) RFC 3590, Source Address Selection for Multicast Listener Discovery Protocol	
	p) IGMP v2 and v3 as described in RFC 2236 and RFC 3376 with IGMP Routing Policies to filter IGMP requests.	
38	The router shall support Virtual Router Redundancy Protocol (VRRP) as per IETF RFC 3768	
39	Router shall support SNMP v2/v3 and NTP	
40	Shall support BFD for both single hop and multihop sessions	
41	Shall support the following OAM features and actions such as syslog/ link down should be configurable on OAM event trigger:	
	a) 802.3ah	
	b) 802.1ag	
	c) Y.1731	
42	Shall support Multi-chassis LAG	
43	IPv6 Features:	
	a) IPv6 Ping	
	b) IPv6 trace route	
	c) OSPF v3	
	d) IS-IS	
	e) VRRPv3	
	f) IPv6 CoS (classification & rewrite, scheduling based on TC)	
	g) IPv6 ACL	
	h) 6PE and 6VPE	
44	Multicast Feature: It shall support following:	
	a) It shall support IGMP snooping v2/v3	

	b) The router shall support PIM Sparse Mode, RFC 4601 (optional)	
	c) Rendezvous Point (RP) - ability to be configured as an RP	
	d) RFC 3569, Source Specific Multicast (SSM)	
	e) RFC 2365, Administratively Scoped IP Multicast	
	f) RFC 3446, Any cast Rendezvous Point (RP) Mechanism using Protocol Independent Multicast (PIM) and Multicast Source Discovery Protocol (MSDP).	
	g) RFC 3618, Multicast Source Discovery Protocol (MSDP).	
45	The proposed router should be NEBS level 3 compliant. NEBS Certification is not required for PMA. However, OEM has to produce certificate from standard lab approved or authorized by Govt. of India that the supplied Products are equivalent to NEBS and meet all standard and specification of NEBS.	
46	The device should comply to the following safety standards	
	a) EN 55022 Class A Emissions (Europe)	
	b) FCC Class A (USA) Radiated Emissions	
	c) UL 60950-1 Information Technology Equipment – Safety	
	d) EN 60825-1 Safety of Laser Products	
	e) EN-61000-4-11 Voltage Dips and Sags	
	f) ETS-300386 Electromagnetic Compatibility Requirements	
	g) The device will conform to the following EN/IEC standard:	
	i. 61000-4-2 – ESD	
	ii. 61000-4-3 Radiated Immunity	
	iii. 61000-4-4 – EFT	
	iv. 61000-4-5 – Surge	
	v. 61000-4-6 – Low Frequency common immunity	
47	The offered devices must support following functionalities to support 3rd party SDN (in future)	
	a) The router should support RFC 6020, YANG - A Data Modeling Language for the Network Configuration	
	b) Protocol (NETCONF)	
	c) The solution should support the network configuration protocol (NETCONF) that provides mechanisms to install, manipulate, and delete the configuration of network devices, RFC 6241	
	d) The router should be able to act as Path computation client in the PCE architecture defined in RFC 4655.	
	e) The router should support PCECP as defined in RFC 5440.	
	f) The router should support BGP link-state (BGP-LS), RFC 4655	
	g) The router should support SPRING	
48	Devices shall support following for Provisioning	
	a) Use NETCONF (RFC 6241, RFC 6242, RFC 5277)	
	b) REST based CRUD operations for configuration and management.	
	c) Web Services based operations for configuration and management	
50	TELEMETRY Function: It shall support following:	

	a) The router should support telemetry based on push model for monitoring network devices	
	b) The router should support various software models/ sensors for capturing different health parameters from the devices	
	c) The router should support sending telemetry data to multiple consumers simultaneously	
	d) The router shall support GPB/ GRPC/ KAFKA encoding for telemetry data	
	e) The software model/ sensors should be based on either yang, xml or open config	
	f) The solution shall use either UDP or GRPC for transport of telemetry data	
	g) The system should support streaming granularity of atleast 10 sec	
	h) The router shall have the ability to interact with open standard based tools	
	i) The system should support REST API for communication with third party tools and applications	
	j) Enabling telemetry should not have any adverse impact on the performance of the device/ router	
	k) Some of the streaming models/ sensors the router should support are:	
	<u>System</u>	
	Chassis Environment	
	Line card utilization (memory, processor, QoS, Temp, Port utilization), errors counters	
	Controller Card sensors (memory, CPU, Temp etc)	
	Fabric statistics	
	ARP table state	
	Routing prefix information	
	<u>Interface</u>	
	Interface statistics (Physical and logical interfaces)	
	Interface optical diagnostic	
	Congestion and latency	
	Filter statistics	
	Protocol	
	BGP peer information	
	ISIS State, Interface, Adjacency statistics, LSDB	
	ISIS SPRING/ Segment Routing Statistics	
	RSVP Interface Statistics	
	LSP statistics	
	LSP Event Export, Experimental	
	IP SLA/RPM (or equivalent) reporting	
	Segment Routing statistics	
	DHCP statistics	
51	Router should support Dual Image/ Partition with USB flash drive	

	booting option for OS recovery	
52	Router should support jumbo frame.	
53	Router should support port mirroring	
54	Router should support security features of Broadcast/ Multicast/ Unicast Storm control.	
55	Router should comply to following Temperature performance parameters:	
	i. Operating Temperature: 0 to 40 degree C or better	
	ii. Storage Temperature: -10 to 60 degree C or better	
56	Routers should support following Metro Ethernet Features:	
	i. ITU-T G.8032 Ethernet Ring Protection designed for loop protection or alternate mechanism to achieve ring protection in less than 50 ms.	
	ii. Should support multiple Ring up to 8 ring (main and sub ring) protection fail over within 50 ms or ITU-T G.8032 v2.	
57	The operating system of the Routers category/ series/ family should be MEF-9/14 or CE (Carrier Ethernet) Certified.	
58	The Router shall be designed for continuous operations with dual fan system.	
59	Router should support CFM and LFM alarms.	
60	Shall support HQoS, option of traffic shaping per VLAN based.	
	i. Shall support at least 4K Queues.	
	ii. Per-VLAN policing.	
	iii. Per-VLAN rewrite	
	iv. Per-VLAN two-rate tri-color marking.	
	v. Per-VLAN classification	
	vi. Per-VLAN filtering	
61	Support for P and PE router functionality for MPLS on the same router simultaneously and on all the interfaces.	
62	Router shall support E-Line or E-LAN MEF standards.	
63	Routers should be rack mountable to fit into a standard 19-inch rack	
64	OEM shall ensure that use of third party optics shall not be explicitly blocked on the Router. Router must support all MSA complied Optics available in market.	
65	Segment Routing	
	i. Router should be able to support SR standards on IPv6 whenever it is firmed up without any cost to RCIL.	
	ii. The router should support SR-MPLS data plane and protocols OSPF, IS-IS and BGP Segment routing extensions	
	iii. Traffic Steering of SR policies with Auto route Include and Segment Routing TI-LFA SRLG Protection	
	iv. LSP ping, trace-route, Pseudo wire Ping over Segment Routing, trace route for binding-SID	
	v. MPLS-LDP interworking with SR-ISIS and SR-OSPF	
	vi. TI-LFA with IGP (Link, Node, Local SRLG, Remote SRLG protection)	

	vii. Controller instantiated SR Policy (PCEP, BGP) and SR policy based on demand next hop	
	viii. Router should have capability to calculate Bandwidth based path using centralized controller.	
	ix. Shall support SR and MPLS (LDP) Interworking Mapping Server	
	x. The router shall support dynamic point-to-point interface latency performance measurement. The measurement must be integrated in the IGP and BGP LS for SDN Controller Analysis.	
	xi. Label distribution protocol and segment routing should coexist and there should support option to prefer LDP over segment routing.	
66	EVPN Features	
	i. Router should have support of Ethernet VPN (EVPN with single homing, multi homing)	
	ii. Router should have support of following features on EVPN: EVPN-IRB, EVPN VPWS, EVPNVPWS Preferred Path over SR-TE Policy	
67	i) Specification Router to support GRE tunnels (RFC 2784).	
Note	NEBS 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 NEBS and meets all standard and specification of NEBS.	
68	On Site OEM Warranty (Year) - 3 years	

SOR Item 2: Router Type II Technical Specification:

SN	Specifications	Requirements	PQC/ Optional
1	Router should support minimum 1G/ 10G SFP+ ports from day one (Including 8X10G SFP+ module).	8	PQC
2	Router should have support for 100G Interfaces (Excluding XFP/ SFP/ QSFP).	4	PQC
3	Total throughput (Full duplex).	Minimum 280Gbps	PQC
4	MAC Table Size	64K	PQC
5	IPv4 RIB/ FIB	Minimum 1M/128K	PQC
6	IPv6 RIB/ FIB	Minimum 512K/32K	PQC
7	MPLS Labels	Minimum 32K	PQC
8	Label Stack	Minimum 5	PQC
9	L2/ L3 VPN VRF	Minimum L2 1000, Minimum L3 256	PQC
10	Packet Forwarding Rate (IMIX traffic) in Mpps	Minimum 300	PQC
11	Support of number of queues per system	Minimum 4K	PQC

12	Number of VLAN support	1000	PQC
13	Operating Temperature	(0 to 40 degree C or better)	PQC
14	Storage Temperature	(-10 to 60 degree C or better)	PQC
15	Router can be of either modular/ fixed type and shall have modular Operating system where it shall support individual restart of critical processes without affecting other processes or rebooting the entire operating system.		PQC
16	All 10G interfaces should support LR, ER, and ZR		PQC
17	Router shall have option checking configuration before committing and option of rolling back to at least five configurations.		PQC
18	Router should have redundant DC (with the operating range of -40 to -72 VDC) power supplies		PQC
19	Digital Optical Monitoring (DOM) should be supported, optics information retrievable including RX/ TX-power, threshold monitoring/ alarming, inventory.		PQC
20	It shall support role based privileges for the system access and radius authentication for the System admin.		PQC
21	The router should have a Console or Out-of-bandManagement.		PQC
22	Alerts for environmental or other hardware based alarms should be visibly implemented on the chassis.		PQC
23	All interfaces shall support services like L2VPN, L3VPN, VPLS and multicast VPN for both IPv4 andIPv6		PQC
24	The router should have mechanism to protect itself from DDoS attack.		PQC
25	The router should be IPv6 ready from day one.		PQC
26	The router should support filtering based on different parameters like: src ip, dst ip, src port, dst port,protocol etc		PQC
27	The router should support Netflow, Jflow or equivalent		PQC
28	The router should support IP SLA or RPM (or equivalent) for performance measurements, it should also support monitoring of IP SLA/ RPM (or equivalent) probes using SNMP polling (OEM has to provide SNMP MIB		PQC

	information)		
29	Shall support QoS, option of traffic shaping per Interface based.		PQC
30	Shall support following class of service features:		PQC
	a) Classification, policing, marking, shaping, filtering		
	b) Manage congestion using a weighted random early detection (WRED) algorithm		
	c) RFC 2474, Definition of the Differentiated Services Field in the IPv4 and IPv6 Headers		
	d) Single Rate Three Color Policer RFC 2697		
	e) RFC 2698, A Two Rate Three Color Policer		
	f) congestion Management through CBWFQ, Round- Robin or equivalent, WFQ or equivalent		
	g) RFC 2597, Assured Forwarding PHB Group		
	h) RFC 2598, An Expedited Forwarding PHB		
	i) Router should be able to classify based on 802.1 ad, 802.1 p, EXP and DSCP bits		
	j) The router shall support traffic interface mirroring in both ingress & egress directions for both IPv4 & IPv6		
31	The router shall support provision for event based scripts that shall be capable of performing actions based on certain triggers		PQC
32	The router shall support aggregated Ethernet and it shall be possible to bundle Upto 16 links.		PQC
33	Shall support following MPLS features		PQC
	a) LDP and RSVP signalling		
	b) RFC 5036, LDP Specification		
	c) RFC 3212 OR Constraint-Based LSP Setup using LDP		
	d) RFC 3215, LDP State Machine		
	e) RFC 3478, Graceful Restart Mechanism for LDP		
	f) RFC 2858, Multiprotocol Extensions for BGP-4		
	g) RFC 3063, MPLS Loop Prevention Mechanism		
	h) RFC 3031, Multiprotocol Label Switching Architecture		
	i) RFC 3032, MPLS Label Stack Encoding		
	j) The router should be able to do load-balancing over multiple equal cost MPLS LSP		

34	The Router shall support MPLS Fast Reroute both linkprotection and Node protection.		PQC
35	MPLS Ping, MPLS Trace Route		PQC
36	Fast Reroute Extensions to RSVP-TE for LSP Tunnels		PQC
37	The router shall Support of Sync-E & PTP technology (License price to be quoted separately)		PQC
38	Shall support MPLS based VPN services		PQC
	a) L3VPN, L2VPN (Kompella BGP/ Martini LDP)		
	b) Internet draft, draft-ietf-l2vpn-vpls-bgp-08.txt, Virtual Private LAN Service (VPLS) Using BGP for Auto-discovery and Signaling		
	c) RFC 4762 Virtual Private LAN Service (VPLS) Using Label Distribution Protocol (LDP) Signaling		
	d) Next Generation mVPN (P2MP) based on (Draft-ietf-13vpn-2547bis-mcast-01.txt) & mVPN (draft-rosen-vpn-mcast).		
39	The router shall support the following routing features		PQC
	a) BGPv4, BGP confederations and route reflector		
	b) Dynamic Host Configuration Protocol (DHCP)		
	c) RFC 3101, The OSPF NSSA Option		
	d) RFC 2328, OSPF Version 2		
	e) RFC 3623, OSPF Graceful Restart		
	f) RFC 3630, Traffic Engineering (TE) Extensions to OSPF Version 2		
	g) RFC 1195, Use of OSI IS-IS for Routing in TCP/ IP and Dual Environments		
	h) RFC 2104, HMAC: Keyed-Hashing for Message Authentication		
	i) RFC 2973, IS-IS Mesh Groups		
	j) RFC 3358, Optional Checksums in IS-IS		
	k) RFC 3359, Reserved Type, Length and Value (TLV) Code points in IS-IS		
	l) RFC 3373, Three-Way Handshake for IS-IS Point-to-Point Adjacencies		
	m) RFC 5305, IS-IS Extensions for Traffic Engineering		
	n) RFC 3847, Restart Signalling for IS-IS		

	o) RFC 3590, Source Address Selection for Multicast Listener Discovery Protocol		
	p) IGMP v2 and v3 as described in RFC 2236 and RFC3376 with IGMP Routing Policies to filter IGMP requests.		
40	The router shall support Virtual Router Redundancy Protocol (VRRP) as per IETF RFC 3768		PQC
41	Router shall support SNMP v2/v3 and NTP		PQC
42	Shall support BFD for both single hop and multihop sessions		PQC
43	Shall support the following OAM features and actions such as syslog/ link down should be configurable on OAM event trigger:		PQC
	a) 802.3ah		
	b) 802.1ag		
	c) Y.1731		
44	Shall support Multi-chassis LAG		PQC
45	IPv6 Features		PQC
	a) IPv6 Ping		
	b) IPv6 trace route		
	c) OSPF v3		
	d) IS-IS		
	e) VRRPv3		
	f) IPv6 CoS (classification & rewrite, scheduling based on TC)		
	g) IPv6 ACL		
	h) 6PE and 6VPE		
46	Multicast Feature: It shall support following:		PQC
	a) It shall support IGMP snooping v2/ v3		
	b) The router shall support PIM Sparse Mode, RFC4601 (optional)		
	c) Rendezvous Point (RP) - ability to be configured as an RP		
	d) RFC 3569, Source Specific Multicast (SSM)		
	e) RFC 2365, Administratively Scoped IP Multicast		
	f) RFC 3446, Anycast Rendezvous Point (RP) Mechanism using Protocol Independent Multicast (PIM) and Multicast Source Discovery Protocol (MSDP).		
	g) RFC 3618, Multicast Source Discovery Protocol (MSDP).		
47	The proposed router should be NEBS level 3 compliant. NEBS Certification is not required for PMA. However OEM has to produce certificate		PQC

	from standard lab approved or authorized by Govt. of India that the supplied Products are equivalent to NEBS and meet all standard and specification of NEBS		
48	The device should comply to the following safety standards		PQC
	a) EN 55022 Class A Emissions (Europe)		
	b) FCC Class A (USA) Radiated Emissions		
	c) UL 60950-1 Information Technology Equipment –Safety		
	d) EN 60825-1 Safety of Laser Products		
	e) EN-61000-4-11 Voltage Dips and Sags		
	f) ETS-300386 Electromagnetic Compatibility Requirements		
	g) The device will conform to the following EN/IEC standard:		
	i. 61000-4-2 – ESD		
	ii. 1000-4-3 Radiated Immunity		
	iii. 61000-4-4 – EFT		
	iv. 61000-4-5 - Surge		
	v. 61000-4-6 – Low Frequency common immunity		
49	The offered devices must support following functionalities to support 3rd party SDN (in future)		
	a) The router should support RFC 6020, YANG - AData Modelling Language for the Network Configuration		PQC
	b) Protocol (NETCONF)		PQC
	c) The solution should support the network configuration protocol (NETCONF) that provides mechanisms to install, manipulate, and delete the configuration of network devices, RFC 6241		PQC
	d) The router should be able to act as Path computation client in the PCE architecture defined in RFC 4655.		PQC
	e) The router should support PCECP as defined in RFC 5440.		PQC
	f) The router should support BGP link-state (BGP-LS), RFC 4655		PQC
	g) The router should support SPRING		Optional
50	Devices shall support following for Provisioning		
	a) Use NETCONF (RFC 6241, RFC 6242, RFC 5277)		PQC

	b) REST based CRUD operations for configuration and management.		PQC
	c) Web Services based operations for configuration and management		Optional
51	The offered devices must support API/ NBIs for autodiscovery of Services and Physical & Logical Topology		PQC
52	TELEMETRY Function: It shall support following:		
	a) The router should support telemetry based on push model for monitoring network devices		PQC
	b) The router should support various software models/ sensors for capturing different health parameters from the devices		PQC
	c) The router should support sending telemetry data to multiple consumers simultaneously		PQC
	d) The router shall support GPB/ GRPC/ KAFKA encoding for telemetry data		PQC
	e) The software model/ sensors should be based on either yang, xml or open config		PQC
	f) The solution shall use either UDP or GRPC for transport of telemetry data		PQC
	g) The system should support streaming granularity of atleast 10 sec		PQC
	h) The router shall have the ability to interact with open standard based tools		PQC
	i) The system should support REST API for communication with third party tools and applications		PQC
	j) Enabling telemetry should not have any adverse impact on the performance of the device/ router		PQC
	k) Some of the streaming models/sensors the routers should support are:		PQC
	<u>System</u>		
	Chassis Environment		PQC
	Line card utilization (memory , processor, QoS, Temp, Port utilization), errors counters		PQC
	Controller Card sensors (memory, CPU, Temp etc)		PQC
	Fabric statistics		Optional
	ARP table state		Optional
	Routing prefix information		Optional
	<u>Interface</u>		

	Interface statistics (Physical and logical interfaces)		PQC
	Interface optical diagnostic		Optional
	Congestion and latency		Optional
	Filter statistics		Optional
	Protocol		Optional
	BGP peer information		Optional
	ISIS State, Interface, Adjacency statistics, LSDB		Optional
	ISIS SPRING / Segment Routing Statistics		Optional
	RSVP Interface Statistics		PQC
	LSP statistics		PQC
	LSP Event Export, Experimental		PQC
	IP SLA/RPM (or equivalent) reporting		PQC
	Segment Routing statistics		PQC
	DHCP statistics		Optional
53	Router should support Dual Image/Partition with USBflash drive booting option for OS recovery		PQC
54	Router should support jumbo frame.		PQC
55	Router should support port mirroring		PQC
56	Routers should support security features of Broadcast/ Multicast/ Unicast Storm control.		PQC
57	Router should comply to following Temperature performance parameters:		PQC
	i. Operating Temperature: 0 to 40 degree C or better		
	ii. Storage Temperature : -10 to 60 degree C or better		
58	Routers should support following Metro Ethernet Features:		PQC
	i. ITU-T G.8032 Ethernet Ring Protection designed for loop protection or alternate mechanism to achieve ring protection in less than 50 ms		
	ii. Should support multiple Ring up to 8 ring (main and sub ring) protection failover within 50 ms or ITU-T G.8032 v2.		
59	The operating system of the Routers category/ series/family should be MEF 9/14 or CE (Carrier Ethernet) Certified.		PQC
60	The Router shall be designed for continuous operations with dual fan system.		PQC
61	Router should support CFM and LFM alarms.		PQC
62	Shall support HQoS, option of traffic shaping per VLAN based.		PQC
	i. Shall support at least 4K Queues.		
	ii. Per-VLAN policing.		

	iii. Per-VLAN rewrite		
	iv. Per-VLAN two-rate tri-color marking.		
	v. Per-VLAN classification		
	vi. Per-VLAN filtering		
63	Support for P and PE router functionality for MPLS on the same router simultaneously and on all the interfaces.		PQC
64	Router shall support E-Line or E-LAN MEF standards.		PQC
65	Routers should be rack mountable to fit into a standard 19-inch rack		PQC
66	OEM shall ensure that use of third-party optics shall not be explicitly blocked on the Router. Router must support all MSA complied Optics available in market.		PQC
67	Segment Routing		
	i. Router should be able to support SR standards on IPv6 whenever it is firm-ed up to without any cost to RCIL.		PQC
	ii. The router should support SR-MPLS data plane and protocols OSPF, IS-IS and BGP Segment routing extensions		PQC
	iii. Traffic Steering of SR policies with Auto route Include and Segment Routing TI-LFA SRLG Protection		Optional
	iv. LSP ping, trace-route, Pseudo wire Ping over Segment Routing, trace route for binding-SID		PQC
	v. MPLS-LDP interworking with SR-ISIS and SR-OSPF		PQC
	vi. TI-LFA with IGP (Link, Node, Local SRLG, Remote SRLG protection)		Optional
	vii. Controller instantiated SR Policy (PCEP, BGP) and SR policy based on demand next hop		Optional
	viii. Router should have capability to calculate Bandwidth based path using centralized controller.		PQC
	ix. Shall support SR and MPLS (LDP) Interworking Mapping Server		PQC
	x. The router shall support dynamic point-to-point interface latency performance measurement. The measurement must be integrated in the IGP and BGP LS for SDN Controller Analysis.		Optional
	xi. Label distribution protocol and segment		PQC

	routing should coexist and there should support option to prefer LDP over segment routing.		
68	EVPN Features		
	i. Router should have support of Ethernet VPN (EVPN with single homing, multi homing)		PQC
	ii. Router should have support of following features on EVPN: EVPN-IRB, EVPN VPWS, EVPN VPWS Preferred Path over SR-TE Policy		Optional
69	Router to support GRE tunnels (RFC 2784).		PQC
70	On Site OEM Warranty (Year) - 3 years		

SOR item 3: Router Type III Technical Specifications

SN	Description	Compliance
1	The Router shall be designed for continuous operations. The bidder shall furnish the MTBF (Mean Time between Failures) and MTRR (Mean Time to Restore) and predicted and observed values along with calculations by manufacturer.	
2	In case of full system failure, Router shall maintain a trace area in the NVRAM, which would be used for analysis/ diagnosis of the problem.	
3	Router shall have built in power on diagnostics system to detect hardware failures.	
4	Should have DC power supply arrangement without any external adaptors with redundant power supply.	
5	Router shall have suitable Visual Indicators for diagnostics and healthy/ unhealthy status of ports & modules.	
6	Router shall have 8 Nos. of Gigabit SFP ports and 4 Nos. RJ45 10/100/1000 Base – TX / SFP Port with RJ-45 SFP and 4 Nos. of 10 Gigabit SFP+ ports complying to IEEE 802.3, IEEE 802.3u and 802.3ab standard, supporting half duplex mode, full duplex mode and auto negotiation on each port of 1G to optimize bandwidth.	
7	Router shall have minimum of 52 Gbps (full duplex) forwarding bandwidth at layer 2 switching fabric.	
8	Router shall have a minimum of 16000 MAC address space.	
9	Bidder to propose Router having Operating and Storage Temperature as per environmental requirement. However, the Router should be capable of working at temperature 0 to 45 degree (minimum).	
10	It should be possible for the Router to be mounted on a 19-Inch rack. All accessories required for this mounting should be supplied.	
11	Should support jumbo frame.	
12	Shall have the following MPLS features:	

	i. Shall support Static IPv4 and Ipv6 routing. It shall also support OSPFv2 and OSPFv3.	
	ii. Shall also support BGP and ISIS based routing.	
	iii. Shall also support MPLS with RSVP and LDP signaling. It shall support MPLSFRR and L3VRF with upto 128 VRF/L2VPN/VPLS	
	iv. Shall support a scale of 250 VLAN and shall support Ethernet OAM features like BFD, 802.3ah, 802.1ag and Y.1731	
	v. Shall support at least 12K MPLS labels.	
	vi. Shall support 16K for IPv4 routes and 4K for IPv6 routes.	
	vii. It shall support LSP ping and trace.	
	viii. It shall support 8 hardware queues per port and shall support ingress policing and egress shaping.	
	ix. Should support Segment routing, TI-LFA, R-LFA, MPLS-TE	
	x. Shall support MPLS based L3, L2 VPN & VPLS services.	
	xi. It shall also support SYNC Ethernet/ IEEE 1588V2 (PTP) and SNMPv3.	
	xii. Shall support remote telnet and SSH capabilities and it shall be possible to integrate with NMS system	
	xiii. Shall conform to UL 60950 or IEC 60950 Standards for safety requirements of IT Equipment.	
	xiv. Shall conform to EN55022 Class A/B or CISPR22 Class A/B or CE Class A/B for EMC for (ElectroMagnetic Compatibility) or latest.	
13	Shall have the following features. All software's/hardware's/License required for this must be supplied along with the Router.	
	i. Link Aggregation Control (LCAP) as per IEEE 802.3ad.	
	ii. Support for IEEE 802.1Q VLAN on all ports.	
	iii. Support for minimum 256 VLANs.	
	iv. Support for IEEE 802.1 D spanning tree protocol / 802.1 s MSTP	
	v. Support for IEEE 802.1 s MSTP.	
	vi. Support Dynamic Host Configuration Protocol (DHCP).	
	vii. Support Auto-MDIX (Media Dependent Interface Cross over)	
	viii. Support Inter VLAN IP routing for full layer -3 routing.	
	ix. Support for IPv6.	
	x. Support Strict Priority Queuing.	
	xi. Support Network Time Protocol (NTP)/ Simple Network Time Protocol (SNTP) based.	
	xii. RFC 1305 / 2030 for synchronization of date & time from the Central NTP Server.	
	xiii. Support RADIUS protocol for console access restriction and authentication as per RFC 2138.	
	xiv. Support 4 group of embedded RMON (history, static's and alarms). or advanced level monitoring like Performance monitoring, Statistics, Alarm logging and event management, Telemetry and SNMP Polling of data	

	xv. Support multiple privilege level to provide different level of access on console port and telnet sessions	
	xvi. Support classification and scheduling as per IEEE 802.1P on all ports.	
	xvii. Support Port Spanning functionally for measurements using a networks analyzer.	
	xviii. Support all the standard MIBs (MIB-I&II).	
	xix. Support for console port Interface for configuration and diagnostics purposes.	
	xx. Support Port Spanning functionally for measurements using a networks analyzer.	
	xxi. ITU-T G.8032 Ethernet Ring Protection designed for loop protection and fast convergence times (sub 50 ms) in ring topologies	
	xxii. Should support multiple Ring up to 8 ring (Main and Sub Ring) protection failover within 50ms (up to 10 Router in ring) or ITU-T G.8032 v2 (Confirmed roadmap within a year time is also acceptable for ITU-T G.8032 v2 with no additional cost to RailTel).	
	xxiii. Should support Optical Transceiver Digital Diagnostic Monitoring.	
	xxiv. Priority queues: Eight hardware-based queues per port for flexible QoS management	
	xxv. Traffic prioritization: Flow-based QoS with internal and external (a.k.a., remarking) prioritization	
	xxvi. Bandwidth management: Flow-based bandwidth management, ingress rate limiting; egress rate shaping per port.	
	xxvii. Queue management: Configurable scheduling algorithms — Strict Priority Queuing (SPQ), Weighted Round Robin (WRR) and Deficit Round Robin (DRR) or better. Rack Mountable clamps for standard 19 inch Rack for each item.	
	xxviii. The following Metro Ethernet features should support:	
	1. IEEE 802.1ad Provider Bridge.	
	2. Transparent LAN Services with Service VLAN (SVLAN) and Customer VLAN (CVLAN) concept.	
	3. CVLAN to SVLAN translation and mapping	
	4. IEEE 802.1ag Ethernet OAM: Connectivity Fault Management (Support 32 MEPs).	
	5. Ethernet OAM compliant with IEEE 802.3ah.	
	6. ITU-T G.8032 Ethernet Ring Protection designed for loop protection and fast convergence times (sub 50 ms) in ring topologies	
	7. Should support Optical Transceiver Digital Diagnostic Monitoring.	
	8. Router should support minimum of 500 Ethernet flow points (EFP) or equivalent functionality.	

	9. L2 Protocol Tunneling.	
14	Router shall have support of following Standards:	
	i. IEEE 802.1D (STP) / 802.1 s MSTP	
	ii. IEEE 802.1p (CoS)	
	iii. IEEE 802.1Q (VLANs)	
	iv. IEEE 802.1ag (Connectivity Fault Management)	
	v. IEEE 802.1s (MSTP)	
	vi. IEEE 802.3x (Flow Control)cccc	
	vii. IEEE 802.3z (Gigabit Ethernet)	
	viii. IEEE 802.3ab (1000Base-T)	
	ix. IEEE 802.3ac (VLAN Tagging)	
	x. IEEE 802.3ad (Link Aggregation)	
	xi. IEEE 802.3ae (10 Gigabit Ethernet)	
	xii. IEEE 802.3ah	
	xiii. ITU-T G.8032/Y.1344 2010: Ethernet Ring	
15	Router shall have the following Certifications:	
	i. The model of the Routers series shall have MEF- (9 & 14)/ CE2.0 or IEEE standards or higher certification from authorized agencies.	
	ii. Deleted.	
	iii. CE / FCC.	
	iv. Shall conform to UL 60950 or IEC 60950 or EN 60950 Standards for safety requirements of ITEquipment.	
	v. Shall Confirm relevant standards of EN/CE/FCC for EMC for (Electro Magnetic Compatibility).	
	vi. Deleted.	
16	OEM should have a valid ISO 9001 & ISO 14001 certification on the date of openingof bid	
17	IPv6 feature should be ready from day 1.	
18	"Router/ Router OS should be tested and certified for EAL 2 / NDPP (Network Device Protection Profile) or above under Common Criteria Program for security related functions or under Indian Common Criteria Certification Scheme (IC3S) by STQC, DEIT, Govt. of India."	
19	On Site OEM Warranty (Year) - 3 years	

SOR item 4: Router Type IV Technical Specifications

SN	Description	Compliance
1	Architecture:	
1.1	Proposed Routers should support SDWAN ready	
1.2	The router should be a single box configuration for ease of management.	
1.3	It shall support hardware based VPN (3DES/AES) Encryption, MD5, SHA, SHA-256	
1.4	The router shall support complete Firewall features.	

1.5	Router shall support minimum 200K IPv4 and 50K Ipv6 routes.	
1.6	The Router shall have enough "High-performance multicore processors capacity and 4 GB DRAM and 4GB Flash Memory from Day1. So as to efficiently meet all the functionalities laid down in the specifications.	
1.7	It shall have integrated USB port.	
1.8	It shall be supplied with necessary power cards, data cables, connectors, bracket accessories, wire managers and other appropriate accessories. Routers shall be capable of working with 110 – 240 Volts AC nominal at frequency 50 +/- 2 Hz.	
2	Performance:	
2.1	It shall support high performance traffic forwarding with con-current features like firewall and encryption	
2.2	Router shall support aggregate WAN throughput of 200Mbps from Day-1 and IPSEC Throughput of 50 Mbps from Day-1.	
2.3	It shall support variety of Ethernet Interfaces – 2 SFP GigE ports & 4 port LAN 10/100/1000 Mbps port.	
2.4	It shall support other IP Services like GRE Tunneling, ACLs, IPSEC VPNs, Firewalling, NAT services.	
3	High Availability:	
3.1	It shall support non-stop forwarding for fast re-convergence of routing protocols.	
3.2	It shall support VRRP or equivalent	
4	Protocol Support:	
4.1	The router shall have routing protocols like IS-IS, RIP ver1 & RIP Ver.2, OSPF ver2, BGP4.	
4.2	It shall support multicast routing protocols IGMPv1/ v2/v3, PIM	
4.3	It shall support DHCP, Ipv6 QoS and Ipv6 Multicast, OSPFv3	
5	Quality of Service (QoS) Features:	
5.1	The router shall support the following:	
5.1.1	Classification and Marking: Policy based routing, IP Precedence, DSCP.	
5.1.2	Congestion Management: WRED, Priority queuing, Class based weighted fair queuing.	
5.1.3	Traffic Shaping and Policing for QoS	
6	Security Features:	
6.1	The router shall support GRE Tunneling & NAT Services.	
6.2	It shall support MD-5 route authentication	
6.3	It shall support AAA support using Radius.	
6.4	It shall support DoS prevention	
6.5	It shall support IP Access list to limit Telnet and SNMP access to router.	
6.6	It shall support multiple privilege level authentications for console and telnet access through Local database or through an external AAA Server.	
6.7	It shall support IEEE 802.1x support for MAC address authentication.	

7	Debug, Alarms & Diagnostics:	
7.1	The router shall have display of input and output error statistics on all interfaces.	
7.2	It shall have display of dynamic ARP table.	
7.3	Trace-route and Ping shall be available.	
8	It should support Network Time Protocol	
9	Management:	
9.1	The router shall have support for CLI, Telnet and SNMPv3.	
9.2	It shall support Secure Shell for secure connectivity.	
9.3	It shall have to have dedicated console for Local management/ login through USB port/ RJ45 port /Serial	
9.4	Event and System logging: Event and system history logging functions shall be available. The Router shall generate system alarms on events. Facility to put selective logging of events onto a separate hardware where the analysis of log shall be available.	
10	Certification Requirements:	
	“Router/ Router OS should be tested and certified for EAL 2/ NDPP (Network Device Protection Profile) or above under Common Criteria Program for security related functions or under Indian Common Criteria Certification Scheme (IC3S) by STQC, DEIT, Govt. of India.”	
11	On Site OEM Warranty (Year) - 3 years	

SOR item 5: Router Type V Technical Specification

SN	Description	Compliance
1	Architecture:	
1.1	Proposed Routers should support SDWAN ready	
1.2	The router should be a single box configuration for ease of management.	
1.3	It shall support hardware based VPN (3DES/ AES) Encryption, MD5, SHA, SHA-256	
1.4	The router shall support complete Firewall features.	
1.5	Router shall support minimum 100K IPv4 and 50K Ipv6 routes.	
1.6	The Router shall have enough “High-performance multicore processors capacity and 4 GB DRAM and 4GB Flash Memory from Day1. So as to efficiently meet all the functionalities laid down in the specifications.	
1.7	It shall have integrated USB port.	
1.8	It shall be supplied with necessary power cards, data cables, connectors, bracket accessories, wire managers and other appropriate accessories. Routers shall be capable of working with 110 – 240 Volts AC nominal at frequency 50 +/- 2 Hz.	
2	Performance:	
2.1	It shall support high performance traffic forwarding with con-current features like firewall and encryption.	

2.2	Router shall support aggregate WAN throughput of 100 Mbps from Day-1 and IPSEC Throughput of 50 Mbps from Day-1	
2.3	It shall support variety of Ethernet Interfaces – 1 RJ45 GigE and 1 SFP GigE port & 4 port LAN 10/100/1000 Mbps port.	
2.4	It shall support other IP Services like GRE Tunneling, ACLs, IPSEC VPNs, Firewalling, NAT services.	
3	High Availability:	
3.1	It shall support non-stop forwarding for fast re-convergence of routing protocols.	
3.2	It shall support VRRP or equivalent	
4	Protocol Support:	
4.1	The router shall have routing protocols like IS-IS, RIP ver1 & RIP Ver.2, OSPF ver2, BGP4.	
4.2	It shall support multicast routing protocols IGMPv1/ v2/v3, PIM	
4.3	It shall support DHCP, Ipv6 QoS and Ipv6 Multicast, OSPFv3	
5	Quality of Service (QoS) Features:	
5.1	The router shall support the following:	
5.1.1	Classification and Marking: Policy based routing, IP Precedence, DSCP.	
5.1.2	Congestion Management: WRED, Priority queuing, Class based weighted fair queuing.	
5.1.3	Traffic Shaping and Policing for QoS	
6	Security Features:	
6.1	The router shall support GRE Tunneling & NAT Services.	
6.2	It shall support MD-5 route authentication	
6.3	It shall support AAA support using Radius.	
6.4	It shall support DoS prevention	
6.5	It shall support IP Access list to limit Telnet and SNMP access to router.	
6.6	It shall support multiple privilege level authentications for console and telnet access through Local database or through an external AAA Server.	
6.7	It shall support IEEE 802.1x support for MAC address authentication.	
7	Debug, Alarms & Diagnostics:	
7.1	The router shall have display of input and output error statistics on all interfaces.	
7.2	It shall have display of dynamic ARP table.	
7.3	Trace-route and Ping shall be available.	
8	It should support Network Time Protocol	
9	Management:	
9.1	The router shall have support for CLI, Telnet and SNMPv3.	
9.2	It shall support Secure Shell for secure connectivity.	
9.3	It shall have to have dedicated console for Local management/ login through USB port/ RJ45 port/ serial	

9.4	Event and System logging: Event and system history logging functions shall be available. The Router shall generate system alarms on events. Facility to put selective logging of events onto a separate hardware where the analysis of log shall be available.	
10	Certification Requirements:	
	“Router/ Router OS should be tested and certified for EAL 2/ NDPP (Network Device Protection Profile) or above under Common Criteria Program for security related functions or under Indian Common Criteria Certification Scheme (IC3S) by STQC, DEIT, Govt. of India.”	
11	On Site OEM Warranty (Year) - 3 years	

SOR item 6: Switch Type I Technical Specifications

SN	Specification	Compliance
1	The LAN switch shall be standalone/ rack mountable with the following ports:	
2	20 Nos. 10G SFP+ and 2 Nos. QSFP+ 40G ports.	
3	The switch should support RJ-45 console port and industry standard CLI	
4	The switch should support Reset button to make switch reset to default.	
5	The switch should support RJ-45 management port	
6	Switch should have 02 power supply in 1+1 in redundant mode. It should support type (-48v DC supply) of power source supply on a Single Power Port.	
7	General Specification:	
8	The LAN Switch should support below specs Min 256MB RAM, 16MB flash, 1.5MB buffer.	
9	The LAN switch shall be available with minimum Switching Fabric. 128 Gbps	
10	The LAN switch shall have minimum packet forwarding rate at 64-byte packet length 95 Mpps	
11	The LAN switch shall support minimum 16K MAC address.	
12	The LAN switch shall support 1024 static MAC address entries	
13	The LAN switch shall have 1K IGMP and 1K MLD snooping groups.	
14	Switch should support Dying Gasp or Syslog/SNMP-Trap for quick trouble shooting during power failures/ system shut down.	
15	Layer-2 Features:	
16	The LAN switch shall support IEEE 802.1Q VLAN up to 255 Active VLANs and 4094 VLAN ID.	
17	Deleted	
18	Deleted	
19	It shall support edge port in STP, RSTP, MSTP (16 instances), BPDU filtering.	

20	It shall support 802.1d, 802.1p, 802.1Q, 802.1s, 802.1w, 802.1x, 802.3x, 802.1ab.	
21	It shall support spanning-tree root guard and loop guard to prevent other edge switches becoming the root bridge.	
22	It shall support IGMP snooping v1, v2 and v3, IGMP Proxy, IGMP Querier and MLD/MLD Querier.	
23	It shall support Link Aggregation Protocol (LACP) as per IEEE 802.3ad and and 8 groups per device/8 ports per group.	
24	It shall Support for Detection of Unidirectional links and to disable them to avoid problems such as spanning tree loops and support Unidirectional Link Detection (UDLD) or any other industry equivalent protocol	
25	It shall have supports L2/L3/L4 QoS/CoS solutions help ensure that critical network services such as VoIP, ERP, Intranet, and video conferencing are served with proper priority.	
26	It shall support unknown unicast and multicast port blocking to allow tight control by filtering packets that the switch has not already learned how to forward.	
27	It shall support unicast MAC filtering to prevent the forwarding of any type of packet with a matching MAC address.	
28	Switch shall support for Admission Control features to improve the network's ability to automatically identify, prevent, and respond to security threats and also to enable the switches to collaborate with third-party solutions for security-policy compliance and enforcement before a host is permitted to access the network.	
29	It shall be able to discover the neighboring device of the same OEM giving the details about the platform, IP Address, Link connected through etc, thus helping in troubleshooting connectivity problems. It shall support LLDP or LLDP-MED for network discovery	
30	There shall be support for Asynchronous data flows upstream and downstream from the end station or on the uplink using ingress policing and egress shaping	
31	It shall support Optical Transceiver Digital Diagnostic Monitoring and link layer monitoring through 802.3ah or UDLD/IPSLA/ TWAMP	
32	It shall support configuration rollback to replace current configuration with any saved configuration file	
33	Deleted	
34	Quality of Service (QoS) Features:	
35	The LAN switch shall have per-port broadcast, multicast, and unicast storm control.	
36	There shall be 8 or better hardware-based queues per port for flexible QoS management	
37	There shall be Shaping and Scheduling supports of WRR/ WRED/SRR	

38	The switch should support QOS based on Switch port, 802.1p priority queues, vLAN ID, MAC addresses, IPv4/IPv6 addresses, DSCP, ToS, Protocol type, TCP/UDP ports, Ipv6 traffic class	
39	It should support Time-Based QOS	
40	It shall support BPDU filtering feature, to shut down Spanning Tree Protocol Port Fast enabled interfaces when BPDUs are received to avoid accidental topology loops.	
41	Network Security Features:	
42	The LAN switch shall support IEEE 802.1x to allow dynamic, port-based security, providing user authentication, Dynamic VLAN assignment	
43	The LAN Switch shall support Compound Authentication and Change of authorization	
44	It shall support unicast MAC filtering to prevent the forwarding of any type of packet with a matching MAC address.	
45	It shall support unknown unicast and multicast port blocking to allow tight control by filtering packets that the switch has not already learned how to forward	
46	It shall support IGMP filtering to provide multicast authentication by filtering out no subscribers and limits the number of concurrent multicast streams available per port	
47	It shall support for SSHv2, SSL v2/v3, SNMPv3 to provide network security by encrypting administrator traffic during Telnet, SSH and SNMP sessions.	
48	It shall support IMPB, DHCP snooping, IPSG and dynamic/static ARP inspection	
49	The switch shall be able to work on both Ipv4 and Ipv6 (dual stack) from day one	
50	It shall support Port Mirroring (minimum 4 mirror session) based on port basis/ VLAN basis to support intrusion prevention system deployment in different VLANs.	
51	It shall support RADIUS authentication to enable centralized control of the switch and restrict unauthorized users from altering the configuration.	
52	It shall support MAC address notification to allow administrators to be notified of users added to or removed from the network	
53	It shall support port security up to 1K MAC address to secure the access to an access or trunk port based on MAC address. After a specific timeframe, the aging feature should remove the MAC address from the switch to allow another device to connect to the same port.	
54	It shall support multilevel security on console access to prevent unauthorized users from altering the switch configuration.	
55	It shall support BPDU filtering feature, to shut down Spanning Tree Protocol Port Fast enabled interfaces when BPDUs are received to avoid accidental topology loops.	

56	It shall support Spanning-Tree Root Guard (STRG) to prevent edge devices not in the network administrator's control from becoming Spanning Tree Protocol root nodes.	
57	Management:	
58	Deleted	
59	It shall support Unidirectional Link Detection (UDLD) or similar mechanism to detect Unidirectional Link Fault.	
60	It shall have Layer 2 trace route to ease troubleshooting by identifying the physical path that a packet takes from source to destination	
61	It shall support Web based or Trivial File Transfer Protocol (TFTP) and File Transfer Protocol (FTP), SCP	
62	It shall support Simple Network Time Protocol/ Network Timing Protocol (SNTP/ NTP) to provide an accurate and consistent time stamp to all intranet switches	
63	It shall support RMON v1 and v2 standards and 4 RMON groups	
64	It shall support SNMPv1, SNMPv2c, and SNMPv3 and Telnet interface support to deliver comprehensive in-band management, and a CLI-based management console to provide detailed out-of-band management and Web Management for better manageability.	
65	It should support routing protocol static and RIP/OSPF.	
66	Switch should support Surge Protection on power input	
67	Switch should support Surge Protection to ± 2 kV (line-earth) and ± 2 kW (line-line) on power input	
68	Loopback Detection (LBD)	
69	It should support 63 IP interface, 8 loopback interfaces and Intervlan routing	
70	It shall support default routing and static routing Support for 128 static Ipv4 routes and Support 64 static Ipv6 routes	
71	It shall support VRRP v2	
72	Should support authentication to allow an IP phone and a PC to authenticate on the same switch port while being placed on the appropriate voice and data VLANs or Should Support 802.1x based access control.	
73	Deleted	
74	It should support Port-based VLAN, MAC-based VLAN, VLAN Trunking, Voice VLAN and Surveillance VLAN, Private VLAN, GVRP, GARP/VTP, IP-Subnet Based VLAN and ISM VLAN (MVR)/IGMP filtering, Guest VLAN	
75	Should have the ability to disable per-VLAN MAC learning	
76	Should support MAC Authentication Bypass (MAB)	
77	Switch must support Zero Touch Deployment feature so that it can automatically obtain IP address and configuration file from remote server	
78	It should support flex link or Back up link.	
79	Deleted	

80	It should support Ethernet Ring Protection Switching ERPS v1 and v2 for main ring and sub rings : G.8032 ERPS Ring Protection Switching provides loop avoidance with redundancy in Layer-2 Ethernet networks using concept of RPL (Ring Protection Link). The switch completion time (transfer time) for a failure on a ring link shall	
81	It should support IEEE 802.1QinQ mechanism and VLAN translation	
82	It shall support built-in power-on diagnostics and system monitoring capabilities to detect hardware failures.	
83	Bandwidth management: Flow-based bandwidth management, ingress rate-limiting; egress rate shaping per port.	
84	It shall loopback detection and shut or disable a physical port and VLAN based on detection of loop on that interface	
85	To check support for Standard and Extended Access Lists	
86	It shall support access list based on Ipv4/v6 address Protocol type Ipv6 flow label VLAN-ID MAC-ID DSCP Ipv6 traffic class TCP/UDP Port and User-defined packet content	
87	Switch shall support Time based ACL	
88	The Switch should support minimum 1K Ingress Access Control Entries	
89	To check IGMP static join feature.	
90	Deleted	
91	To check Login and Access control List violations shall generate alarms to Network Management System and a log of the same shall be generated.	
92	It should support of ICMPv4, ICMPv6, Telnet v4, Telnet v6, SNMP v4 and SNMP v6	
93	Switch should support PVST or equivalent.	
94	Switch should support CPU monitoring, Memory monitoring and password recovery.	
95	It should support MAC flapping feature to block a duplicate MAC to learn from uplink and downlink interface	
96	It should support duplicate address inspection	
97	Support multiple privilege level to provide different level of access on console port and telnet sessions	
98	Switch should support traffic segmentation	
99	It should support DOS attack prevention and URPF	
100	Switch should support sflow or netflow	
101	Switch should support Ipv6 Neighbor Discovery (ND)	
102	Deleted	
103	It should support DHCP Client, DHCP Server and DHCP Relay with option 82.	
104	It should support IEEE 802.1ag Ethernet OAM: Connectivity Fault Management (Support 32 MEPs)	
105	It should support Ethernet OAM compliant with IEEE 802.3ah/Y.1731	
106	It should support Radius and TACACS + Switch, Local Database	
107	It should support L2 Protocol Tunnelling for STP	

108	Should support port and vlan mirroring and jumbo frame 9K.	
109	Switch should support system log, traceroute, PING Size up to 9000 bytes or more.	
110	Switch should have dual image. Switch shouldn't go in monitor in any case mode if power off during firmware upgrade.	
111	Should support Optical Transceiver Digital Diagnostic Monitoring for All SFP ports of 1/10G.	
112	Switch should support following SNMP traps or syslog	
113	i. Interface UP & Down	
114	ii. Optical power SFP threshold alarms	
115	iii. STP Topology Changes and New root bridge	
116	iv. LLDP table changes	
117	v. Threshold alarms for Temperature.	
118	vi. Ethernet OAM SNMP alarms.	
119	Deleted	
120	Switch should comply to following Temperature performance parameters :	
121	i. Operating Temperature – min 0 to 50 °C	
122	ii. Storage Temperature - min -20 to 70 °C	
123	Safety Requirement :-	
124	Switch should have safety compliance of CE and FCC or equivalent	
125	Electromagnetic Compatibility (EMC) Requirements:-	
126	Switch should have EMC compliance of CE or equivalent	
127	Deleted	
128	Deleted	
129	Should be allowed Ipv6 ready from Day One.	
130	It shall have comprehensive debugging features required for software & hardware fault diagnosis.	
131	Switch should come with default accessories like Switch 3PIN Power cable, RJ-45 console cable, 2 mounting brackets for 19" rack mounting, Mounting kit, Quick Installation Guide.	
132	Deleted	
133	All 10G interfaces shall be of SFP+ type and shall support LR/ER/ZR. Use of third party optics should not be locked for all interfaces	
134	On Site OEM Warranty (Year) – 3 years	

SOR item 7: Switch Type II (AC Type) Technical Specification

SN	Specification	Compliance
1	Should have minimum 24 x GE SFP based ports.	
2	Should have minimum 4 nos. SFP+ based 10 GE ports.	
3	Should have at least 64 Gbps full duplex line rate traffic.	
4	Should have support for 802.3x flow control.	

5	Should support 802.1D spanning tree control/RSTP support and MSTP support.	
6	Should support management features viz. Web-based GUI/SSH, SNMP, TFTP Client SystemLog.	
7	Should support Auto MDI-II/MDI-X uplink for all the twisted pair ports.	
8	Should support 802.1Q VLAN, 802.1p Priority queues.	
9	Should support port mirroring, jumbo frame & should have at least 16K MAC address	
10	Should support console port and telnet-based management.	
11	Should have AC power supply arrangement as given below in chassis without any externaladaptors with redundant power supply (RPS): (i) AC power supply 100 to 240 V AC with 50 to 60 Hz	
12	Should support Port-based VLAN, 802.1Q Tagged VLAN along with Management VLAN	
13	Should support ITU-T G.8032 Ethernet Ring protection for Loop Protection and fast convergence time (Sub 50 ms) in ring topologies/ IEEE 802.1W RSTP for Sub Secondfailover. Industry Standard IEEE 802.1W RSTP is standard for Ring/ STP topology.	
14	Switch should support Surge Protection on power input and on Ethernet ports as perEN61000-4-5 standard and as per requirement at Indian Railway Station.	
15	Should support Quality of Service (QoS) features viz. Priority Queue, Class of Service (CoS), Rate Limiting (Bandwidth Control), Strict PriorityQueue (SPQ), Weighted Round Robin (WRR) or better, DOS attack prevention.	
16	Ipv6 feature should be ready from day 1.	
17	Minimum Operating Temperature 0 to 50 degree.	
18	It should have safety certificates as per UL/IEC/EN 60950. The switch should have EMCcertification as per EN/CE/FCC standards.	
19	Switch shall be with Rack Mountable clamps for standard 19-inch rack mountable.	
20	The Switch shall be designed for continuous operations.	
21	Should support port Trunking of at least 2 Nos. GE/10GE ports.	
22	Switch should support LLDP or similar functionality.	
23	Should support following security features viz.: i. SSL (HTTPS)/SSH, ii. Broadcast/Multicast/Unicast Storm Control, iii. DoS Attack Prevention/ DAI	
24	Switch should support following SNMP traps or syslog i. Interface UP & Down ii. Optical Power SFP threshold alarms iii. STP Topology Changes and New root bridge iv. LLDP table changes	
	Note:- 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.	
25	On Site OEM Warranty (Year) - 3 years	

SOR item 8: Switch Type III (AC&DC type both) Technical Specification

SN	Specification	Compliance
1	Should have minimum 24 x GE SFP based ports.	
2	Should have minimum 4 nos. SFP+ based 10 GE ports.	
3	Should have at least 64 Gbps full duplex line rate traffic.	
4	Should have support for 802.3x flow control.	
5	Should support 802.1D spanning tree control/RSTP support and MSTP support.	
6	Should support management features viz. Web-based GUI/SSH, SNMP, TFTP Client SystemLog.	
7	Should support Auto MDI-II/MDI-X uplink for all the twisted pair ports.	
8	Should support 802.1Q VLAN, 802.1p Priority queues.	
9	Should support port mirroring, jumbo frame & should have at least 16K MAC address	
10	Should support console port and telnet-based management.	
11	Should have AC power supply arrangement as given below in chassis without any external adaptors with redundant power supply (RPS): <ul style="list-style-type: none"> i. AC power supply 100 to 240 V AC with 50 to 60 Hz ii. -48 V DC Supply: DC power supply should work as a redundant power supply to power on the switch in case failure of AC power supply. 	
12	Should support Port-based VLAN, 802.1Q Tagged VLAN along with Management VLAN	
13	Should support ITU-T G.8032 Ethernet Ring protection for Loop Protection and fast convergence time (Sub 50 ms) in ring topologies/ IEEE 802.1W RSTP for Sub Second failover. Industry Standard IEEE 802.1W RSTP is standard for Ring /STP topology.	
14	Switch should support Surge Protection on power input and on Ethernet ports as per EN61000-4-5 standard and as per requirement at Indian Railway Station.	
15	Should support Quality of Service (QoS) features viz. Priority Queue, Class of Service (CoS), Rate Limiting (Bandwidth Control), Strict Priority Queue (SPQ), Weighted Round Robin (WRR) or better, DOS attack prevention.	
16	IPv6 feature should be ready from day 1.	
17	Minimum Operating Temperature 0 to 50 degree.	
18	It should have safety certificates as per UL/ IEC/ EN 60950. The switch should have EMC certification as per EN/ CE/ FCC standards.	
19	Switch shall be with Rack Mountable clamps for standard 19-inch rack	

	mountable.	
20	The Switch shall be designed for continuous operations	
21	Should support port Trunking of at least 2 Nos. GE/ 10GE ports.	
22	Switch should support LLDP or similar functionality.	
23	Should support following security features viz.: i. SSL (HTTPS)/SSH, ii. Broadcast/Multicast/Unicast Storm Control, iii. DoS Attack Prevention/ DAI	
24	Switch should support following SNMP traps or syslog i. Interface UP & Down ii. Optical Power SFP threshold alarms iii. STP Topology Changes and New root bridge iv. LLDP table changes	
	Note:- 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.	
25	On Site OEM Warranty (Year) - 3 years	

SOR item 9: Switch Type IV (DC Type) Technical Specification

SN	Specification	Compliance
1	Should have minimum 24 x GE SFP based ports.	
2	Should have minimum 4 nos. SFP+ based 10 GE ports.	
3	Should have at least 64 Gbps full duplex line rate traffic.	
4	Should have support for 802.3x flow control.	
5	Should support 802.1D spanning tree control/RSTP support and MSTP support.	
6	Should support management features viz. Web-based GUI/SSH, SNMP, TFTP Client SystemLog.	
7	Should support Auto MDI-II/MDI-X uplink for all the twisted pair ports.	
8	Should support 802.1Q VLAN, 802.1p Priority queues.	
9	Should support port mirroring, jumbo frame & should have at least 16K MAC address	
10	Should support console port and telnet-based management.	
11	Should have DC power supply arrangement as given below in chassis without any external adaptors with redundant power supply (RPS): - 48 V DC Supply	
12	Should support Port-based VLAN, 802.1Q Tagged VLAN along with Management VLAN	
13	Should support ITU-T G.8032 Ethernet Ring protection for Loop Protection and fast convergence time (Sub 50 ms) in ring topologies/ IEEE 802.1W RSTP for Sub Second failover. Industry Standard IEEE 802.1W RSTP is standard for Ring /STP topology.	

14	Switch should support Surge Protection on power input and on Ethernet ports as per EN61000-4-5 standard and as per requirement at Indian Railway Station.	
15	Should support Quality of Service (QoS) features viz. Priority Queue, Class of Service (CoS), Rate Limiting (Bandwidth Control), Strict Priority Queue (SPQ), Weighted Round Robin (WRR) or better, DOS attack prevention.	
16	IPv6 feature should be ready from day 1.	
17	Minimum Operating Temperature 0 to 50 degree.	
18	It should have safety certificates as per UL/IEC/EN 60950. The switch should have EMC certification as per EN/CE/FCC standards.	
19	Switch shall be with Rack Mountable clamps for standard 19-inch rack mountable.	
20	The Switch shall be designed for continuous operations.	
21	Should support port Trunking of at least 2 Nos. GE/10GE ports.	
22	Switch should support LLDP or similar functionality.	
23	Should support following security features viz.: i. SSL (HTTPS)/SSH, ii. Broadcast/Multicast/Unicast Storm Control, iii. DoS Attack Prevention/ DAI	
24	Switch should support following SNMP traps or syslog i. Interface UP & Down ii. Optical Power SFP threshold alarms iii. STP Topology Changes and New root bridge iv. LLDP table changes	
	Note:- 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.	
25	On Site OEM Warranty (Year) - 3 years	

SOR item 10: SFP+ 10G 10 KM Dual Fiber Technical Specification

1. Should be compatible with OEM equipment's like Cisco Juniper, Edgecore and D Link. IT should be MSA Complaint.
2. Should support minimum 10 km optical distance on Single mode Fiber (ITU-G652D) should have LC type connector.
3. Should have 10 Gigabit Ethernet throughput on single mode fiber.
4. Important Parameters:
 - A. Link Budget (Max Tx Power- Receiver Sensitivity) 5 dB or better.
 - B. Transceiver supply voltage: 3.3 V (Nominal)
 - C. The case operating temperature -20 Degree Centigrade to +70 Degree Centigrade.
 - D. The storage Temp: -40 Degree Centigrade to +85 Degree Centigrade
 - E. Wavelength- 1310nm (Nominal)

5. Should support Digital Diagnostic Monitoring (MSA-SFF 8472 Compliant) feature with following operating parameters:
 - A. Transceiver temperature
 - B. Laser bias current
 - C. Launch Optical Power
 - D. Received optical power
 - E. Transceiver supply voltage:
 - F. It will provide alarm and warning flags to alert the user when particular operating parameters are outside of a factory set normal range.
6. Complies with SFF-8431/8432 SFP+ MSA (Multi-Source Agreements Standards)
7. Applications- 10 Gbps Ethernet
8. Performance Certificate: The bidder will submit a satisfactory performance certificate from Telecom Service Provider/ ISP/ Govt/ PSU for the offered mak of the SFP.
9. Regulatory Compliance:
 - A. EMI/EMC compatible with FCC/ EN/ IEC
 - B. Laser Safety compatible with FDA/ EN/ IEC
 - C. RoHS compliant
10. On Site OEM Warranty (Year) - 3 years

SOR item 11: SFP+ 10G 40 KM BIDI) Technical Specification

SN	Description	Compliance
1	SFP modules should comply with multi-source agreement (MSA), enabling compatibility with other vendors equipment.	
2	Should support 20-40 kms optical distance on single fiber	
3	Should have LC type connector	
4	Should have 10 Gigabit Ethernet capacities on single mode fiber.	
5	Should support DDMI feature. Option should be available for both SFP+ and XFP	
6	Should be having valid ISO 9000 & ISO 14000 certification on the date of opening of bid.	
7	Should have CE and FCC regulatory compliances.	
8	Operating Temperature of the SFP Should be mini 0 to 65 °C (23 to 149 °F)	
9	On Site OEM Warranty (Year) - 3 years	

SOR item 12: SFP 1G 40 KM BIDI Technical Specification

1. Should be compatible with OEM equipments like Cisco Juniper, Edgecore and D Link. IT should be MSA Complaint.
2. Should support minimum 40 km optical distance on Single Fiber (ITU-G 652D) (Bi Directional on Single Mode Fiber).
3. Should have LC type connector.

4. Should have 1 Gigabit Ethernet throughput on single mode fiber.
5. Important Parameters:
 - A. Link Budget (Max Tx Power- Receiver Sensitivity) 19 dB or better.
 - B. Transceiver supply voltage: 3.3 V (Nominal)
 - C. The case operating temperature -20 Degree Centigrade to +70 Degree Centigrade.
 - D. The storage Temp: -40 Degree Centigrade to +85 Degree Centigrade
 - E. Wavelength- 1270/1330 or 1550/1310 or 1490/1550
6. Should support Digital Diagnostic Monitoring (MSA-SFF 8472 Compliant) feature with following operating parameters:
 - A. Transceiver temperature
 - B. Laser bias current
 - C. Launch Optical Power
 - D. Received optical power
 - E. Transceiver supply voltage:
 - F. It will provide alarm and warning flags to alert the user when particular operating parameters are outside of a factory set normal range.
7. Complies with SFF-8431/8432 SFP+ MSA (Multi-Source Agreements Standards)
8. Applications- 1 Gbps Ethernet
9. Performance Certificate: The bidder will submit a satisfactory performance certificate from Telecom Service Provider/ ISP/ Govt/ PSU for the offered make of the SFP.
10. Regulatory Compliance
 - A. EMI/EMC compatible with FCC/ EN/ IEC
 - B. Laser Safety compatible with FDA/ EN/ IEC
 - C. RoHS compliant
11. SFP should support all OEM Vendors devices and open all optic ports
12. On Site OEM Warranty (Year) - 3 years

SOR item 13: SFP 1G 10KM BIDI Technical Specification

1. Should be compatible with OEM equipments like Cisco Juniper, Edgecore and D Link. IT should be MSA Complaint.
2. Should support minimum 10 km optical distance on Single Fiber (ITU-G 652D) (Bi Directional on Single Mode Fiber).
3. Should have LC type connector.
4. Should provide quantity in such a way that matching pair (BX U & D) can be achieved.
5. Should have 1 Gigabit Ethernet throughput on single mode fiber.
6. Important Parameters:
 - A. Link Budget (Max Tx Power- Receiver Sensitivity) 5 dB or better.
 - B. Transceiver supply voltage: 3.3 V (Nominal)
 - C. The case operating temperature -20 Degree Centigrade to +70 Degree Centigrade.
 - D. The storage Temp: -40 Degree Centigrade to +85 Degree Centigrade
 - E. Wavelength- 1270/1330 or 1550/1310 or 1490/1550
7. Should support Digital Diagnostic Monitoring (MSA-SFF 8472 Compliant) feature with following operating parameters:
 - A. Transceiver temperature
 - B. Laser bias current

- C. Launch Optical Power
- D. Received optical power
- E. Transceiver supply voltage:
- F. It will provide alarm and warning flags to alert the user when particular operating parameters are outside of a factory set normal range.
- 8. Complies with SFF-8431/8432 SFP+ MSA (Multi-Source Agreements Standards)
- 9. Applications- 1 Gbps Ethernet
- 10. Performance Certificate: The bidder will submit a satisfactory performance certificate from Telecom Service Provider/ ISP/ Govt/ PSU for the offered make of the SFP.
- 11. Regulatory Compliance
 - A. EMI/EMC compatible with FCC/ EN/ IEC
 - B. Laser Safety compatible with FDA/ EN/ IEC
 - C. RoHS compliant
- 12. SFP should support all OEM Vendors devices and open all optic ports
- 13. On Site OEM Warranty (Year) - 3 years

SOR item 14: SFP 1G 20KM BIDI Technical Specification

SN	Description	Compliance
1	SFP module should comply with multi-source agreement (MSA), enabling compatibility with other vendor equipment.	
2	Should support 20 km optical distance on single fiber	
3	Should have LC type connector	
4	Should quote rate in pair (BX U & D)can be achieved	
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: -17dBm Transceiver supply voltage: 3.3V It also provides a sophisticated system of alarm and warning flags	
7	OEM should be having valid ISO 9000 Certificate	
8	Should have CE and FCC and UL regulatory Certificate	
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	
13	On Site OEM Warranty (Year) - 3 years	

SOR Item 15: SFP 1G 40 Km Dual Fiber Technical Specification

1. Should be compatible with OEM equipments like Cisco Juniper, Edgecore and D Link. IT should be MSA Compliant.
2. Should support minimum 40 km optical distance on Single Fiber (ITU-G 652D) Should have LC type connector.
3. Should have 1 Gigabit Ethernet throughput on single mode fiber.
4. Important Parameters:
 - A. Link Budget (Max Tx Power- Receiver Sensitivity) 19 dB or better.
 - B. Transceiver supply voltage: 3.3 V (Nominal)
 - C. The case operating temperature -20 Degree Centigrade to +70 Degree Centigrade.
 - D. The storage Temp: -40 Degree Centigrade to +85 Degree Centigrade
 - E. Wavelength- 1310nm or 1550nm
5. Should support Digital Diagnostic Monitoring (MSA-SFF 8472 Compliant) feature with following operating parameters:
 - A. Transceiver temperature
 - B. Laser bias current
 - C. Launch Optical Power
 - D. Received optical power
 - E. Transceiver supply voltage:
 - F. It will provide alarm and warning flags to alert the user when particular operating parameters are outside of a factory set normal range.
6. Complies with SFF-8431/8432 SFP+ MSA (Multi-Source Agreements Standards)
7. Applications- 1 Gbps Ethernet
8. Performance Certificate: The bidder will submit a satisfactory performance certificate from Telecom Service Provider/ ISP/ Govt/ PSU for the offered make of the SFP.
9. Regulatory Compliance
 - A. EMI/EMC compatible with FCC/ EN/ IEC
 - B. Laser Safety compatible with FDA/ EN/ IEC
 - C. RoHS compliant
10. On Site OEM Warranty (Year) - 3 years

SOR item 16: Breakout Cable (LC*4 one end, Single Mode 10 Mtr as per Technical Specification

1. MPO to LC*4 Single Mode
2. Breakout cable – 10Mtr in length
3. Compliant with IEC61754-7, TIA/EIA 604-5, GR-326, GR-1435
4. LSZH supported
5. 12-ribbon single mode fiber-cable with female MPO connector
6. 12-ribbon single mode fiber-cable with female MPO connector
7. MPO Insertion standard loss. (<0.75dB)
8. Return Loss (<-20dB)
9. MPO X/Y End-face Angel (-0.2 ~ 0.2 um)
10. Operating Temperature Range (Degree C) -40 ~ +70 C

11. 40G QSFP PSM4-LR 10KM (MPO) with MPO connector and for MPO to LC*4 Single Mode LSZH Breakout cable shall be from same OEM or OEM certified one to avoid interoperability issues.
12. On Site OEM Warranty (Year) - 3 years

SOR item 17: UTM as per the specifications

SN	Description	Compliance
1	<p>Scope or Work: Supply, Configuration, installation and Commissioning of UTM at WCL, HQ Nagpur UTM must have Features of Intrusion detection, SPAM, AntiMalware, Content filtering, VPN Capabilities, Identity based access, Load balancing, SSL and SSH inspection, Application awareness, Intrusion Prevention, Web filetering, QOS etc along with their License from Day 1.</p> <p>UTM must Support NAT (Network Address Translation), Static and dynamic routing from Day 1.</p> <p>All Supplied Hardware and software should be Maintained for 5 Years with License from Day 1 and Support Valid for 5 years from Day 1.</p> <p>All the below mentioned Features to be available from Day 1 .</p>	
2	Interfaces and Modules	
i	GE RJ45 Interfaces	16
ii	GE SFP Slots	8
iii	GE RJ45 Management Ports	1
iv	USB Ports	1
v	Console Port	1
vi	Local Storage	Minimum 512 GB SSD
vii	Included Transceivers	2x SFP (SX 1 GE)
3	System Performance — Enterprise Traffic Mix	
i	IPS Throughput	5 Gbps
ii	NGFW Throughput	3.5 Gbps
iii	Threat Protection Throughput 2, 5	3 Gbps
4	System Performance and Capacity	
i	IPv4 Firewall Throughput (1518 / 512 / 64 byte, UDP)	32 / 32 / 20 Gbps
ii	IPv6 Firewall Throughput (1518 / 512 / 64 byte, UDP)	32 / 32 / 20 Gbps
iii	Firewall Latency (64 byte, UDP)	3 μ s
iv	Firewall Throughput (Packet per Second)	30 Mpps
v	Concurrent Sessions (TCP)	4 Million
vi	New Sessions/Second (TCP)	300000
vii	Firewall Policies	10000
viii	IPsec VPN Throughput (512 byte) 1	15 Gbps
ix	Gateway-to-Gateway IPsec VPN Tunnels	2000

x	Client-to-Gateway IPsec VPN Tunnels	50000	
xi	SSL-VPN Throughput	2.5 Gbps	
xii	Concurrent SSL-VPN Users (Recommended Maximum, Tunnel Mode)	5000	
xiii	SSL Inspection Throughput (IPS, avg. HTTPS) 3	3.9 Gbps	
xiv	SSL Inspection CPS (IPS, avg. HTTPS) 3	2500	
xv	SSL Inspection Concurrent Session (IPS, avg. HTTPS) 3	340000	
xvi	Application Control Throughput (HTTP 64K) 2	7 Gbps	
xvii	CAPWAP Throughput (1444 byte, UDP)	5 Gbps	
xviii	Virtual Domains (Default / Maximum)	10	
xix	High Availability Configurations	Active-Active, Active-Passive, Clustering	
xx	UTM Must have Following Features from day 1	NAT (Network Address Translation), Static and Dynamic routing (OSPF, BGP, etc)	
5	Dimensions and Power		
i	Height x Width x Length (inches)	1.75 x 17.0 x 15.0	
ii	Height x Width x Length (mm)	44.45 x 432 x 380	
iii	Weight	16.1 lbs (7.3 kg)	
iv	Form Factor (supports EIA / non-EIA standards)	Rack Mount, 1 RU	
v	Power Consumption (Average / Maximum)	90 W / 173 W	
vi	Power Input	100V–240V AC, 50–60Hz	
vii	Current (Maximum)	6A	
viii	Heat Dissipation	595 BTU/h	
ix	Redundant Power Supplies (Hot Swappable)(inbuild)	Dual-Dual(inbuilt)	
6	Operating Environment and Certifications		
i	Operating Temperature	(0–40°C)	
ii	Storage Temperature	(-15–70°C)	
iii	Humidity	10–90% non-condensing	
iv	Noise Level	48 dBA	
v	Compliance	FCC Part 15 Class A, RCM, VCCI, CE, UL/ cUL, CB	
vi	Certifications	ICSA Labs: Firewall, IPsec, IPS, Antivirus, SSL-VPN; USGv6/IPv6	

7	Logging and Reporting solution		
i	GB/Days of Log	100 Gb/Day	
ii	Analytics sustained rate Log/sec	3000	
iii	Collector sustained rate Log/sec	4500	
iv	Maximum Number of Day Analytics(Logs) to be stored .	60 Days (Minimum 4 TB Storage)	
v	The proposed system should provide individual users download & Upload data usage report.log and monitor threats to networks, filter data on multiple levels, keep track of administrative activity, and more. generate custom data reports from logs from day 1	Yes	
vi	The proposed system should email daily group browsing reports to respective group heads in pdf forma	Yes	
vii	The proposed system should provide user and IP address based reports from day 1	Yes	
viii	The proposed system should have options to create users with different access rights (E.g. users who can only view reports and not manage the system)	Yes	
ix	The reporting solution of the proposed system should be able to provide detailed Audit log for auditing and tracking system from day 1	Yes	
x	It should provide various kinds of reports like virus reports, URL filtering reports, Top visited websites, Systems infected by Spywares, User or IP wise download for the day from Day 1. It should have graphical reports of usages ISP wise, Application wise and IP wise from day 1	Yes	
8	Other Condition		
i	UTM must not become end of support within 5 Years from Date of Issue of PO		
ii	UTM must be replaced in Next business day if found faulty at any stage during 5 years		

Annexure-II

**RGM/WR
RailTel Corporation of India Ltd.**

Dated:

.....
.....
.....

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

Ref: GeM Bid No. GEM/2023/B/3541135 dated: 28.06.2023

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

We hereby authorize M/s (bidder name), Office
..... to participate in bid and subsequently upon
award of the bid to execute the supply and Installation & Commissioning of our range of
products against your above said bid.

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

Thanking you,
Best regards,

Authorised Signatory

Annexure-III

FORMAT FOR AFFIDAVIT TO BE UPLOADED BY TENDERER ALONGWITH 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/WR, 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 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 tenderers, execution of work or final payment of the contract, the master copy available with the railway 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 alongwith 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 IR. 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/SD and Performance Guarantee besides any other action provided in the contract including banning of business for five year on entire IR.

**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.

Annexure -IV

**Guarantee Bond for Performance Guarantee
(On Stamp Paper of requisite value)
(To be used by approved Scheduled Banks)**

1. In consideration of the RailTel Corporation of India Limited, Registered office at Plate-A, 6th Floor, Office Block, Tower-2, East Kidwai Nagar, New Delhi-110023 and Regional office at RailTel Corporation of India Ltd, Mahalaxmi Railway Microwave Compound, Senapati Bapat Marg, Mahalaxmi- Mumbai- 400 013 (hereinafter called "the RailTel") having agreed to exempt **(Name and address of the Company/ Contractor both Registered and Regional office address)** (hereinafter called "the said Contractor(s)") from the demand, under the terms and conditions of an L.O.A No..... Dated..... [L.O.A Date] made between and RailTel Corporation of India Limited, for [Name of Work/Supply of Materials] (hereinafter called "the said Agreement") of **Performance Guarantee** for the due fulfillment by the said contractor's) of the terms and conditions contained in the said Agreement, or production of a Bank Guarantee for Rs..... (Rs. Only). We, (indicate the name of the Bank and address) hereinafter referred to as " the Bank") at the request of. M/s..... 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 (indicate the name of the Bank and address) do hereby undertake to pay the amount 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 (indicate the name of the Bank and address) undertake to pay to the **RailTel** any money so demanded notwithstanding any dispute or disputes raised by the Contractor(s) / Supplier(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 thereunder and the Contractor(s) / Supplier(s) shall have no claim against us for making such payment.

4. We, Bank (indicate the name of the Bank and address) 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 the Bank and address) 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. 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 toand
 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 2023 for
.....
(Indicate the name of the Bank)

Witness:

1. Signature
Name
2. Signature
Name

Annexure - V**Consignee Details:**

S.No.	Consignee	Consignee Address	RailTel Region	Items to be delivered
1	Sr. Mgr/Stores RCIL/Mumbai	RailTel Office, Mumbai	Western Region	All Items and Quantities.

Note: All the locations/stations name given above are tentative and may change. Successful Bidder may ask the final location with complete address after finalizing the tender. RailTel has the right to change location within RailTel Western Region area & firm has to supply & commission at location given by RailTel.

Annexure-VI

PROFORMA FOR Nil Deviation Component Compliance
Undertaking Letter
(TO BE SIGNED BY BIDDER)

To,
Regional General Manager/WR
RailTel Corporation of India Ltd.
Mahalaxmi, Mumbai-400013

Dear Sir,

Sub: NIL Deviation Compliance for **GeM Bid No. GEM/2023/B/3541135 Dt 28.06.2023**

Over and above all our earlier conformations and submissions as per your requirements of the bid, we confirm that,

We will ensure our unconditional compliance of all the terms and conditions as mentioned in the Tender document. In case of any deviation, the same should be attached as an Annexure (as per Format given below) to this form. In case of any deviation, RailTel reserves the right to reject the bid without giving any justification. Format of Annexure (Deviation Statement)

S. No.	Clause No. & Chapter No.	Existing Clause of Tender	Proposed Clause	Remarks, if any

All the proposed items to be supplied as per SOR for the technical specifications as mentioned in Annexure-I of Bid.

We hereby certify that the items/materials mentioned in our offer are complete.

We confirm that there is no requirement of any other hardware and software to fulfill requirements as per scope against the bid. If any additional hardware and software is required to meet in scope requirements, then it would be provided by us at no extra cost to RailTel.

Place:

Date:

Seal and signature of the bidder

(This Form along with Annexure (if required) should be on the letterhead of the bidder duly signed by an authorized signatory)

Annexure-VII

Self Certification under Preference to “MAKE IN INDIA” Policy

CERTIFICATE

In line with Government Public Procurement Order No. P-45021/2/2017-BE-II dt. 15.06.2017, as amended from time to time and as applicable on the date of submission of tender, we hereby certify that we M/s _____ (supplier name) are local supplier meeting the requirement of minimum Local content (50%) as defined in above orders for the material against Tender No _____

Details of location at which local value addition will be made is as follows:

We also understand, false declarations will be in breach of the Code of Integrity under Rule 175(1)(i)(h) of the General Financial Rule for which for which a bidder or its successors can be debarred for up two years as per Rule 151 (iii) of the General Financial Rules along with such other actions as may be permissible under law.

Seal and Signature of Authorized Signatory
