



**Jammu and Kashmir e-Governance Agency  
(JaKeGA),  
Information Technology Department  
Government of Jammu and Kashmir**

***TENDER FOR SUPPLY, INSTALLATION  
AND COMMISSIONING OF  
WI-FI NETWORK SETUP AT CIVIL SECRETARAIT,  
JAMMU***

**Tender Document  
Notification No.: 02-JaKeGA of 2019  
Dated: 16.09.2019**

## **Definitions:**

**AMC:** Annual Maintenance Contract

**BG:** Bank Guarantee

**CDR:** Call Deposit Receipt

**DD:** Demand Draft

**EMD:** Earnest Money Deposit

**FDR:** Fixed Deposit Receipt

**Go Live:** Is the date of commissioning of the project

**ITD:** Information Technology Department

**JaKeGA:** Jammu and Kashmir e-Governance Agency

**OEM:** Original Equipment Manufacturer

**PBG:** Performance Bank Guarantee

**SLA:** Service Level Agreement

**TAC:** Technical Assistance Center

**Wi-Fi:** Wireless Fidelity

**SIEM:** Security Information and Event Management

**NMS:** Network Monitoring System

**SDN:** Software Defined Network

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## **1. Disclaimer:**

All information contained in this RFP document provided/ clarified is in the good interest and faith. This is not an agreement and this is not an offer or invitation to enter into an agreement of any kind with any party. Though adequate care has been taken in the presentation of this RFP document, the interested firms shall satisfy it-self that the document is complete in all respects. The information published in this document is not intended to be exhaustive. Interested respondents are required to make their own enquiries and assumptions wherever required. Intimation of discrepancy, if any, should be given to the specified office immediately. If no intimation is received by this office by the date mentioned in the document, it shall be deemed that the RFP document is complete in all respects and firms submitting their bids are satisfied that the RFP document is complete in all respects. Jammu & Kashmir e-Governance Agency (JaKeGA) for Promotion of Information Technology (A society under Department of Information Technology, Government of Jammu & Kashmir) reserves the right to reject any or all of the applications submitted in response to this RFP document at any stage without assigning any reasons whatsoever. JaKeGA for Promotion of Information Technology also reserves right to withhold or withdraw the process at any stage with intimation to all who have submitted their applications in response to this RFP. JaKeGA for Promotion of Information Technology reserves the right to change/ modify/ amend any or all of the provisions of this RFP document without assigning any reason. Any such change would be communicated to the applicants by posting it on the website of JaKeGA ([www.jakega.jk.gov.in](http://www.jakega.jk.gov.in)) for Promotion of Information Technology. Neither JaKeGA for Promotion of Information Technology nor their employees and associates will have any liability to any prospective Respondent interested to apply or any other person under the law of contract to the principles or resolution or unjust enrichment or otherwise for any loss, expense or damage which may raise from or be incurred or suffered in connection with anything contained in this RFP document, any matter deemed to form part of this RFP document, the award of the Assignment, the information and any other information supplied by or on behalf of JaKeGA for Promotion of Information Technology or their employees and Prime applicant (PA)/ Consortiums or otherwise arising in any way from the selection process for the Assignment. Information provided in this document or imparted to any respondent as part of RFP process is confidential to JaKeGA for Promotion of Information Technology and shall not be used by the respondent for any other purpose, distributed to, or shared with any other person or organization.

## **2. Introduction:**

The Jammu and Kashmir e-Governance Agency is an implementation agency for execution of Information Technology Projects in the state of Jammu and Kashmir. The agency works under the administrative control of Information Technology Department. The primary objective of the Jammu and Kashmir e-Governance Agency (JaKeGA) is to design, deliver and administer e-Governance projects in the State of Jammu and Kashmir. JaKeGA works in promoting and disseminating Information Technology culture in the State so that common man could avail the benefits of Information technology and e- Governance. The Agency also facilitate establishment of e-service centre's throughout the State through suitable public-private partnerships to ensure that public gets the desired information and e-Services literally at their doorsteps. JaKeGA has so far delivered various mission mode and other projects.

JaKeGA, IT Department intends to establish a manageable Wireless Network in Civil Secretariat Jammu with latest technology of higher throughput and scalability.

### 3. Notice Inviting Bid:

S. No	Subject	Description
1	Bid Inviting Authority	Chief Executive Officer, Jammu and Kashmir e-Governance Agency
2	Requirement	Selection of System Integrator for Supply, Installation and Commissioning of Wireless (Wi-Fi) Network at Civil Secretariat Jammu
3	Mode of Bid	Through e-tendering mode using two Bid System – Technical and Financial
4	Bid Evaluation Criteria (Selection Method)	Least Cost Based Selection (LCBS) (L1)
5	Websites for downloading RFP, Corrigendum's, Addendums etc.	<a href="http://www.jktenders.gov.in">www.jktenders.gov.in</a> <a href="http://www.jkit.nic.in">www.jkit.nic.in</a> <a href="http://www.jakega.jk.gov.in">www.jakega.jk.gov.in</a>
6	Bid Document/Tender Fee	Rs.5000/- (Rupees Five thousand only) in form of DD/Bankers Cheque in favor of CEO, JaKeGA payable at Srinagar, J&K. The Tender fee DD can be scanned and uploaded on e-tendering portal. Meanwhile actual DD/Cheque must be send either by hand or through registered courier and must reach this office by or before opening of Financial Bid.
7	Bid Security and Mode of Payment	Bid security- Earnest Money Deposit in the form of a CDR/FDR/Cheque from a scheduled or Nationalized Indian Bank in favor of 'CEO JaKeGA, valid for (01) One Year payable at Jammu, J&K, for the sum of Rupees Five Lakh shall be required to be submitted by each bidder ("bid Security"). EMD fees shall be submitted along with the Bid documents by the bidders. Bids not accompanied with the Earnest Money Deposit shall be liable to be rejected by JaKeGA. The EMD can be scanned and uploaded on e-tendering portal. Meanwhile actual EMD must be send either by hand or through registered courier and must reach this office by or before opening of Technical Bid

8	Start/ End Date for the submission of Bids	Start Date: 27-09-2019 End Date: 09-10-2019
9	Pre Bid Meeting Date and Time and Place	02:00 PM of 26/09/2019, CEO, JaKeGA, Civil Secretariat, Srinagar, 190001
10	Submission of Online Banker's Cheque/ Demand Draft for Tender Fee, Bid Security, and Processing Fee*	The Bidder shall submit the scanned copies of EMD/tender Fee receipt along with the Technical Bid. However, the bidder has to submit original documents of EMD/Tender fee by or before 2:00 PM of 10-10-2019 in the office of CEO, JaKeGA Civil Secretariat Srinagar, J&K.
10	Date/ Time/ Place of Technical Bid Opening	Shall be notified later
11	Date/ Time/ Place of Financial Bid Opening	Will be notified later to the Technically qualified bidders
12	Date and Time to seek Query/Clarification on the RFP	via email on <a href="mailto:ceojakega@nic.in">ceojakega@nic.in</a> by or before 24-09-2019.
13	Bid Validity	180 days from the bid submission deadline

#### 4. Objective and Scope of Work:

In order to create IT Infrastructure **JaKeGA, ITD** plans to set up Wireless (Wi-Fi) Networking infrastructure using state of the art networking equipment, Access points, Integration at **Civil Secretariat Jammu**

The following summarizes the scope of work.

- A. To Implement Wireless (Wi-Fi) Networking at **Civil Secretariat, Jammu.**
- B. To supply, install and commission all the components mentioned as per the technical and financial bid and to carry out the work besides integration with existing IT Infrastructure.
- C. To supply, install and commission Intra building STP CAT6A/UTP/ Fiber structured cabling Network as per BOQ and anything over and above as per actual need at the time of implementation.
- D. Detailed Specification of Components needed as per Annexure IV. Allied terms and other information: Annexure I to Annexure IV. Financial Bid at Annexure VIII.

- E. Successful bidder will be responsible to rollout the Wireless (Wi-Fi) Network including, but not limited to user creation/deletion/updation/provisioning/tracking/security/overall Wireless (Wi-Fi) Network Management and handover to user department.
- F. Successful Bidder to provide detailed connectivity diagram(Physical and Logical) including: Raceway/pathway diagram, heat maps, Cable and Fiber patching details, Naming and labeling details, Cable scanning and test results.
- G. Successful Bidder will carry penta-scanning of each and every node of the Wi-Fi Network

## 5. General Terms and Conditions

- a. The bids under Two-Bid System will consist of two parts as per following details:-
  - a) Technical bid consisting of all technical details along with terms and conditions and EMD (Earnest Money Deposit) and Tender Cost, in the form of two separate Demand Drafts issued from any Nationalized / Scheduled commercial bank in favour of CEO, Jammu and Kashmir e-Governance Agency, IT Department, Government, J&K, and payable at "Jammu, India b) Price bid indicating price for the items / services mentioned in Financial Bid as per the BOQ mentioned herein. In stage-one, only the Technical Bids shall be opened and evaluated. In stage-two, the Price bids of only the technically qualified and acceptable offers will be opened, for further evaluation.
- b. The documents referred in Checklist and its Annexures thereof of this Tender forms the Technical Bid Evaluation criteria. All documents pertaining to the same as mentioned therein may be signed and stamped by the bidder and uploaded as Technical Bid on e-Tendering portal.
- c. The successful bidder will have to deposit 10% of the total value of supply as Security Money in the form of Performance Bank Guarantee or FDR in favour of the CEO, JaKeGA, J&K; which will be refunded after completion of the warranty period or will be adjusted in case of violation of terms and conditions laid down in this tender.
- d. Conditional offer will not be accepted.
- e. It will be the sole responsibility of the bidder(s) that its bid should be uploaded on time on e-tendering portal.
- f. Necessary corrigendum(s), if required, will be issued at any stage. Any corrigendum will be published on our website [www.jakega.jk.gov.in](http://www.jakega.jk.gov.in), [www.jkit.nic.in](http://www.jkit.nic.in) and [www.jktenders.gov.in](http://www.jktenders.gov.in). Bidder(s) must be in touch with our websites for corrigendum(s). It will be sole responsibility of the bidder(s) that they will go through the corrigendum(s) published, if any, on our website [www.jakega.jk.gov.in](http://www.jakega.jk.gov.in), [www.jkit.nic.in](http://www.jkit.nic.in), [www.jktenders.gov.in](http://www.jktenders.gov.in) and submit its tender accordingly
- g. The compatibility of all the networking components is the essence of this tender for efficient working of the network, hence bidders shall essentially quote all active components of one make for Wireless network. Any deviations in this matter will subject to disqualification. Similarly, bidder has to quote all the passive components like Optical Fibre, Cat 6A or similar cable, LIU's, Fiber Patch Cords, Patch Panels, RJ-45 connectors of the same make as per Tender Specifications.
- h. Successful Bidder to provide Heat maps as a part of Wi-Fi Survey before start of actual work.

- i. No part shipment/transshipment/third party shipment shall be acceptable.
- j. Bidders are requested to mandatorily do a survey and understand the existing Network of Civil Secretariat Jammu for Smooth Integration with proposed network. Survey can be done any day between 10-09-2019 2019 till 23-09-2019 with prior requisition sent via email to ceojakega@nic.in supported by contact person email and phone number of intending person. Incase no requisition is received or survey is not carried out and in future it is noticed that there is any integration challenges, then bidder will be responsible for the same. Hence if any extra material will be needed because of this laxity then it its expenses will be borne by the bidder.
- k. All pre bid queries regarding the tender must be submitted to email: ceojakega@nic.in from 09-09-2019 to 24-09-2019.
- l. Minimum warranty period for each equipment / instrument should be for a period of 05 years from the date of delivery.
- m. In case any manufacturing defect arises in the equipment, it should be replaced within four working days.
- n. In the event of goods not being in accordance with the specification or the conditions of the contract or failure by the bidder to perform services as outlined in the Tender/Bid document, **JAKEGA** reserves the right to cancel the contract at any stage
- o. Validity of the quoted offer should cover the period of the completion of project. Offers without such validity need not to bid.
- p. All information in the Tender/Bid should be in English language and each page of the Tender/Bid document should be signed & stamped by the Bidder as a token of acceptance to terms and conditions.
- q. Bidders should quote for all accessories which are either part of an item or are necessary for proper functioning of that item. Thus, for accessories of individual items JaKeGA shall not pay anything separately and if the functioning of any item is not proper or does not function at all, JaKeGA shall have the full right to deduct complete payment of that item(s).
- r. The successful Bidder shall have to sign an agreement with JaKeGA to comply with all rules, regulations, Laws and Byelaws enforced by the State Govt. and JaKeGA.
- s. It shall be the responsibility of the successful bidder to make an inventory of all the supplied materials upon its arrival at the customer's location and inform of missing components, if any
- t. All Passive Cabling work whether it is Fiber, UTP, Patch Panels, Racks Patch Cords etc should be done neatly and with proper tagging. Entire cabling should be structured and aesthetically implemented.
- u. Successful Bidder must have a local office presence in J&K or arrange the same within a period of two months of issuance of work order.
- v. Bidder must not have been blacklisted by any State/Central Government Department. An undertaking in this effect may be submitted.
- w. Participating in this tender would mean that Bidder is accepting all terms and conditions of this tender document. Bidders are requested to mandatorily do survey and understand the existing Network of Civil Secretariat Jammu for Smooth Integration with proposed network.
- x. All legal disputes, arising if any, would be settled under jurisdiction of High Courts



in Jammu and Kashmir. Arbitration shall be only in the state of J&K.

## 6. Special Terms and Conditions

### a. TERMINATION BY DEFAULT

JaKeGA may, without prejudice to any other remedy for breach of contract, by written 30 days' notice of default sent to the Successful Agency, terminate the Contract in whole or part. If the Successful Agency fails to deliver any or all of the systems within the period(s) specified in the Contract, or within any extension thereof granted by the Purchaser pursuant to conditions of contract clause or if the Successful Agency fails to perform any other obligation(s) under the Contract. In the event that JaKeGA terminates the Contract in whole or in part, pursuant to the conditions of contract clause, it may procure, upon such terms and in such manner, as it deems appropriate, systems or services similar to those undelivered, and the Successful Agency shall be liable to pay JaKeGA for any excess costs for such similar systems or services. However, the Successful Agency shall continue the performance of the Contract to the extent not terminated.

- b. All the items are to be quoted in Indian Rupees.
- c. All prices quoted shall be inclusive of all **taxes, freight and octroi** etc. and shall be for **JaKeGA, Civil Secretariat, Jammu**.
- d. The bidder must clearly mention the **make, model & enclose relevant datasheet/brochures along with requisite certificates of the products** as per technical specifications as mentioned in technical specification annexures.
- e. Payment Terms will be as follows subject to the successful audit report as decided by JaKeGA:
  - a. 60% Payment of overall bid shall be processed at the time of delivery and subject to Bill of Material (BOM) Verification by JaKeGA and IT Department.
  - b. 20% of Payment of overall bid value shall be made on Successful Installation and commissioning and completion of the project.
  - c. Remaining payment shall be made quarterly in 12 equal installments after Go-Live and subject to the satisfactory functioning of the network as per scope of the project.
- f. JaKeGA may decrease or increase any active or passive component or both and make a commensurate adjustments in the corresponding service components while issuing work order or at a later stage. JaKeGA shall decide to add or drop any item at any stage of the tender process or on award of Purchase order to successful bidder. Bidders are advised to quote competitively on each and every line item of the financial bid.
- g. Additional similar equipment or components may be required at a later date, contingent on additional funding being made available. JaKeGA shall decide to add or drop any item at any stage of the tender process or on award of Purchase order to successful bidder.
- h. Delivery Schedule: The Material delivery has to be done in Four weeks at Civil Secretariat premises Jammu from the release of work Order and complete installation has to be done within Six weeks from the date of release of Work

Order

- i. Warranty/Guarantee: The equipment's supplied and installed shall be guaranteed by the successful bidder for a minimum period of five years with regards to quality of material, workmanship, performance, efficiency, installation, etc. Defects developed in the system within guarantee period, shall be rectified by the successful bidder at his own expense promptly within twenty four hours. Bidder shall provide warranty from OEM for 5 years(5 years warranty from bidder on legal format for whole solution).
- j. The Passive quantity mentioned in the Tender/Bid is only indicative one. **JaKeGA** reserves the right to increase/ decrease/ remove any/all quantities while placing the order. All passive components will be paid on actual basis.
- k. Any work not covered under this contract which may be essentially required for the completion of job (to the satisfaction of **JaKeGA**) shall be carried out by the Successful Bidder as extra item with prior approval of **JaKeGA** for which payment shall be made separately at the reasonable rates decided by JAKEGA.
- l. For the period of 3 years beyond Go-Live of the project, Bidder shall be responsible for smooth running of the system.
- m. The required ethics under constitution shall be followed by the bidder.
- n. Minor changes would be sorted out by the bidder on the request of JaKeGA.
- o. In case of failure, the specific penalties of any shall be imposed by CEO, JaKeGA.
- p. EMD shall be released after receiving the PBG and signing of the contract.
- q. Warranty means smooth and regular uninterrupted functioning of the solution.
- r. At any time, prior to the deadline for submission of Bids, the procuring entity may for any reason, whether on its own initiative or as a result of a request for clarification by a bidder, modify the bidding documents by issuing an addendum/ corrigendum in accordance with the provisions below.
- s. In case, any modification is made to the bidding document or any clarification is issued which materially affects the terms contained in the bidding document, the procuring entity shall publish such modification or clarification in the same manner as the publication of the initial bidding document.
- t. In case, a clarification or modification is issued to the bidding document, the procuring entity may, prior to the last date for submission of Bids, extend such time limit in order to allow the bidders sufficient time to take into account the clarification or modification, as the case may be, while submitting their Bids.
- u. Any bidder, who has submitted his Bid in response to the original invitation, shall have the opportunity to modify or re-submit it, as the case may be, within the period of time originally allotted or such extended time as may be allowed for submission of Bids, when changes are made to the bidding document by the procuring entity: Provided that the Bid last submitted or the Bid as modified by the bidder shall be considered for evaluation.
- v. Necessary corrigendum(s), if required, will be issued at any stage. Any corrigendum will be published on our website [www.jakega.jk.gov.in](http://www.jakega.jk.gov.in), [www.jkit.nic.in](http://www.jkit.nic.in). Bidder(s) must be in touch with our websites for corrigendum(s). It will be sole responsibility of the bidder(s) that they will go through the corrigendum(s) published, if any, on our website [www.jakega.jk.gov.in](http://www.jakega.jk.gov.in) and [www.jkit.nic.in](http://www.jkit.nic.in) and submit its tender accordingly.
- w. Digging work required to be carried out for laying out the fiber is the

responsibility of the bidder.

- x. Bidder shall be responsible to provide all the electrical equipments(like wires,pipes,MCB,switches etc) that would be required to complete the project without any extra cost.

**y. FORCE MAJEURE:**

Force Majeure shall mean any event or circumstances or combination of events or circumstances that materially and adversely affects, prevents or delays any party in performance of its obligation in accordance with the terms of the Agreement, but only if and to the extent that such events and circumstances affected party's reasonable control, directly or indirectly and effects of which could have prevented Good Industry Practice or, in the case of the construction activities through reasonable skill and care through the expenditure of reasonable sums of money.

Any events or circumstances meeting the description of the Force Majeure which have same effect upon the performance of any contractor s hall constitute Force Majeure with respect to the Vendor.

The Parties shall ensure compliance of the terms of the Agreement unless affected by the Force Majeure Events.

If a Force Majeure situation arises, the supplier/ selected bidder shall promptly notify the JaKeGA in writing of such conditions and cause thereof within 15 days of occurrence of such event. Unless otherwise directed by JaKeGA, the supplier/ selected bidder shall continue to perform its obligations under the contract as far as reasonably practical.

If the performance in whole or part or any obligation under the contract is prevented or delayed by any reason of Force Majeure for a period exceeding 60 days, either party at its option may terminate the contract without any financial repercussion on either side.

## 7. Checklist

To ensure that your offer submitted to JAKEGA is complete in all respects, please go through the following checklist & tick mark for the enclosures attached with your offer:

#	DESCRIPTION	Documents Required	(Yes/No)	(Page No)
1.	General Information about Bidder as per Annexure I and the documents thereof.	Annexure I and the documents thereof.		
2.	Earnest Money Deposit	Demand Draft / FDR of INR 5 Lakh (Rs 500000).		
3.	Tender Fee:	Draft/FDR of Rs 5000 in favor of CEO JaKeGA, Civil Sectt. Jammu.		
4.	Letter of proposal – Form 1	Letter of proposal; as per template provided (Form 1)		
5.	Form 2	Technical Compliance as per detailed specifications of this Tender. Affidavit duly attested by Oath Commissioner		
6.	Compliance and details on Annexure I – General Information about Bidder	Documentary Proof as per Annexure I		
7.	Compliance and details on Annexure II- Bidder and OEM Compliance	Documentary Proof as per Annexure II		
8.	Compliance and details on Annexure III	Documentary Proof of SLA as per Annexure III		
9.	Local Office in Jammu Province	A Self Certified letter by an authorized signatory. Incase the bidder doesn't have an office, it has to setup its office for which declaration should be submitted.		
10.	Blacklisting	A self-certified letter by Authorized Signatory of Company/firm. Incase of Consortium, all partners must submit a separate self-certified letter by Authorized signatory.		
11.	Broachers/Catalogs	Product catalogue sheets or equipment brochures clearly mentioning the model.		
12.	Technical Bid in Separate Envelope - Annexure I to Annexure VII Compliance	Signed copy of the entire Tender and Annexure I to Annexure VII Compliance		
13.	Financial Bid in a Separate Sealed Envelope - Annexure VIII	Annexure VIII to be placed in financial bid of tender		

**FORM 1: Proposal Letter**

**To  
The Chief Executive Officer  
Jammu and Kashmir e-Governance Agency  
Civil Secretariat  
Srinagar 190001.**

Sir,

Having examined the Bid Documents, the receipt of which is hereby duly acknowledged, we the undersigned, offer to execute the Wi-Fi Networking works in conformity with the said Bid documents and schedule of prices attached herewith as made part of this Bid.

We undertake, if our Bid is accepted, to complete the works within the specified period as per the Bid document.

We also undertake that we accept all the terms and conditions of this Tender.

Until a formal contract is prepared and executed, this Bid, together with your written acceptance thereof and your notification of award, shall constitute a binding contract between us.

We undertake that in competing for and if the award is made, in executing the above work, we will strictly observe the laws against fraud and corruption in force in India namely "Prevention of Corruption Act 1988".

We acknowledge that we will complete the said project in all respects and also provide best of the best of the support. We also undertake to put required manpower for smooth functioning of the setup for 03 years post Go-Live.

Further we certify that our organization is not blacklisted by any Govt. Department.

**Dated** \_\_\_\_\_

**Authorized Signatory Signature of Bidder with Company Stamp**

**FORM 2: Technical Compliance as per detailed specifications of this Tender**

**(Affidavit duly attested by Oath Commissioner)**

To  
The Chief Executive Officer  
Jammu and Kashmir e-Governance Agency  
Civil Secretariat Srinagar, 190001.

Sir,

Having examined the Bid Documents of tender vide Notification No: -JaKeGA of 2019 dated \_\_\_\_\_ 2019, the receipt of which is hereby duly acknowledged, we the undersigned, offer to execute the Networking works as per the specifications mentioned in this tender.

We undertake that the Bill of material supplied as mentioned in Annexure V are fully compliant with the detailed specifications of the corresponding items from Annexure IV of this tender. Any non compliance on technical specification or any non other non compliance of scope of work and terms and conditions of this tender will lead to cancellation of work order, blacklisting of our company, forfeiting of EMD submitted and a penalty of Rupees 30 Lakhs.

Dated \_\_\_\_\_

Authorized Signatory Signature of Bidder with Company Stamp

## Annexure – I

### General Information about the bidder

1.	<b>Name Of The Bidder</b>	
2	<b>Postal Address</b>	
3	<b>Telephone/Fax no</b>	
4	<b>E-mail address &amp; URL</b>	
5	<b>Type of Company</b> Attach Proof of Company Registration along with a copy of the Partnership Deed/ Article of Association and Memorandum of Understanding	
6	<b>Name and designation of the representative</b> of the Bidder to whom all references shall be made to expedite technical co-ordination.	
7	<b>Amount and reference of the EMD</b>	
8	<b>Financial capacity of the company/ firm.</b> (Attach copies of I.T. Returns and Balance Sheets for last 2 Year)	
9	<b>Name and address of the Indian/Foreign collaborator(s) if any.</b>	
11	<b>PAN/TAN Number</b> (A copy should be enclosed)	

**ANNEXURE – II: Bidder and OEM Compliance**

S. No	DESCRIPTION	Documents Required	(Yes/ No)	(Page No)
I.	The bidder should be a registered Company/Organization/MSME with Government with Valid GST No and PAN No.	GST Registration Certificate and PAN Card		
II.	The Bidder should submit the Manufacturers Authorization Form (MAF) from the respective major OEMs.	Manufacturers Authorization Form (MAF) of One Page from each OEM.		
III.	The Bidder must be a profit making Company/Organization from last 5 years (2014-2015,2015-2016,2016-17, 2017-18, 2018-19) duly certified by registered CA.	Documentary Proof of not more than Three pages		
IV.	Switches and Access Points should be from the same OEM to have single TAC for Active components. Passive components should be from same OEM.	Documentary Proof of not more than one page		
V.	OEM should have presence in India at least from last 05 years and making no losses in Networking business in last 5 years	Documentary Proof of not more than one page		
VI.	The Bidder should have a minimum turnover of Rs Two Crore in last three Financial years i.e (2016-17, 2017-18, 2018-19) duly certified by registered CA	Documentary Proof of not more than Three pages		
VII.	<p>Bidder must have executed similar work in any State/Central Government Department/Government Agencies/PSU in last three financial years:</p> <p>Atleast one Project of Wireless (Wi-Fi) Networking with work order of the value of 2 Crore or more in any State/Central Government/Government Agencies/PSU;</p> <p>or</p> <p>Two Projects of Wireless (Wi-Fi)</p>	<p>Purchase Orders and completion Certificate from Government Department/Government Agencies/PSU.</p>		



	Networking with work order of the value of 1 Crore or more in any State/Central Government/Government Agencies/PSU			
VIII.	Bidder should be ISO 20000:2011, ISO 27001:2013 certified and ISO 9001:2015	Evidence for all these ISO.		
IX.	Warranty and support from OEM for 5 years (Hardware/Software)whole solution	OEM Certificate and 5 years warranty certificate from bidder on legal format on whole solution		

### Annexure – III - SLA

- I. Bidder will be responsible for operations and maintenance for a period of Three years.
- II. For the purpose of measurement, “**downtime**” or “**fault duration**” constitutes any period of time during which the network connection is not useable for Data, Voice & Video. Causes of downtime include:
  - a. Network connection equipment failures, supplied by Bidder to JaKeGA.
  - b. Process failure
  - c. Local loop failure in cables.
  - d. Access Point, Core Switches& Access Switch
  - e. Any failure in the entire solution provided.
  - f. Cable fault in the network e.g. LAN cable, internal OFC patch cords, patch panel etc.
- III. All change requests will be routed to Bidder for next Three year and will be taken care by Bidder as a part of warranty with zero Cost.
- IV. Successful bidder to depute three networking resources with more than 3 years of Networking Experience for day to day operations and changes in the Network for Three years post go live of the project. Incase more no of Engineers are required; Bidder will arrange the same without any cost implications.
- V. Successful Bidder to will provide one week training to designated team on the entire setup of this project.
- VI. Any spare replacement will be competed in maximum of two working days for 5 years after completion of implementation phase. Any deviation on the part of successful bidder will attract a penalty of Rs 500 per day.
- VII. The successful bidder shall take immediate action to carry out any rectification work and restore the installation to its normal operating conditions upon receipt of the complaint from the officer in-charge of the END-USER or his representative’s work for three year after Go Live acceptance by JaKeGA. If no action is taken to carry out the repair within twenty four hours upon lodging of the report, the JakeGA shall reserve the right to engage a third party to carry out the rectification works with all the costs and expenses charged to the successful bidder. At the same time, bidder will attract a penalty of Rs 500 per hour for any non compliance.
- VIII. This SLA will be a part of agreement with further additions as deemed necessary by JaKeGA.
- IX. Three Onsite support networking resources for Three years post Go-Live.
- X. Post Go-Live, any change proposed by JaKeGA would be addressed by the bidder without any cost to JaKeGA.

## Annexure IV (Scope with Technical Specifications)

In order to create IT Infrastructure **JaKeGA, ITD** plans to set up Wireless (Wi-Fi) Networking infrastructure using state of the art networking equipment, Access points, Integration at **Civil Secretariat Jammu**

The following summarizes the scope of work.

- A. To Implement Wireless (Wi-Fi) Networking at **Civil Secretariat, Jammu.**
- B. To supply, install and commission all the components mentioned as per the technical and financial bid and to carry out the work besides integration with existing IT Infrastructure.
- C. To supply, install and commission Intra building STP CAT6 A/UTP/ Fiber structured cabling Network as per BOQ and anything over and above as per actual need at the time of implementation.
- D. Detailed Specification of Components needed as per Annexure IV.
- E. Successful bidder will be responsible to rollout the Wireless (Wi-Fi) Network including, but not limited to user creation/deletion/updation/provisioning/tracking/security/overall Wireless (Wi-Fi) Network Management and handover to user department.
- F. Successful Bidder to provide detailed connectivity diagram(Physical and Logical) including: Raceway/pathway diagram, heat maps, Cable and Fiber patching details, Naming and labeling details, Cable scanning and test results.
- G. Successful Bidder will carry penta-scanning of each and every node of the Wi-Fi Network

S. No	Scope of the Work with further details
1	<b>Campus Design Scope of work</b>
i	Campus design must be based on routed access i.e. using L3 at access to avoid any STP or broadcast/flood related issues
ii	All switches i.e. Access switches and Core switches need to be provided with all software license from day-1 to support functionality mentioned in RFP specification
iii	Campus solution should have network automation tool for zero touch provisioning building network and host inventory topology creating network segment and network access policy software image update troubleshooting end to end connectivity getting OEM update on security update/advisory end of sale/end of life update etc.
iv	Campus solution should have capability to provide user mobility on wired network (Users moving from one floor to another floor) without changing ip address or vlan. Vendor needs to provide details on how they are going to achieve it with their solution.
v	There has to be end to end logical separation (including routing table) between campus data users and guest/contractors.

vi	It should possible to create micro segmentation between floor users where we should able to restrict communication between users on the same segment/vlan and communication between users will only be allowed based on policy. Vendor needs to provide details on how they are going to achieve it with their solution.
<b>2</b>	<b>Campus Access control solution</b>
i	Campus solution should include secure campus access and secure guest access components (software and license) from day-1. It should allow campus access based on user id and password, MAC address, certificate etc. It should allow contractors and guest to bring their devices and access authorized resources in secure way It should able to provide visibility on connected users, devices types, how they are connected etc. It should allow password management for guest in automated, approval based access It should possible to send guest password on email and SMS It should allow to provide guest/contractor access based on hours, days and weeks
i	Proposed solution should integrate with existing IT infrastructure that supports industry standards such as 802.1x, CoA, WebAuth/Web Redirect
iii	Solution should support wide range of authentication protocols, including PAP, MS-CHAP, Extensible Authentication Protocol (EAP)-MD5, Protected EAP (PEAP), EAP-Flexible Authentication via Secure Tunneling (FAST), and EAP-Transport Layer Security (TLS).
iv	Secure access software needs to be provided for minimum 1000 end devices license including 500 guest access/BYOD license
v	Hardware appliance in HA needs to be provided to run secure access software
vi	Secure access software should support local user database, active directory integration
vii	Campus access control solution should able to share contextual information with visibility and threat analytics solution and should support bidirectional context sharing
<b>3</b>	<b>Campus Visibility and threat analytics solution</b>
i	Campus solution should include network visibility and threat analytics solution based on flow records. It should allow visibility on user traffic flow, type of device, top talkers, user to user communication detail like application, ports etc, traffic anomalies based on campus traffic analysis, alarm generation based on traffic anomalies, highlighting top attackers, top victims etc.
ii	The solution should detect common events like Scanning, Worms, Unexpected application services (e.g., tunneled protocols, backdoors, use of forbidden application Protocols), Policy violations, password detection mechanism (like brute-force, nmapscan)etc
iii	The solution should detect applications running on non-standard port numbers. The solution should display traffic profiles in terms of packet rate.
iv	The solution should support detection methods/fingerprints for Phishing, Botnets, Malware, Spyware, DDOS , Worms , Virus , protocol anomalies (Internal , external ) Connections to bad reputation Nations and Dark IP .
v	It should support netflow, sflow, jflow and IPFIX
vi	The solution should be able to store full flow data for long-term for forensic purpose

vii	The solution should be able to visualize malware propagation behavior
viii	Solution should have the ability to statefully reassemble uni-directional flows into bi-directional conversations; handling de-duplication of data and asymmetry
ix	The solution should do Data Flow Analysis across all ports and services and not limited to data being transported via HTTP/HTTPS/SMTP/IMAP/POP/ SSH / telnet and other into and out of the network
x	It should able to detect traffic anomalies in encrypted traffic
xi	It should possible to isolate attacker or infected machines from network with integration with campus access control solution. Integration should be based on IETF standard driven framework
xii	The solution should be able to integrate with various SIEMs available in the market like RSA, Splunk, HP, etc
xiii	All hardware and software license for campus visibility and threat analytics solution.
4	<b>General Requirement</b>
I	It is desirable to have entire solution from single OEM
li	OEM offering switches, campus access control and visibility and threat analytics solution should have offices in India and 24x7x365 TAC support
lii	Central controller should correlate logs collected from Network, AAA, DNS,DHCP etc. It should allow to view historical state of the network including the actual meta flows and user data collected on the network at anypoint of time for the last 7 days. The controller should provide actionable insight based on analysis of this information.
lv	Network should send real time telemetry push data to central controller. This should not be based on non-real time polling based methods which are prone to loss of accuracy.
V	Controller should provide information on overall network health of each RBI office and provide details on switch CPU, Memory, modules insights.
Vii	Controller should create network inventory and should poll devices in the network at periodic basis for inventory maintenance
Vii	Controller should have tight integration with user policy engine to have visibility of user and device data on the network and push user policies from controller.
Viii	Controller should automate network provisioning which includes zero touch provisioning, creation of network fabric, user authentication, authorization and access policy, Setting AAA, SNMP, DHCP, DNS servers etc.
lx	Controller should provide end to end path troubleshooting highlighting ingress and egress interfaces, ACL and QoS policy, packet drops etc.

**Passive Component Specifications:**

Sr No.	<b>Laser Optimized OM4 Fiber optics based SCS shall be proposed as a response to the RFP.</b>	
	<b><i>Optical Fiber Cable specifications</i></b>	
1.	Cable Construction: Loose-tube, Gel-filled cable	
2.	Armored: Steel-tape armored	
3.	The cable construction should be able to support 800N long term tensile load with minimum crush resistance of 2000 N/m <sup>2</sup>	
4.	The cable should be able to support a vertical rise of 700m (backbone riser)	
5.	Water Penetration: Comply to FOTP-82 / IEC 60794-1-2, Section 24	
6.	Operating Temperature: -20 Degree C to +70 Degree C	
7.	Compression: 44N/mm using FOTP-41 / IEC 60794-1-2 Section 7	
8.	Cable Qualification Standards ANSI/ICEA S-87-640-2006 / Telcordia GR-20-CORE Issue 3	
9.	ROHS 2011 / 65 / EU compliant	
10.	Designed, manufactured and distributed under ISO 9001:2008 quality system	
11.	Please append manufacturer's data sheets / warranty document in support of above specifications.	
12.	Standards Compliance:	TIA-492AAAC (OM3)
13.	Attenuation, maximum:	3.00 db/km @ 850 nm
14.	1 Gbps Ethernet Distance:	1020 m @ 850 nm or better
15.	10 Gbps Ethernet Distance:	500 m @ 850 nm or better
16.	Cladding Diameter:	125.0 µm or better
17.	Cladding Diameter Tolerance:	±1.0 µm or better
18.	Cladding Non-Circularity, maximum:	1% or better
19.	Coating Diameter (Colored):	254 µm or better
20.	Coating Diameter (Uncolored):	245 µm or better
21.	Coating Diameter Tolerance (Colored):	±7 µm or better
22.	Coating Diameter Tolerance (Uncolored) :	±10 µm or better
23.	Coating/Cladding Concentricity Error, maximum:	6 µm or better
24.	Core Diameter:	50.0 µm or better
25.	Core Diameter Tolerance:	±2.5 µm or better

26.	Core/Clad Offset, maximum:	1.5 µm or better
27.	ROHS 2011 / 65 / EU compliant	
28.	Designed, manufactured and distributed under ISO 9001:2008 quality system	

### Specifications of Cat 6A UTP/STP CABLING SYSTEM

Sr No.	Details	Specification
1	<b>Type</b>	Must be designed to support high speed data network applications such as 10-Gigabit Ethernet(10GBASE-T) Category 6A F/UTP Cable is intended for high speed data applications upto 500MHz including: IEEE 802.3an 10GBASE-T 10Gb/s IEEE 802.3 1000BASE-T 1Gb/s ATM 155Mb/s 155Mb/s IEEE 802.3 100BASE-TX 100Mb/s CDDI 100Mb/s
2	<b>Networks Supported</b>	Minimum of 10 / 100/1000 Ethernet, 155 Mbps ATM, 1000 Mbps IEEE 802.3ab Ethernet, and proposed Cat 6A Gigabit Ethernet or higher
3	<b>Mechanical characteristics</b>	0.57 mm(2AWG), bare copper wire insulated with FEP(plenum) or PE(Polyethylene).Two insulated conductors twisted together with varying lays to form a pair and four pairs laid up to form the basis unit.
4	<b>Electrical/optical characteristics</b>	Mutual capacitance:5.6nF 100m max DC resistance maximum 9.8 skew: Ohms/100m maximum skew:45 ns/100m pair to ground unbalance: pF/100m max. Nominal velocity of propagation(NVP): See cable jacket for NVP setting Coupling Attenuation:75dB @ 30 MHZ
5	<b>TIA / EIA 568 C.2</b>	ETL Verified, UL Listed and UL channel verified- All three Certificates are mandatory
6	<b>Warranty</b>	25 year systems warranty; Warranty to cover Bandwidth of the specified and installed cabling system, and the installation costs
7	<b>Performance characteristics to be provided along with bid</b>	Attenuation, Pair-to-pair and PS NEXT, ELFEXT and PSELFEXT, Return Loss, ACR and PS ACR for 4-connector channel
8	<b>Others</b>	(a) Dca fire rating, IP 20 protection class
		(b) Should perform to CAT6 UTP/STP with short channel
		(c) zero halogen cable jacket
		(d) 23 AWG solid bare copper Zero-bit Error, ETL verified

## Technical Specifications of Cat 6A UTP/STP, UTP JACKS

Cat 6A Jack		
S. no	Details	Specifications
1.	<b>Features and Benefits</b>	<b>Should have Spring-Loaded Shutter:</b>
		prevents incomplete mating
		protects from dust and contaminants
		IDC V-shaped contacts that flex not fatigue when terminated
		Features pointed IDC towers to speed termination and enhance cable retention
		Dual color-coding allows for 568 A/B wiring Configuration
		Can be terminated using industry standard punch-down tools
		RJ-11 compatible
		Molded category identification on jack face as well as optional port identification icons
		USOC Wiring Sequences Available
2	Dust Proof	RJ45 Jack should be supplied with Cap or Shutter to avoid Dust
3	RJ45 I/O Compatibility	Individual Compatible RJ45 Jack
		Pointed IDC Tower on RJ45 Jack for easy termination
		Half Plugged Patch Cord should be spitted out if not properly plugged in
4	<b>Mechanical Characteristics</b>	
	Plastic Housing:	Thermoplastic UL94V-0 rated or equivalent
	Operating Life:	Minimum 750 insertion cycles
	Contact Material:	Copper Alloy
	Contact Plating:	50 $\mu$ " Gold/100 $\mu$ " Nickel
	Contact Force:	100g minimum
	Plug Retention Force:	11 lbf minimum
5	<b>IDC Connector</b>	
	Plastic Housing:	Thermoplastic UL94V-0 rated or equivalent
	Operating Life:	Minimum 20 re-terminations
	Contact Material:	Copper Alloy
	IDC Contact Plating:	Tin/Lead Plate
	Wire Accommodation:	22-24 AWG solid
6	<b>Electrical Characteristics</b>	
	Interface Resistance:	20 milliohms
	Initial Contact Resistance:	2.5 milliohms



	Insulation Resistance:	>100 Megaohms
7	Parts List:	<input type="checkbox"/> DataGate Plus Jack with Stuffer Cap
8	Approvals	UL Listed and ETL Verified

<b>Wall plates</b>		
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1	Features and Benefits	The stylish unloaded Synergy Wallplates were designed specifically to accept the UTP Datagate Connector. The unloaded Synergy Wallplates are available in 1, 2 and 4 port variants, in five colours, to co-ordinate with any decor and any installation size.
2	Accommodates	UTP, STP Datagate jacks Single bezel Fibre modules Media configurable modules
3	Material	VE10 ABS

<b>24 Port loaded Patch Panel 1U Height</b>		
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1.	Features and benefits	
		Available in 1U 24 Port and 2U 48 Port density
		<input type="checkbox"/> Each port features the spring-loaded shutter:
		– prevents incomplete mating
		– protects from dust and contaminants
		<input type="checkbox"/> Patented IDC V-shaped contacts that flex not fatigue when terminated
		<input type="checkbox"/> Features pointed IDC towers to speed termination and enhance cable retention
		<input type="checkbox"/> Dual colour-coding allows for 568 A/B wiring configuration
		<input type="checkbox"/> Front and rear port labelling (port sequence 1–480) as well as panel identification label
		<input type="checkbox"/> 4 x 6 ganged jack configuration
		<input type="checkbox"/> Individually removable patch panel ports
		<input type="checkbox"/> Removable cable management shelf(s) ensure bend radius compliance
		<input type="checkbox"/> Available with either ANSI and metric hardware kit
		<input type="checkbox"/> Can be terminated using industry standard punch-down tools
		<input type="checkbox"/> RJ45 port which is RJ-11 compatible
		<input type="checkbox"/> Molded category identification on each port face as well as optional port identification icons
2	Rear Cable Manager	Flat type metal with Perforated Rear Cable Manager to hold CAT6 UTP Cable with velcro cable ties
3	Dust Proof	RJ45 Jack should be supplied with Cap or Shutter to avoid Dust
4	RJ45 I/O Compatibility	Individual Compatible RJ45 Jack
		Pointed IDC Tower on RJ45 Jack for easy termination

		Half Plugged Patch Cord should be spitted out if not properly plugged in
5	<b>Mechanical Characteristics</b>	
	Material:	CRS (cold rolled steel)
	Thickness:	.060" (1.52mm)
	Coating:	Grey / Option for Black
6	<b>Jack Connector</b>	
	Plastic Housing:	Thermoplastic UL94V-0 rated or equivalent
	Operating Life:	Minimum 750 insertion cycles
	Contact Material:	Phosphor Bronze
	Contact Plating:	50 $\mu$ " Gold/100 $\mu$ " Nickel
	Contact Force:	100g minimum
	Plug Retention Force:	11 lbf minimum
7	<b>IDC Connector</b>	
	Plastic Housing:	Thermoplastic UL94V-0 rated or equivalent
	Operating Life:	Minimum 20 reterminations
	Contact Material:	Phosphor Bronze
	IDC Contact Plating:	Solder Plate (60% tin/40% lead)
	Wire Accommodation:	22-24 AWG solid
8	<b>Electrical Characteristics</b>	
	Interface Resistance:	20 milliohms
	Initial Contact Resistance:	2.5 milliohms
	Insulation Resistance:	>100 Megaohms
9	Standards	ETL Verified to ANSI/TIA-568-C.2, ISO/IEC 11801 Category 6 and UL Listed
<b>Cat 6A Patch cord</b>		
1	Type	Cat 6A U/UTP End-to-End Solution and are designed to support data networks for 10/100BASE-T and 1000BASE-T applications.
2	Conductor size:	24 AWG stranded copper wire
3	Nom. O.D.:	5.9mm
4	Sheath:	LS0H
5	Bend radius:	4X O.D.
6	Boots	Transparent Plug with anti-s snag slip on boots
7	RJ45 Plug Standard	ISO/IEC 60606-7-4 and FCC 47 Part 68

8	Sheath Standards	Fire Propagation compliant with CSA FT1, IEC 60332-1, IEC 61034
9	Operating temperature range:	-20°C to 60°C
10	MIN operating life	750 insertion cycles
11	RJ45 plug and boot material:	Clear polycarbonate
12	Contact material:	0.35mm thick copper alloy
13	Contact plating:	Selective gold
14	RJ45 plug dimensions compliant with:	ISO/IEC 60603-7-4 and FCC 47 Part 68
15	Commercial Standards	ISO/IEC 11801:2002/Amd 2:2010 Cat 6A-, TIA-568-C.2 Cat 6A
16	Approvals	UL Listed and ETL Verified
17	Fire Propagation Tests:	LS0H Sheath: CSA FT1, IEC 60332-1, IEC 61034
18	Standard length available	0.5mt to 10 mts

#### Technical Specifications of LC to LC Patch Cord

Sr No.	Specifications	Requirement
1	<b>Make and Type</b>	LC to LC Duplex Fiber Optic Patch Cord, 9/125 micron
2	<b>Cable Sheath</b>	LSZH
3	<b>Cable Diameter</b>	1.8 mm mini twin zip
4	<b>Ferrule</b>	Ceramic
5	<b>Return Loss</b>	> 45 db
6	<b>Insertion Loss</b>	1 db Typical Max .3 db
7	<b>Length</b>	3/5/10 meters.
8	<b>ROHS</b>	ROHS Compliant

#### Technical Specifications of 12 U Network Racks:

- Adjustable 12U equipment mounting verticals provide the better mounting flexibility and maximizes the usable mounting space and compatible with active and passive devices of this tender.
- Depth adjustable mounting slots. The Dept must so that Switches, LIU and Patch Panels can be easily housed.
- Top and bottom Panel with ventilation and cable entry facility
- Provision to mount the cooling fans on the top panel
- Powder coated finish with pretreatment process meeting all industry standards
- Grounding and Bonding Options.

## Technical Specifications of 42 U Racks:

1. Attractive styling for Datacentre or office environments
2. Front door – tinted glass or fully perforated steel
3. Rear steel door – single or dual, fully perforated
4. Vented Top cover with cable entry provision
5. Fully recessible 19" mounting angles at front and rear
6. Rear 19" mounting angles supplied as split pairs to allow easy adjustments for equipment of different depths
7. Side panels with slam latches and indents for improved strength and aesthetics
8. Load rating 1000 kgs
9. Must have Depth that can house the Core Switches, LIU, Servers, Controllers as per this tender
10. IP Based KVM Switch
11. The frame must be made of heavy grade aluminum extrusions. Must be included with Stationary and sliding shelves, 5 trays, Cooling Fans, Cable Managers, earthing kit, castors with foot operated breaks, leveling legs, base frame, Mounting hardware.

## Active Equipment Specifications

### Technical Specifications of Wireless Indoor Access Point Specifications

Sr. No.	Specification
1	Access Points proposed must include radios for 2.4 GHz and 5 GHz with 802.11ax.
2	Access Point must support OFDMA and MU-MIMO.
3	An access point must include a standard OEM provided Mounting brackets for mounting on Ceiling or Roof top.
4	Access Point shall support Console port that uses Standard Port (RJ-45) type connection
5	Should have 1x 100, 1000, 2500 Multigigabit Ethernet (RJ-45) – IEEE 802.3bz
6	Access Point should have USB port for future requirement.
7	Must have atleast 3 dBi Antenna gain on each radios
8	Access Point should be IOT ready supporting BLE, Zigbee, Thread and other 802.15.4 devices.
9	Must support 4x4 MIMO for both 2.4 and 5 ghz radio.
10	Must Support data rate upto 5gbps.
11	Must support minimum of 23dbm of transmit power in both 2.4Ghz and 5Ghz radios. And should follow the local regulatory Norms.
12	Must support AP enforced load-balance between 2.4Ghz and 5Ghz band.
13	Must incorporate radio resource management for power, channel and performance optimization
14	Must have -97 dB or better Receiver Sensitivity.
15	Must support Proactive Key Caching and/or other methods for Fast Secure Roaming.

16	Must support Management Frame Protection.
17	Should support locally-significant certificates on the APs using a Public Key Infrastructure (PKI).
18	Access Points must support Hardware-based encrypted user data and management traffic between controller and Access point for better security.
19	Must support the ability to serve clients and monitor the RF environment concurrently.
20	Same model AP that serves clients must be able to be dedicated to monitoring the RF environment.
21	Must be plenum-rated (UL2043).
22	Must support 16 WLANs per AP for SSID deployment flexibility.
23	Access Point Must continue serving clients when link to controller is down. It should also have option to authenticate user through Radius server directly from Access Point during link unavailability to controller.
24	Must support telnet and/or SSH login to APs directly for troubleshooting flexibility.
25	Must support 802.3af power source when required.
26	802.11e and WMM and Access point should be wifi 6 certifiable.
27	Must support QoS and Video Call Admission Control capabilities.

### Technical Specification of Wireless Outdoor Access Point Specifications

Sr. No.	Specification
1	Access Points proposed must include radios for 2.4 GHz and 5 GHz with 802.11ac Wave 2.
2	An access point must include a standard OEM provided Mounting brackets for mounting on Ceiling or Roof top.
3	Access Point shall support Console port that uses Standard Port (RJ-45) type connection
4	Should have 1x RJ-45 auto-sensing 10/100/1000 Mbps LAN port and 1x Built-in Gigabit SFP port for direct fiber uplink.
5	Must have atleast 4 dBi Antenna gain on each radio
6	Must support 3x3 MIMO for both 802.11ac and 802.11n.
7	Must Support data rate of 1.3 Gbps on 5ghz.
8	Must support minimum of 30dbm of EIRP in both 2.4Ghz and 5Ghz radios. And should follow the local regulatory Norms. Beamforming gain will not be considered in calculating EIRP.
9	Must support AP enforced load-balance between 2.4Ghz and 5Ghz band.
10	Must incorporate radio resource management for power, channel and performance optimization
11	Must have -97 dB or better Receiver Sensitivity.
12	Must support Proactive Key Caching and/or other methods for Fast Secure Roaming.
13	Must support Management Frame Protection.

14	Should support locally-significant certificates on the APs using a Public Key Infrastructure (PKI).
15	Access Points must support Hardware-based encrypted user data and management traffic between controller and Access point for better security.
16	Must support the ability to serve clients and monitor the RF environment concurrently.
17	Same model AP that serves clients must be able to be dedicated to monitoring the RF environment.
18	Must support 16 WLANs per AP for SSID deployment flexibility.
19	Access Point Must continue serving clients when link to controller is down. It should also have option to authenticate user through Radius server directly from Access Point during link unavailability to controller.
20	Must support telnet and/or SSH login to APs directly for troubleshooting flexibility.
21	Must support Power over Ethernet, local power(AC/DC Power), and power injectors.
22	802.11e and WMM
23	Must support Reliable Multicast to Unicast conversion to maintain video quality at AP level
24	Must support QoS and Video Call Admission Control capabilities.
25	Access Point should 802.11 DFS certified
26	The Access point shall be IP67 and NEMA rated
27	The Access point shall support operating temperature of -40 to 65°C
28	The equipment shall support up to 100 MPH sustained winds & 165 MPH wind gusts.

## Technical Specification of Access Switch

Access Switch – Layer 2 -24 Port with mGig support specifications	
SNo.	Specifications
<b>1</b>	<b>General Hardware and Interface requirements</b>
1.1	Switch should have minimum 24 mgig Ethernet Ports supporting 100M, 1G, 2.5G, 5G or 10Gbps per port and 8x10G SFP uplink ports.
1.2	Switch must support 60W per port for all the 24 ports
1.3	Switch shall have minimum 480 Gbps of stacking bandwidth with dedicated stacking ports and cables with minimum 8 switch in stack.
1.4	Switch shall support 1:1 redundant internal power supply.
1.5	Power supply modules, fan modules and transceivers modules should be hot swappable.
<b>2</b>	<b>Performance Requirements</b>
2.1	Switch shall have minimum 640 Gbps of switching fabric and 476 Mpps of forwarding rate.
2.2	Switch shall have minimum 32K MAC Addresses.
2.3	Switch shall have minimum 4K Active VLANs.
2.4	Switch shall support minimum 32K IPv4 and 16K IPv6 unicast routes.
2.5	Switch shall support minimum 8K IPv4 and IPv6 multicast routes

2.6	Switch shall support minimum 4K IPv4 and IPv6 QoS and Security ACLs.
2.7	Switch must have atleast 8GB DRAM and 16GB Flash
<b>3</b>	<b>IEEE Standards</b>
3.1	Should support IEEE Standards of Ethernet: IEEE 802.1D, 802.1s, 802.1w, 802.1x, 802.3ad, 802.3x, 802.1p, 802.1Q, 802.3, 802.3u, 802.3ab, 802.3z.
3.2	Switch hardware capable for IEEE 802.1AE / MacSec on all ports
<b>4</b>	<b>of Service (QoS) requirements</b>
4.1	Switch shall have 802.1p class of service, IP differentiated service code point (DSCP) and cross stack QoS.
4.2	Switch shall have committed information rate, rate limiting and flow based rate limiting.
4.3	Switch shall have minimum 8 egress queues per port and strict priority queuing.
<b>5</b>	<b>System Management and Administration</b>
5.1	Switch should support SSHv2, SNMPv2c, SNMPv3, NTPv3 and NTPv4.
5.2	Switch should support AAA using RADIUS and TACACS+.
5.3	Switch should support port security, DHCP snooping, Dynamic ARP inspection, IP Source guard, BPDU Guard, Spanning tree root guard and IPv6 First Hop Security.
5.4	Switch should support software upgrades via TFTP or FTP.
5.5	Switch should support IPv4 and IPv6 ACLs, VLAN , Port and Time based access list with time ranges.
5.6	Switch should have Layer 2, Routed Access (RIP, EIGRP Stub, OSPF - 1000 routes), PBR, PIM Stub Multicast (1000 routes)), PVLAN, VRRP, PBR, CDP, QoS, FHS, 802.1X, MACsec-128, CoPP, SXP from day 1
5.7	Switch shall have Switch Port Analyzer (SPAN) and Remote Switch Port Analyzer (RSPAN) .
5.8	Switch shall have Layer 2 trace route for ease of troubleshooting by identifying the physical path that a packet takes from source to destination.
5.9	Switch shall have Internet Group Management Protocol (IGMP) Snooping for IPv4 and IPv6, MLD v1 and v2 Snooping and Multicast VLAN Registration protocol.
5.10	Switch shall have per port broadcast, multicast and unicast storm control.
5.11	Switch shall have Unidirectional Link Detection Protocol (UDLD), Aggressive UDLD, Link Aggregation Control Protocol (LACP), Port Aggregation Protocol (PAgP) and Dynamic Trunking Protocol (DTP).
5.12	Switch should be Software Defined Networking Ready with Openflow or similar protocol support
<b>6</b>	<b>Regulatory Compliance</b>
6.1	Switch shall conform to UL 60950 or IEC 60950 or CSA 60950 or EN 60950 Standards for Safety requirements of Information Technology Equipment.
6.2	Switch shall conform to EN 55022 Class A/B or CISPR22 Class A/B or CE Class A/B or FCC Class A/B Standards for EMC (Electro Magnetic Compatibility) requirements.
<b>7</b>	<b>Evaluation Compliance</b>
7.1	Switch should be certified for EAL 2/NDPP or above or equivalent under Common Criteria Certification.
7.2	Switch should be IPv6 Certified/IPv6 logo ready.

## Technical Specifications of Core Switch Layer 3

Core Switch Layer 3 - 10/25 Gig *48Ports Specifications	
SN	Specifications
<b>1</b>	<b>General Hardware and Interface requirements</b>
1.1	Switch should have minimum 48 nos. of 1/10/25G SFP ports and 4 No of 40 G/100G SFP28 ports
1.2	Switch must have 1:1 redundant internal power supply.
1.3	Power supply modules, fan modules and transceivers modules should be hot swappable.
<b>2</b>	<b>Performance Requirements</b>
2.1	Switch shall have minimum 3.2Tbps of switching fabric and 1000 mpps of forwarding rate or above
2.2	Switch should support minimum 56K MAC Addresses.
2.3	Switch must have minimum 4K Active VLANs.
2.4	Switch shall support minimum 200K IPv4 and IPv6 unicast routes.
2.5	Switch shall support minimum 32K IPv4 and IPv6 multicast routes
2.6	Switch shall support minimum 16K IPv4 and IPv6 QoS and Security ACLs.
2.7	Switch shall have for Layer 2, Routed Access (RIP, OSPF – Upto 2000 routes),PBR, PIM Stub Multicast (upto 32000 routes)), PVLAN, VRRP, PBR, QoS, FHS, 802.1x and Macsec-128,
2.8	Switch shall have OSPFv2, OSPFv3, BGPv4, VRF, VXLAN, LISP, SGT, MPLS, mVPN,MSDP, PIM SM and PIM SSM
2.9	Switch shall support policy based routing and virtual routing and forwarding feature.
2.10	Switch must have atleast 16GB RAM and 16GB Flash
<b>3</b>	<b>IEEE Standards</b>
3.1	Should support IEEE Standards of Ethernet: IEEE 802.1D, 802.1s, 802.1w, 802.1x, 802.3ad, 802.3x, 802.1p, 802.1Q, 802.3, 802.3u, 802.3ab, 802.3z
3.2	Switch hardware capable for IEEE 802.1AE / MacSec on all ports
<b>4</b>	<b>Quality of Service (QoS) requirements</b>
4.1	Switch shall have 802.1p class of service, IP differentiated service code point (DSCP) and cross stack QoS.
4.2	Switch shall have committed information rate, rate limiting and flow based rate limiting.
4.3	Switch shall have minimum 8 egress queues per port and strict priority queuing.
<b>5</b>	<b>System Management and Administration</b>
5.1	Switch should support SSHv2, SNMPv2c, SNMPv3, NTPv3 and NTPv4.
5.2	Switch should support AAA using RADIUS and TACACS+.



5.3	Switch should support port security, DHCP snooping, Dynamic ARP inspection, IP Source guard, BPDU Guard, Spanning tree root guard and IPv6 First Hop Security.
5.4	Switch should support software upgrades via TFTP or FTP.
5.5	Switch should support IPv4 and IPv6 ACLs, VLAN , Port and Time based access list with time ranges.
5.6	Switch shall have Switch Port Analyzer (SPAN) and Remote Switch Port Analyzer (RSPAN) .
5.7	Switch shall have Layer 2 trace route for ease of troubleshooting by identifying the physical path that a packet takes from source to destination.
5.8	Switch shall have Internet Group Management Protocol (IGMP) Snooping for IPv4 and IPv6, MLD v1 and v2 Snooping and Multicast VLAN Registration protocol.
5.9	Switch shall have per port broadcast, multicast and unicast storm control.
5.1	Switch shall have Unidirectional Link Detection Protocol (UDLD), Aggressive UDLD, Link Aggregation Control Protocol (LACP), Port Aggregation Protocol (PAgP) and Dynamic Trunking Protocol (DTP).
5.11	Switch should be Software Defined Networking Ready with Openflow or simmlar protocol support
<b>6</b>	<b>Regulatory Compliance</b>
6.1	Switch shall conform to UL 60950 or IEC 60950 or CSA 60950 or EN 60950 Standards for Safety requirements of Information Technology Equipment.
6.2	Switch shall conform to EN 55032 Class A or CISPR32 Class A or FCC Class A/B Standards for EMC (Electro Magnetic Compatibility) requirements.
<b>7</b>	<b>Evaluation Compliance</b>
7.1	Switch should be certified for EAL 2/NDPP or above or equivalent under Common Criteria Certification.
7.2	Switch should be IPv6 Certified/IPv6 logo ready.

### Technical Specifications of WLAN Controller

S.No	Specification
1	The controller shall support deployment flexibility with appliance or VM without compromising any features
2	The controller appliance should have 4x10 Gig SFP/SFP+ uplink ports.
3	The controller appliance should have redundant power supply.
4	The controller appliance shall support 40 Gbps tunneling capacity
5	Wireless controller should support 1200+ APs and 8000 clients from day 1.
6	Wireless Controller shall support link aggregation and load sharing between Access Point to WLC links

7	The Controller shall provide standalone Virtual Wireless Controller option without requiring physical, additional Controller appliance
8	The controller shall be proposed with complete feature set including licensed feature
9	High Availability mode shall support controller inline data plane mode as well as local switching mode.
10	The controller failover shall not trigger client de-authentication and re-association
11	The controller shall support hot WLC software patching for fixing bugs tat does not require WLC reboot.
12	The controller shall support hot AP software patching for fixing bugs that does not require AP reboot.
13	The controller shall support new AP hardware without need for upgrading entire controller software.
14	The controller shall support rolling AP upgrade
15	The controller shall support rolling AP upgrade without need for clustering
16	The redundant Controller shall sync Access Point and Client Status, including DHCP IP lease status
17	Access Point shall be able to proactively distributes Client connection before and after association and tracking client condition in real time using data packet RSSI
18	The controller shall support Inter-Controller Wireless Roaming
19	The controller shall maintains per-user Application usage and shall be able to export it for network analytic.
20	The controller shall be able to support multiple RF Management profile per group of APs, including Transmit Power Control and Dynamic Channel Assignment on both <u>2.4GHz</u> and 5Ghz
21	The controller shall be able to identify and avoid interferers with network performance impact analysis report
22	The controller shall support optimized, automatic channel width (20~160Mhz) selection over 5GHz, 802.11ac
23	The controller shall support per-user and per-WLAN based application recognition and control that throttle usage by rate-limiting
24	The controller application recognition technology shall support exporting to 3rd party compatible format, such as NetFlow v9
25	The controller shall provide policy-based mDNS gateway including chromecast gateway
26	The contorller shall support new application signatures without upgrading controller software

27	Access Point shall be able to support 802.11r-based fast roaming and generic WPA2 devices under same SSID
28	Access Point shall defer off channel scanning upon activity of high priority traffic
29	Access Point should support Load-based Call Admission Control
30	The controller shall provide options to choose trustworthy QoS tag from multiple sources (DSCP,UP) and maintains priority tag over end-to-end network
31	The controller shall provide Device Profiling using mutple profiling methods to reduce false-detection
32	The controller shall be able to embedded custom web portal page (HTML) to fully customize user experience without additional cost or extra box
33	WLC should detect if someone connect a Rogue Access Point in network and able to take appropriate action to contain rogue Access point.
34	WLC should detect and protect an Ad-hoc connection when a connected user forming a network with other system without an AP or try enabling bridging between two interface
35	WLC should detect and take appropriate containment action if a smartphone user using tethering to connect other device.
36	WLC should detect and protect if a user try to spoof MAC address of valid client or AP for unauthorized access/authentication.
37	WLC should detect a hotspot running on client.
38	The controller shall be able to provide unique pre-shared keys to the devices that do not support the 802.1x security protocol
39	The controller shall support mapping of specific VLANs to single SSID, depending on Access Point location and user
40	The controller shall support automatic VLAN assignment per SSID to load-balance user connection. assigned VLAN pool shall be same as number of available VLAN in the system
41	The controller shall support embedded best practice configuration profile and setup
42	The controller shall support packet fragmentation between Access Point and controller communication

### Technical Specifications of SDN Controller & location Tracking Solution

S. No.	Specification
1	Controller should be hardware appliance with multicore CPU architecture and SSD drives. It should have minimum 2x10Gig interface
2	Controller should provide software-based automation and assurance capability

3	Controller should provide central management from single dashboard, device lifecycle management like device discovery, topology, inventory, image upgrade for both for wired and wireless networks
4	Controller should support multiple application to solve business problem like end to end path trace, automated end to end QoS deployment in the network, automation to create SD-LAN fabric etc.
5	With controller, It should possible to create SD-LAN fabric with following capabilities
a	Automated provisioning of layer-3 routed access layer design for access switches
b	User mobility (from one floor to another or anywhere in the campus) on layer-3 routed access architecture without change in IP address
C	It should possible to create micro segmentation between floor users where we should able to restrict communication between users on the same segment/vlan and communication between users will only be allowed based on policy. Vendor needs to provide details on how they are going to achieve it with their solution.
d	Provisioning different layer-3 virtual networks (VRF) for end to end separation
6	Controller should able to integrate with NAC solution to provide integrated security with SD-LAN
7	Controller should able to integrate with external services like DHCP, DNS, SNMP, AAA servers
8	Controller should able to collect real time telemetry data from syslog, snmp, flow etc. and should provide end to end visibility, network time travel, proactive and predictive information for troubleshooting
9	Controller should provide guided remediation for faster resolution of problem
10	It should possible to create custom templates for faster provisioning of network devices
11	Controller should provide following management and visibility capability
a	Network and user health with top 10 issues
b	Network topology based on site, Geo etc.
c	Client health summary, Client on boarding in wireless, RF details, history of performance of each client device
d	Capability to view historical events to check network status when issue occurred
e	Troubleshooting issue along network path, checking if ACL, QoS affecting connectivity or performance issue
12	Controller should support REST APIs to share data with third party applications
13	Controller should have redundant power supplies
	<b>Location Tracking Solution</b>
	Solution must have location-based tracking of interferers, rogues, and Wi-Fi clients
	Solution must have RF prediction tools
	Must support RFID asset tags for location tracking.

	Should provide Open APIs / SDK for app development
	Device should support storage of location information for upto 5000 devices
	Location Aware software should support the capacity to track up to 10,000 assets, including Wi-Fi clients and assets with Wi-Fi tags simultaneously.
	Location-Aware software should allow for the integration of business applications via a rich and open RESTful AP
	Should provide a robust and capable RESTful API interface that can be used to programmatically apply the location of various assets, process analytics, manage beacons, add or delete notifications, and more
	s and notifications should be set up based on the severity of the condition being reported.
	Should support enhanced security by providing the location of rouge access points and devices
	Historical data on the elements being tracked should be collected and stored for drawing up trends and faster troubleshooting
	Must support the capability to use both Received Signal Strength Indicator (RSSI) and Time Difference of Arrival (TDOA) methods of location tracking.
	Must support showing location information in the management application.
	Physical and Virtual Appliances should support up to 2000 Access Points and tracking of up to 50000 devices
	Software should provide visibility and comprehensive threat prevention for the mobility network through monitoring, alerts, classifying, and remediation of wireless and wired network vulnerabilities.
	Software Engine should be able to communicate with WLAN controller via standard protocols like Network Mobility Services Protocol (NMSP)
	The solution shall support zero-touch-deployment and change management to lower operational expenditures and increase network quickly changes to align with business needs
	Must have required hardware, software, License for smooth running of Wired & wireless network with Automation and Assurance

### Technical Specifications of Large Display Technical

S.No.	Technical Specification of Large Monitor Commercial Series Display	
1	Screen Size	55 Inch Smart TV
2	Panel & Technology	60Hz LED or better & 64-bit quad-core processor with 2GB RAM + 8GB Storage or better
3	Resolution	3840 X 2160
4	Aspect Ratio	16:09
5	Brightness	350 nits or higher
6	Contrast Ratio (Typical)	5000:01:00 or better
7	Viewing Angle (H/V)	178Deg /178Deg
8	Response Time	6 ms
9	Connectivity	

10	Input	VGA (D-sub 15 pin), DVI-D, HDMI, DisplayPort, Component/Composite, USB, Stereo Mini Jack, TV In, LAN and WiFi
11	Output	DVI-D (Digital Loop out), Stereo Mini Jack
12	External Control	RS232C (in/out) through Stereo Jack, RJ45
13	Sensor	Stereo Mini Jack (IR in/out), Mini USB (Ext. Brightness/IR Sensor)
14	Power Supply	AC 100 - 240 V~ (+/- 10 %), 50/60 Hz
15	Power Consumption (Typical/Max)	86W / 102W
16	Power Consumption (Standby)	Less than 1W
17	Environmental Conditions	
18	Operating Temperature	0°C - 40°C
19	Operating Humidity	10%~80% Non-Condensing
20	Features	
21	Special	Built-in TV Tuner, Built-in Speaker (10W + 10W), Simple Plug & Play Media Player (through USB), Narrow Bezel, Slim Chassis Depth (1.18")
22	Built-in Tuner	Yes
23	VESA Standard Wall-Mount Interface	200 x 200mm Wall Mount or better
24	Software	Android Based with Chromecast

## Technical Specifications of Rack Server

Rack Server Specifications		
SN	Item	Minimum Specification
1	Processors	Each server shall have a minimum of two (2) Intel Scalable Gold Processor with minimum of 22 Cores series CPUs with minimum of 2.1 Ghz Processor Base Frequency and minimum of 30 MB L3 Cache or higher
2	Chipset	Latest OEM chipset supporting an optimized for the above processor
3	Hard Disk	The server should have up to 8, 2.5" front-accessible, hot-swappable, SAS/SSD or SATA drives with 6X1 TB, 15K SSD or higher
4	RAID	The Server RAID controller should support the following configurations RAID 0, 1, 5, 6
5	RAID Card	Internal RAID Controller

6	Memory	Support for advanced memory redundant technologies like Advanced error- correcting code (ECC) and memory mirroring. 128 GB Ram from day 1.
7	Network	Should have 6 * 1 GbE LAN on Motherboard ( LOM ) for network Connectivity and 2*10 G with SFP transceiver
8	Optical Drive	Internal/External DVD-ROM drive
9	I/O FC	2*16Gb FC HBA card
10	Ports	Should have the atleast following ports for server connectivity: 1 serial port, 2 USB ports, 1 VGA video port
11	Certification	Platinum efficiency, hot-plug, redundant 550W or 770W power supplies; Bronze efficiency
12	Server Mgmt.	OEM embedded controller with dedicated management port with IPMI 2.0 compliance and Server Management Tool from same OEM
13	Power Supplies	Redundant efficient Power Supply (atleast 500 Watts each) to sustain above configuration.
14	Cooling	Hot plug and redundant fans
15	Systems management	Should be IPMI 2.0 compliant, and provides server-level management that monitors, reports and controls power consumption at the processor, memory and system level.
16	OS and Virtualization	The quoted server models should have the following Certifications: Microsoft Windows Server2016, Microsoft, Microsoft® Windows Server® 2016, Hyper-V, VMware® ESXi Version and all latest versions. The Server must be supplied with virtualization software that sits directly on bare metal hardware with capability to add(CPU, memory, devices) to VM's when needed. It should have less agentless integration with 3rd party security(AV, anti malware). The Network Management System and Automation Software Solutions shall host on the VM created in this Server hence the solution of NMS should have complete compatibility with this virtual setup of this server
17	Industry Certification	The server OEM must be ISO-14001, FCC, UL, ROHS
18	Form Factor	1U/2U Rack form factor with sliding rails to fit in the rack of industry standard 19" Server Rack
19	Warranty	3 years onsite warranty with 24x7 by OEM Prefailure warranty on CPU, Memory & Hard disks
20	OS and Virtualization Software	The Server must be supplied with RedHat Linux OS Enterprise Version with unlimited Virtualization as per CPUs for Server and Windows Core Infrastructure 2019 Standard Edition OS for the total

	no. of cores of the Server. The Server must be supplied with VMware License for Virtualization Enterprise Version of VSphere along with V Centre for management for the complete Server configuration with VMware Management Software from day 1
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### Technical Specifications of 25 KVA UPS with Five hours backup

Sl. No.	Specification	
1.	Capacity	25Kva Online with Five hours backup
2.	Wave form	Pure Sine wave
3.	Rectifier	IGBT based
4.	Display	LED/LCD
5.	Input power factor correction	0.99
6.	input configuration	1Ph,L-N+PE
7.	Output Power factor	0.8
8.	frequency (Input)	50Hz frequency
9.	frequency (output)	50Hz/60Hz frequency
10	V threshold	2%max full linear load,5% max on Nonlinear load
11	PF	>=0.99
12	AC-AC Efficiency	90% or batter
13	Transfer time Main-Battery	0
14	Transfer time Inverter-Bypass	4 msec
15	Emergency Power off function	Yes
16	Monitoring software for	Battery , health of UPS, any critical parameter change
17	communication	SNMP V1/V2
18	Programmable power management outlets	Ready from Day one
19	Port	USB,RS-232
20	Batter Type	SMF – Rocket/Excide/Quanta
21	Battery backup	Five Hours with full load with and supply batteries accordingly
22	operating temperature range	0-55 deg



23	Over Temperature, Load on Battery, Battery on Charge, Battery low, Mains on	Indication required
24	EPO function	Yes
25	Tel line surge protection	inbuilt
26	Humidity	0% to 95% non-condensing
27	Noise Level	50 dBA max
28	Size	not more than 2U rack mountable
29	Protection	IP20
30	Mechanical Parameter	EMI
31	Safety	EN
32	Performance	IEC/EN
33	MANAGEMENT Software	Included with SNMP as mandatory requirement
34	Operations System	Supports Windows® Latest Operating System, Linux, Unix

S. No	KVM Specifications	
1	<b>Console Connections</b>	
1.1	Local	1
1.2	Remote	1
2	<b>Computer Connections</b>	
2.1	Direct	16
2.2	Maximum	256 (via Cascade)
3	<b>Port Selection</b>	Pushbuttons, GUI, Hotkeys
4	<b>Connectors</b>	
4.1	Console Ports	2 x USB Type-A Female (White)
4.2		1 x 6-pin Mini-DIN Female (Purple)
4.3		1 x 6-pin Mini-DIN Female (Green)
4.4		1 x HDB-15 Female (Blue)
5	USB Port	3 x USB Type-A Female
6	Audio	2 x Audio Jack Female
7	Laptop USB Console (LUC) Port	1 x USB Mini-B Female
8	KVM Ports	16 x RJ-45 Female
9	Serial	2 x RJ-45 Female
10	PON	1 x RJ-45 Female
11	Modem	1 x RJ-45 Female
12	LAN Ports	2 x RJ-45 Female
13	Power	2 x IEC 60320/C14
14	<b>Switches</b>	

14.1	Port Selection	2 x Pushbutton
14.2	Reset	1 x Semi-recessed Pushbutton
14.3	Power	2 x Rocker
15	<b>LEDs</b>	
15.1	Online	16 (Green)
15.2	Link 10 / 100 / 1000 Mbps	2 (Red/Orange/Green)
15.3	Power	2 (Blue)
16	<b>Emulation</b>	
16.1	Keyboard / Mouse	PS/2 / USB
17	<b>Video</b>	
18	Local	1920 x 1200@60 Hz
18.1	Remote	1920 x 1200@60 Hz
19	<b>Scan Interval</b>	1-255 Seconds
20	<b>Maximum Input Power Rating</b>	100-240V AC, 50-60Hz, 1A
21	<b>Power Consumption</b>	AC110V:14W:102BTU
		AC220V:15W:107BTU
22	<b>Environmental</b>	
22.1	Operating Temperature	0 - 50°C
22.2	Storage Temperature	-20 - 60°C
22.3	Humidity	0 - 80% RH, Non-condensing
23	<b>Physical Properties</b>	<b>Rack Moutable</b>

**(ANNEXURE V) - TECHNICAL BID COMPLIANCE INFORMATION – Bill of Quantity**

**Note: Bidders to ensure that the detailed technical specifications mentioned on Annexure III and IV in this tender are complied**

<b>Technical BOQ</b>			
<b>S.No</b>	<b>Item Description as per Technical Specifications in this Tender</b>	<b>UoM</b>	<b>Qty</b>
1	Core Switch Layer 3 - 10Gig – 48 Ports	Nos.	2
2	Access Switch - Layer 2 -24 Port	Nos.	35
3	Wireless LAN Controller	Nos.	2
4	Outdoor High End Wireless Access Points	Nos.	20
5	Indoor High End Wireless Access Point	Nos.	222
6	Rack Server	Nos.	2
7	NMS & SDN to manage LAN and Wireless Infrastructure	Nos.	1
8	SFP Optics- 10GBASE-SR SFP Module for L3 SW	Nos.	80
9	SFP Optics- 10GBASE-SR SFP Module for L2 Access SW	Nos.	80
10	SFP Optics- 1Gig Copper RJ45 for L3 Switch	Nos.	4
11	SFP Optics- 1G Fiber for L3 Switch	Nos.	6
12	LED Display Screen	Nos.	2
13	IP KVM Switch	Nos.	2
<b>Passive Components as per Specifications in this Tender</b>			
<b>S.No</b>	<b>Passive Components as per Specifications in this Tender</b>	<b>UOM</b>	<b>Qty</b>
14	24 Port Patch Panel with Cable Manager - Loaded	Nos.	39
15	Single Port STP Cat6A Information Outlet with Face Plate & SMB with all accessories	Nos.	272
16	STP Cat6A Cable Box (500 Meters)	Nos.	27
17	1 Meter STP Cat6A Patch Cord	Nos.	554
18	6 Core Multi Mode Fiber Cable OM4 Jelly Filled Armoured	Meters	5400
19	12 Port LIU LC Type Rack Mount Loaded with all accessories	Nos.	37
20	24 Port LIU LC Type Rack Mount Loaded with all accessories	Nos.	11
21	Multi Mode OM4 Fiber Patch Cord 3 Meter	Nos.	160

22	32 MM HDPE Pipe with rodent repellent features	Meters	1620
23	Multi Mode Pig Tail	Nos.	464
24	MK Channel	Nos.	10
25	PVC Conduit – 1” ISI Certified Preferably AKG	Meters	2255
26	PVC Conduit – 1.5” ISI Certified Preferably AKG	Meters	158
27	Unslotted PVC Channel 30 x 25mm – ISI Certified	Meters	158
28	Unslotted PVC Channel 15 x 15mm – ISI Certified	Meters	158
29	12 U Rack with 2 Fans with Fan Tray, 1 x Cable Manager, 1 x 6 Socket PDU, 1 x H/w Packet of 10 and should be complete with all accessories with required depth as needed by the Switches, LIU, Patch Panel etc to be housed.	Nos.	37
30	1-inch PVC Flexible pipe including all accessories (Reputed Brand)	Mtrs.	500
31	RJ 45 Connector Box for all nodes supplied Cat 6A Cable	Nos.	2
32	25 Kva Online UPS with 6 hours Backup to cater the load of Access and Core Network components including Switches and Servers	Nos.	4
33	Any other item to complete the complete network setup end to end in all respects	Lumpsum	-
34	42U Rack with all Accessories	Nos.	2
35	Fiber Route Marker Labels in florescent color for Indoor	Nos.	200
<b>S.No</b>			
<b>Service Components (will be calculated on actuals upon billing)</b>		<b>UOM</b>	<b>Qty</b>
36	Installation of Indoor Wireless Access Point Indoor	Nos.	222
37	Installation of Outdoor Wireless Access Point	Nos.	20
38	Installation & Configuration of Core Layer 3 - 10Gig – 24 Ports	Nos.	2
39	Installation & Configuration of Access Switch - Layer 2 -24 Port - 8*802.3bz support - Type 1	Nos.	35
40	Installation & Configuration of WLAN Controller	Nos.	2
41	Installation & Configuration of Rack Server	Nos.	2

42	Installation & Configuration of NMS Server	Nos.	1
43	Installation & Configuration of Large Display Technical Specification	Nos.	2
44	Installation & Configuration of 10GBASE-SR SFP Module, Enterprise-Class	Nos.	160
45	Installation & Configuration of 1000BASE-T SFP transceiver module for Category 5 copper wire	Nos.	4
46	Installation of 24 Port Patch Panel with Cable Manager	Nos.	39
47	Installation & Configuration of Multimode Pig Tail	Nos.	464
48	Installation of Single Port STP Cat6A Information Outlet with Face Plate & SMB	Nos.	272
49	Laying, Installation & Commissioning of STP Cat6A Cable (In Meters)	Meters	13600
50	Installation of 1 Meter STP Cat6A Patch Cord	Nos.	554
51	Laying, Installation & Commissioning of above ground 6 Core Multimode mode OM4 Armoured Fiber Cable above ground	Meters	5400
52	Installation and commissioning of 12 Port LIU LC Type Rack Mount Loaded with all accessories	Nos	37
53	Installation and commissioning of 24 Port LIU LC Type Rack Mount Loaded with all accessories	Nos	11
54	Installation and commissioning of Multi Mode Fiber Patch Cord 3 Meter	Nos	160
55	Laying, Installation and commissioning of 32 MM HDPE Pipe with rodent repellent features	Meters	1620
56	Laying, Installation and commissioning of MK Channel	Nos.	10
57	Laying, Installation and commissioning of PVC Conduit – 1” ISI Certified Preferably AKG	Meters	2255
58	Laying, Installation and commissioning of PVC Conduit – 1.5” ISI Certified Preferably AKG	Meters	158
59	Laying, Installation and Commissioning of Unslotted PVC Channel 30 x 25mm per meter	Meters	158

<b>60</b>	Laying, Installation and Commissioning of Unslotted PVC Channel 15 x 15mm per meter	Meters	158
<b>61</b>	Installation and Commissioning of 12 U Rack with 2 Fans with Fan Tray, 1 x Cable Manager, 1 x 6 Socket PDU, 1 x H/w Packet of 10 and should be complete with all accessories.	Nos.	37
<b>62</b>	Laying, Installation and Commissioning of 1-inch PVC Flexible pipe including all accessories (Reputed Brand)	Meters	500
<b>63</b>	Installation and commissioning of RJ 45 Connector - Crimping work for all nodes	LumSump	-
<b>64</b>	Installation and Commissioning of 25 Kva UPS	Nos.	4
<b>65</b>	Splicing of Fiber Per core	Nos	320
<b>66</b>	Labeling of Jack Panels, Path Cords, Patch Panels, Pig tails with Printed labels and Route markers along with route marking	LumSump	-
<b>67</b>	Pentascanning Testing of Data Nodes (Both Ends)	Nos	242
<b>68</b>	42U Rack with all Accessories	Nos.	1
<b>69</b>	Installation and Commissioning IP KVM Switch	Nos.	2
<b>70</b>	Fiber Route Marker Labels in florecent color for Indoor	Nos.	200
<b>71</b>	Complete Documentation w.r.t. network layout, cable structure, with count of Active, Passive Components with segregated list of each component for each network site implemented / operational.	Nos	1
<b>72</b>	Project Management Charges for execution of this project	Nos	1
<b>73</b>	Lump Sum of all Electrical Work needed for carrying the complete work for executing this tender including and not limited to giving UPS supply from Server Room to all Access Switches	Nos	1
<b>74</b>	Three onsite Networking Support manpower resources from the date of sign off of installation and Commissioning	Nos	1
<b>75</b>	Any other work to complete the complete project end to end in all respects	Nos	Lumsump

**(ANNEXURE VI) - COMPONENTS REQUIRING MANUFACTURERS AUTHORIZATION**

<b>Major Components</b>	
<b>1</b>	Core Switch Layer 3 - 10Gig – 48 Port
<b>2</b>	Access Switch - Layer 2 -24 Port
<b>3</b>	Wireless LAN Controller
<b>4</b>	Outdoor High End Wireless Access Points
<b>5</b>	Indoor High End Wireless Access Point
<b>6</b>	Rack Server
<b>7</b>	NMS & SDN to manage LAN and Wireless Infrastructure
<b>8</b>	SFP Optics- 10GBASE-SR SFP Module for L3 SW
<b>9</b>	SFP Optics- 10GBASE-SR SFP Module for L2 Access SW
<b>10</b>	SFP Optics- 1G Fiber for L3 Switch
<b>11</b>	SFP Optics- 1Gig Copper RJ45 for L3 Switch
<b>12</b>	STP Cat6A Cable Box (500 Meters)
<b>13</b>	6 Core Multi Mode Fiber Cable MM

**Note: Bidders to ensure that the detailed technical specifications mentioned on Annexure IV, V and VI in this tender are complied**

**ANNEXURE VII – FINANCIAL BID**

<b>Financial Bid</b>								
<b>S.No</b>	<b>Item Description as per Technical Specifications in this Tender</b>	<b>UoM</b>	<b>Qty</b>	<b>Unit Rate</b>	<b>Amount in INR</b>	<b>Tax - %</b>	<b>Tax Amount</b>	<b>Total Amount in INR.</b>
1	Core Switch Layer 3 - 10Gig – 24 Ports	Nos.	2					
2	Access Switch - Layer 2 -24 Port	Nos.	35					
3	Wireless LAN Controller	Nos.	2					
4	Outdoor High End Wireless Access Points	Nos.	20					
5	Indoor High End Wireless Access Point	Nos.	222					
6	Rack Server	Nos.	2					
7	NMS & SDN to manage LAN and Wireless Infrastructure	Nos.	1					
8	SFP Optics- 10GBASE-SR SFP Module for L3 SW	Nos.	80					
9	SFP Optics- 10GBASE-SR SFP Module for L2 Access SW	Nos.	80					
10	SFP Optics- 1Gig Copper RJ45 for L3 Switch	Nos.	4					
11	SFP Optics- 1G Fiber for L3 Switch	Nos.	6					
12	LED Display Screen	Nos.	2					
13	IP KVM Switch	Nos.	2					
<b>Total Active Cost - A</b>								
<b>S.No</b>	<b>Passive Components as per Specifications in this Tender</b>	<b>UOM</b>	<b>Qty</b>	<b>Unit Rate (in Rs.)</b>	<b>Amount in INR</b>	<b>Tax %</b>	<b>Tax Amount</b>	<b>Total Amount in INR</b>
14	24 Port Patch Panel with Cable Manager - Loaded	Nos.	37					
15	Single Port STP Cat6A Information Outlet with Face Plate & SMB with all accessories	Nos.	272					
16	STP Cat6A Cable Box (500 Meters)	Nos.	27					
17	1 Meter STP Cat6A Patch Cord	Nos.	554					



18	6 Core Multi Mode Fiber Cable OM4 Jelly Filled Armoured	Meters	5400					
19	12 Port LIU LC Type Mode Rack Mount Loaded with all accessories and compatible with complete setup and Fiber	Nos.	37					
20	24 Port LIU LC Type Mode Rack Mount Loaded with all accessories and compatible with complete setup	Nos.	11					
21	Multi Mode OM4 Fiber Patch Cord 3 Meter	Nos.	160					
22	32 MM HDPE Pipe with rodent repellent features	Meters	1620					
23	Pig Tail Multimode	Nos.	464					
24	MK Channel	Nos.	10					
25	PVC Conduit – 1” ISI Certified Preferably AKG	Meters	2255					
26	PVC Conduit – 1.5” ISI Certified Preferably AKG	Meters	158					
27	Unslotted PVC Channel 30 x 25mm – ISI Certified	Meters	158					
28	Unslotted PVC Channel 15 x 15mm – ISI Certified	Meters	158					
29	12 U Rack with 2 Fans with Fan Tray, 1 x Cable Manager, 1 x 6 Socket PDU, 1 x H/w Packet of 10 and should be complete with all accessories with required depth as needed by the Switches, LIU, Patch Panel etc to be housed.	Nos.	37					
30	1-inch PVC Flexible pipe including all accessories (Reputed Brand)	Mtrs.	500					
31	RJ 45 Connector Box for all needs	Nos.	2					
32	25 Kva Online UPS with 6 hours Backup	Nos.	4					
33	42U Rack with all Accessories	Nos.	1					
34	Fiber Route Marker Labels in florescent color for Indoor	Nos.	200					
35	Any other item to complete the complete network setup end to end in all respects including electrical items as well	Lump sum	-					
<b>Total Passive Cost - B</b>								

S.No	Service Components (will be calculated on actuals upon billing)	UOM	Qty	Unit Rate* (in Rs.)	Total Amount (in Rs.)	Service Tax -%	Tax Amount	Total Amount in INR
35	Installation of Indoor Wireless Access Point	Nos.	222					
36	Installation of Outdoor Wireless Access Point	Nos.	20					
37	Installation & Configuration of Core Layer 3 - 10Gig – 48 Ports	Nos.	2					
38	Installation & Configuration of Access Switch - Layer 2 -24 Port	Nos.	35					
39	Installation & Configuration of WLAN Controller	Nos.	2					
40	Installation & Configuration of Rack Server	Nos.	2					
41	Installation & Configuration of NMS Server	Nos.	1					
42	Installation & Configuration of Large Display Technical Specification	Nos.	2					
43	Installation & Configuration of 10GBASE-SR SFP Module, Enterprise-Class	Nos.	160					
44	Installation & Configuration of 1000BASE-T SFP transceiver module for Category 5 copper wire	Nos.	4					
45	Installation & Configuration of SFP Optics- 1G Fiber for L3 Switch	Nos	6					
46	Installation of 24 Port Patch Panel with Cable Manager	Nos.	37					
47	Installation and Commissioning of Multimode Pig Tails	Nos.	464					
48	Installation of Single Port STP Cat6A Information Outlet with Face Plate & SMB	Nos.	272					
49	Laying, Installation & Commissioning of STP Cat6A Cable (In Meters)	Meters	13600					
50	Installation of 1 Meter STP Cat6A Patch Cord	Nos.	554					
51	Laying, Installation & Commissioning of above ground 6 Core Multimode OM4 Jelly Filled Armoured Fiber Cable above ground	Meters	5400					

52	Installation and commissioning of 12 Port LIU LC Type Rack Mount Loaded with all accessories	Nos	37					
53	Installation and commissioning of 24 Port LIU LC Type Rack Mount Loaded with all accessories	Nos	11					
54	Installation and commissioning of Multimode Mode OM4 Fiber Patch Cord 3 Meter	Nos	127					
55	Laying, Installation and commissioning of 32 MM HDPE Pipe with rodent repellent features	Meters	1620					
56	Laying, Installation and commissioning of MK Channel	Nos.	10					
57	Laying, Installation and commissioning of PVC Conduit – 1” ISI Certified Preferably AKG	Meters	2255					
58	Laying, Installation and commissioning of PVC Conduit – 1.5” ISI Certified Preferably AKG	Meters	158					
59	Laying, Installation and Commissioning of Unslotted PVC Channel 30 x 25mm per meter	Meters	158					
60	Laying, Installation and Commissioning of Unslotted PVC Channel 15 x 15mm per meter	Meters	158					
61	Installation and Commissioning of 12 U Rack with 2 Fans with Fan Tray, 1 x Cable Manager, 1 x 6 Socket PDU, 1 x H/w Packet of 10 and should be complete with all accessories.	Nos.	37					
62	Laying, Installation and Commissioning of 1-inch PVC Flexible pipe including all accessories (Reputed Brand)	Meters	500					
63	Installation and commissioning of RJ 45 Connector - Crimping work for all nodes	LumSump	-					
64	Installation and Commissioning of 25 Kva UPS	Nos.	4					
65	Splicing of Fiber for all cores for the complete project	LumSump	1					
66	Labeling of Jack Panels, Path Cords, Patch Panels, Pig tails with Printed labels and Route markers along with route marking	LumSump	-					
67	Installation and Commissioning IP KVM Switch	Nos.	2					

68	Pentascanning Testing of Data Nodes (Both Ends)	Nos	242					
69	42U Rack with all Accessories	Nos.	1					
70	Fiber Route Marker Labels in florecent color for Indoor	Nos.	200					
71	Complete Documentation w.r.t. network layout, cable structure, with count of Active, Passive Components with segregated list of each component for each network site implemented / operational.	Nos	1					
72	Project Management Charges for execution of this project	Nos	1					
73	Lump Sum of all Electrical Work needed for carrying the complete work for executing this tender including and not limited to giving UPS supply from Server Room to all Access Switches	Nos	1					
74	Three onsite Networking Support manpower resources from the date of sign off of installation and Commissioning	Nos	1					
75	Any other work to complete the compete project end to end in all respects	Nos	Lums ump					
<b>Total Installation Cost - ( C )</b>								
<b>Total Cost of the Complete Project (A+B+C)</b>								