1. All Access Point should be quoted along with controller as per Technical specifications given in Annexure-I & II. The bidders will be required to quote for access point cost including the cost of controller and management systems. The bid received without controller will be summarily rejected.

2. In the specification wherever support for a feature has been asked for, it will mean that the feature should be available without RailTel requiring any other hardware/software/licenses. Thus all hardware/software/licenses required for enabling the support/feature shall be included in the offer.

3. OEM or Authorized distributor/Partner of OEM should have a registered office in India to provide sales and 24x7 support in India. The certificate to this effect should be submitted. The bidder should be either OEM or his authorized dealer/distributor.

4. Equipment offered shall have complete data sheets and detailed description on OEM web sites.

5. OEMs should be having valid ISO 9000 & ISO 14000 certification on the date of opening of bid.

6. Bidder shall submit the detailed BOM of the equipment's offered duly verified and certified by the respective OEM. The detailed BOM shall indicate quantities and price break up of various modules/sub modules/cards/Licenses required for each equipment's.

7. GSTIN ID of vendor should be provided from where good will be supplied.

8. **Earnest Money Deposit (EMD)/ Bid Security: Rs 5,00,000/- (Rs. Five Lakh)** in the form of Pay Order/Demand Draft drawn in favor of RailTel Corporation of India Ltd. payable at New Delhi. The EMD is common for access point and controller.

9. **Security Deposit/Performance Bank Guarantee**:

The successful tenderer shall submit security deposit in the form of DD/FDR 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 15 days of issue of Purchase Order with validity of 3 months beyond warranty period.

ii. The security deposit/PBG shall be submitted to Corporate Office Gurgaon.

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 New Delhi only.

10 Eligibility Criteria for OEM:

a. Each OEM can authorize up to a maximum of three (3) authorized partners to bid the tender.

b. The Equipment offered by the OEM or equipment of the same series/family from the same OEM should have been satisfactorily working in Government/PSUs/Telecom Service Providers network for at least 06 months as on 25.12.17 in India or Abroad. The certificates from the actual users will have to be submitted offline.

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c. The OEM should have supplied at least 35% of the tendered quantity of the equipment offered or equipment of the same series/family to Government/PSUs/Telecom Service Providers.OEM can submit self-certificate with proper contact detail of clients (Firm Name, Contact person, Designation, Telephone Number, Fax, Official mail id etc.). The same should be issued from authorized signatory

d. The OEM should have proven facilities for Engineering, manufacture, assembly, integration and testing of Switches and basic facilities with respect to space, Engineering, Personnel, Test equipment, Manufacture, Training, Logistic Supports for at least past three years in the country from where the proposed equipment are planned to be supplied. The certificates/Undertaking for the same will have to be submitted offline.

11. Eligibility Criteria for Bidder:

a. The tenderer should have executed single order of supply/ provision of Router /Switches/Wi-Fi/AP System equipment's costing not less than 35% of tendered value during last proceeding 3 financial years(i.e. current year and three previous financial years) from the date 25.12.17. Supply of this value against a single rate contract, during above period, will also qualify for this purpose. The bidder shall also furnish Supply/ work completion certificate issued by customer/s for the Purchase Orders/ Work Orders

b. The bidder should have annual turnover of minimum 150% of tendered quantity or above during the last 3 financial years (i.e. current year and three previous financial years). The bidder should provide Audited Balance Sheets and annual reports as documentary evidence or other such documents so as to establish the financial soundness of their company for the preceding three financial years.

c. The Bidder should have authorization specific to this tender from respective OEM.

d. The Bidder or their promoters having equity stake or operating partnership in bidder, should not be holding valid License for Telecom service provider/ISP/NLD, Services License of Government of India for Telecom Operation.

12. Warranty: The equipments (APs and Controllers) should be warranted for a period of 24 months from the date of supply.

12.1 The supplier shall warrant that material to be supplied shall be new and free from all defects and faults in material, workmanship, manufacture and shall be of the highest grade consistent with the established and generally accepted standards of materials for the type ordered and shall perform in full conformity with the specifications and drawings. The supplier shall be responsible for any defects (with respect to the specification of the material) that may develop subsequently under the conditions provided in the contract under proper use, arising out of faulty materials, design or workmanship such as corrosion, inadequate quantity of material to meet equipment requirements, 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.

12.2 If it becomes necessary for the contractor to replace or renew any defective portion/portions of the supplies under this clause, the provisions of the clause shall apply to the portion/portions of the equipment/ material so replaced or renewed or until the end of the above mentioned period, whichever may be later. If any defect is not remedied within a reasonable time, the Purchaser may proceed to do the work at the contractor's risk and expenses, but without prejudice to any other rights which the Purchaser may have against the contractor in respect of such defects.

12.3 Replacement under warranty clause shall be made by the contractor free of all charges at site including freight, insurance and other incidental charges.

12.4 The Contractor/Seller hereby covenants that it is a condition of the contract that all goods/stores/articles furnished to the Purchaser under this contract shall be of the highest grade free of all defects and faults and of the best materials, quality, manufacture and workmanship throughout and consistent with the established and generally accepted standards for materials of the type ordered and in full conformity with the contract specification, drawing or sample, if any and shall, if operable, operate properly.

12.5 The Contractor also guarantees that the said goods/stores/articles would continue to conform to the description and quality as aforesaid, for a period of 24 months from the date of supply, after their delivery or after a period as mentioned in BID data sheet from the date of placement in service whichever shall be sooner, and this warranty shall survive notwithstanding the fact that the goods/stores/articles may have been inspected, accepted and payment thereof made by the Purchaser.

12.6 If during the aforesaid period, the said goods/stores/articles be discovered not to conform to the description and quality aforesaid or have deteriorated, otherwise that by fair wear and tear the decision of the Purchaser in that behalf being final and conclusive that the Purchaser will be entitled to reject the said goods/stores/articles or such portions thereof as may be discovered not to conform to the said description and quality. On such rejection, the goods/stores/articles will be at the Seller's risk. If the Contractor/Seller so desires, the rejected goods may be taken over by him or his agents for disposal such manner as he may deem fit within a period of 3 months from the date of such rejection. At the expiry of the period, no claim whatsoever shall lie against the Purchaser in respect of the said goods/stores/articles, which may be disposed of by the Purchaser in such manner as he thinks fit.

12.7 The Contractor/Seller shall, if required, replace the goods or such portion thereof as have been rejected by the Purchaser, free of cost, at the ultimate destination, or at the option of the Purchaser, the Contractor/Seller shall pay to the Purchaser, the value thereof at the contract price and such other expenditure and damage as may arise by reason of the breach of the conditions hereinbefore specified. Nothing herein contained shall prejudice any other right of the Purchaser in that behalf under this contract or otherwise.

13. Long Term Maintenance Support/AMC:

13.1 The Bidder will submit a certificate from OEM of APs towards maintenance support after successful completion of the warranty obligations for a minimum period of 03 years. The long term maintenance support shall be comprehensive and include all hardware and software of equipment etc. supplied against this contract. RailTel should be extended the benefits of software up-grades made by OEM on the system from time to time to improve performance. During this period the following terms and conditions shall be applicable.

13.2 Material for replacement shall be handed over /taken over to contractors engineer at the RailTel's NOC or mutually agreed RailTel PoP location. The cost of replacement etc. shall be included in the quoted bid price during warranty period. During this period, the contractor shall remain responsible to arrange replacement within a week and for setting right at his own cost. The decision of the RailTel's representative in this regard to direct the contractor to attend to any damage or defect in work shall be final and binding on the Contractor.

13.3 During this period the contractor shall be responsible to the extent expressed in this clause for any

defects that may develop under the conditions provided for by the contract and under proper use, arising from faulty materials, design or workmanship in the plant, or from faulty execution of the plant by the contractor but not otherwise and shall remedy such defects at his own cost when called upon to do so by the Purchaser Engineer who shall state in writing in what respect the portion is faulty.

13.4 If it becomes necessary for the contractor to replace or renew any defective portions of the system under this clause the provisions of this clause shall apply to the portions of the equipment to be replaced or renewed until the expiration of three months from the date of such replacement or renewal or until the end of the support period whichever may be later. If any defect is not remedied within reasonable time, the purchaser may proceed to do the work at contractor's risk and expense, but without prejudice to any other rights which the purchaser may have against the contractor in respect of such defects.

13.5 Tenderer/OEM, shall be paid extra @ 3.5% of supply cost per annum towards Long Term Maintenance Support after completion of warranty period, to undertake replacements of all type of module/ card/assembly/ subassembly and update/upgrade of software released during this period and /or which may fail in the network after the warranty. In case the bidder wants to have AMC cost above 3.5% per annum then he should load the bid price accordingly. AMC would have to be valid for minimum period of 3 years after the warranty.

13.6 Separate LOA/agreement for AMC after warranty period shall be entered with OEM/ Bidder byRailTel. A fresh Bank Guarantee valid for three years for 10% of the Long Term Maintenance Support cost of three years quoted by the tenderer, shall be required to be submitted by OEM/ Tenderer for due fulfillment of long term maintenance support obligation.

13.7 Quarterly payment for AMC Charges would be made by RailTel after successful completion of AMC Services of that quarter and on the certificate furnished by concerned RailTel representative of the Executive Director of the Region.

14. Offline Submissions:

The bidder is required to submit the following documents offline to RailTel Corporation of India Ltd, Institutional Area Plot 143, Sector 44, Gurgaon before 15:00 Hrs of 26.12.2017 in a Sealed Envelope. The envelope shall bear 'DO NOT OPEN BEFORE' (due date & time as per GeM Portal). The offline documents shall be opened after 1:00 hour of the completion of reverse auction on GeM portal. In case the reverse auction is completed in the odd hours than the documents will be opened on next working day at 11:00 hours. Bids without these off line submissions will be summarily rejected.

i. EMD
ii. MAF/ OEM Authorization Letter
iii. BOQ of offered equipment.
iv. Data Sheet of offered equipment.
v. Financial and technical Eligibility Criteria documents.
vi. Technical Compliance of Specification for AP & Controller.

Note: An agreement will be signed with the successful bidder for execution of the order.

Technical Specification

1. **Mid-Range Outdoor Access Point:**

Reference	Parameters	Technical specification
CT2HW1	Hardware	Access Points proposed must include radios for both 2.4 GHz and 5 GHz.
CT2HW2	Hardware	Must have a robust design for durability, without visible vents
CT2HW3	Hardware	Must include dual band antennas to support both the 2.4GHz and 5GHz operations simultaneously.
CT2HW4	Hardware	Proposed access point shall support MDO(Mobile Data offload)
CT2HW5	Hardware	Mounting kit should be standard which shall be used for mounting access point
CT2HW5	Hardware	Must support operating humidity of 10 to 90% (noncondensing)
CT2WS1	wireless Standard	Must support 2X2 multiple-input multiple-output (MIMO) with TWO spatial streams
CT2WS2	wireless Standard	Must support simultaneous 802.11n on both the 2.4 GHz and 5 GHz radios and 802.11ac on 5ghz .
CT2WS3	wireless Standard	Must support data rates unto 800 Mbps on 5Ghz radio and 140 mbps on 2.4Ghz radio.
CT2WS4	wireless Standard	Must support 40 MHz and 80 MHz wide channels in 5 GHz.
CT2WS5	wireless Standard	Must support unto 25 dbm of transmit power in both 2.4Ghz and 5Ghz radios.
CT2RF1	RF	The Wireless AP should have the technology to improve downlink performance.
CT2RF2	RF	The AP shall be able to load-balance between 2.4Ghz and 5Ghz band.
CT2RF3	RF	Must have -90dB to -100B or better Receiver Sensitivity.
CT2RF4	RF	Must incorporate radio resource management for power, channel, coverage hole detection and performance optimization
CT2RF6	RF	Should support configurable carrier sense threshold
CT2M1	Mesh	The Wireless Backhaul shall operate in 5Ghz
CT2M2	Mesh	Support Encrypted and authenticated connectivity between all backhaul components
CT2M3	Mesh	Access point shall have wired uplink interfaces i.e. 1X10/100/1000BASE-T Ethernet
CT2R1	Roaming	Must support Proactive Key Caching and/or other methods for Fast Secure Roaming.

CT2S1	Security	Must support Management Frame Protection
CT2S2	Security	Should support locally-significant certificates on the APs using a Public Key Infrastructure (PKI) or preinstalled certs on AP for authentication
CT2S3	Security	Provision of Wireless IPS to filter malicious traffic
CT2E1	Encryption	Access Points must support a distributed encryption/decryption model.
CT2E2	Encryption	Access Points must support hardware or software based encryption
CT2M1	Monitoring	Must support the ability to serve clients or monitor the RF environment.
CT2M2	Monitoring	AP model proposed must be able to be both a client-serving AP or monitor- Intrusion Prevention services.
CT2F1	Flexibility:	Should support mesh capabilities for temporary connectivity in areas with no Ethernet cabling.
CT2F2	Flexibility:	should support QoS for voice over wireless.
CT2F3	Flexibility:	Must support Controller-based and standalone(autonomous) deployments
CT2F4	Flexibility:	Must support 16 WLANs per AP for SSID deployment flexibility.
CT2O1	Operational:	Must support telnet or SSH or console login to APs directly for troubleshooting flexibility.
CT2O2	Operational:	Must support automatic detection of dropped connection to controller,
CT2O3	Operational:	Must support automatic failover to secondary controller, upon detecting lost connection to controller
CT2O4	Operational:	Must support DHCP Option 82, defined in RFC 3046, including support for Sub-option 01 (Circuit-Id) and Sub-option 02 (Remote Id) fields.
CT2O5	Operational:	With Controller APs (from a data-plane plane perspective) must support: - Ethernet over GRE IPv6 tunnel - Automatic detection of failed tunnel termination, with configurable connection retry and timeout. - Automatic failover to secondary tunnel termination address.
CT2O6	Operational:	Support for basic AP monitoring statistics for each radio: Bytes Sent, Bytes Received, Packets Sent, Packets Received, Radio Channel Utilization, Noise.
CT2O7	Operational:	Must support data-plane split tunneling in which ACLs may be configured to enable a range of destination net blocks and/or IPs to bypass the data-plane tunnel and be bridged on the wired interface.
CT2P1	Power:	Must support Power over Ethernet/PoE+/UPoE/Power Injector/AC/DC .
CT2Q1	Quality of Service:	shall have the support of 802.11e and WMM

CT2Q2	Quality of Service:	Should be Wi-Fi Alliance certified and WPC Approved and ETA Certified
CT2Q3	Quality of Service:	Must support QoS to prioritize video ,voice and Data traffic
CT2EES 1	Environmental and Electrical Specifications	Must support QoS and Video Call Admission Control capabilities.
CT2EES 2	Environmental and Electrical Specifications	Access point shall support powering from POE/PoE+/UPoE /Power Injector/AC/DC.
CT2EES 3	Environmental and Electrical Specifications	Access point shall support pole, wall, and roof mounting options.
CT2EES 4	Environmental and Electrical Specifications	Geographic orientation flexibility – tilt angle for pole, wall, and roof mounting units
CT2EES 5	Environmental and Electrical Specifications	The equipment shall support up to 100 MPH sustained winds & 140 MPH wind gusts.
CT2EES 6	Environmental and Electrical Specifications	The Access point shall be IP67 certified.
CT2EES 7	Environmental and Electrical Specifications	The Access point shall be rated for operation over an ambient temperature range of 0C to +60 C

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Specification of Cloud/Appliance based Wireless Controller:

The below mentioned parameters are minimum specifications of the controller. Bidders has to propose Cloud/Appliance based Wireless Controller to meet the requirement as per the tender without any cost Implication for Railtel.

Reference	Parameters	Technical specification
WCHW1	Hardware and Standards	Must be compliant with IEEE CAPWAP or equivalent for controller-based WLANs.
WCHW2	Hardware and Standards	Controller should support 5000 access points from Day 1 from single chassis. If any OEM/Bidder can't provide WLAN controller to support 5000 AP in 2U form factor, multiple stackable controllers must be proposed from Day One from single chassis of minimum 2000 Access Point. Proposed controller should support 1+1/N+1 redundancy from the day one. The solution should be scalable to support 20000 or more APs. The cloud bases solution should be implemented in Railtel Data Centre
WCHW3	Hardware and Standards	Controller must have at least 4 x 10Gbps of uplink interfaces.
WCHW4	Hardware and Standards	Controller shall support 30000 concurrent sessions from a single chassis
WCHW5	Hardware and Standards	WLAN controller shall support Mobile data offload as a feature
WCC1	Compatibility	Must not require a separate controller for Wireless Intrusion Prevention Access Points.
WCHA1	High Availability	Must support both 1+1 and N+1 redundancy models.
WCHA2	High Availability	Must have feature for stateful recovery without re-authentication of the client in the event of LAN and WLAN infrastructure disruption to deliver a non-stop client session
WCHA3	High Availability	Must support internal redundant power supplies.
WCRF1	RF Management	Must support an ability to dynamically adjust channel and power settings based on the RF environment.
WCRF2	RF Management	Radio coverage algorithm must allow adjacent APs to operate on different channels, in order to maximize available bandwidth and avoid interference
WCRF3	RF Management	Must have Automatic 802.11 interference detection, identification, classification, and mitigation.
WCRF4	RF Management	Must support coverage whole detection and correction
WCRF5	RF Management	Must support RF Management with 20/40/80 MHz channels with 802.11a/b/g/n/ac

WCIP1	IPv6 features	WLC should support L2 and L3 roaming of IPv6 clients
WCIP2	IPv6 features	WLC should support Guest-access functionality for IPv6 clients
WCP1	Performance:	Controller performance must remain the same if encryption is on or off for wireless SSIDs except the throughput processing of the controller.
WCS1	Security:	Should adhere to the strictest level of security standards, including 802.11i Wi-Fi Protected Access 2 (WPA2), WPA, Wired Equivalent Privacy (WEP), 802.1X with multiple Extensible Authentication Protocol (EAP) types, including Protected EAP (PEAP), EAP with Transport Layer Security (EAP-TLS), EAP with Tunnelled TLS (EAP-TTLS)
WCS2	Security:	Should support Management frame protection for the authentication of 802.11 management frames by the wireless network infrastructure.
WCS3	Security:	The Controller should support a capability to shun / block WLAN client in collaboration with wired IPS on detecting malicious client traffic.
WCS4	Security:	Controller should have rogue AP detection, classification and automatic containment feature
WCS5	Security:	Controller should be able to detect attacks like Broadcast deauthentication, NULL probe, from day one for all access points
WCS6	Security:	Controller should have profiling of devices based on protocols like HTTP, DHCP and more to identify the end devices on the network
WCG1	Guest Wireless	Must support internal and external web authentication.
WCF1	Functionality	Must be able to set a maximum per-user bandwidth limit on a per-SSID basis.
WCF2	Functionality	Must support user load balancing across Access Points.
WCF3	Functionality	Controller must provide Mesh capability for Mesh supported AP.
WCM1	Monitoring	Must be able to use APs to monitor for Intrusion Prevention Services
WCR1	Roaming:	Must support client roaming across controllers separated by a layer 3 routed boundary.
WCR2	Roaming:	Solution proposed must support clients roaming across at least 500 APs.
WCO1	Operational:	Must support AP over-the-air packet capture for export to a tool such as Wire shark.
WCO2	Operational:	Should be able to classify different types of interference
WCO3	Operational:	Should provide a snapshot of air quality in terms of the performance and impact of interference on the wireless network identifying the problem areas.
WCO4	Operational:	Should provide real-time charts showing interferers per access point, on a per-radio, per-channel basis.
WCO5	Operational:	Should support encrypted mechanism to securely upload/download software images to and from wireless controllers

WCO6	Operational:	Must support Ethernet over GRE IPv4 tunnel to northbound gateway
WCO7	Operational:	Should support Ethernet over GRE IPv6 tunnel to northbound gateway
WCO8	Operational:	Must support automatic detection of failed tunnel termination, with configurable connection retry and timeout
WCO9	Operational:	Must support automatic failover to secondary tunnel termination address.
WCO10	Operational:	Must support controller-based configuration of Ethernet over GRE tunnel termination
WCO11	Operational:	must be wifi passpoint 2 complaint
WCO12	Operational:	System shall support various modes of operations like Tunnel Mode and local Breakout on the Same AP
WCO13	Operational:	Must support configuration of data-plane split tunneling by enabling specific destination IP addresses and net blocks to bypass the data-plane tunnel and be bridged on the wired interface
WCO14	Operational:	Shall Support WAG functionality for WiFi offload
WCO15	Operational:	shall support API's for NB Integration with CNMS
WCO16	Operational:	System shall support Reporting functionality without any external server
WCQ1	QOS:	Must support 802.11e (WMM)
WCQ2	QOS:	Shall able to prioritize all traffic such as (Data ,voice and video)
WCQ3	QOS:	Controller shall integrate with existing firewall and deep packet inspection
WCQ4	QOS:	Should have rate limiting per user and per SSID basis for encrypted tunnel mode
WCQ5	QOS:	To deliver optimal bandwidth usage, reliable multicast must use single session between AP and Wireless Controller.