पुण्यश्लोक अहिल्यादेवी होळकर
सोलापूर विद्यापीठ
।। विद्यया संपन्नता ।।
NAAC Accredited-2022
'B++ Grade (CGPA 2.96)

Punyashlok Ahilyadevi Holkar Solapur University, Solapur

E - Tender

For

Supply, Installation, Testing & Commissioning (SITC) of IT Network Infrastructure, at Punyashlok Ahilyadevi Holkar Solapur University, Solapur.

Punyashlok Ahilyadevi Holkar Solapur University, Solapur

Web-http://sus.ac.in
e - Tender Notice, 2024-25.

Punyashlok Ahilyadevi Holkar Solapr University, Solapur – 413255 (Tel.& Fax. 0217-2744771/78) invites e–Tender for the purchase of **Supply, Installation, Testing & Commissioning (SITC) of IT Network Infrastructure, at Punyashlok Ahilyadevi Holkar Solapur University, Solapur with support for 3 years** from original manufacturer / authorized dealer. The detail of e – tender as follows:

Item Description	EMD amount	Cost of e-Tender form
Supply, Installation, Testing & Commissioning (SITC) of IT Network Infrastructure with support for 3 years	Rs. 1,25,000 /- (Refundable)	Rs. 15,000/- (non-refundable)

e- Tender Time Table

1.	e – Tender Publishing Date	Date:17/04/2025	Time: 04.00 PM
2.	Tender Sate/ Download Start Date and Time	Date: 17/04/2025	Time: 04.00 PM
3.	Bid Submission Date and Time	Date:17/04/2025	Time: 04.00 PM
4.	Closing date and of e-/tender	Date: 07/05/2025	Time: 04.00 PM
5.	Pri-Bid Meeting Date and Time	Date: 23/04/2025	Time: 04.00 PM
6.	Date and place of online opening of E-Tender (Technical Bid opening Date)	Date:09/05/2025 Time: 04.00 PM P.A.H. SOLAPUR UNIVERSITY,SOLAPUR, Solapur Pune-National highway Kegaon, Solapur 413255.Telephone-0217-2744771/78(Ext-133).	
6.	Online /Tender Fee & EMD Submit Online payment	EMD & e-Tender form fee should Submit Online	

Punyashlok Ahilyadevi Holkar Solapur University, Solapur

E - Tender Form

Supply, Installation, Testing & Commissioning (SITC) of IT Network Infrastructure with support for 3 years

1) Name of Bidder :

2) Full Address :

3) Mobile :

4) E-mail ID :

5) G.S.T. No. :

6) PAN No. :

Seal & Signature of Vendor

Punyashlok Ahilyadevi Holkar Solapur University, Solapur

SECTION - A

MAIN TENDER DOCUMENT

Name of Work: - Supply, Installation, Testing & Commissioning (SITC) of IT Network Infrastructure with support for 3 years

TENDERING PROCEDURE

1. GUIDELINE TO BIDDER ON THE OPERATION OF ELECTRONIC TENDERING SYSTEM OF P.A.H. SOLAPUR UNIVERSITY,SOLAPUR.

1.1 BLANK TENDER FORMS

Tender form can be downloaded from the e- tendering portal Government of Maharashtra i.e. http://www.mahatenders.gov.in after entering the details of payment towards tender fees as per the Tender Schedule.

1.2 The prospective Bidders are free to ask for any additional information or clarification either in writing or orally concerning the work, and the reply to the same will be given by the Registrar, P.A.H. Solapur University, Solapur,413255 and same will be made available on e-tendering portal of Government of Maharashtra i.e. http://www.mahatenders.gov.in and this clarification referred to as common set of conditions/deviations (C.S.D.), shall form part of tender documents and which will also be common and applicable to all Bidders.

1.3 The tender submitted by the Bidders shall be based on the clarification and shall be unconditional. Conditional tenders will be summarily REJECTED.

1.4 All Bidders are cautioned that tenders containing any deviation from the contractual terms and conditions, specifications or other requirements and conditional tenders will be treated as no responsive.

1.5 Bidders should have valid class II/III Digital Signature Certificate (DSC) obtained from any Certifying Authorities. In case of requirement of DSC, interested Bidders should go to www.mahatenders.gov.in and follow the procedure mentioned in the document 'Procedure for application of digital certificate'

1.6 For any assistance on the use of Electronic Tendering System (ETS), users may call the number: 24x7 Help Desk Toll FREE No-0120-4200462/4001002

1.7 Bidder should install the mandatory components available on the home page of www.mahatenders.gov.in under the section 'Mandatory Components' and make the necessary Browser Settings provided under section 'Internet Explorer Settings'

2. PRE-REQUISITED TO PARTICIPATE IN THE TENDERS PROCESSED BY P.A.H. SOLAPUR UNIVERSITY, SOLAPUR

2.1 ENROLMENT AND EMPANELMENT OF CONTRACTORS ON ELETRONIC TENDERING SYSTEM:

The contractors interested in participating in the Tenders of P.A.H. Solapur University, Solapur process by using the Electronic Tendering System shall be required to enrol on www.mahatenders.gov.in the Electronic Tendering System to obtain user ID.

After submission of application for enrolment on the system, the application information shall be verified by the authorized representative of the service provider. If the information is found to be complete, the enrolment submitted by the contractor shall be approved. The contractors may obtain the necessary information on the process of enrolment either from Helpdesk Support team or enrol directly on web site www.mahatenders.gov.in.

2.2 OBTAINING A DIGITAL CERTIFICATE

The digital certificates are issued by an approved Certifying Authority Authorized by the Controller of Certifying Authorities of Government of India through their Authorized Representatives upon receipt of documents required to obtain a Digital Certificate Bid data/information for a particular Tender may be submitted only using the Digital Certificate which is used to encrypt the data during the Bid preparation. In case during the process of preparing and submitting a Bid for a particular tender, the contractor loses his/her Digital Signature Certificate (i.e. due to virus attack, hardware problem, operating System problem): he/her may not be able to submit the Bid online. Hence the Users are advised to store his/her Digital Certificate secure and if possible, keep a backup at safe place under adequate security to be used in case of need.

In case of online tendering, if the Digital Certificate issued to an Authorized User of a partnership firm is used for signing and submitting a bid, it well be considered equivalent to a no objection

certificate / power of attorney to that user to submit the bid on behalf of the partnership Firm. The partnership firm has to authorize a specific individual by an authorization certificate signed by a partner of the firm (and in case the applicant is a partner, another partners required to authorize in the same form) to use the digital certificate as per Indian Information Technology Act 2000.

Unless the Digital Certificate is revoked, it will be assumed adequate authority of the Authorized user to bid on behalf of the firm for the tenders processed on the Electronic Tender Management System of Government of Maharashtra as per Indian Information Technology Act, 2000.The Digital signature of this authorized user will be binding on the firm. It shall be the responsibility of partners of the firm to inform the certifying authority or sub-certifying authority, if the Authorized user changes, and apply for a fresh Digital Signature Certificate. The procedure for application of a Digital Signature Certificate will remain the same for the new authorized user.

The same procedure holds true for the Authorized Users in Private / Public Limited Company. In this case, the Authorization Certificate will have to be signed by the Director of the Company or the reporting authority of the applicant. For information of the process of application for obtaining Digital Certificate, the contractors may visit the section 'Digital Certificate' on the home page of the electronic tendering system.

3. STEPS TO BE FOLLOWED BY CONTRACTORS TO PARTICIPATE IN THE E-TENDERS PROCESSED BY MAHATENDERS

3.1 PREPARATION OF ONLINE BRIEFCASE

All contractors enrolled on the Electronic Tendering System of Government of Maharashtra are provided with dedicated briefcase facility to store documents/files in digital format. The contractors can use the online briefcase to store their scanned copies of frequently used documents/files to be submitted as a part of their bid response. The contractors are advised to store the relevant documents in the briefcase before starting the Bid Preparation and submission stage. In case the contractors have multiple documents under the same type. (e.g. multiple work completion certificates) as mentioned above, the contractors advised to either create a single pdf file of all the documents of same type or compress the documents in a single compressed file in zip rar formats and upload the same. It is mandatory to upload the documents using the briefcase facility. Therefore the contractors are advised to keep the documents ready in the briefcase to ensure timely bid preparation.

Note : Uploading of document in the briefcase does not mean that the documents are available to P.A.H. Solapur University, Solapur at the time of tender opening stage unless the documents are specifically attached to the bid during the online bid preparation as well as during decryption.

3.2 ONLINE VIEWING OF DETAILED NOTICE INVITIING TENDERS

The contractors can view the detailed tender notice along with the time schedule (Key Dates) for all the live Bidders released by P.A.H. Solapur University, Solapur on the e- Tendering portal on http://www.mahatendres.gov.in under the organization of P.A.H. Solapur University, Solapur.

3.3 DOWNLOAD OF TENDER DOCUMENTS

The pre-qualification/Main Bidding documents are available for free downloading. However to participate in the online Bidder, the bidder must purchase the bidding documents online.

3.4 ONLINE BID PREPARATION

Submission of bids will be preceded by online bid preparation and submission of the digitally signed within the tender time schedule (Key dates) published in the detailed notice inviting tender. The bid data is to be prepared in the templates provided by the tendering authority of P.A.H. Solapur University, Solapur. In the unloadable document type of templates, the contractors are required to select the relevant document/compressed file (containing multiple documents) already uploaded in the briefcase.

3.5 SHORT LISTING OF CONTRACTORS FOR FINANCIAL BIDDING PROCESS

The tendering authority will first open the technical bid documents of all contractors and after scrutinizing these documents will shortlist the contractors who are eligible for financial Bidding Process.

3.6 OPENING OF THE FINANCIAL BIDS

The contractors may be present in the office of the Tender opening authority at the time of opening of Financial Bids. However, the results of the Financial Bids of all contractors shall be available on the P.A.H. Solapur University, Solapur e-tendering Portal immediately after the completion of opening process.

3.7 TENDER SCHEDULE (KEY DATES)

The contractors are strictly advised to follow the dates and times allocated to each stage under the column “Contractor Stage” as indicated in the Time Schedule in the detailed tender notice for the Tender. All the online activities are time tracked and the electronic tendering System enforces time-locks that ensure that no activity or transaction can take place outside the start and end dates and time of the stage as defined in the tender schedule. At the sole discretion of the tender authority, the time schedule of the tender stages may be extended.

4. SUBMISSION OF DOCUMENTS AND TENDER OPENING:

4.1 COVER I : DOCUMENTS TO BE UPLOADED AT THE TIME OF ONLINE SUBMISSION FOR FULFILLING QUALIFYING CRITERIA

Scanned copies of the following documents shall be uploaded by the bidder in cover no.1 at the time of online submission of the bid:

Sr. No	Eligibility Criteria to Participate	Supporting Documents
1	The bidder should be registered under Indian Companies Act, 1956 / partnership / LLP or proprietorship.	Scan Copy of certificate
2	Bidder should have GST Registration.	Scan Copy of certificate
3	The bidder company or firm should have Annual Average turnover of minimum Rs. 2 Crore for last three financial years i.e. FY 2020-21, 2021-22 & 2022-23	Copy of Turnover Certificate from certified CA
4	Bidder should have executed orders fulfilling below mentioned criteria, in Government Organization / ULBs / PSUs in last 5 financial years.:	Copy of relevent Work / PO / LOA / contract
	A. Single order of Supply, Installation, Testing & Commissioning (SITC) of IT/ITES Infrastructure for a single client, of value not less than 70 Lakhs.	
	OR	
	B. Two orders of Supply, Installation, Testing & Commissioning (SITC) of IT Infrastructure for a client, of value not less than 50 Lakhs each.	
	OR	
	C. Three orders of Supply, Installation, Testing & Commissioning (SITC) of IT Infrastructure for a client, of value not less than 35 Lakhs each.	
5	The bidder must have an office in Maharashtra.	Copy of relevent Document
6	The bidder should submit the MAFs for NMS, Switch, WAP, WLC & UTP cable from respective OEMs as per their proposed solution as per **Annexure – II**. Non submission of any MAF will lead to rejection of bid.	Copy of Manufacturer's Authorization Forms (MAF)as per Annexure II
7	The bidder as to provide clause by clause compliance from respective OEM on OEM's letterhead for all technical specifications mentioned in **Annexure I**. Non-compliance of any clause will lead to rejection of bid.	Copy of compliance sheet as per Annsxure I
8	The bidder has to provide all relative documents as per required in OEM's pre-qualification criteria. Non submission of any document will lead to rejection of bid.	Copy of relevant Docuements

9	Site survey report is to be submitted with stamp & sign from the authority, during bid submission, as per **Annexure – VII**.	Copy of Survey report as per Annexure-VII
10	Self declaration in the given format from bidder in respect of black listing of their companies as per **Annexure – VI**	Copy of Self declaration as per Annexure-VI

Additional Documents to be submitted in cover-I as per Formats attached :

4.1.13 Scan copy of Annexure-III (Bid form)

4.1.14 Scan copy of Annexure-IV (Service Report Details)

4.1.15 Scan copy of Annexure-V. (Forwarding Letter on company letter head)

IMPORTANT POINTS FOR THE BIDDER:

a. The bidders fulfilling all the above criteria and conditions, with satisfactory documented evidences, will only be qualified for their financial bid opening.
b. The cost of the site survey and relevant activities is to be borne by the bidder only.
c. The bidders registered under GoI's Start-up initiative, are exempted from the experiencecriteria, as mentioned in above table at Sr. No. 4
d. **Hard Copy of Documents uploaded in Technical Bid, should be sent to PAH Solapur University Solapur within 1 week (7 Days) after last date of tender submission else technical bid will not be valid.**

4.2 Cover II: FINANCIAL BID

The Bidder shall quote his financial offer duly signed in terms of item rates at the appropriate place of tender template in Excel Format File **Supply, Installation, Testing & Commissioning (SITC) of IT Network Infrastructure with support for 3 years** (Annexure-VII). It shall be filled in cover No.2 (In the Online Excel Format File). The Bidder should not quote his financial offer anywhere directly or indirectly in Envelope no 1. The bidder shall quote for the work as per details given in the Tender document and also based on the detailed set of conditions issued/additional stipulations made by the P.A.H. Solapur University, Solapur and made available to him on www.mahatenders.gov.in. The tender shall be unconditional. Financial bid will be opened only after bidder qualify technically (i.e. criteria's mentioned in 4.1).

4.3 SUBMISSION OF TENDER

The bidder shall refer to section "Guidelines to Bidders on the operations of Electronic Tendering System of www.mahatenders.gov.in for details.

4.4 OPENING OF TENDERS :

On the date, specified in the Tender Schedule following procedure will be adopted for opening of the Tender.

(A) Cover No.1 TECHNICAL BID

First of all cover No.1 of the Bidders will be opened online to verify its contents as per requirements. If the various scanned documents do not meet the qualifying criteria prescribed by the P.A.H. Solapur University, Solapur, a note will be recorded accordingly by the tender opening committee and the said Bidders Cover No.2 will not be considered for further action and the same will be recorded. The decision of the tender opening committee in this regard will be final and binding on the bidders.

(B) Cover No. 2 FINANCIAL BID

Cover No. 2 shall be opened online after opening of Cover No.1 Only. If the documents submitted in Cover No.1 meet the qualifying criteria prescribed by the P.A.H. Solapur University, Solapur and contents of Cover No.1 are found to be acceptable to the P.A.H. Solapur University, Solapur. The quoted rates of the items in the Financial Bid of the bidder shall then be read out from the template in the presence of bidders present at the time of opening of Cover No. 2.

NOTE: - Commissioning Prices quoted by the bidders should include all local taxes, duties, Levies, installing, transportation costs and insurance costs etc till the equipment is accepted.

5. EARNEST MONEY DEPOSIT (EMD)

Earnest Money Rs. 1,25,000/- shall be paid through online system. Scanned copy of the receipt of EMD shall be uploaded in Envelope No. 1 online. In case of successful bidder the Earnest money will be refunded after paying the initial security deposit and completing the tender documents by the bidder. The amount of Earnest Money will be forfeited to the University in case the successful bidder does not pay the amount of initial security deposit within specified time limit.

6. PERFORMANCE SECURITY DEPOSIT

Earnest Money Deposit credited along with tender shall be converted as a performance security deposit (2 % of purchase order) and successful bidder shall have to credit remaining balance amount of performance security deposit or SD 2 % of purchase order shall be deposited either in Cash through NEFT/RTGS or DD of Nationalized bank or in form of B.G of Nationalized Bank payable Solapur should be valid till 60 days after warranty period. On successful completion of contract security deposit

amount will be refunded to the contractor without interest after expiry 60 days from the expiry of warranty.

7. TIME LIMIT

The work period as specified in the N.I.T. (Notification Inviting Tenders) which shall be Reckoned from the date mentioned in the written work order for commencing the work.

8. TENDER RATE

No alteration in the form of tender and in any schedule/Annexure of tender and no Additions in the scope of special stipulation will be permitted.

9. TENDER UNITS

The bidders should particularly note the unit mentioned in the Annexure VIII on which the rates are based. No change in the units shall be allowed.

10. CORRECTIONS

No corrections/alternations shall be made in the tender documents.

11. TENDER ACCEPTANCES:

The Bidders whose bid is lowest, the successful shall submit all the attested copies of the scanned documents uploaded online by him in Cover No.1 to the office of address The Registrar, P.A.H. Solapur University,Solapur after opening of financial bids. If all above documents meet the requirements of University, further process will be carried out. The decision of the tender opening authority in this regard will be final and binding on the contractor.

Acceptance of tender will rest with the University Authorities, P.A.H. Solapur University, Solapur. P.A.H. Solapur University, Solapur reserves the right to reject any or all tenders without assigning any reason therefore at any stage of tender. The Bidders whose tender is accepted will have to deposit security deposit and enter in to an agreement within 15 days of being notified to do so. In case of failure on the part of Bidders to sign the agreement within the stipulated time, the earnest money paid by him shall stand forfeited to the University and the offer of the Bidders shall be considered as withdrawn by him.

12. VALIDITY PERIOD

The offer shall remain open for acceptance for minimum period of 120 days from the date of opening of cover no. 2 (Financial Bid) and thereafter until it is withdrawn by the bidder by notice in writing duly addressed to authority opening the tender and sent by Registered Post Acknowledgement due.

General Terms and Conditions

1. The Bidder should be responsible for the **Supply, Installation, Testing & Commissioning (SITC) of IT Network Infrastructure, at Punyashlok Ahilyadevi Holkar Solapur University, Solapur** mentioned in Annexure-I and the relevant software and other relevant technology components including all items.

1.1. The Bidder should have contact centre (central or location wise) in order to log the calls on 24 x 7 x 365. They should also provide onsite support on 24 x 7 x 365 basis. The contact centre numbers should be provided to the University along with the escalation matrix mentioning the contact person's name, number and designation in the company.

1.2. All the hardware and software along with necessary instruments as may be required for **Supply, Installation, Testing & Commissioning (SITC) of IT Network Infrastructure, at Punyashlok Ahilyadevi Holkar Solapur University, Solapur so** supplied by the Bidder should come with Standard / 3 Years Free Product Warranty, Onsite Service/ Support.

1.3. While executing the **Supply, Installation, Testing & Commissioning (SITC) of IT Network Infrastructure, at Punyashlok Ahilyadevi Holkar Solapur University, Solapur**) bidder shall first take permission of the university to carryout the work along with layout. The bidder take all possible precautions not to initiate any work without permission of the university. If the bidder initiates the work without prior approval / permission of the university and if any damage is caused to the University property or university staff, students etc. the bidder shall be held responsible and it shall be his duty to repair /replace the damaged part of the property or the pay the damages as the case may be.

1.4. It shall be the duty of the Bidder / Contractor to take care of the machinery and workman engaged for the **Supply, Installation, Testing & Commissioning (SITC) of IT Network Infrastructure, at Punyashlok Ahilyadevi Holkar Solapur University, Solapur.** For this work the university shall not be held responsible for any loss or damage of the machinery or accident of workman during the period of work.

1.5. While executing the work of **Supply, Installation, Testing & Commissioning (SITC) of IT Network Infrastructure, at Punyashlok Ahilyadevi Holkar Solapur University, Solapur** bidder shall take all possible precautions not to cause damage to the property of University either by his workmen and or by use of machinery. If the damage is caused to the University property the bidder shall be held responsible and it shall be his duty to repair / replace the damaged part of the property or the pay the damages.

3. TERMINATION OF CONTRACT

3.1 If the successful bidder fails to complete the work within 03 months stipulated time without any serious cause the university has every right to terminate the contract.

3.2 If the Contractor / bidder's workmen misbehaves with the University staff, students, university officers the university shall issue a notice to the Contractor then the Contractor shall not engage the services of such worker within the university.

3.3 On completion of work or termination of work the Contractor shall withdraw the persons andmachinery deployed by him in connection with the work mentioned in the tender document from the premises of the University immediately. In case of failure of the Contractor to do so, the University shall have the right to take appropriate action to remove such persons and or machinery from the University premises by resorting to coercive measures and adopt such course as may be deemed necessary and appropriate for that purpose.

3.4 All the disputes arising between the Contractor and University shall be subject to Solapur Jurisdiction only.

4 RISK AND COST

If the successful contractor / bidder without any reasonable cause fails to complete the work within stipulated time and if the said work completed by the university by engaging other contractor / agency, then under such circumstances the cost and expenses so incurred shall be recovered from the successful contractor / bidder.

5 FORCE MAJEURE

Any event or circumstance beyond the control of the Parties, such as war, strike, riot, flood, earthquake, act of God etc. prevents one or both Parties from fulfilling their obligations under the Contract, decision of the Vice Chancellor of the University shall be a final and binding on the both the Parties.

6 The bidder shall read carefully all the conditions of the Tender and instructions given in the Tender before quoting his offer in the Financial Bid. He shall read description of work, Scope of work and other necessary statutory compliances and other requirements etc. carefully and then quote accordingly.

7 The work so assigned shall be strictly completed within the stipulated time. In exceptional cases and circumstances university has every right to take decision for enhancement of the period.

8 The bidder shall have all necessary permits/licenses for this work. The successful bidder / contractor shall deploy the trained and qualified workmen for completing the work as mentioned herein above. . The University will not be responsible for any accident and or any incident happened due to breach of these rules and regulations by the agency.

9 The agency shall keep The University indemnified against all actions, suits, proceedings, losses, costs, damages, charges, claims and demands in any way arising out of or by reason of anything done or omitted to be done by the bidder or its workers. The bidder would also ensure that its activities do not in any manner disturb officials, teachers, students, residents within the area of university and shall not damage any assets property of the University.

10 In case, if any dispute regarding interpretation of any clause or term of this contract and any related document, the decision of the Vice Chancellor of The University will be final and binding on both the parties to this tender.

11 All labor/workmen deployed by the agency at The University shall abide by the rules and regulations laid down by The University from time to time. The bidder shall be solely

responsible for the conduct and performance of the workmen deployed by him for this purpose.

12 The Contractor/agency shall ensure that it fully complies with and observes all statutory provisions, rules and regulations laid down by the Government or local body and amendments thereto from time to time in respect to aforementioned work and also rules and regulations and legal norms specified for workmen. The contractor is bound to follow the rules and regulations pertaining the engagement of labour and their wages etc.

13 The University shall not accept and entertain any claim in the event of the contractor / bidder's workmen sustaining any injury, damage or loss either to person or property or machinery etc. either inside or outside of the University premises. It shall be the sole responsibility of the contractor / bidder only.

14 Selection of lowest bidder - If university found more than one lowest bidders (those who quoted the same rate), Selection of the bidder would be made after taking into consideration all the relevant factors like lowest rates, past experience/performance as mentioned above, responsible business practices, highest turnover, competency to execute such contracts, credentials of fulfilment of past work of contractor / bidder and after taking into consideration the above terms altogether. The University reserves right to select the bidder for contract from the lowest bidders.

15 The University reserves the right to reject any or all tenders. The University may accept tender in full or part or may award part of the works to different bidders.

16 The University reserves the right to get clarification and additional documents form the bidder if necessary.

17 The University reserves the right to reject any or all tenders or to cancel the tender process without assigning any reasons thereof, and no complaints shall be entertained in this regard.

18 The tenderers shall specifically mention on their letter head that no disputes / litigation in whatsoever nature is pending or settled between their firm / company / proprietorship and university.

19 The tenderers / bidders shall certify that their firm / company / proprietorship has not been black listed by Government / Semi-Government bodies / authorities.

20 The Tenders shall along with the experience certificate should also produce and annex the certificate of satisfactorily completion of his / their services from the earlier institution/s.

21 Secured internet /Maximum Security against cyber threats (DDOs Protection and manged firewall).

22 One Dedicated person on site for support.

23 24X7 customer support.

24 Payment Clause, deposit, refund clause penalty clause or any other relevant terms apart from these

3. Delivery and Installation

3.1 All the goods ordered shall be delivered at, PAH Solapur University, At Post – Kegaon, Solapur within 6 weeks from date of issue of Purchase Order as per terms and condition of tender/purchase order. All the Aspects of safe delivery and commissioning shall be the exclusive responsibility of supplier. If the supplier fails to deliver and commissioning of the goods on or before the stipulated date, then penalty @ 1% per week of the total order value shall be levied subject to maximum of 10% of total order value. The goods are to be supplied within this stipulated period, failing which the supply order is liable to cancelled.

3.2 Delivery of the Goods shall be made by the Supplier in accordance with the terms of the Purchase Contract. The vendor should take responsibility of the Goods till it reaches the delivery destination as informed by the PAH Solapur University, Solapur, transport to such place of destination in India, including insurance and storage, as shall be specified in the contract, shall be arranged by the Supplier. Vendor shall organize the Road Permits wherever required.

3.3 The Vendor/Bidder should successful install and commissioning the goods within four (4-6) weeks, from the date of receipt of material. It means the faultless functioning of equipment. The clearing of the consignment at respective Airport shall be done by supplier. The corresponding shipping documents may be taken accordingly. If there is delay in clearing of the consignment for not giving timely, demurrage (Ware house charges), if applicable has to be paid by supplier.

3.4 Installation will be treated as incomplete in one/all of the following situations:

1. Non-delivery of supporting documentation
2. Delivery, but no installation of the components and/or software

3.5 The PAH Solapur University, Solapur will consider the inability of the Bidder to deliver or install the equipment within the specified time limit, as a breach of contract and would entail the payment of Liquidation Damages on the part of the Bidder.

The liquidation damages represent an estimate of the loss or damage that the PAH Solapur University, Solapur may have suffered due to delay in performance of the Obligations (relating to delivery, installation, operationalization, implementation, Training, acceptance, warranty, maintenance etc. of the deliverables) by the Bidder.

3.6 The PAH Solapur University, Solapur shall, without prejudice to its other remedies under the Contract, deduct from the Contract Price, as liquidated damages, a sum as specified in Special Terms and Conditions

3.7 Products shall be supplied in a ready to use condition along with all accessories mentioned in specifications etc.

4. Delivery and Documents

The details of shipping and/or other documents to be furnished by the Supplier are specified hereunder**.**

4.1 Original copy of Supplier's invoices showing contract number, goods description, quantity, unit price and total amount.

5. Price and Taxes:

5.1 Prices quoted by the bidders for these equipment's / material / work specified in tender dicument should be in Indian Currency in Rupees (INR) inclusive of all types of taxes and delivery at PAH Solapur University, Solapur.

5.2 The prices quoted shall be valid for a minimum period of three (3) Months from date of opening of financial bid.

6. Technical Information

The technical documentation involving detailed instruction for operation and maintenance, users' manual etc., is to be delivered with every unit of the equipment's / material / work specified in tender dicument. The language of the documentation should be English.

7. Acceptance.

A. The acceptance / performance test will be performed after completion of installation and commissioning of all the components of the solution at the sites of installation. The acceptance test will be conducted by P.A.H. Solapur University, Solapur, the expert committee nominated by the P.A.H. Solapur University, Solapur as its option as per the acceptance criteria. The acceptance will involve trouble-free operation for two consecutive days at site. The Bidder will be responsible for setting up and running the acceptance test without any extra cost to the P.A.H. Solapur University, Solapur.

B. In the event of hardware and software failing to pass the acceptance test, a period not exceeding two weeks will be given to rectify the defects and clear the acceptance test, failing which the P.A.H. Solapur University, Solapur reserves the right to get the corresponding component replaced by the bidder at no extra cost to the P.A.H. Solapur University, Solapur or to cancel the order and recall all the payments made by the P.A.H. Solapur University, Solapur to the bidder.

C. Successful conduct and conclusion of the acceptance tests for the installed components shall also be the sole responsibility and at the cost of the Bidder.

8. Acceptance certificate

On successful completion of acceptability test, receipt of deliverables etc. for the equipment and after the P.A.H. Solapur University, Solapur is satisfied with the working on the system, the acceptance certificate signed by the bidder and the representative of the P.A.H. Solapur University, Solapur will be issued. The date on which such certificate is signed shall be deemed to be the date of acceptance of the work carriedout by the abider as per tender document and the WARRANTY Of the Hardware starts from that date.

9. Governing Language

A. The contract shall be written in English. All correspondence and other documents pertaining to the Contract, which are exchanged by the parties, shall be written in English.
B. The technical documentation involving detailed instruction for operation and maintenance, users manual etc. is to be delivered with every unit of the equipment supplied .The language of the documentation should be English.

10. Inspections and Tests.

A. The event of hardware and software or the material used for completing the work as specified in tender document as the case may be failing to pass the acceptance test, as per the specifications given, a period not exceeding two weeks will be given to rectify the defects and clear the acceptance test, failing which, the P.A.H. Solapur University, Solapur reserves the right to cancel the purchase order.
B. On successful completion of acceptability test, receipt of deliverables, etc., and after the P.A.H. Solapur University ,Solapur is satisfied with the working on the system, the acceptance certificate will be signed by the, Testing Agency and the representative of the P.A.H. Solapur University ,Solapur. Notwithstanding anything contained above, in case of dispute, claim & legal action arising out of the contract, the parties shall be subject to the jurisdiction of courts at Solapur, Maharashtra, India only.

C. Compliance with Laws: By acceptance of this agreement, the Vendor agrees to comply with the requirements of all the existing laws. The Vendor also agrees to comply with the Fair Labor Standards Act and the Occupational Safety and Health Act, and all other applicable laws, ordinances, regulations and codes in the Vendor's performance hereunder. The Vendor further agrees to indemnify and hold the University and its customers harmless from any loss or damage that may be sustained by the University, by reason of the Vendor's failure to comply with any laws, ordinance, regulations and codes.

1. The Bidder should be responsible for the Supply, Installation, Testing & Commissioning (SITC) of IT Network Infrastructure, at Punyashlok Ahilyadevi Holkar Solapur University, Solapur mentioned in Annexure-I and the relevant software and other relevant technology components including all items.

1.6. The Bidder should have contact centre (central or location wise) in order to log the calls on 24 x 7 x 365. They should also provide onsite support on 24 x 7 x 365 basis. The contact centre numbers should be provided to the University along with the escalation matrix mentioning the contact person's name, number and designation in the company.

1.7. All the hardware and software along with necessary instruments as may be required for Supply, Installation, Testing & Commissioning (SITC) of IT Network Infrastructure, at Punyashlok Ahilyadevi Holkar Solapur University, Solapur so supplied by the Bidder should come with Standard / 3 Years Free Product Warranty, Onsite Service/ Support.

1.8. While executing the Supply, Installation, Testing & Commissioning (SITC) of IT Network Infrastructure, at Punyashlok Ahilyadevi Holkar Solapur University, Solapur) bidder shall first take permission of the university to carryout the work along with layout. The bidder take all possible precautions not to initiate any work without permission of the university. If the bidder initiates the work without prior approval / permission of the university and if any damage is caused to the University property or university staff, students etc. the bidder shall be held responsible and it shall be his duty to repair /replace the damaged part of the property or the pay the damages as the case may be.

1.9. It shall be the duty of the Bidder / Contractor to take care of the machinery and workman engaged for the Supply, Installation, Testing & Commissioning (SITC) of IT Network Infrastructure, at Punyashlok Ahilyadevi Holkar Solapur University, Solapur. For this work the university shall not be held responsible for any loss or damage of the machinery or accident of workman during the period of work.

1.10. While executing the work of Supply, Installation, Testing & Commissioning (SITC) of IT Network Infrastructure, at Punyashlok Ahilyadevi Holkar Solapur University, Solapur bidder shall take all possible precautions not to cause damage to the property of University either by his workmen and or by use of machinery. If the damage is caused to the University property the bidder shall be held responsible and it shall be his duty to repair / replace the damaged part of the property or the pay the damages.

3 TERMINATION OF CONTRACT

3.1 If the successful bidder fails to complete the work within 03 months stipulated time without any serious cause the university has every right to terminate the contract.

3.2 If the Contractor / bidder's workmen misbehaves with the University staff, students, university officers the university shall issue a notice to the Contractor then the Contractor shall not engage the services of such worker within the university.

3.3 On completion of work or termination of work the Contractor shall withdraw the persons and machinery deployed by him in connection with the work mentioned in the tender document from the premises of the University immediately. In case of failure of the Contractor to do so, the University shall have the right to take appropriate action to remove such persons and or machinery from the University premises by resorting to coercive measures and adopt such course as may be deemed necessary and appropriate for that purpose.

3.4 All the disputes arising between the Contractor and University shall be subject to Solapur Jurisdiction only.

4 RISK AND COST

If the successful contractor / bidder without any reasonable cause fails to complete the work within stipulated time and if the said work completed by the university by engaging other contractor / agency, then under such circumstances the cost and expenses so incurred shall be recovered from the successful contractor / bidder.

5 FORCE MAJEURE

Any event or circumstance beyond the control of the Parties, such as war, strike, riot, flood, earthquake, act of God etc. prevents one or both Parties from fulfilling their obligations under the Contract, decision of the Vice Chancellor of the University shall be a final and binding on the both the Parties.

6 The bidder shall read carefully all the conditions of the Tender and instructions given in the Tender before quoting his offer in the Financial Bid. He shall read description of work, Scope of work and other necessary statutory compliances and other requirements etc. carefully and then quote accordingly.

7 The work so assigned shall be strictly completed within the stipulated time. In exceptional cases and circumstances university has every right to take decision for enhancement of the period.

8 The bidder shall have all necessary permits/licenses for this work. The successful bidder / contractor shall deploy the trained and qualified workmen for completing the work as mentioned herein above. . The University will not be responsible for any accident and or any incident happened due to breach of these rules and regulations by the agency.

9 The agency shall keep The University indemnified against all actions, suits, proceedings, losses, costs, damages, charges, claims and demands in any way arising out of or by reason of anything done or omitted to be done by the bidder or its workers. The bidder would also ensure that its activities do not in any manner disturb officials, teachers, students, residents within the area of university and shall not damage any assets property of the University.

10 In case, if any dispute regarding interpretation of any clause or term of this contract and any related document, the decision of the Vice Chancellor of The University will be final and binding on both the parties to this tender.

11 All labor/workmen deployed by the agency at The University shall abide by the rules and regulations laid down by The University from time to time. The bidder shall be solely responsible for the conduct and performance of the workmen deployed by him for this purpose.

12 The Contractor/agency shall ensure that it fully complies with and observes all statutory provisions, rules and regulations laid down by the Government or local body and amendments thereto from time to time in respect to aforementioned work and also rules and regulations and legal norms specified for workmen. The contractor is bound to follow the rules and regulations pertaining the engagement of labour and their wages etc.

13 The University shall not accept and entertain any claim in the event of the contractor / bidder's workmen sustaining any injury, damage or loss either to person or property or machinery etc. either inside or

outside of the University premises. It shall be the sole responsibility of the contractor / bidder only.

14 Selection of lowest bidder - If university found more than one lowest bidders (those who quoted the same rate), Selection of the bidder would be made after taking into consideration all the relevant factors like lowest rates, past experience/performance as mentioned above, responsible business practices, highest turnover, competency to execute such contracts, credentials of fulfilment of past work of contractor / bidder and after taking into consideration the above terms altogether. The University reserves right to select the bidder for contract from the lowest bidders.

15 The University reserves the right to reject any or all tenders. The University may accept tender in full or part or may award part of the works to different bidders.

16 The University reserves the right to get clarification and additional documents form the bidder if necessary.

17 The University reserves the right to reject any or all tenders or to cancel the tender process without assigning any reasons thereof, and no complaints shall be entertained in this regard.

18 The tenderers shall specifically mention on their letter head that no disputes / litigation in whatsoever nature is pending or settled between their firm / company / proprietorship and university.

19 The tenderers / bidders shall certify that their firm / company / proprietorship has not been black listed by Government / Semi-Government bodies / authorities.

20 The Tenders shall along with the experience certificate should also produce and annex the certificate of satisfactorily completion of his / their services from the earlier institution/s.

21 Secured internet /Maximum Security against cyber threats (DDOs Protection and manged firewall).

23 One Dedicated person on site for support.

24 24X7 customer support.

25. Bill Payments & Compliance

1.1 Bidder will be required to furnish the documentary proof of delivery, successful installation report and acceptance duly signed by P.A.H. Solapur University, Solapur officials while claiming the payment.

1.2 Supplier will be entirely responsible for all applicable present and future duties, levies, charges, license fees G.S.T. etc. in connection with delivery of goods at site including incidental services and commissioning.

1.3 The Bidder must accept the payment terms proposed by the P.A.H. Solapur University, Solapur. The financial bid submitted by the Bidder must be in conformity with the payment terms proposed by the P.A.H. Solapur University, Solapur. Any deviation from the proposed payment terms would not be accepted. The P.A.H. Solapur University, Solapur shall have the right to withhold any payment due the Bidder in case of delays or defaults on the part of the Bidder. Such withholding of payment shall not amount to default on the part of P.A.H. Solapur University, Solapur.

1.4 The standard payment terms of the PAH Solapur University, Solapur are given below.

i) The Bidder must accept the payment terms proposed by the PAH Solapur University, Solapur.

ii) The financial bid submitted by the Bidder must be in conformity with the payment terms proposed by the PAH Solapur University, Solapur.

iii) Any deviation from the proposed payment terms would not be accepted.

iv) The PAH Solapur University, Solapur shall have the right to withhold any payment due to the Bidder, in case of delays or defaults on the part of the Bidder.

v) 50% Payment of supply order will be released after delivery of all items as per PO in good Condition & recommendation given by expert verification committee nominated by the University authority.

vi) Remaining 45% payment will be released after installation and commissioning

performance verified by the expert verification committee and their recommendation report for the payment.

vii) Balance 5% of the Payment for technical support & maintenance will be after completion of 2 years.

viii)Security deposit/Bank gurantee will be 5% of contract value. And security deposit will be refunded after expiry of six months of 3 year contract.

1.5 Bidder should submit bill in two copies showing G.S.T. separately on his letter head.

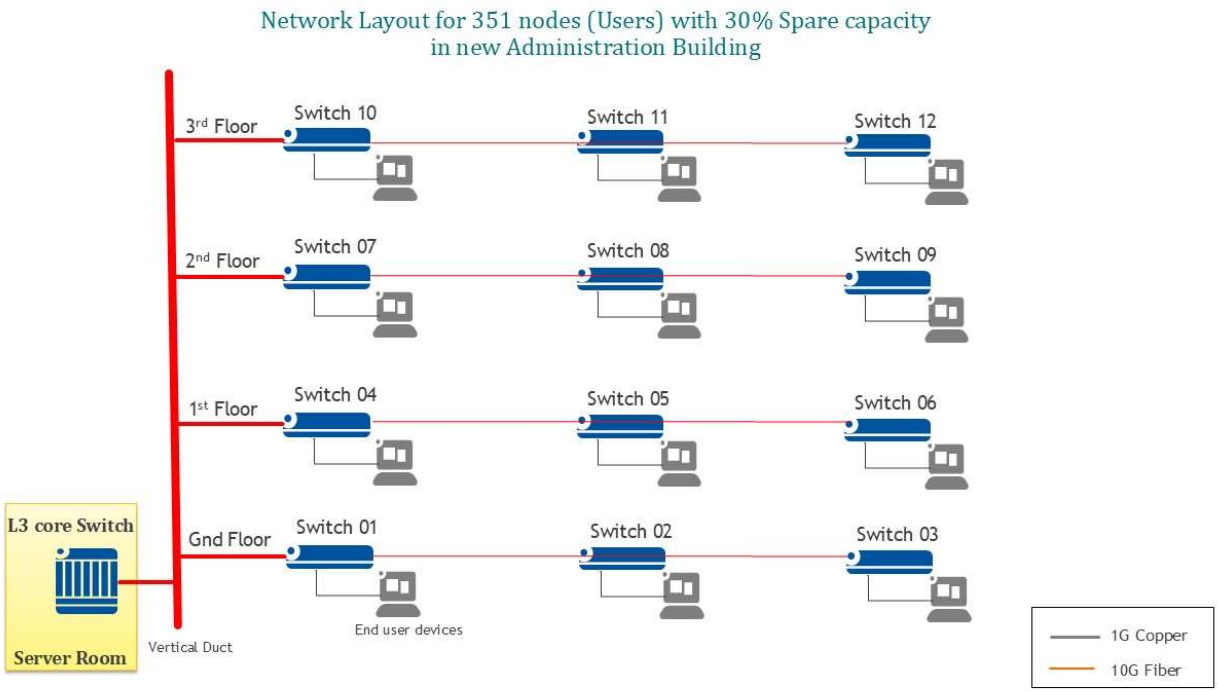
1.6 Bidder should give bank details on his letter head for on line payments.

1.7 Applicable Taxes will be deducted at prevailing rate while making payments.

Scope of Work

The Successful bidder on awarding the contract & purchase order from University shall start delivery of the "**Supply, Installation, Testing & Commissioning (SITC) of IT Network Infrastructure with support for 3 years"**

Proposed Network layout :



1.1 Within specified delivery period successful Bidder is responsible for following :

a. **LAN infrastructure –** Provisioning of active & passive components at the Main administrative Building, situated in the Campus. Configuring of these active components to be done as per the industry standards and best practices to ensure smooth data flow and proper network security.

b. **Network Monitoring System (NMS) –** To setup and configure NMS tools at each Network device, to troubleshoot the desktops and other active network devices in Main administrative Building.

c. **Annual Maintenance & Support –** IT infrastructure's annual Support/ maintenance for 3 years is to be given by the same vendor who is involve in installation of the network connectivity. Support for all network hardware and network-related calls is considered in this proposal. Support includes troubleshooting and resolution of all connectivity-related calls and report them back to University officials

1.2 Scope of IT Infrastructure and Network Support during Maintenance Period:

The successful bidder has to provide support for all networkrelated issues/calls as raised by the users and IT department. They will be responsible for trouble-shooting and resolution of all field related calls and report them back to the IT department. Successful bidder if required can appoint on-site engineer to attend the network issue raised by users and staff. Scope of the support engineer would be as below:

a. In case of any network issue raised by University staff, same should be attended by support engineer immediately within 4 hrs.
b. The engineer will do continuous monitoring of NMS tool.
c. The engineer will address all issues raised as per defined timelines.
d. The engineer will be responsible for providing Level 1 support immediately. In case of majorhardware failure he has to raise a ticket with respective hardware OEMs for prompt resolution within the stipulated time.

1.3 Scope of Buyer (University to provide):

a. Space for mounting of racks to be provided by buyer at all the locations.
b. Necessary permissions for digging the roads, drilling the walls, channels for laying LAN cables wherever required.
c. Electric points with 6A/15A socket through uninterrupted power source i.e. backup facility in case of power failure for every network Rack Location, to be provided by buyer at all the locations, as per the requirement.
d. Electrical earthing at each Network rack location.

1.4 Bidder has to visit the campus to understand the cabling routes, Rack mounting locations and other cabling related details before submitting the bid. Cost of site visit should be bourn by bidder only.

1.5 The Bidder should have back-to-back arrangement with the OEM so that University will be able to log a call with the OEM directly for the contract period of 36 months.

1.6 The Bidder to ensure that the proposed equipment / components must not be declared “End of Support” within the next 7 years from the date of purchase.

1.7 **Warranty, Annual Maintenance Contract and Annual technical support** – All the Active hardware and software supplied by the Bidder should come with Three Years Free Product Warranty. Bidder has to provide manpower to log service related request to OEMs and take floow up with them until service is restored.

Service Window

Bidder shall provide technical support for the material supplied as per the service window mentioned here under:

1) Service Window: Working hour of the Location

2) Telephonic Support: Within 30 minutes
3) On-site Call Response: Within 4 Hours.
4) Spare Turn around: Next Business Day

Warranty:

a) The warranty for the "**Supply, Installation, Testing & Commissioning (SITC) of IT Network Infrastructure"** to be supplied shall carry a warranty for a minimum period of 36 months i.e..03 years on all active componenets and shall commence after the delivery, installation & satisfactory operation of the material.

b) Bidder shall be responsible for replacement of any component of the "**Supply, Installation, Testing & Commissioning (SITC) of IT Network Infrastructure**" incase found defective before or during installation and also during warranty period.

Uptime

The Bidder shall attend to and put forth the best of efforts to rectify any of the problems to the network devices or related peripherals supplied and installed in the University on all the days irrespective of holidays i.e. general or special. It is also to be noted that in the event of the Bidder failing to carry out the repairs/ replacement within the time stipulated as per service window, the company shall at its own cost provide to the University stand by "**Supply, Installation, Testing & Commissioning (SITC) of IT Network Infrastructure"** of equivalent configuration, and the same shall be used by the University till the repairs/replacement receive to the location of the University and the same becomes operational.

Proposed Bill of Quantity (BoQ) :

Sr. No	Particulars Product with technical Specifications	Rate per Unit in Rs.	Total required Qty
१	Fiber Components –		
१	Fiber Connectivity – Vertical (Floor to Floor)		
१.१	Fibre Cable Single Mode (६ core) outdoor in Metres (Armoured) for Backbone	Mtr	१२००
१.२	Fiber panel(LIU) १९" rackmount, with २४ SC adaptors.(Couplers, splicetrays & panels included) Fully loaded with SC adapters	No	३
१.३	Fiber panel(LIU) १९" rackmount, with ६ SC adaptors.(Couplers, splicetrays & panels included) Fully loaded with SC adapters	No	१

১.৪	Multimode SC Pigtails for OM৩	No	৬০
১.৫	OFC LC-SC Duplex Patch Cord Single mode ৩ mtr	No	২২
২	Copper Components –		
A	Rack Side		
২.১	Cat ৬ Fully Loaded Patch Panel ২৪ Port	No	২৪
২.২	Cat ৬ Mounting patch Cords (২ mtrs)	No	২১০
২.৩	Cat ৬ Mounting patch Cords (১ mtrs)	No	২১০
B	User Side		
২.১	Unshielded Twisted Pair CAT৬ LSZH (as per EIA/TIA Standards) Cable Box of ৩০৫ Meter	Mtr	২৬
২.২	Cat ৬ Information Outlet (user side)	No	২১০
২.৩	Single port Face Plates with back box	No	২১০
৩	Network/Server Racks –		
৩.১	Floor Standing Rack ৪২U/৫৫০W/৫০০D, Aluminum frame. Top cover with ৪ No of ৯০ CFM FANS. Top & Bottom cover with cable entry gland plates. Front & rear dual steel door fully perforated. All door lockable. ২ Nos of Power Distribution Units (PDUs) with Vertical strip consist of ৬/১৬ Amp ৬ sockets each. Vertical Cable Channels, Captive Mounting Hardware	No	১
৩.২	Wall Mount Rack ১২U/৫৫০W/৫০০D, Basic steel frame. Top cover with ১ No of ৯০ CFM FANS and bottom cover having cable entry provision. Front toughened glass door lockable. ১ Nos of Power Distribution Units (PDUs) with Horizontal strip consist of ৬ Amp ৪ sockets , Captive Mounting Hardware	No	৯
৪	Core Switch		
৪.১	২৪ port Layer ৩ switch with min ১৬ x ১০G SFP+ and with min. ৮ * ১০G/২৫G SFP+/SFP২৮	No	১
৫	Distribution Switch		
৫.১	৪৮ port Gigabit Ethernet ৭RU chassis. ৪৮*১০/১০০/১০০০ BaseT, ২ fixed SFP+ ৭G/১০G ports. ১০G uplink speed enabled.	No	৫
৫.২	২৪ port Gigabit Ethernet ৭RU chassis. ২৪*১০/১০০/১০০০ BaseT, ২ fixed SFP+ ৭G/১০G ports. ১০G uplink speed enabled by default.	No	৪
৫.৩	Gigabit Ethernet ৭RU chassis. ২৪ PoE ১০/১০০/১০০০BaseT, ২ fixed SFP+ ৭G/১০G ports, Includes internal ৩৯০W AC PSU.	No	১
৬	Fiber Module		

৬.১	১০ Gigabit optical transceiver SFP+ with an LC connector. Typical reach of ৩০০m	No	২২
৬	**Wireless Access Point**		
৬.১	Dual-band ৫০২.১১abgn/ac/ax Wireless Access Point with Multi-Gigabit Ethernet backhaul, ৪x৪:৪ + ২x২:২ streams, OFDMA, MU-MIMO, BeamFlex+, dual ports, PoH/uPoE/৫০২.৩at PoE support.	No.	৬
৬.২	Wireless Controller/AAA server hardware based.	No.	১
৫	**NMS**		
৫.১	NMS Hardware based for ৩ yrs	No	১
৯	**Conduits & Accessories**		
৯.১	২৬ mm PVC Casing and capping with all accessories	Mtr	৪৬০০
৯.২	৩২ mm PVC Casing and capping with all accessories	Mtr	১০০০
৯.৩	Casing capping pipe	Mtr	২০০০
৯.৪	GI cable trays ৬০*১০০*৬০mm Gauge ১৬ with galvanized coating	Mtr	৫০০
১০	**Warranty**		
১০.১	Additional Warranty of ২ yrs (after end of Standard ১ yr warranty) on active and passive components with onsite support	No	১
১১	UPS		
১১.১	১KVA Rack mount UPS	No	৯
১১.২	৩KVA UPS with ১hr backup	No	১
১২	**One Time Transport and Installation Charges**	No	১

Pre-Qualification Criteria for the OEMs :

১	Selection Criterion For Firewall OEM	Compliance (Yes/No)
১.১	Proposed OEM of Firewall solution should be EAL৪ certified	
১.২	OEM Should have ISO ৯০০১:২০১৬ and ISO ২৬০০১ certification	
১.৩	The proposed OEM for firewall solution should be CB, CE, UKCA, UL, FCC certified	
১.৪	The proposed OEM for Firewall solution must be in Gartners quadrant for both WAN edge and Network Firewalls in latest gartner report	

২	Selection criterion for OEM of Switches and NMS	Compliance (Yes/No)
২.১	OEM should have R&D Centre in India for their Data Networking Solution	
২.২	OEM should have presence a minimum of ৫০০০ employees in India.	
২.৩	OEM should have a Global TAC/customer support centre in India.	
২.৪	Warranty ৫ Years from OEM with Toll free number for support in India	
২.৫	OEM should be present in Gartner Report for wireless Networking for last three years.	
২.৬	All categories of Switches, Transceivers & Switch OS should be from same OEM	
২.৭	The Switch OS should be EAL/NDPP and TEC Certified. The Latest Updated Maintenance Common Criteria Report (Evaluation and Validation) should be submitted.	
২.৮	There should be single OEM for Switches and NMS for better performance	
S. No.	OEM Eligibility Criteria for Passive cabling system and Network Racks	Compliance (Yes/No)
৩.১	OEM Should be registered in INDIA.	
৩.২	All LAN cable and component (Copper & Fiber) should be from single OEM.	
৩.৩	OEM must be EIA/TIA Committee Member. OEM must be BICSI Corporate Member. At least three persons should be member from organization. Documentary proof to be submitted.	
৩.৪	Data Sheets of all proposed products should be available on the OEM public website. The data sheets provided on the OEM public website and submitted data sheets should be the same.	
৩.৫	The OEM products when installed should carry and provide ৩০ years of end-to-end channel performance warranty.	
৩.৬	The product quoted for cabling should be ROHS complied (ROHS logo to be in the data sheet).	
৩.৭	The Cabling product quoted should be in accordance latest global standard to EIA/TIA, IEE, ISO/IEC and should be mentioned the data sheet.	
৩.৮	OEM should have valid ISO ৯০০১, ISO ১৪০০১ and ISO ৪৫০০১ certificate on Design, development, and manufacture of solutions for communication networks.	
৩.৯	All Product should when delivered to be submitted with FTC (Factory Test Certificates).	
৩.১০	Given Specifications are Minimum Criteria and OEM/Contractor may suggest products which are at least meeting or exceeding the product specifications.	

Note: Bidder has to submit relevant documents proving eligibility for above mentioned clauses. Non-submission of the same will lead to rejection of the bid.

Annexure I

Technical Compliance Sheet

[To be submitted on letter head along with Technical Bid]

To

The Registrar

PAH Solapur University,

Solapur

Name of the firm: ----------

Address: ----------

Phone No. / Mobile No. ----------

E-Mail ID - ----------

Respected Sir,

Find our clause by clause compliance as below:

1. Technical Specifications of Passive Components:

1.1 Fiber Optic Cable Single Mode 6 Core Outdoor/Indoor Use

S. No.	Min Acceptable Technical Parameters	Compliance (Yes/No)
১	Armoured ৬ /১২Core Singlemode (OS২) ৯/১২৫ Fiber Cable, ITU G.৬৫২.D, G.৬৫৩A১, Outdoor ECCS Armored Fiber Cable with PBT Loose Tube Filled With Thixotropic Jelly, Uni-Tube, Glass Yarn, Water Swellable Tape Under Armor, UV-HDPE Jacket	
২	Application : The fiber cable should have Bend insensitive features to be installed in Outdoor, Duct, Trenches & Underground application.	
৩	Features : The fiber cable should have excellent features of Tensile, Crush, Water Prevention with Jelly & Moisture Barrier Tape	
৪	Cable Construction	
৫	Uni-tube (Central Loose Tube) with color coded fibers as per EIA/TIA ৫৯৮	
৬	Loose Tube : PBT Loose Tube filled with Thixotropic Jelly	
৩	Loose Tube Diameter : ২.৫mm Nominal	
৮	Armoring : Corrugated ECCS Tape Armouring (০.১৫৫ mm Nominal thickness)	
৯	Outer Sheath : UV Resistance HDPE	
১০	Moisture Barrer : Water Blocking Tape Under Armor	
১১	Strength Member over Central Tube : Glass Yarns	
১২	Physical / Mechanical Characteristics	
১৩	Outer Diameter : ৯.০ +/- ১.০ mm	
১৪	Nominal Jacket Thickness : ১.৫ mm	
১৫	Tensile Strength : >= ২২২০ Newton (IEC ৬০৩৯৪-১-২-E১)	
১৬	Bending Radius : <= ২০*OD (IEC ৬০৩৯৪-১-২-E১১) (OD=Cable Outer Diameter)	
১৩	Crush Resistance : >= ২২০০ Newton/১০০mm (IEC ৬০৩৯৪-১-২-E৩)	
১৮	Water Penetration : Meets IEC ৬০৯৩৪-১-২ (২৪ Hr, ৩Meter Sample, ১Meter Height)	
১৯	Weight : <= ৯৫ Kg/km	
২০	Environmental Characteristics	
২১	Operating Temperature : IEC ৬০৩৯৪-১-২-F১ @ -৩০°C to +৩০°C	
২২	Storage Temperature : IEC ৬০৩৯৪-১-২-F১ @ -১০°C to +৬০°C	

২৩	Installation Temperature : IEC ৬০৬৯৪-১-২-F১ @ -৩০°C to +৬০°C	
২৪	Safety : ROHS to be mentioned in data sheet	
২৫	Optical Characteristics	
২৬	Fiber Type : SM (৯/১২৫) OS২ as per G.৬৫৬ A১	
২৬	Max. Attenuation : ০.৩৬/km dB @ ১৩১০nm , ০.২৩ dB/km @ ১৫৫০nm	
২৮	Mode Field Diameter @ ১৩১০nm : ৮.৮ +/- ০.৪ µm	
২৯	Dispersion : ≤ ৩.৫ ps/nm.km & ≤ ১৬.৫ ps/nm.km	
৩০	Fiber cut of Wavelength : ≤ ১৩২০	
৩১	Cable Cut of Wavelength : ≤ ১২৬০	
৩২	Zero Dispersion Wavelength : ১৩০০-১৩২৪ nm	
৩৩	Zero Dispersion Slope : ≤ ০.০৯০ ps/nm^2.km	
৩৪	Coating Diameter : ২৫০ ± ১৫ µm	
৩৫	Cladding Diameter : ১২৫ ± ০.৬ µm	
৩৬	Fiber Curl : ≥ ৪ m radius curve	
৩৬	Cladding Non-Circularity : ≤ ১%	
৩৮	Mode Field Concentricity error : ≤ ০.৮ um	
৩৯	Coating/Cladding Concentricity Error : ≤ ১২ um	
৪০	Packaging : Wooden Spool of Min. ২KM roll	

1.2 Fiber LIU with 24/6 SC adaptors:

Sl. No	Specification Required	Fully Complied (Yes/No)
	Min. Acceptable Specification	
	LIU Features	
১	SITC of ৬ and ২৪ Port 1U x ১৯" LIU Loaded with Single mode OS২ SC UPC Adapters & LSZH Pigtails along with Splice Trays, Min. ৪ No of Circular Cable Entry with Rubber Grommet/Glands to close any open entry, Cable Holders for Cable Entry Inside Panel, Heat Shrink Tubes for Splices, Tube for open fibers, Ties, Panel shall be Powder Coated with Min. ১.২mm Metal Sheath, ৩০ Years Channel Warranty. Factory Loaded SC UPC Type LSZH Pigtails should meet IEC ৬১০৩৪-১ ,IEC-৬০৩৩২-১, IEC-৬০৬৬৪-১, Insertion loss <= ০.৩৫ dB, Return Loss >= ৬০, Attenuation: ১৩১০/১৫৫০ : ০.৩/০.২	

	dB/KM, Repeatability: <= ০.২DB ৭০০০ Times Mating Cycles, RoHS Complied, Meets ANSI/TIA ৫৬৮.৩-D	
২	The Fiber Panel shall have Telescopic Sliding Shelf for easy smooth maintenance add/move/changes.	
৩	The optical fiber Pigtails shall be factory loaded inside each individual Port of the panel. Pigtails shall be LSZH with Single mode ৯/১২৫µm fiber	
৪	Panel shall have Min. ৪ No. of Cable Entry Slots at back of the Panel supplied with Cable Holders inside Panel.	
৫	Completely Enclosed without any open area to avoid any Rodent Entry	
৬	Pigtail Parameters Loaded inside Panel shall meet below mentioned requirements: -	
৬	Pigtail Buffer Jacket Material: LSZH complying to IEC ৬১০৩৪-১ ,IEC-৬০৩৩২-১, IEC-৬০৬৫৪-১	
৮	Connector Insertion loss should be better than ০.৩৫ dB	
৯	Return Loss >= ৫০ for UPC and >= ৬৫ for APC	
১০	Attenuation: ১৩১০/১৫৫০ : ০.৩ /০.২ dB/KM	
১১	RoHS Complied, Meets ANSI/TIA ৫৬৮.৩-D	
১২	Repeatability: <= ০.২DB ৭০০০ Times Mating Cycles	

1.3 OFC LC-SC Duplex Patch Cord Single mode 3 mtr:

Sl. No	**Specification Required** Min. Acceptable Specification	Fully Complied (Yes/No)
1	SITC of Fiber Patch Cord, LC Duplex - SC Duplex, 9/125µm OS2 Singlemode Duplex Zip Cord (<= 2.0mm), IL <= 0.35dB, RL>= 50dB, LSZH Jacket IEC 60332-1, Operating Temperature -40°C to +85°C, Meets ANSI/TIA 568.3-D, Length 3Meter	
2	Cable : LC/LC or LC/SC or SC/SC, 9/125µm OS2 Singlemode Duplex Zip Cord (<= 2.0mm). OEM Name shall be mentioned on the patch cord cable.	
3	Connectors : The optical fiber patch leads shall comprise of Single mode 9/125µm fiber	
4	Connector Insertion loss <= 0.35 dB	
5	Return Loss >= 55 for UPC and >= 65 for APC	
6	Jacket Material: LSZH complying to IEC 61034-1, IEC-60332-1, IEC-60754-1	

7	Length : 3 Meter	
8	Attenuation: 1310/1550 : 0.35/0.20 dB/KM	
9	Operating Temperature: -40°C to +85°C	
10	Repeatability: <= 0.2DB 1000 Times Mating Cycles	
11	OEM Name shall be printed on the Patch Cord Cable.	
12	RoHS Complied, Meets ANSI/TIA 568.3-D	

1.4 Cat 6 Fully Loaded Patch Panel 24 Port Panel:

Sl. No	Min. Acceptable Specification	Fully Complied (Yes/No)
১	২৪-Port ১U Unloaded Universal Modular Straight Patch Panel preloaded with cable support Bar (with slots to tie individual cable properly at the Support Bar (Shuttered IO not recommended, because when shutter gets malfunctioned then entire IO is of no use)	
২	The Patch panel should be universal (stainless steel rear metal frame) and should be able to support both for UTP & STP Solutions	
৩	Patch panel should be equipped with cable strain relief retention tray (Cable Support Bar) with slots to tie individual cable properly at the Support Bar	
৪	Each port of the panel should have individual transparent labelling point	
৫	Panel should be inbuild transparent spring shutter for dust protection on each port. (Shuttered IO not recommended, because when shutter gets malfunctioned then entire IO is of no use)	
৬	Should be RoHS & UL ৭৪V-০ complied	
৬	Panel shall be UL ৭৫৬৩ Rated (Certificate to be provided along with Bid)	
৫	Panel should be loaded with Cat ৬ UTP information outlet Jacks with appropriate quantity.	

1.5 Category 6 Patch Cord:

Sl. No	Min. Acceptable Specification	Fully Complied (Yes/No)

১	SITC of Cat৬ Patch Cord U/UTP Unshielded ২৪AWG Bare Copper, Stranded Flexible Conductor, HDPE Insulation, LSZH Jacket, ANSI/TIA ৫৬৮C.২ Category ৬ Patch Cord, Support ১GBASE-T with Min. ২৫০Mhz Bandwidth, Operating Temperature -২০ ℃ to + ৬০ ℃, Diameter <= ৬.০mm Nominal, No Shield or Barrier Tape Inside, Min. ৩৫০ Plug Mating Cycles, PC UL৯৪-V-০, Factory assembled with Transparent Premoulded Boots, Length ১ Meter, Blue Color	
২	Cable Construction of Patch Cord : U/UTP LSZH	
৩	Number of conductors : ৮ (৪ Twisted Pairs)	
৪	Conductor Material : Bare Copper (২৪AWG Stranded)	
৫	Cable Overall Nominal diameter : <= ৬.০ mm	
৬	Insulation: HDPE	
৩	Cat ৬ patch cord plug to have round cable holder strain relief transparent boot to avoid bending.	
৮	Jacket: LSZH (Low Smoke Zero Halogen) with Flame Rating IEC ৬০৩৩২-১ or Better	
৯	Operating Temperature : -২০ to + ৬০ ℃	
১০	Plug should have high repeatability cross talk performance with Min. ৩৫০ Cycles.	
১১	Patch cord should be ETL verified.	

1.6 Unshielded Twisted Pair Category 6 cable LSZH

Sl. No	Specification Required Min. Acceptable Specification	Fully Complied (Yes/No)
১	SITC of Cat ৬, ২৩ AWG Bare Copper Solid Conductor U/UTP Unshielded LSZH, in accordance to ANSI/TIA ৫৬৮ C.২ Category ৬, Flame Rating IEC ৬০৩৩২-১, Halogen Acid IEC ৬০৩৫৪ -১, Smoke Density IEC ৬০১৩৪-২, ISO/IEC ১১৮০১§২nd Edition, ২৫০ Mhz Bandwidth, ASTM D ৪৫৬৬, ৫.৮ mm Nominal Diameter, HDPE Insulation with Diameter ০.৯৫ +/- ০.০৫mm, No Shield/Non Metallic Barrier Tape, Breaking Strength : >= ৪০০N, Conductor Resistance <= ৮.০ Ω /১০০m, Min. Elongation at Break of Insulation : ৪০০%, Min. Jacket Tensile Strength >= ১০ N/mm২ (Mpa), Dielectric Strength: DC ১৫০০ V /Min., Euroclass Eca, Propagation Velocity : ৬৯% (nominal), RoHS Complied, Cable Roll of ৩০৫ Mtr	
২	Suitable for ১GBASE-T with Min. ২৫০Mhz of Bandwidth	
৩	৪ Twisted Pair alongside PE / PVC Cross Separator	
৪	Conductor: ২৩AWG Solid Annealed Bare Copper	
৫	Conductor Diameter: ০.৫৫ ± ০.০২৫mm	
৬	Insulation: High Density Polyethylene, Diameter ০.৯৫+/- ০.০৫mm	

৬	Jacket: LSZH complying to IEC ৬০৩৩২-১ Flame Rating, IEC ৬০৬৫৪-১/২ for Halogen Acid Test, IEC ৬১০৩৪-২ for Smoke Density Test	
৮	Euroclass : Eca	
৯	Cable Outer Diameter: ৫.৮ ± ০.৩ mm	
১০	Operating Temperature: -২০'C to +৬০'C	
১১	Cable shall not have any kind of Non Metallic or Metallic Shield Barrier Tape inside	
১২	Breaking Strength : >= ৪০০N	
১৩	Temperature Index & Oxygen Index should meet ASTM D ২৮৬৩	
১৪	Bend Radius: ৪ X Cable Diameter (Min.) or Better	
১৫	Conductor Resistance : <= ৮.০ Ω /১০০m	
১৬	Resistance Unbalance : ৫% Max	
১৬	Mutual Capacitance : £ ৫.৬nF/১০০m	
১৮	Propagation Velocity : ৬৯% (nominal)	
১৯	Dielectric Strength: DC ১৫০০ V /Min.	
২০	Min. Elongation at Break of Insulation : ৪০০%	
২১	Min. Jacket Tensile Strength : >= ১০ N/mm২ (Mpa)	
২২	RoHS Complied	

1.7 Category 6 Information Outlet

Sl. No	Specification Required	Compliance
	Min. Acceptable Specification	Fully Complied (Yes/No)
১	SITC of Category ৬ RJ৪৫ Unshielded Modular Jack, ISO/IEC ১১৮০১:২nd edition, EN ৫০১৬৩-১, ANSI/TIA/EIA ৫৬৮-C.২ Category ৬, IEC ৬০৬০৩-৬ (৬০৩-৬), Interoperable and backwards compatible with Cat.৫e, Universal ১১০ Impact Tool & Tooless (Both) Termination, Min. ২৫০Mhz Bandwidth, Min. ১Gbps Speed, IDC >= ২০০ Re-Terminations, >= ৬৫০ Plug Mating Cycles, ১.৫A Current, ৩০lbs Plug Retention, UL Certified UL ১৮৬৩, Strain Relief boot for Pairs, Bend Limiting Boot for Cable, Without any OEM Proprietary Tool Termination	
২	Suitable for ১০০০BASE-T applications in acc. with IEEE ৮০২.৩an up to ২৫০ MHz .	
৩	Compatible with RJ standard plugs (RJ১১, RJ১২, RJ৪৫), PCB Based Universal ১১০ Impact Tool & Toolless (both) based connection of installation cables	
৪	Each Jack should be supplied with one Strain relief boot for Pairs and separate additional bend limiting boot for Cable with side split clip with the I/O and a cable tie for proper holding of cable to the JACK.	
৫	The Bend limiting boot should have additional clip or locking facility to project the Cable and it should be inbuilt with the JACK.	

६	The Jack should be universal toolless and tool based connection of installation cables AWG २४ § २३ with Solid Conductor cables.	
७	IDC termination should feature Color Coding according to EIA/TIA ५६८-A/B, Gold-Plated Contacts, >= ७५० mating cycles, >= २०० insertion cycle at IDC	
८	Material: RoHS complied	
९	Housing material: Polycarbonate/Flame Retardant PVC (UL-९४-V०)	
१०	Should be UL Certified as per UL १८६३	
११	DC/AC Voltage Endurance - DC१०००V/AC७५०V (१min)	
१२	DC Resistance : Max. ०.३ Ohms	
१३	Plug Retention Force : ३० lbs	
१४	Operating Temperature : -१० to +६० °C	
१५	Current Rating : १.५ Amp	
१६	The Modular Jack shall not require and Properitory Termination Tool for termination of Cable.	

1.8 Face Plate Single Port with Back Box:

Sl. No	Specification Required Min. Acceptable Specification	Fully Complied (Yes/No)
१	Style (Square) Keystone-Type Shuttered Faceplates, १, २ & ४ port configurations	
२	UK Style (Square) Keystone-Type Faceplates, १, २ & ४ port configurations, White Color	
३	Should be featured with spring shutter for each port	
४	Elegant २ Piece (२ Plate) design for better aesthetics	
५	Cover and Base Plastic Material to meet Min. ABS-UL९४-V२	
६	Suitable for both Flush and Wall mount gang box	
७	Dimensions : ८६ x ८६ x १२.८ (mm)	

2. Technical Specification of Network Switches

2.1 Technical Specification of Core Switch:

Sr. No.	Min. Acceptable Specification	Fully Complied (Yes/No)

৭	Product details – Please specify	
৭.৭	Please mention Make, Model No. and Part Code.	
২	Architecture & Port Density	
২.৭	The Switch should be configured with ২৪—Fibre ports supporting minimum ৭০G SFP+. Minimum ৫ ports out of the ২৪ ports should support ৭০/২৫ Gbps SFP+/SFP২৮.	
২.২	The Switch should be loaded with appropriate SFP/SFP+ Transceivers from Day ৭ as per design requirement.	
২.৩	The Switch should support Virtual Switching System (VSS) or Virtual Chassis (VC) or equivalent Switch Clustering/Stacking feature, where the Switch Clustering feature should combine multiple switches into a single network element.	
২.৪	The switch should be able to operate in standalone mode as well as support the ability to be managed by an on prem and cloud-based management software.	
২.৫	The switch should support minimum ৫ switches in a single stack.	
৩	Performance	
৩.৭	Switching Bandwidth: The Switch should provide Switch Fabric Bandwidth Capacity of ৬২০ Gbps or more and Packet Forwarding Capacity of ৫৩৩ Mpps or more.	
৪	Layer ২ features	
৪.৭	Should support up to ৩২K MAC addresses or more.	
৪.২	Should support Jumbo Frames (৯K bytes or more).	
৪.৩	Should support ৪K Active VLANs, with the following features.	
	— Dual-Mode and MAC based VLANs	
	— Dynamic MAC-based VLAN Activation, Dynamic Voice VLAN Assignment and Dynamic VLAN Assignment	
৪.৪	Should support Spanning Tree Protocols, with the following features.	
	— ৫০২.৭D Spanning Tree	
	— ৫০২.৭W Rapid Spanning Tree Protocol (RSTP)	
	— ৫০২.৭s Multiple Spanning Tree	
	— ৫০২.৭s Multiple Spanning Tree enhancement (MSTP+)	
	— Fast Port Span, Fast Uplink Span, and Single-instance Span	
	— Compatibility with PVST/PVST+, PVRST+ and PVST+	
৪.৫	Should support Link Aggregation Groups (LAG) with ৫০২.৩ad Link Aggregation Control Protocol (Dynamic LAG), Dynamic insertion and removal of ports and Support for LAG between different default port speeds	
৪.৬	Should support ৫০২.৭q Tunneling, with ৫০২.৭ad (Q-in-Q) tagging, Q-in-Q BPDU tunneling and Selective Q-in-Q	
৫	Layer ৩ features	

৭.১	Should support up to ১৬K IPv৪ routes or more.	
৭.২	— Should support RIP v১/v২, RIPng, OSPF v২, v৩ , PIM-SM, PIM-SSM, PIM-DM, PIM passive (IPv৪, IPv৬) , Virtual Route Redundancy Protocol VRRP (IPv৪), VRF, GRE and PBR.	
৬	Quality of Service (QoS) & Traffic Management	
৬.১	Should support the following Quality of Service (QoS) features.	
	— ACL Mapping and Marking of ToS/DSCP (CoS)	
	— ACL Mapping and Marking of ৫০২.১p	
	— ACL Mapping to Priority Queue	
	— Classifying and Limiting Flows Based on TCP Flags	
	— DiffServ Support	
	— Honoring DSCP and ৫০২.১p (CoS)	
	— MAC Address Mapping to Priority Queue	
	— Priority Queue Management using Weighted Round Robin (WRR), Strict Priority (SP), and a combination of WRR and SP	
৬.২	Should support the following Traffic Management features.	
	— ACL-based Inbound Rate Limiting and Traffic Policies	
	— Broadcast, Multicast, and Unknown Unicast Rate Limiting	
	— Inbound Rate Limiting per Port	
	— Outbound Rate Limiting per Port and per Queue	
৬	Software Defined Networking (SDN)	
৬.১	Should support SDN features and functionality including OpenFlow v১.০, OpenFlow v১.৩, OpenFlow hybrid port mode (Supports both OpenFlow traffic forwarding and regular traffic forwarding on the same port).	
৫	Security	
৫.১	Should support the following Security features	
	— Layer ২ ACLs (MAC), Layer ৩ ACLs (IPv৪ & IPv৬) and Layer ৪ ACLs	
	— ৫০২.১X Authentication and Accounting	
	— MAC Authentication and Accounting	
	— Web Authentication	
	— RADIUS/TACACS/TACACS+	
৫.২	The Switch should support the following Flexible Authentication features.	
	— ৫০২.১x with Dynamic ACL Assignment and Dynamic VLAN Assignment	
	— ৫০২.১x and MAC Authentication on the same port	
	— Flexible Authentication together with Dynamic ARP Inspection (IPv৪ and IPv৬) with Dynamic ACLs	

	— Flexible authentication together with DHCPv৪ and DHCPv৬ Snooping with Dynamic ACLs	
	— ८০২.৭x Authentication together with IP Source Guard Protection	
	— MAC Authentication together with IP Source Guard Protection, with Dynamic VLAN Assignment, with MAC Authentication together with Dynamic ACLs and with ८০২.৭x	
	— ८০২.৭x together with Denial of Service (DoS) Attack Protection	
৯	Monitoring & Manageability	
৯.৭	Should support manageability using Network Management Software with Web based Graphical User Interface (GUI).	
৯.২	The Switch should support the following Monitoring & Management features.	
	— RSPAN	
	— Virtual Cable Tester (VCT)	
	— Automation with Ansible	
	— REST API	
	— SNMP v৭, v২, and v৩	
	— Mirroring based on ACL, MAC ACL and VLAN, port based	
৯.৩	Should support Integrated Standard based Command Line Interface (CLI), Telnet, TFTP, HTTP access to switch management/monitoring.	
৯.৪	Should support NetFlow or sFlow or equivalent.	
৭০	Physical Attributes, Memory, PoE, Power Supply and Fans	
৭০.৭	The Switch should have minimum ৪MB Packet Buffer, ৪GB DRAM and ८GB NVRAM Memory.	
৭৭	Mandatory Compliance :	
৭৭.৭	All categories of Switches, Transceivers & Switch OS should be from same OEM	
৭৭.২	The Switch OS should be EAL/NDPP and TEC Certified. The Latest Updated Maintenance Common Criteria Report (Evaluation and Validation) should be submitted.	
৭২	Warranty	
৭২.৭	The Switch should be quoted with "৩" Years of TAC Support and Lifetime (Till End of Support) for Hardware Warranty with NBD Hardware Replacement.	

2.2. Technical Specifications of 48 port Switch:

Sr. No.	Min. Acceptable Specification	Fully Complied

		(Yes/No)
1	**Product details - Please specify**	
1.1	Please mention Make, Model No. and Part Code.	
2	**Architecture & Port Density**	
2.1	The Switch should have 48 x 10M/100M/1G RJ45 ports,4*25Gbps SFP28 ports. Alternatively, vendor can provide 4x10G SFP+ ports from day one.	
2.2	The Switch should support Virtual Switching System (VSS) or Virtual Chassis (VC) or equivalent Switch Clustering/Stacking feature, where the Switch Clustering feature should combine multiple switches into a single network element.	
2.3	All components required for stacking should be provided along with the switch, to ensure 40Gbps of stacking bandwidth per switch.	
2.4	The solution should have support to manage multiple switches from a single console from day one.	
2.5	The Switch should support minimum 10 switches in a single stack.	
3	**Performance**	
3.1	Switching Bandwidth: The Switch should provide Switch Fabric Bandwidth Capacity of 296 Gbps or more.	
3.2	Forwarding Capacity: The Switch should provide Packet Forwarding Capacity of 220 Mpps or more.	
4	**Layer 2 features**	
4.1	Should support up to 16K MAC addresses or more.	
4.2	Should support Jumbo Frames (up to 9K bytes).	
4.3	Should support 4K Active VLANs, with the following features.	
	· Port based VLANs and VLAN Groups	
	· Simultaneous tagged and untagged VLAN on a port	
	· Dual-Mode VLANs	
	· MAC-based VLANs	
	· Dynamic MAC-based VLAN Activation	
	· Dynamic Voice VLAN Assignment	
	· Dynamic VLAN Assignment	
	· VLAN mapping or VLAN Translation to translate CVLANs to SVLANs	
4.4	Should support Spanning Tree Protocols, with the following features.	
	· 802.1D Spanning Tree	
	· 802.1W Rapid Spanning Tree Protocol (RSTP)	
	· 802.1s Multiple Spanning Tree	
	· 802.1s Multiple Spanning Tree enhancement (MSTP+)	
	· Fast Port Span, Fast Uplink Span, and Single-instance Span	
	· Compatibility with PVST/PVST+, PVRST+ and PVST+	
	· BPDU Guard	
	· Root Guard for STP & MSTP	
	· Port Loop Detection	

	· Spanning Tree path cost method changes	
	· MSTP path-cost configuration	
4.5	Should support Link Aggregation Groups (LAG), with the following features.	
	· Static LAG	
	· 802.3ad Link Aggregation Control Protocol (Dynamic LAG)	
	· Dynamic insertion and removal of ports	
	· Support for LAG between different default port speeds	
4.6	Should support 802.1q Tunneling, with the following features.	
	· 802.1ad (Q-in-Q) tagging	
	· Q-in-Q BPDU tunneling	
	· Selective Q-in-Q	
4.7	Should support Private VLANs, with the following features.	
	· PVLANs with dual mode support	
	· PVLAN with LAG	
4.8	Should support VLAN Registration Protocol, with the following features.	
	· Multiple VLAN Registration Protocol (MVRP)	
	· MVRP with Per-VLAN STP and Per-VLAN RSTP	
4.9	Should support the following Layer 2 Switching Features.	
	· Remote Fault Notification (RFN)	
	· Link Fault Signaling (LFS)	
	· Uni-Directional Link Detection (UDLD) on Tagged and Untagged Ports	
5	**Layer 3 features**	
5.1	Should support up to 1K IPv4 routes or more.	
5.2	Should support the following Basic IPv4 and IPv6 Layer 3 Routing features.	
	· IPv4 and IPv6 Static Routes	
	· RIP v1/v2, RIPng	
	· ECMP	
	· Port-based Access Control Lists	
	· Layer 3/Layer 4 ACLs	
	· Host routes	
	· Virtual Interfaces	
	· Routed Interfaces	
	· Route-only Support	
	· Routing Between Directly Connected Subnets	
5.3	Should support the following Advanced IPv4 and IPv6 Layer 3 Routing features.	
	· IPv4 and IPv6 Dynamic Routes	
	· OSPF v2, OSPF v3 (IPv6)	
	· PIM-SM, PIM-SSM, PIM-DM, PIM passive (IPv4/IPv6 multicast routing functionality)	
	· Policy Based Routing (PBR)	
	· Virtual Route Redundancy Protocol VRRP v2 (IPv4)	

	· Virtual Route Redundancy Protocol VRRP v3 (IPv6)	
	· Non-Stop Routing (NSR)	
	· GRE	
	· IPv6 over IPv4 tunnels	
	· Multi VRF (IPv4 and IPv6) with Inter-VRF route leaking using static routes	
	· DHCP Server (IPv4 & IPv6)	
	· MSDP	
6	**Quality of Service (QoS) & Traffic Management**	
6.1	Should support the following Quality of Service (QoS) features.	
	· ACL Mapping and Marking of ToS/DSCP (CoS)	
	· ACL Mapping and Marking of 802.1p	
	· ACL Mapping to Priority Queue	
	· Classifying and Limiting Flows Based on TCP Flags	
	· DiffServ Support	
	· Honoring DSCP and 802.1p (CoS)	
	· MAC Address Mapping to Priority Queue	
	· Dynamic Buffer Allocation for QoS Priorities	
	· Separate QoS Queuing for Unicast and Multicast	
	· Priority Queue Management using Weighted Round Robin (WRR), Strict Priority (SP), and a combination of WRR and SP	
6.2	Should support the following Traffic Management features.	
	· ACL-based Inbound Rate Limiting and Traffic Policies	
	· Broadcast, Multicast, and Unknown Unicast Rate Limiting	
	· Inbound Rate Limiting per Port	
	· Outbound Rate Limiting per Port and per Queue	
7	**Software Defined Networking (SDN)**	
7.1	Should support the following SDN features and functionality.	
	· OpenFlow v1.0	
	· OpenFlow v1.3	
	· Hybrid Switch Mode (OpenFlow enabled on per-port basis)	
	· Hybrid Port Mode with Layer 2 Mode, Layer 3 Mode, and Simultaneous Layer 2/Layer 3 Mode	
	· Support for Multiple Controllers	
8	**Security**	
8.1	Should support the following Security features	
	· MACsec (with Additional License)	
	· Layer 3 ACLs (IPv4 & IPv6)	
	· Layer 2 ACLs (MAC)	
	· Binding IPv4, IPv6, and MAC ACLs to VLAN	
	· 802.1X Authentication and Accounting	
	· MAC Authentication and Accounting	

	· Web Authentication	
	· DHCP Snooping	
	· Dynamic ARP Inspection	
	· Neighbor Discovery (ND) Inspection	
	· Protection against Denial of Service (DoS) Attacks	
	· Authentication, Authorization, and Accounting (AAA)	
	· Port Security with Secure MAC Address Limiting	
	· Advanced Encryption Standard (AES) with SSHv2	
	· RADIUS/TACACS/TACACS+	
	· Secure Copy (SCP)	
	· Secure Shell (SSHv2)	
	· Change of Authorization (CoA) RFC 5176	
	· Trusted Platform Module	
	· Protected Ports	
	· IPv6 RA Guard	
	· RADSEC (RFC 6614)	
	· Encrypted Syslog (RFC 5425)	
8.2	The Switch should support the following Flexible Authentication features.	
	· 802.1x with Dynamic ACL Assignment	
	· 802.1x with Dynamic VLAN Assignment	
	· 802.1x and MAC Authentication on the same port	
	· Flexible Authentication together with Dynamic ARP Inspection (IPv4 and IPv6) with Dynamic ACLs	
	· Flexible authentication together with DHCPv4 and DHCPv6 Snooping with Dynamic ACLs	
	· 802.1x Authentication together with IP Source Guard Protection	
	· MAC Authentication together with IP Source Guard Protection	
	· MAC Authentication together with Dynamic VLAN Assignment	
	· MAC Authentication together with Dynamic ACLs	
	· MAC Authentication together with 802.1x	
	· 802.1x together with Denial of Service (DoS) Attack Protection	
	· Periodic Reauthentication for MAC Authentication	
	· Periodic Reauthentication for 802.1x	
8.3	The Switch should support Cisco ISE, Aruba ClearPass, and Ruckus Cloudpath for 802.1X Authentication, MAC Authentication, Dynamic VLAN Assignment, Dynamic ACL Assignment, External Web Authentication and Change of Authorization (CoA).	
8.4	Should support IPv4 and IPv6 ACLs with up to 2K Rules per ACL and a minimum of 8K Rules per System.	
9	**Monitoring & Manageability**	
9.1	Should support manageability using Network Management Software with Web based Graphical User Interface (GUI).	
9.2	The Switch should support the following Monitoring & Management features.	

	· ERSPAN	
	· RSPAN	
	· Virtual Cable Tester (VCT)	
	· PTP Transparent Clock	
	· LEDs On/Off Command	
	· Cisco Discovery Protocol (CDP) for IPv4 and IPv6 Traffic	
	· Automation with Ansible	
	· REST API	
	· Switch Cloud Management	
	· SNMP v1, v2, and v3	
	· Mirroring based on ACL, MAC ACL and VLAN	
	· Analytics Streaming Interface	
	· Configuration Archive, Replace & Roll back	
	· IP DHCP binding scalability of up to 2500 Devices	
	· Software Defined Video-over-Ethernet (SDVoE) compliance	
9.3	Should support Integrated Standard based Command Line Interface (CLI), Telnet, TFTP, HTTP access to switch management/monitoring.	
9.4	Should support NetFlow or sFlow or equivalent.	
10	**Physical Attributes, Memory, PoE, Power Supply and Fans**	
10.1	The Switch should have minimum 2MB Packet Buffer, 1GB Main Memory and 2GB Flash Memory.	
11	**Mandatory Compliance :**	
11.2	The Switch OS should be EAL/NDPP Certified. The Latest Updated Maintenance Common Criteria Report (Evaluation and Validation) should be submitted. The Switch should be TEC certified as well.	
11.3	The Switch should have an MTBF of more than 800,000 hours	
12	**Warranty**	
12.1	The Switch should be quoted with Three (3) Years of TAC Support and Lifetime (Till End of Support) for Hardware Warranty with NBD Hardware Replacement.	

2.3 Technical Specification of 24 port access Switch:

Sr. No.	Min. Acceptable Specification	Fully Complied (Yes/No)
१	Product details – Please specify	
१.१	Please mention Make, Model No. and Part Code.	
२	Architecture & Port Density	

২.১	The Switch should have ২৪ x ১০M/১০০M/১G RJ৪৫ ports, two ১০G SFP+ ports and two ১G ports. The two ১G ports should be upgradeable to ১০G SFP+ ports in future. Alternatively, vendor can provide ৪x১০G SFP+ ports from day one.	
২.২	The Switch should support Virtual Switching System (VSS) or Virtual Chassis (VC) or equivalent Switch Clustering/Stacking feature, where the Switch Clustering feature should combine multiple switches into a single network element.	
২.৩	All components required for stacking should be provided along with the switch, to ensure ৪০Gbps of stacking bandwidth per switch.	
২.৪	The solution should have support to manage multiple switches from a single console from day one.	
২.৫	The Switch should support minimum ৫ switches in a single stack.	
৩	**Performance**	
৩.১	Switching Bandwidth: The Switch should provide Switch Fabric Bandwidth Capacity of ১২৫ Gbps or more.	
৩.২	Forwarding Capacity: The Switch should provide Packet Forwarding Capacity of ৭৫ Mpps or more.	
৪	**Layer ২ features**	
৪.১	Should support up to ১৬K MAC addresses or more.	
৪.২	Should support Jumbo Frames (up to ৯K bytes).	
৪.৩	Should support ৪K Active VLANs, with the following features.	
	— Port based VLANs and VLAN Groups	
	— Simultaneous tagged and untagged VLAN on a port	
	— Dual-Mode VLANs	
	— MAC-based VLANs	
	— Dynamic MAC-based VLAN Activation	
	— Dynamic Voice VLAN Assignment	
	— Dynamic VLAN Assignment	
	— VLAN mapping or VLAN Translation to translate CVLANs to SVLANs	
৪.৪	Should support Spanning Tree Protocols, with the following features.	
	— ৫০২.১D Spanning Tree	
	— ৫০২.১W Rapid Spanning Tree Protocol (RSTP)	
	— ৫০২.১s Multiple Spanning Tree	
	— ৫০২.১s Multiple Spanning Tree enhancement (MSTP+)	

	— Fast Port Span, Fast Uplink Span, and Single-instance Span	
	— Compatibility with PVST/PVST+, PVRST+ and PVST+	
	— BPDU Guard	
	— Root Guard for STP & MSTP	
	— Port Loop Detection	
	— Spanning Tree path cost method changes	
	— MSTP path-cost configuration	
৪.৫	Should support Link Aggregation Groups (LAG), with the following features.	
	— Static LAG	
	— ৫০২.৩ad Link Aggregation Control Protocol (Dynamic LAG)	
	— Dynamic insertion and removal of ports	
	— Support for LAG between different default port speeds	
৪.৬	Should support ৫০২.৭q Tunneling, with the following features.	
	— ৫০২.৭ad (Q-in-Q) tagging	
	— Q-in-Q BPDU tunneling	
	— Selective Q-in-Q	
৪.৬	Should support Private VLANs, with the following features.	
	— PVLANs with dual mode support	
	— PVLAN with LAG	
৪.৮	Should support VLAN Registration Protocol, with the following features.	
	— Multiple VLAN Registration Protocol (MVRP)	
	— MVRP with Per-VLAN STP and Per-VLAN RSTP	
৪.৯	Should support the following Layer ২ Switching Features.	
	— Remote Fault Notification (RFN)	
	— Link Fault Signaling (LFS)	
	— Uni-Directional Link Detection (UDLD) on Tagged and Untagged Ports	
৫	Layer ৩ features	
৫.৭	Should support up to ৭K IPv৪ routes or more.	
৫.২	Should support the following Basic IPv৪ and IPv৬ Layer ৩ Routing features.	
	— IPv৪ and IPv৬ Static Routes	
	— RIP v৭/v২, RIPng	
	— ECMP	

	— Port-based Access Control Lists	
	— Layer ३/Layer ४ ACLs	
	— Host routes	
	— Virtual Interfaces	
	— Routed Interfaces	
	— Route-only Support	
	— Routing Between Directly Connected Subnets	
५.३	Should support the following Advanced IPv४ and IPv६ Layer ३ Routing features.	
	— IPv४ and IPv६ Dynamic Routes	
	— OSPF v२, OSPF v३ (IPv६)	
	— PIM-SM, PIM-SSM, PIM-DM, PIM passive (IPv४/IPv६ multicast routing functionality)	
	— Policy Based Routing (PBR)	
	— Virtual Route Redundancy Protocol VRRP v२ (IPv४)	
	— Virtual Route Redundancy Protocol VRRP v३ (IPv६)	
	— Non-Stop Routing (NSR)	
	— GRE	
	— IPv६ over IPv४ tunnels	
	— Multi VRF (IPv४ and IPv६) with Inter-VRF route leaking using static routes	
	— DHCP Server (IPv४ & IPv६)	
	— MSDP	
६	Quality of Service (QoS) & Traffic Management	
६.१	Should support the following Quality of Service (QoS) features.	
	— ACL Mapping and Marking of ToS/DSCP (CoS)	
	— ACL Mapping and Marking of ८०२.१p	
	— ACL Mapping to Priority Queue	
	— Classifying and Limiting Flows Based on TCP Flags	
	— DiffServ Support	
	— Honoring DSCP and ८०२.१p (CoS)	
	— MAC Address Mapping to Priority Queue	
	— Dynamic Buffer Allocation for QoS Priorities	
	— Separate QoS Queuing for Unicast and Multicast	
	— Priority Queue Management using Weighted Round Robin (WRR), Strict Priority (SP), and a combination of WRR and SP	
६.२	Should support the following Traffic Management features.	

	— ACL-based Inbound Rate Limiting and Traffic Policies	
	— Broadcast, Multicast, and Unknown Unicast Rate Limiting	
	— Inbound Rate Limiting per Port	
	— Outbound Rate Limiting per Port and per Queue	
৬	Software Defined Networking (SDN)	
৬.১	Should support the following SDN features and functionality.	
	— OpenFlow v১.০	
	— OpenFlow v১.৩	
	— Hybrid Switch Mode (OpenFlow enabled on per-port basis)	
	— Hybrid Port Mode with Layer ২ Mode, Layer ৩ Mode, and Simultaneous Layer ২/Layer ৩ Mode	
	— Support for Multiple Controllers	
৮	Security	
৮.১	Should support the following Security features	
	— MACsec (with Additional License)	
	— Layer ৩ ACLs (IPv৪ & IPv৬)	
	— Layer ২ ACLs (MAC)	
	— Binding IPv৪, IPv৬, and MAC ACLs to VLAN	
	— ৮০২.১X Authentication and Accounting	
	— MAC Authentication and Accounting	
	— Web Authentication	
	— DHCP Snooping	
	— Dynamic ARP Inspection	
	— Neighbor Discovery (ND) Inspection	
	— Protection against Denial of Service (DoS) Attacks	
	— Authentication, Authorization, and Accounting (AAA)	
	— Port Security with Secure MAC Address Limiting	
	— Advanced Encryption Standard (AES) with SSHv২	
	— RADIUS/TACACS/TACACS+	
	— Secure Copy (SCP)	
	— Secure Shell (SSHv২)	
	— Change of Authorization (CoA) RFC ৫১৬৬	
	— Trusted Platform Module	
	— Protected Ports	
	— IPv৬ RA Guard	

	— RADSEC (RFC ৫৫৭৮)	
	— Encrypted Syslog (RFC ৬৪২৬)	
৫.২	The Switch should support the following Flexible Authentication features.	
	— ৫০২.৭x with Dynamic ACL Assignment	
	— ৫০২.৭x with Dynamic VLAN Assignment	
	— ৫০২.৭x and MAC Authentication on the same port	
	— Flexible Authentication together with Dynamic ARP Inspection (IPv৪ and IPv৫) with Dynamic ACLs	
	— Flexible authentication together with DHCPv৪ and DHCPv৫ Snooping with Dynamic ACLs	
	— ৫০২.৭x Authentication together with IP Source Guard Protection	
	— MAC Authentication together with IP Source Guard Protection	
	— MAC Authentication together with Dynamic VLAN Assignment	
	— MAC Authentication together with Dynamic ACLs	
	— MAC Authentication together with ৫০২.৭x	
	— ৫০২.৭x together with Denial of Service (DoS) Attack Protection	
	— Periodic Reauthentication for MAC Authentication	
	— Periodic Reauthentication for ৫০২.৭x	
৫.৩	The Switch should support Cisco ISE, Aruba ClearPass, and Ruckus Cloudpath for ৫০২.৭X Authentication, MAC Authentication, Dynamic VLAN Assignment, Dynamic ACL Assignment, External Web Authentication and Change of Authorization (CoA).	
৫.৪	Should support IPv৪ and IPv৫ ACLs with up to ২K Rules per ACL and a minimum of ৫K Rules per System.	
৭	Monitoring & Manageability	
৭.১	Should support manageability using Network Management Software with Web based Graphical User Interface (GUI).	
৭.২	The Switch should support the following Monitoring & Management features.	
	— ERSPAN	
	— RSPAN	
	— Virtual Cable Tester (VCT)	
	— PTP Transparent Clock	
	— LEDs On/Off Command	
	— Cisco Discovery Protocol (CDP) for IPv৪ and IPv৫ Traffic	
	— Automation with Ansible	
	— REST API	

	— Switch Cloud Management	
	— SNMP v৭, v২, and v৩	
	— Mirroring based on ACL, MAC ACL and VLAN	
	— Analytics Streaming Interface	
	— Configuration Archive, Replace & Roll back	
	— IP DHCP binding scalability of up to ২৫০০ Devices	
	— Software Defined Video-over-Ethernet (SDVoE) compliance	
৯.৩	Should support Integrated Standard based Command Line Interface (CLI), Telnet, TFTP, HTTP access to switch management/monitoring.	
৯.৪	Should support NetFlow or sFlow or equivalent.	
৯০	Physical Attributes, Memory, PoE, Power Supply and Fans	
৯০.৭	The Switch should have minimum ২MB Packet Buffer, ৭GB Main Memory and ২GB Flash Memory.	
৯৯	Mandatory Compliance :	
৯৯.২	The Switch OS should be EAL/NDPP Certified. The Latest Updated Maintenance Common Criteria Report (Evaluation and Validation) should be submitted. The Switch should be TEC certified as well.	
৯৯.৩	The Switch should have an MTBF of more than ৮০০,০০০ hours	
৯২	Warranty	
৯২.৭	The Switch should be quoted with Three (৩) Years of TAC Support and Lifetime (Till End of Support) for Hardware Warranty with NBD Hardware Replacement.	

2.4 Technical Specification of 24 port POE access Switch:

Sl. No	Specification Required Min. Acceptable Specification	Fully Complied (Yes/No)
৭	Product details – Please specify	
৭.৭	Please mention Make, Model No. and Part Code.	
২	Architecture & Port Density	
২.৭	The Switch should be configured with ২৪ x ৭০M/৭০০M/৭G RJ৪৫ POE+ ports, Stacking Ports/Module and ২ x ৭G/৭০G SFP+ Slots for Uplinks from Day ৭.	
২.২	The Switch should support Virtual Switching System (VSS) or Virtual Chassis (VC) or equivalent Switch Clustering/Stacking feature, where the Switch Clustering feature should combine multiple switches into a single network element.	

২.৩	All components required for stacking should be provided along with the switch, to ensure ৪০Gbps of stacking bandwidth per switch.	
২.৪	The Switch should be able to be managed in standalone mode, through an on premises management solution and cloud based controller.	
৩	Performance	
৩.১	Switching Bandwidth: The Switch should provide Switch Fabric Bandwidth Capacity of ১২৮ Gbps or more.	
৩.২	Forwarding Capacity: The Switch should provide Packet Forwarding Capacity of ৯৫ Mpps or more.	
৪	Layer ২ features	
৪.১	Should support up to ১৬K MAC addresses or more.	
৪.২	Should support Jumbo Frames (up to ৯K bytes).	
৪.৩	Should support ৪K Active VLANs, with the following features.	
	— Port based VLANs and VLAN Groups	
	— Simultaneous tagged and untagged VLAN on a port	
	— Dual-Mode VLANs	
	— MAC-based VLANs	
	— Dynamic MAC-based VLAN Activation	
	— Dynamic Voice VLAN Assignment	
	— Dynamic VLAN Assignment	
	— VLAN mapping or VLAN Translation to translate CVLANs to SVLANs	
৪.৪	Should support Spanning Tree Protocols, with the following features.	
	— ৮০২.১D Spanning Tree	
	— ৮০২.১W Rapid Spanning Tree Protocol (RSTP)	
	— ৮০২.১s Multiple Spanning Tree	
	— ৮০২.১s Multiple Spanning Tree enhancement (MSTP+)	
	— Fast Port Span, Fast Uplink Span, and Single-instance Span	
	— Compatibility with PVST/PVST+, PVRST+ and PVST+	
	— BPDU Guard	
	— Root Guard for STP & MSTP	
	— Port Loop Detection	
	— Spanning Tree path cost method changes	
	— MSTP path-cost configuration	
৪.৫	Should support Link Aggregation Groups (LAG), with the following features.	
	— Static LAG	
	— ৮০২.৩ad Link Aggregation Control Protocol (Dynamic LAG)	
	— Dynamic insertion and removal of ports	

	— Support for LAG between different default port speeds	
৪.৬	Should support ৫০২.৭q Tunneling, with the following features.	
	— ৫০২.৭ad (Q-in-Q) tagging	
	— Q-in-Q BPDU tunneling	
	— Selective Q-in-Q	
৪.৬	Should support Private VLANs, with the following features.	
	— PVLANs with dual mode support	
	— PVLAN with LAG	
৪.৮	Should support VLAN Registration Protocol, with the following features.	
	— Multiple VLAN Registration Protocol (MVRP)	
	— MVRP with Per-VLAN STP and Per-VLAN RSTP	
৪.৯	Should support the following Layer ২ Switching Features.	
	— Remote Fault Notification (RFN)	
	— Link Fault Signaling (LFS)	
	— Uni-Directional Link Detection (UDLD) on Tagged and Untagged Ports	
৫	Layer ৩ features	
৫.১	Should support up to ৭K IPv৪ routes or more.	
৫.২	Should support the following Basic IPv৪ and IPv৬ Layer ৩ Routing features.	
	— IPv৪ and IPv৬ Static Routes	
	— RIP v৭/v২, RIPng	
	— ECMP	
	— Port-based Access Control Lists	
	— Layer ৩/Layer ৪ ACLs	
	— Host routes	
	— Virtual Interfaces	
	— Routed Interfaces	
	— Route-only Support	
	— Routing Between Directly Connected Subnets	
৫.৩	Switch should be upgradeable to support below features or provide below features from day one.	
	— IPv৪ and IPv৬ Dynamic Routes	
	— OSPF v২, OSPF v৩ (IPv৬)	
	— PIM-SM, PIM-SSM, PIM-DM, PIM passive (IPv৪/IPv৬ multicast routing functionality)	
	— Policy Based Routing (PBR)	
	— Virtual Route Redundancy Protocol VRRP v২ (IPv৪)	
	— Virtual Route Redundancy Protocol VRRP v৩ (IPv৬)	

	— Non-Stop Routing (NSR)	
	— GRE	
	— IPv৬ over IPv৪ tunnels	
	— Multi VRF (IPv৪ and IPv৬) with Inter-VRF route leaking using static routes	
	— DHCP Server (IPv৪ & IPv৬)	
	— MSDP	
৬	Quality of Service (QoS) & Traffic Management	
৬.১	Should support the following Quality of Service (QoS) features.	
	— ACL Mapping and Marking of ToS/DSCP (CoS)	
	— ACL Mapping and Marking of ৮০২.১p	
	— ACL Mapping to Priority Queue	
	— Classifying and Limiting Flows Based on TCP Flags	
	— DiffServ Support	
	— Honoring DSCP and ৮০২.১p (CoS)	
	— MAC Address Mapping to Priority Queue	
	— Dynamic Buffer Allocation for QoS Priorities	
	— Separate QoS Queuing for Unicast and Multicast	
	— Priority Queue Management using Weighted Round Robin (WRR), Strict Priority (SP), and a combination of WRR and SP	
৬.২	Should support the following Traffic Management features.	
	— ACL-based Inbound Rate Limiting and Traffic Policies	
	— Broadcast, Multicast, and Unknown Unicast Rate Limiting	
	— Inbound Rate Limiting per Port	
	— Outbound Rate Limiting per Port and per Queue	
৬	Software Defined Networking (SDN)	
৬.১	Should support the following SDN features and functionality.	
	— OpenFlow v১.০	
	— OpenFlow v১.৩	
	— Hybrid Switch Mode (OpenFlow enabled on per-port basis)	
	— Hybrid Port Mode with Layer ২ Mode, Layer ৩ Mode, and Simultaneous Layer ২/Layer ৩ Mode	
	— Support for Multiple Controllers	
৮	Security	
৮.১	Should support the following Security features	
	— MACsec (with Additional License)	
	— Layer ৩ ACLs (IPv৪ & IPv৬)	
	— Layer ২ ACLs (MAC)	

	— Binding IPv৪, IPv৬, and MAC ACLs to VLAN	
	— ৫০২.৭X Authentication and Accounting	
	— MAC Authentication and Accounting	
	— Web Authentication	
	— DHCP Snooping	
	— Dynamic ARP Inspection	
	— Neighbor Discovery (ND) Inspection	
	— Protection against Denial of Service (DoS) Attacks	
	— Authentication, Authorization, and Accounting (AAA)	
	— Port Security with Secure MAC Address Limiting	
	— Advanced Encryption Standard (AES) with SSHv২	
	— RADIUS/TACACS/TACACS+	
	— Secure Copy (SCP)	
	— Secure Shell (SSHv২)	
	— Change of Authorization (CoA) RFC ৫৭৩৬	
	— Trusted Platform Module	
	— Protected Ports	
	— IPv৬ RA Guard	
	— RADSEC (RFC ৬৬৭৪)	
	— Encrypted Syslog (RFC ৫৪২৫)	
৫.২	The Switch should support the following Flexible Authentication features.	
	— ৫০২.৭x with Dynamic ACL Assignment	
	— ৫০২.৭x with Dynamic VLAN Assignment	
	— ৫০২.৭x and MAC Authentication on the same port	
	— Flexible Authentication together with Dynamic ARP Inspection (IPv৪ and IPv৬) with Dynamic ACLs	
	— Flexible authentication together with DHCPv৪ and DHCPv৬ Snooping with Dynamic ACLs	
	— ৫০২.৭x Authentication together with IP Source Guard Protection	
	— MAC Authentication together with IP Source Guard Protection	
	— MAC Authentication together with Dynamic VLAN Assignment	
	— MAC Authentication together with Dynamic ACLs	
	— MAC Authentication together with ৫০২.৭x	
	— ৫০২.৭x together with Denial of Service (DoS) Attack Protection	
	— Periodic Reauthentication for MAC Authentication	
	— Periodic Reauthentication for ৫০২.৭x	

৫.৩	The Switch should support Cisco ISE, Aruba ClearPass, and Ruckus Cloudpath for ৫০২.১X Authentication, MAC Authentication, Dynamic VLAN Assignment, Dynamic ACL Assignment, External Web Authentication and Change of Authorization (CoA).	
৫.৪	Should support IPv৪ and IPv৬ ACLs with up to ২K Rules per ACL and a minimum of ৫K Rules per System.	
৯	Monitoring & Manageability	
৯.১	Should support manageability using Network Management Software with Web based Graphical User Interface (GUI).	
৯.২	The Switch should support the following Monitoring & Management features.	
	— ERSPAN	
	— RSPAN	
	— Virtual Cable Tester (VCT)	
	— PTP Transparent Clock	
	— LEDs On/Off Command	
	— Cisco Discovery Protocol (CDP) for IPv৪ and IPv৬ Traffic	
	— Automation with Ansible	
	— REST API	
	— Switch Cloud Management	
	— SNMP v১, v২, and v৩	
	— Mirroring based on ACL, MAC ACL and VLAN	
	— Analytics Streaming Interface	
	— Configuration Archive, Replace & Roll back	
	— IP DHCP binding scalability of up to ২৫০০ Devices	
	— Software Defined Video-over-Ethernet (SDVoE) compliance	
৯.৩	Should support Integrated Standard based Command Line Interface (CLI), Telnet, TFTP, HTTP access to switch management/monitoring.	
৯.৪	Should support NetFlow or sFlow or equivalent.	
১০	Physical Attributes, Memory, PoE, Power Supply and Fans	
১০.১	The Switch should have minimum ২MB Packet Buffer, ১GB Main Memory and ২GB Flash Memory and POE budget of ৩৬০W.	
১১	Mandatory Compliance :	
১১.১	All categories of Switches, Transceivers & Switch OS should be from same OEM	
১১.২	The Switch OS should be EAL/NDPP Certified. The Latest Updated Maintenance Common Criteria Report (Evaluation and Validation) should be submitted. The Switch should also be TEC certified.	
১১.৩	The Switch should have an MTBF of more than ৩৯৬,০০০ hours	
১২	Warranty	

১২.১	The Switch should be quoted with Five (৫) Years of TAC Support and Lifetime (Till End of Support) for Hardware Warranty with NBD Hardware Replacement.	

3. Technical Specification of Wireless Components

৩.১ Technical Specifications for Wireless Access Points:

Sl. No	Min. Acceptable Specification	Fully Complied (Yes/No)
১	The Access Point should support the ৫০২.১১a, ৫০২.১১b, ৫০২.১১g and ১১n standards. It should also support ৫০২.১১ac standard in the ৫ GHz band and ৫০২.১১ax on both the bands.	
২	The proposed Access Point should be ৫০২.১১ax capable and operate as dual band radio. The AP should also have an additional integrated radio to act either as BLE or Zigbee for IoT applications.	
৩	The Access Point should have minimum Transmit power of **২৩** dBm on both ২.৪GHz and ৫GHz.	
৪	The Access Point should support ২০, ৪০, ৫০MHz channelization. It should support below channels:	
	— ২.৪GHz: ১-১৩.	
	— ৫GHz: ৩৬-৬৪, ১০০-১৪৪, ১৪৯-১৬৫.	
৫	The Access Point should support ২ spatial streams SU/MU MIMO on both radio bands. It should support the below data rates:	
	— ৫০২.১১ax: ৪ to ১৬৬৪ Mbps	
	— ৫০২.১১ac: ৬.৫ to ৫৬৬Mbps (MCS০ to MCS৯, NSS = ১ to২ for VHT২০/৪০/৫০)	
	— ৫০২.১১n: ৬.৫ Mbps to ৩০০Mbps (MCS০ to MCS১৫)	
	— ৫০২.১১a/g: ৬ to ৫৪ Mbps	
	— ৫০২.১১b: ১ to ১১ Mbps	
৬	The Access Point shall have two ১GbE port, RJ-৪৫. It should also have a USB port to support additional IOT technologies in future.	
৬	The Access Point should be centrally configured and managed through the controller.	
৫	The Access Point should be able to operate in full MIMO mode and the necessary power POE/POE+/uPOE/POH should be provided.	
৯	Security mechanisms should be in place to protect the communication between the Wireless Controller and the Access Point.	

৭০	Since most radio interference come from the WLAN network itself the vendor should specify what mechanisms such as beam steering/ adaptive antenna technology/ beamforming are available in combination to focus the energy on the destination STA and minimize radio interference with the surrounding of the Access Point.	
৭৭	Since the WLAN network will be using an unlicensed band the solution should have mechanisms that reduce the impact of interference generated by other radio equipment operating in the same band. Please Describe techniques supported.	
৭২	The Access Point should be able to detect clients that have dual band capability and automatically steer those clients to use the ৫GHz band instead of the ২.৪GHz band.	
৭৩	The Access Point should support ৫০২.৭q VLAN tagging	
৭৪	The Access Point should support — WPA-PSK, WPA-TKIP, WPA২ AES, WPA৩-Personal, WPA৩-Enterprise, ৫০২.৭৭i, Dynamic PSK, OWE and WIPS/WIDS.	
৭৫	The AP should support below advanced Wi-Fi features:	
	— WMM, Power Save, Tx Beamforming, LDPC, STBC, ৫০২.৭৭r/k/v	
	— Hotspot	
	— Hotspot ২.০	
	— Captive Portal	
	— WISPr	
৭৬	The Access Point should implement below Wi-Fi alliance standards:	
	Wi-Fi Enhanced Open™	
	— Wi-Fi Agile Multiband™	
	— Passpoint®	
	— Vantage	
	— WMM®	
৭৭	The Access Point should provide for concurrent support for high definition IP Video, Voice and Data application without needing any configuration change. This feature should be demonstrable.	
৭৮	The AP should support — QoS-based scheduling, Directed Multicast, L২/L৩/L৪ ACLs	
৭৯	The AP should support below Policy Management Tools:	
	— Application Recognition and Control	
	— Access Control Lists	
	— Device Fingerprinting	
	— Rate Limiting	
২০	The Access Point should support a receiver sensitivity of minimum -৯৭dBm	
২৭	The Access Point should support channel selection based on measuring throughput capacity in real time and switching to another channel should the capacity fall below the statistical average of all channels without using background scanning as a method.	

২২	The Access Point should support Transmit power tuning in ৭dB increments in order to reduce interference and RF hazards	
২৩	The Access Point should have an integrated antenna with a gain of ২ dBi or more.	
২৪	The Access Point should support ৩০ BSSIDs on ২.৪G radio and ৫G radio together for multiple differentiated user services (e.g. voice).	
২৫	The Access Point should support ৫০০ or more clients per AP.	
২৬	The Access Point should support IPv৬ from day one.	
২৭	For troubleshooting purposes, the administrator should have the ability to remotely capture ৮০২.১১ and / or ৮০২.৩ frames from an Access Point without disrupting client access.	
২৮	The AP should support mesh.	
২৯	Operating Temperature: ০'C to ৫০'C.	
৩০	Operating Humidity: up to ৯৫% non-condensing.	
৩১	The Access Point should be Wi-Fi certified and WPC approved; ETA certificate to be enclosed. It should also be TEC approved.	
৩২	The Access Point should have a mechanism for physical device locking using padlock /Kensington lock / equivalent	

3.2 Technical Specifications of Wireless Controller/AAA device:

Sl. No	Min. Acceptable Specification	Fully Complied (Yes/No)
	AAA specs	
	The proposed solution should have following BYOD features:	
১	Seamless backend integration with AD, LDAP, RADIUS, Google Accounts, or social networks	
২	Compatibility with major OS like Windows, iOS, OSX, Android, ChromeOS, Linux.	
৩	Certificate-based Wi-Fi for stress-free security.	
৪	Self-service authorization and device provisioning via open network.	
৫	It should be a certificate based solution for all type of users including guests	
৬	Certificates should be per-device and avoid common issues with passwords¬leaks, sharing, change management	
৭	It should address the below requirements:	
	· Graceful onboarding	
	· Compelling Google and Chromebook solution	
	· Intuitive user/device management	
	· Certificate-based security for internal as well as guest users	

	· Self-service ८०२.१X and guest access workflows	
	· Differentiated workflow per SSID and device	
	· Integrated AAA server with key policy definitions	
	· Built-in user database with per device/user credential management	
	· Potential platform for advanced policy solution	
	· Should support wide range of devices and operating systems	
	· Easily customizable workflows for different users/devices and policies.	
	· User should be able to perform Onsite and remote onboarding	
	· Scales to multi-site and multi-controller deployments. Should be vendor agnostic	
	· Unified device visibility and reporting	
	· Should support wired as well as wireless networks.	
	· The proposed system should be multi-tenant to support different workflow for different locations.	
८	The proposed solution should have following integrated platforms:	
	a. RADIUS § efficient and flexible ८०२.१X connectivity	
	b. PKI § certificate management has never been this easy	
	c. Client Provisioning § support for all client OS types	
	d. User DB Integration § integrate with existing user databases/Certificate Authority	
	e. Device Management § enforce device-specific settings for antivirus, firewall, passcodes, NAC, proxies	
	f. Guest Access § secure or traditional self-service guest	
	g. Policy Engine § enforce custom user and device privileges	

4. Technical Specifications for NMS

Sr. No.	Min. Acceptable Specification	Fully Complied (Yes/No)
1	The NMS should be appliance based with minimum two 10G ports. It should be from the same OEM as switches. In future it should be able to manage the AP also from the same vendor so that a single console is available for wired and wireless network management	
2	It should support management of minimum 400 Switches. NMS License to be propsoed as per the actual number of switches being proposed.	
3	The NMS must support switch registration and authentication	
4	The NMS must support Switch inventory (model, FW version, last backup, etc)	
5	The NMS must support Health and performance monitoring (status, traffic stats, errors, clients etc) with alarms	
6	The NMS should also support Zero Touch Provisioning of the switch.	
7	The NMS must support Configuration copy, Configuration changes and port settings.	

8	The Controller or WLAN solution should support switch Firmware Upgrade	
9	The Controller or WLAN solution should support Switch configuration file backup and restore	
10	The Controller or WLAN solution should support Client troubleshooting - search by Client MAC to find the switch port for that client	
11	The NMS must support remote ping and traceroute	
12	The NMS should be able to generate report for Switches like Switch traffic statistics.	
13	NMS Appliance should support operating temperature of 0-40 degree and operating humidity of 5-85% non condensing	
14	The proposed product should be EAL2 Common Criteria Certified and TEC certified as well.	

***Supplier may provide higher configuration in the same rate instead of the above mentioned. Configuration.**

Signatory of Bidder

पुण्यश्लोक अहिल्यादेवी होळकर
सोलापूर विद्यापीठ
।। विद्यया संपन्नता ।।

Annexure II

Manufacturers/Dealer Authorization Form

[To be submitted along with Technical Bid]

Ref. No: Date:

To,

Subject: For the "Supply, Installation, Testing & Commissioning (SITC) of IT Network Infrastructure with support for 3 years"

Dear Sir,

We _____ who are established and reputable manufacturers of _____ having Factories at _____ and _____ do hereby authorise M/s _____ [**Name and address of vendor**] to submit a bid and sign the contract with you for the goods manufactured by us against the above RfP No_____ dated _____ We hereby extend our full guarantee and warranty as per the clauses of contract based on the terms and conditions of the RfP for the goods and services offered for supply by the above firm against the RfP.

Yours faithfully

[ ]

Name of the Manufacturer and Signature of Authorized person

Note: This letter of authority should be on the letterhead of the manufacturer and should be signed by a person competent and having the power of attorney to bind the manufacturer. It should be included by the bidder in its bid.

Annexure III

BID FORM

[To be submitted on the letter head of the bidder along with Technical Bid]

Ref. No. Date:

To,

Sub: RfP No……Dated……For "supply Supply, Installation, Testing & Commissioning (SITC) of IT Network Infrastructure with support for 3 years "

Dear Sir,

We, the undersigned, offer to supply and deliver materials and services including installation and commissioning of **"supply Supply, Installation, Testing & Commissioning (SITC) of IT Network Infrastructure** "in conformity with the tender.

We undertake, if our bid is accepted, to deliver the Goods in accordance with the delivery schedule specified in the Tender.

If our bid is accepted, we will provide Bank guarantee in your favour for a sum equivalent to 2 % of the contract price for the due performance of the contract in the format prescribed by the purchaser.

We agree to abide by this bid for the period of 120 days from their it shall remain binding upon us and may be accepted at any time before the expiration of that period.

Until a formal contract is prepared and executed, this bid, together with PAH Solapur University, Sholapur's written acceptance thereof and the PAH Solapur University, Sholapur's notification of award shall constitute a binding Contract between us.

We hereby undertake to produce the certificate from our OEM supplier in support of above undertaking at the time of delivery/installation. It will be our responsibility to produce such letters from our OEM supplier's at the time of delivery or within a reasonable time.

We agree that the PAH Solapur University, Solapur will have Single Point of Contact with us, at the address stated below for the entire goods and services to be delivered by us in case our bid is accepted.

Address of Bidder for Single Point of Contact ……

We understand that the PAH Solapur University, Solapur is not bound to accept the lowest of any bid the bank may receive.

Dated _____ day of _____ 20...

(Signature in the Capacity of)

Duly Authorized to sign bid for and on behalf of

(Name& Address of Bidder)_____

Annexure IV

Service Support Details

[To be submitted along with Technical Bid]

S.N.	Location	Whether local support available at the location [Yes or No]	In respect of Column 3, if response is "NO", specify location from which support extended.	Service Support own or through Franchise	Address and Telephone No [for response specified in column 5]	Working Days and hours	No of S/w Engineers	No of H/w Engineers
1	2	3	4	5	6	7	8	9
1	PAH Solapur University, Solapur							

Seal and Signature of Vendor

Annexure - V

Forwarding Letter

(To be submitted on company's letter head with Technical Bid)

To:

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Subject: Tender for supply of "supply Supply, Installation, Testing & Commissioning (SITC) of IT Network Infrastructure with support for 3 years"

Dear Sir,

This is in reference to your above-mentioned tender for the procurement of **"supply Supply, Installation, Testing & Commissioning (SITC) of IT Network Infrastructure",** having examined the tender document, the receipt of which is hereby duly acknowledged, we the undersigned; hereby submit our proposal along with necessary supporting documents.

Further, we agree to abide by all the terms and conditions as mentioned in the tender document. We have also noted that PAH Solapur University, Solapur reserves the right to consider/ reject any or all applications without assigning any reason thereof.

Date :

Authorised Signatory.
Name:
Designation:

***

Annexure VI
Self Decalration

(Self-Declaration by Bidder on Company Letterhead)

I, _____ (Name of Authorized person),

Aged about _____ years, residing at _____ _____ (Postal Address) do hereby declare that, I am the proprietor / Partner of _____ (Name of Company / firm) registered at _____.

I do hereby confirm that, the documents submitted in envelope No.1 of the tender document for the work of _____are true, correct and complete. I am not blacklisted in any organization. In case the contents of envelope No.1 and other document pertaining to the tender submitted by me are found to be incorrect or false, I shall be liable for action under the relevant provision of Indian Penal Code and other relevant laws.

Signature of Authorized person /Applicant/Service Provider

Name : _____
Address: _____
City: _____
Date: _____
E-mail: _____
Mobile: _____

Seal and Signature of Vendor

Annexure – VII
Site Surevey Report/Certificate

SITE SURVEY CERTIFICATE

1. It is certified that Representatives of M/s ..... Address ..... Contact Person Name & Designation …… …….. has carried out the site visit on...../...../ ..... at our location …… as per Tender No .....Pertaining to Tender Name …… for our tender ''Supply, Installation, Testing & Commissioning (SITC) of IT Network Infrastructure, at Punyashlok Ahilyadevi Holkar Solapur University, Solapur with management for 3 years''.

2. The certificate has been issued to the firm as per Tender/GEM bid for technical evaluation.

Seal and Signature of
Competent Authority/In-charge
officer from Buyer
with Date

Seal and Signature of Vendor

Annexure – VIII

FINANICAL BID (In COVER - II)

Sr. No	Particulars Product with technical Specifications	Rate per Unit in Rs.	Total required Qty	Unit Rate	Total With GST
१	Fiber Components –				
१	Fiber Connectivity - Vertical (Floor to Floor)				
१.१	Fibre Cable Single Mode (६ core) outdoor in Metres (Armoured) for Backbone	Mtr	१२००		
१.२	Fiber panel(LIU) १९" rackmount, with २४ SC adaptors.(Couplers, splicetrays & panels included) Fully loaded with SC adapters	No	३		
१.३	Fiber panel(LIU) १९" rackmount, with ६ SC adaptors.(Couplers, splicetrays & panels included) Fully loaded with SC adapters	No	९		
१.४	Multimode SC Pigtails for OM३	No	६०		
१.५	OFC LC-SC Duplex Patch Cord Single mode ३ mtr	No	२२		
२	Copper Components –				
A	Rack Side				
२.१	Cat ६ Fully Loaded Patch Panel २४ Port	No	२४		
२.२	Cat ६ Mounting patch Cords (२ mtrs)	No	२१०		
२.३	Cat ६ Mounting patch Cords (१ mtrs)	No	२१०		
B	User Side				
२.१	Unshielded Twisted Pair CAT६ LSZH (as per EIA/TIA Standards) Cable Box of ३०५ Meter	Mtr	२६		
२.२	Cat ६ Information Outlet (user side)	No	२१०		
२.३	Single port Face Plates with back box	No	२१०		
३	Network/Server Racks –				
३.१	Floor Standing Rack ४२U/५५०W/५००D, Aluminum frame. Top cover with ४ No of ९० CFM FANS. Top & Bottom cover with cable entry gland plates. Front & rear dual steel door fully perforated. All door lockable. २ Nos of Power Distribution Units (PDUs) with Vertical strip consist of ६/१६ Amp ६ sockets each. Vertical Cable Channels, Captive Mounting Hardware	No	१		

Seal and Signature of Vendor

৩.২	Wall Mount Rack ৭২U/৫৫০W/৫০০D, Basic steel frame. Top cover with ৭ No of ৯০ CFM FANS and bottom cover having cable entry provision. Front toughened glass door lockable. ৭ Nos of Power Distribution Units (PDUs) with Horizontal strip consist of ৬ Amp ৮ sockets , Captive Mounting Hardware	No	৯		
৮	Core Switch				
৮.৭	২৮ port Layer ৩ switch with min ৭৬ x ৭০G SFP+ and with min. ৫ * ৭০G/২৫G SFP+/SFP২৫	No	৭		
৫	Distribution Switch				
৫.৭	৮৫ port Gigabit Ethernet ৭RU chassis. ৮৫*৭০/৭০০/৭০০০ BaseT, ২ fixed SFP+ ৭G/৭০G ports. ৭০G uplink speed enabled.	No	৫		
৫.২	২৮ port Gigabit Ethernet ৭RU chassis. ২৮*৭০/৭০০/৭০০০ BaseT, ২ fixed SFP+ ৭G/৭০G ports. ৭০G uplink speed enabled by default.	No	৮		
৫.৩	Gigabit Ethernet ৭RU chassis. ২৮ PoE ৭০/৭০০/৭০০০BaseT, ২ fixed SFP+ ৭G/৭০G ports, Includes internal ৩৯০W AC PSU.	No	৭		
৬	Fiber Module				
৬.৭	৭০ Gigabit optical transceiver SFP+ with an LC connector. Typical reach of ৩০০m	No	২২		
৬	Wireless Access Point				
৬.৭	Dual-band ৫০২.৭৭abgn/ac/ax Wireless Access Point with Multi-Gigabit Ethernet backhaul, ৮x৮:৮ + ২x২:২ streams, OFDMA, MU-MIMO, BeamFlex+, dual ports, PoH/uPoE/৫০২.৩at PoE support.	No.	৬		
৬.২	Wireless Controller/AAA server hardware based.	No.	৭		
৫	NMS				
৫.৭	NMS Hardware based for ৩ yrs	No	৭		
৯	Conduits & Accessories				
৯.৭	২৫ mm PVC Casing and capping with all accessories	Mtr	৮৫০০		
৯.২	৩২ mm PVC Casing and capping with all accessories	Mtr	৭০০০		
৯.৩	Casing capping pipe	Mtr	২০০০		
৯.৮	GI cable trays ৫০*৭০০*৫০mm Gauge ৭৬ with galvanized coating	Mtr	৫০০		
৭০	Warranty				
৭০.৭	Additional Warranty of ২ yrs (after end of Standard ৭ yr warranty) on active and passive components with onsite support	No	৭		

Seal and Signature of Vendor

११	UPS				
११.१	१KVA Rack mount UPS	No	९		
११.२	३KVA UPS with १hr backup	No	१		
१२	One Time Transport and Installation Charges	No	१		
				Total	
				L– १ Abowe besed on total Item Cost	

Note: Bidder are requested to note the following –

- All the details must be provided as per format.
- L1 will be arrived based on the above total cost.
- All active items are with 3 years warranty from date of installation.
- All the terms and conditions as mentioned in the Government Resolution of Govt of Maharashtra regarding purchase process are applicable to the tender document.
- GST & other taxes may be indicated separately.
- Quantity will be vary on the basis of actual requirement.

Seal and Signature of Vendor