Malaviya National Institute of Technology Jaipur

Name of Work: **Design, Supply, Installation, Testing and Commissioning for Comprehensive Upgradation of Wired and Wireless Campus LAN**

Tender No: F5(1306)ST/MNIT/DIS/2024 **Date: 21.02.2025**

Malaviya National Institute of Technology Jaipur - 302017

Website: https://www.mnit.ac.in

Email: @mnit.ac.in

Malaviya National Institute of Technology Jaipur

1. PRESS NOTE

The Registrar, Malaviya National Institute of Technology, Jaipur, invites tender under two bid Post Qualification System (Technical and Financial Bid) from similar-field Central government Organizations (CGOs), Central Public Sector Undertakings (CPSUs) and Central Public Sector Enterprises (CPSEs) like NICSI, ERNET, EDCIL, RailTel, TCIL, BSNL, etc. fulfilling the **Qualification & Provenness criteria** may participate and operation of following work:

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2. Information for Bidders

Information about Online Bid Submission

The Department of Expenditure has issued the directive to publish the tender document on the Central Public Procurement Portal (URL:http://eprocure.gov.in/eprocure/app). The bidders are required to submit soft copies of their bids electronically on the CPP Portal using valid Digital Signature Certificates. Below mentioned instructions are meant to guide the bidders for registration on the CPP Portal, prepare their bids in accordance with the requirements and submit their bids online on the CPP Portal. For more information, bidders may visit the CPP Portal http://eprocure.gov.in/eprocure/app. Tender document can also be downloaded from MNIT Jaipur Website (www.storepurchase@mnit.ac.in)

The contractor/bidder/system-integrator (SI) shall mean the organization or company, from amongst CGO/CPSU/CPSE.

2.1 Registration Process

a) Bidders to enroll on the e-Procurement module of the portal http://eprocure.gov.in/eprocure/app by clicking on the link "Click here to Enroll". Enrolment on the CPP Portal is free of charge.

b) The bidders choose a unique username and assign a password for their accounts. Bidders are advised to register their valid email address and mobile numbers as part of the registration process. These would be used for any communication from the CPP Portal.

c) Bidders register upon enrolment of their valid Digital Signature Certificate (Class II or Class III Certificates with signing key usage) issued by any Certifying Authority recognized by CCA India with their profile.

d) Only one valid DSC should be registered by a bidder. Please note that the bidders are responsible that they do not lend their DSCs to others which may lead to misuse. Foreign bidders are advised to refer "DSC details for Foreign Bidders" for Digital Signature requirements on the portal.

e) Bidder then logs in to the site through the secured login by entering their user ID / password and the password of the DSC / eToken.

2.2 Tender Documents Search

a) Various built in options are available in the CPP Portal to facilitate bidders to search active tenders by several parameters. These parameters include Tender ID, organization, location, date, value, etc.

b) There is also an option of advanced search for tenders, wherein the bidders may combine a number of search parameters such as organization name, form of contract, location, date, other keywords etc. to search for a tender published on the CPP Portal.

c) Once the bidders have selected the tenders they are interested in; they may download the required documents / tender schedules. These tenders can be moved to the respective 'My Tenders' folder. This would enable the CPP Portal to intimate the bidders through SMS / e-mail in case there is any corrigendum issued to the tender document.

d) The bidder should make a note of the unique Tender ID assigned to each tender, in case they want to obtain any clarification / help from the Helpdesk.

2.3 Bid Preparation

a) Bidders should take into account any corrigendum published on the tender document before submitting their bids.

b) Please go through the tender advertisement and the tender document carefully to understand the documents required to be submitted as part of the bid.

c) Please note the number of covers in which the bid documents have to be submitted, the number of documents - including the names and content of each of the documents that need to be submitted. Any deviations from these may lead to rejection of the bid.

d) Bidders, in advance, should get ready the bid documents to be submitted as indicated in the tender document /Schedule and generally, they can be in PDF / XLS / RAR / DWF formats. Bid documents may be scanned with 100 dpi with black and white option.

e) To avoid the time and effort required in uploading the same set of standard documents which are required to be submitted as a part of every bid, a provision of uploading such standard documents (e.g. PAN card copy, annual reports, auditor certificates etc.) has been provided to the bidders. Bidders can use the "My Space" area available to them to upload such documents. These documents may be directly submitted from the "Myspace" area while sub- mitting a bid, and need not be uploaded again and again. This will lead to a reduction in the time required for bid submission process

2.4 Bid Submission

a) Bidder to log into the site well in advance for bid submission so that he/she upload the bid in time i.e. on or before the bid submission time. Bidders will be responsible for any delay due to other issues.

b) The bidder to digitally sign and upload the required bid documents one by one as indicated in the tender document.

c) Bidder to select the payment option as "on-line" to pay the tender fee/ EMD wherever applicable and enter details of the instrument.

d) A standard BOQ format has been provided with the tender document to be filled by all the bidders. Bidders to note that they should necessarily submit their financial bids in the pre- scribed format and no other format is acceptable.

e) The server time (which is displayed on the bidders' dashboard) will be considered as the standard time for referencing the deadlines for submission of the bids by the bidders, opening of bids etc. The bidders should follow this time during bid submission.

f) All the documents being submitted by the bidders would be encrypted using PKI encryption techniques to ensure the secrecy of the data, which cannot be viewed by unauthorized per- sons until the time of bid opening.

g) The uploaded tender documents become readable only after the tender opening by the authorized bid openers.

h) Upon the successful and timely submission of bids, the portal will give a successful bid submission message & a bid summary will be displayed with the bid no. and the date & time of submission of the bid with all other relevant details.

i) Kindly add a scanned PDF of all relevant documents in a single PDF file of the compliance sheet.

2.5 Assistance to Bidders

a) Any queries relating to the tender document and the terms and conditions contained therein should be addressed to the Tender Inviting Authority for a tender or the relevant contact person indicated in the tender.

b) Any queries relating to the process of online bid submission or queries relating to CPP Portal in general may be directed to the 24x7 CPP Portal Helpdesk. The contact number for the helpdesk is 1800 2337315.

2.6 General Instructions to the Bidders

a) The tenders will be received online through the portal https://eprocure.gov.in/eprocure/app. In the Technical Bids, the bidders are required to upload all the documents in .pdf format.

b) Possession of Valid Class II/III Digital Signature Certificate (DSC) in the form of smart card Token in the company's name is a prerequisite for registration and participating in the bid submission activities through https: //eprocure.gov.in/eprocure/app. Digital Signature Certificates can be obtained from the authorized certifying agencies, details of which are available in the web site https://eprocure.gov.in/eprocure/app under the link `Information about DSC'. Bidders are advised to follow the instructions provided in the `Instructions to the Bidders for the e- Submission of the bids online through the Central Public Procurement Portal for e-Procurement at https://eprocure.gov.in/eprocure

c) All MII Provisions have to be followed as per para 5 of Section-II.

SECTION I - INVITATION FOR BIDS

1. Tenders are invited through an online bidding process on the website https://eprocure.gov.in from the eligible bidders. The tender document is also available on the website https://mnit.ac.in for download by prospective bidders free of cost. There will be no sale/ distribution of a Hard Copy of the Tender Document.

2. Brief details of the Tender are as under

S. No.	Item Description	No. of Items	Estimated Value of Tender inclusive of all taxes (Rs. in crore.)	Earnest Money Deposit (Rs.)
1	Design, Supply, Installation, Testing and Commissioning for Comprehensive Upgradation of Wired and Wireless Campus LAN	01 (Turn Key Project)	43.19	Not applicable for a CGO/ CPSU/ CPSE

3. All bids are to be submitted online on the E-Procurement portal website **https://eprocure.gov.in**. No offline bids will be accepted.

4. Before starting the bidding process, bidders are advised to carefully read 'Instructions to the Contractors/Bidders for the e-submission of the bids online through e-procurement.

5. Time Schedule of Tender:

1.	**Tender No.**	**F5(1306)ST/MNIT/DIS/2024**
2.	Name of work	Design, Supply, Installation, Testing and Commissioning for Comprehensive Upgradation of Wired and Wireless Campus LAN
3.	Composited Estimated cost	**Rs. 43.19 Cr.**
4.	Bid Validity	**90 Days**
5.	Earnest Money	**Not Applicable**
6.	Period for completion	210 days
7.	**Bid Start Date**	**21/02/2025 at 16.00 PM**
8.	**Pre-bid Meeting**	**27/02/2025 (11.00 AM to 11.30AM)**
9.	**Last date and time for submission of tender**	**03/04/2025 at 14:00 PM**
10.	**Technical Bid Opening**	**04/04/2025 at 15:00 PM**
11.	Financial Bid Opening	To be intimated
12.	Category and class of Bidder	**Central government organizations (CGOs)/CPSUs/CPSEs only**

6. There is no provision to take out the list of parties that have downloaded the tender document from the above-referred website. As such, bidders are requested to visit the website once again before the due date of tender opening to ensure that they have not missed out on any corrigendum issued against the said tender after they have downloaded the tender document. The responsibility of downloading the corrigendum, if any, will be of the downloading party. No separate intimation in respect of the corrigendum to the NIT (if any) will be sent to the bidders who have downloaded the tender document from the website.

7. In the event of the scheduled/extended due date of opening of bids being declared as a closed holiday for the purchaser's office or a "bundh", the due date for the opening of bids will be the following working day at the scheduled time.

8. The bidders, in their own interest, are requested not to wait till the last moment for submission of the bid to avoid last-minute rush and local problems related to internet connectivity, law and order, strike, bundh, etc. The Purchaser shall not be responsible if bids could not be uploaded due to such local problems at the bidders' end.

9. The offer should be submitted (uploaded) strictly as per the terms and conditions and procedures laid down in the website tender document failing which the offer is liable for rejection. Bidders should download the complete NIT including the Annexures and read it carefully before filling in the details and uploading the documents.

10. The offers with any deviations to the NIT Terms and conditions shall be liable for rejection.

11. The bidder must upload all the documents required as per the terms of NIT. Any other document uploaded which is not required as per the terms of the NIT shall not be considered.

12. It may please be noted that E-tendering or e-procurement falls under the purview of the Information Technology Act 2000 and Information Technology (Amendment) Act 2008 and other relevant acts and subsequent amendments if any.

13. **Only central government organizations, CPSUs and CPSEs are allowed to bid. Bids other than central government organizations/ CPSU/ CPSE will be rejected.**

SECTION II - INSTRUCTIONS TO CONTRACTOR/ BIDDERS (ITC/B)

1) It will be the bidder's responsibility to comply with the system requirement, i.e. hardware, software, and internet connectivity at the bidder's premises to access the e-Procurement website. Under no circumstances MNIT shall be liable to the bidders for any direct/indirect loss or damages incurred by them arising out of incorrect use of the e-procurement system or internet connectivity failures.
2) It shall be the responsibility of the tenderer to ensure that they get registered with the e-Procurement portal well in advance and download the documents before the last date and time for the same.
3) **Communication: -** All communication sent by MNIT through post/fax/e-mail/SMS shall be deemed valid communication. The bidders must provide a complete address, fax number, e-mail id, and mobile number.
4) **Cost of Bidding:** -The bidder shall bear all costs associated with the preparation and online submission of the bid, and MNIT, hereinafter referred to as "the Purchaser", will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.
5) **Purchase Preference: It is mandatory for all the bidders to comply with PPP and Make In India (MII) provisions, applicable as on date.** (As per https://www.meity.gov.in/esdm/ppo) Government has issued Public Procurement (Preference to Make in India) [PPP-MII] Order 2017 vide the Department for Promotion of Industry and Internal Trade (DPIIT) Order No.P-45021/2/2017-B.E.-II dated 15.06.2017 and subsequent revisions vide Order No. 45021/2/2017-PP(BE-II) dated 28.05.2018, 29.05.2019, 04.06.2020, 16.09.2020 and **other latest ones till date** to encourage 'Make in India' and to promote manufacturing and production of goods, services and works in India with a view to enhancing income and employment. The relevant orders from other Ministries **till date** i.e. Electronics & IT, DoT etc. should also be considered. This Order is issued pursuant to Rule 153 (iii) of the General Financial Rules 2017. The salient features of the aforesaid Orders are as follows.
    a) The Order is applicable for procurement by the Ministry / Department / attached / subordinate office of, or autonomous body controlled by, the Government of India and includes Government companies as defined in the Companies Act.
    b) In the procurement of all goods, services, or works in respect of which the Nodal Ministry/ Department has communicated that there is sufficient local capacity and local competition, only 'Class-I local supplier', as defined under the Order, shall be eligible to bid irrespective of purchase value.
    c) The margin of purchase preference shall be 20%. 'margin of purchase preference' means the maximum extent to which the price quoted by a local supplier may be above the L1 for the purpose of purchase preference.
    d) Ministry of Electronics and Information Technology is the Nodal Ministry for implementation of the Electronic Product Notifications issued in furtherance of PPP-MII Order 2017.
    e) Classes of Local Suppliers based on local content as per the revised PPP-MII Order dated 19.07.2024 issued by the Department for Promotion of Industry and Internal Trade (DPIIT) are as under
    f) Class-I Local supplier - a supplier or service provider, whose goods, services or works offered for procurement, has local content equal to or more than 50%.
    g) Class-II Local supplier - a supplier or service provider, whose goods, services, or works offered for procurement, have local content of more than 20% but less than 50%.
    h) Non-Local supplier - a supplier or service provider, whose goods, services, or works offered for procurement, has local content less than or equal to 20%.
    i) Only 'Class-I local supplier' and 'Class-II local supplier' shall be eligible to bid in the

procurement of all goods, services, or works, and with an estimated value of purchases less than Rs. 200 crores.

j) Various select OMs relevant to PPP-MII are as follows.
   - All such relevant OMs/notices issued till date by DP-IIT (Sep-2020, Mar-2021, Dec-2022, May-2023, Apr-2024, July-2024),
   - Dept of Telecom (Aug-2018, gazette notification 21-Oct-2024),
   - Ministry of Electronics & IT (Sept-2017, 7-Sep-2020 gazette notification, Mar-2021, Mar-2022, Aug-2022),
   - All other OMs/notofications till date should be considered.

6) **Pre-bid Meeting/ Clarifications**

a) MNIT also schedules a pre-bid meeting as per the details mentioned in the NIT to clarify doubts of potential bidders in respect of the procurement, and the records of such conference shall be intimated to all bidders and, where applicable, shall be published on the respective websites.

b) Any prospective bidder may, in writing, seek clarifications from the procuring entity in respect of the bidding documents.

c) Prerequisite: Only eligible CGOs/CPSEs/CPSUs are invited to the pre-bid meeting. No OEM/SI participation in the pre bid shall be entertained. CGO/CPSE/CPSUs are required to provide eligibility proof as mentioned in the tender at the time of the Pre Bid meeting.

d) The period within which the bidders may seek clarifications under (a) above and the period within which the procuring entity shall respond to such requests for clarifications shall be as follows: -
   i) Last date of submitting clarifications requests by the bidder: as per NIT
   ii) Response to clarifications by procuring entity: as per NIT

e) The minutes and response, if any, shall be provided promptly to all bidders to which the procuring entity provided the bidding documents so as to enable those bidders to take minutes into account in preparing their bids and shall be published on the respective websites.

7) **Changes in the Bidding Document**

a) At any time, prior to the deadline for submission of Bids, the procuring entity may for any reason, whether on its own initiative or as a result of a request for clarification by a bidder, modify the tender documents by issuing an addendum in accordance with the provisions below.

b) In case any modification is made to the tender document or any clarification is issued that materially affects the terms contained in the tender document, the procuring entity shall publish such modification or clarification in the same manner as the publication of the initial tender document.

c) In case a clarification or modification is issued to the tender document, the procuring entity may, prior to the last date for submission of Bids, extend such time limit in order to allow the bidders sufficient time to take into account the clarification or modification as the case may be, while submitting their Bids.

d) Any bidder who has submitted his Bid in response to the original invitation shall have the opportunity to modify or re-submit it, as the case may be, within the period of time originally allotted or such extended time as may be allowed for submission of Bids when changes are made to the tender document by the procuring entity:

e) Provided that the bid was last submitted or modified by the bidder, it shall be considered for evaluation.

8) **Period of Validity of Bids**
   a) Bids submitted by the bidders shall remain valid during the period specified in the Tender document. A Bid valid for a shorter period shall be rejected by the procuring entity as a non-responsive Bid.
   b) Prior to the expiry of the period of validity of Bids, the procuring entity, in exceptional circumstances, may request the bidders to extend the bid validity period for an additional specified period of time. A bidder may refuse the request and such refusal shall be treated as a withdrawal of Bid and in such circumstances bid security shall not be forfeited.
   c) Bidders that agree to an extension of the period of validity of their Bids shall extend or get extended the period of validity of bid securities submitted by them or submit new bid securities to cover the extended period of validity of their bids. A bidder whose bid security is not extended, or that has not submitted a new bid security is considered to have refused the request to extend the period of validity of its Bid.
   d) Bidders must submit their bids online at the e-Procurement portal.
   e) All the documents uploaded should be digitally signed with the DSC (Digital Signature Certificate) of the authorized signatory.

9) **A Single Stage-Two part/ cover system shall be followed for the Bid: -**
   a) Technical Bid, including eligibility & technical documents
   b) Financial Bid

10) **Bids shall be submitted online only at the CPPP website: https://eprocure.gov.in/eprocure/app.**

11) Tenderer/Contractor/Bidders are advised to follow the instructions provided in the 'Instruction to the Contractors/Tenderer/Bidders for the e-submission of the bids online through the Central Public Procurement Portal for e-Procurement at https://eprocure.gov.in/eprocure/app.'

12) Bid documents may be scanned with 100 dpi with a black-and-white option, which helps reduce the scanned document's size.

13) The tenderer shall not be permitted to withdraw his offer or modify the terms and conditions thereof.

14) **Technical Bid**

The following documents are to be furnished by the bidder along with **Technical Bid** as per the tender document:

   a) A copy of the constitution or legal status of the bidder manufacturer / Sole proprietorship/firm/agency etc.
   b) A copy of the PAN Registration No.
   c) A Copy of the GSTIN Registration Certificate.
   d) Bidders must attach a Manufacturer Authorization Certificate for all items.
   e) Copy of income tax return Acknowledgment for the last three years.
   f) Bidder shall submit a copy of the tender document and addenda thereto, if any, with each page of this document should be signed and stamped to confirm the acceptance of the entire terms & conditions as mentioned in the tender inquiry document.
   g) Signed and Scanned copies of documents.
   h) All the certificates are given in the format.
   i) Duly Signed Tender document and their annexures

15) **Financial Bid -** The bidder must submit the financial bid in the attached BOQ in the CPP Portal.

16) **Qualification and Provenness Criteria: -** As per GFR-2017 (amended) clause 133, all Central government organizations (CGOs), CPSUs/CPSEs etc. are eligible for bidding[1]. Any CGO fulfilling the following Qualification and Proven-ness Criteria may participate in this tender. Bidders should attach the relevant document as proof.

a) Work Experience: - The intending tenderer must have in its name the experience of having successfully completed similar works during the last 7 (Seven) years ending the last day of the month previous to the one in which this bid application is invited (i.e., e-publication date on the procurement portal) should be any of the following.

i) Three similar completed works each cost not less than 40% of the estimated tender cost.

Or

ii) Two similar completed works each cost not less than 50% of the estimated tender cost.

Or

iii) One similar completed work costing not less than the amount equal to 80% of the estimated tender cost.

b) Similar works Definition: -The definition of similar works shall be "Supply, installation, commissioning, and maintenance of LAN / WAN / Campus networking Projects/ Network infrastructure components including passive components, related hardware/software on rental and/or outright purchase basis at any other PSU / Govt. / Quasi-Govt. establishment / Government Education institutes like NIT, IIT, IIM, IIIT, and Central universities."

c) **Annual Turnover**: The average annual financial turnover of the CGO/CPSU/CPSE should not be less than 30% of the estimated cost during the immediate last 3 consecutive financial years. This should be duly certified by a Chartered Accountant and audited Balance Sheets and P&L account.

d) The intending tenderer must submit documentary evidence in support of the above in the form of (i) a certified copy of the work order, (ii) a completion certificate indicating the value and period of work, (iii) an Audited balance sheet, and P&L account or Chartered Accountant certificate.

Note

SCANNED DOCUMENTS OF THE DOCUMENTS IN RESPECT OF ELIGIBILITY CRITERIA INCLUDING AUTHORISATION IF ANY, TO BE UPLOADED AS SINGLE.pdf FILE NAMED "Eligibility.pdf," in COVER-I

Failure to submit the above Documents may render a tenderer "UNACCEPTABLE" without any further correspondence.

[1] Indicative list of Central government organizations/CPSUs/CPSEs but not limited to- https://sambandh.msme.gov.in/PPP_AllCPSEs_List.aspx, https://dpe.gov.in/about-us/policy-i-division/schedule-wise-list-cpses

Section III - Required Documents

In COVER-I

1. Scanned document of the documents in respect of eligibility criteria, including authorization, if any, to be uploaded as a single pdf file named **Eligibility.pdf**

2. Scanned document of the Declaration of local content as a single PDF file named MII.pdf

3. Scanned document of the sealed and signed tender copy as a single PDF file named tender.pdf

4. Scanned document of the documents with respect to the OEM technical compliance sheet as a single PDF file named tech_compliance.pdf

5. Scanned document of the documents with respect to all the product data sheets as a single PDF file named ds.pdf

6. Scanned document of the documents of All the MAFs as per the format available in the bid document in a single PDF file named MAF.pdf

7. Performance bank guarantee (PBG) as per the format available in the bid document in a single pdf file named DRB.pdf

8. After-sale and service certificate as per the format available in the bid document in a single pdf file named DRB.pdf

9. Declaration Regarding Banning as per the format available in the bid document in a single pdf file named DRB.pdf

10. No Deviation Certificate as per the format available in the bid document in a single pdf file named NDC.pdf

11. Self-Certificate for Proven-ness as per the format available in the bid document in a single pdf file named SCPN.pdf

12. Lowest Price Certificate as per the format available in the bid document in a single pdf file named LPC.pdf

13. Quality Certificate as per the format available in the bid document in a single pdf file named QC.pdf

14. Integrity pact as per the format available in the bid document in a single Pdf file named Integrity.pdf

15. Integrity pact as per the format available in the bid document in a single Pdf file named Integrity.pdf

16. Letter of Bid (LOB) as per the format available in the bid document in a single Pdf file named LOB.Pdf.

17. Declaration Certificate regarding bidder not from/ from Country sharing Land border with India & Registration of Bidder with Competent Authority as per the format available in the bid document in a single Pdf. File.

18. Self-Certificate for Similar Work Experience Criteria as per the format available in the bid document in a single pdf file.

19. Declaration regarding Non-Blacklisting of Supplier as per the format available in the bid document in a single pdf file.

20. Bidder's Information as per the format available in the bid document in a single pdf file.

In COVER-II

1. Financial Bid as per format.

Ser.	Types	Content	File Type
1.	Financial Bid	Price bid as per BOQ format only. (Note: -Comparison of prices will be done ONLY on the bids submitted for the Main Equipment and anything asked as 'Optional 'in the specifications is not to be included for overall comparison)	.XLS

FINANCIAL BID (PRICE-BID): Bidder has to quote separately for all the fields as mentioned in Price Schedule. Adding 0 'Zero' shall be treated as unresponsive. Online submission of the bids will not be permitted on the portal after the expiry of submission time and the bidder shall not be permitted to submit the same by any other mode. **The bid will be evaluated 'total value wise' hence it is mandatory for the bidder to quote price for all the items and supply the same to the Institute. If any bidder quotes '0' Zero price for any article, his bid will be treated non-responsive and will be rejected.**

Section IV - Implementation Timeline

S. No.	Name of Activity	Timeline of work to be completed on OR before the following
1	Supply of all passive items/ devices	75 Days from the award of the Tender
2	Supply of all active items/ devices	120 Days from the award of the Tender
3 (a)	Completion of laying of fiber backbone	120 Days from the award of the Tender
3 (b)	Completion of Wi-Fi network in hostels/ hostel area	165 Days from the award of the Tender
3 (c)	Completion of Wi-Fi network in academic area	190 Days from the award of the Tender
3 (d)	Completion of the whole work duly certified (Installation/Testing/commissioning)	210 Days from the award of the Tender

SCOPE OF WORK, DELIVERABLES & TIMELINES

MNIT invites proposals for the Supply, Installation, and Commissioning of network equipment for Wi-Fi Enabled MNIT Campus across all the buildings including Academic area, Hostel area and Staff residential area (details of items/works to be carried out by the contractor as per the Schedule of Requirements Section).

Bidder shall: -

1. **Supply & Installation**
    a. The successful bidder, hereinafter referred to as System Integrator (SI), during this phase, shall arrange the supply of all the ordered items at the location as specified in the Schedule of Requirements Section and Technical Specifications Section in the time- schedule mentioned at Implementation Timeline Section of this bidding document.
    b. **All the active components must be certified by any accredited lab endorsed by Government of India i.e. TEC/TSEC, SQTC, BIS, EAL2, NDcPP, ICSA Labs, IC3S.**
    c. All traditional LAN components (Core Switch, Distribution Switch, Access Switch, and PoE switch) are from one OEM only and the OS for core and distribution switch must be same.
    d. All wireless components (2:2X2 access point, 4:4X4 Access point, 8:8X8 Access Point, outdoor access point, and wireless controller) are from one OEM only.
    e. All GPON components (XGS PON OLT, ONT type 1 and 2, and EMS) are from one OEM only.
    f. All fiber components (Fiber cable, fiber patch cord, LIU, splitter home termination box, and joint closure) are from one OEM only.
    g. All copper components (UTP cables, connectors, jack panel information outlet, and patch cords) are from one OEM only.
    h. The MNIT official will share the deployment plan.
    i. The deployment of the LAN network should be done using one of these proven protocols such as STP/MSTP/RSTP/VSTP/EVPN-VXLAN/ERPS.
    j. Installation, commissioning, configuration, laying, and testing of supplied items are to be done by the SI as per the plan given by the MNIT officials.
    k. MNIT Jaipur will provide the power points required at the time of installation.
    l. Any other item required at the time of installation/ laying will be the SI's responsibility at his own cost.

m. The proposed solution should work with the existing inventory of the following devices- i.e., (i) 32 Nos of EX3400- 48T, (ii) 70 Nos of EX3400-24T Switches. (These devices have already been populated with 408 Nos of EX-SFP-10GE-LR transceivers.)
n. If the bidder proposes the devices from an OEM, (i) that can't connect-to/interoperate-with the existing switches in our campus Network, and/or (ii) the available transceiver modules of existing switches cannot be utilized, then the bidder must supply the replacement of existing inventory at no extra cost.
o. The bidder shall promptly submit the delivery challan of all the items mentioned in the BOQ.
p. The hardware is to be supplied with all the required installation material/ accessories (wherever required) for proper installation. The supplied items shall be housed as specified during the time of installation at the designated location as per Section VI (Required Items and quantity).
q. The supplied software (wherever applicable) should include an appropriate number of genuine OEM perpetual/subscription licenses (as applicable as per OEM licensing policy).
r. All passive items (Cables, conduits) are in tentative quantity. The bill will be generated as per the actual quantity.
s. The details (datasheets, features, manuals, etc.) of all quoted components, active or passive including any operating systems used therein etc. should be available at the official website of the OEM.
t. After the supply of items, SI shall arrange installation of the requisite infra at the designated installation location and obtain a successful installation report from the designated officer.
u. The SI should provide fiber GPS locations every 10 meters and at turning/Junctions.
v. After successful installation, the User acceptance testing (UAT) would be carried out by the purchaser at the request of SI.
w. The successful bidder will also provide the required training for supplied items, from an OEM/OEM certified training partner for 5 personnel for at least 5 days at no extra cost.
x. All supplied hardware/software items should be in the name of **'Malaviya National Institute of Technology Jaipur'.**

2. Training before completion of work.

a. Network Design, Administration, Operation, and Management Training: The SI shall provide training to at least two people nominated by MNIT JAIPUR.
b. The training shall be conducted at MNIT JAIPUR premises.
c. The training shall broadly cover the design, Administration, Operation, and Management of all supplied solutions/devices/software, etc.
d. This training duration shall be of 2 or more working days.

3. Acceptance Protocol

a. Acceptance protocol will be signed by MNIT JAIPUR when all the following activities are completed.
b. Complete Wi-Fi systems are functional as per functional requirements and scope of work.
c. MNIT Jaipur users are able to access internet and intranet services.
d. All documents related to warranty and support letters from OEM are provided.
e. All other documentation is referred to in this tender document.
f. After completion of all activities as above, an acceptance protocol as per Annexure 18 shall be signed between MNIT Jaipur and Bidder/SI certifying completion of all supplies and activities as per the purchase order. All the guarantees/Warranties will start from the date mentioned in the acceptance protocol.

4. **Payment Terms:** The Bills in triplicate may be sent to this office for settlement after satisfactory supply/delivery/ installation/ commissioning of the material. The bill should have full particulars of the items. No Payment shall be made in advance nor shall the loan from any financial institutions be recommended based on the order of award of work. The CGO/CPSU/CPSE shall submit the bills only after the supply/delivery/ installation/ commissioning of the material to the satisfaction of MNIT Jaipur. The case of issuing sanction and passing of the bill for payment will be initiated on receipt of a pre- receipt invoice from the Contractor. No payment will be made for goods rejected. The payments would be released as per the following schedule.

S. No	Payment criteria	Payment Percentage
1	After supply of all passive items (S. No. 20. to 53 and 57 of BOQ)	15%
2	After supply of all active items (S. No. 1 to 19 of BOQ)	35%
3	After successful completion of work	50%

5. **Maintenance & Support Service**
   a. Maintenance & Support Services shall commence for a period of five years for all hardware and software products, from the date of receipt of certificate of completion of the work.
   b. The Bidder/SI must provide comprehensive OEM onsite warranty maintenance services (24*7) for the installed hardware and software. This involves comprehensive maintenance of all installed hardware & software covered under warranty as per the 'Warranty' clause, including repairing and replacement of faulty parts, modules, sub-modules, assemblies, sub-assemblies, spares, etc., with genuine OEM components to make the system functional/ operational. The software supplied shall include all the patches, updates, and upgrades for the period covered under the warranty as per the 'Warranty' clause. Bidder/ SI/ OEM shall inform the Department whenever OEM launches such updates/patches/upgrades and shall share its report promptly on the email provided by the purchaser.
   c. Reconfiguration of equipment/software installed under the project: Whenever required, the Bidder/ SI/ OEM shall reconfigure the equipment /software installed under the project to meet the needs of MNIT.
   d. Bidder/ SI shall provide an escalation matrix (a helpdesk number, email address) so that the end- user may report problems, if any, using any of the available methods.
6. **Warranty Terms and Conditions**
   a. As per Annexure 17

Section V - General Rules & Directions

1. Any person who submits a tender shall fill up the usual printed form, starting at what rate he is willing to undertake each item of the work. Tenders, which propose any alteration in the work specified in the said form of invitation to tender, or in the time allowed for carrying out the work, or which contain any other conditions of any sort including conditional rebates will be summarily rejected. Tenders shall have the name and number of the works to which they refer, written on the envelopes.
   The rate(s) must be quoted in decimal coinage. Amounts must be quoted in full rupees by ignoring fifty paisa and less and considering more than fifty paisa as rupee one.

2. The officer inviting tender or his duly authorized assistant will open tenders in the presence of intending contractors who may be present at the time, and will enter the amounts of the several tenders in a comparative statement in a suitable form. In the event of a tender being accepted, a receipt shall thereupon be given to the contractor.
3. The officer inviting tenders shall have the right of rejecting all or any of the tenders and will not be bound to accept the lowest or any other tender.
4. The receipt of an accountant or clerk for any money paid by the contractor will not be considered as any acknowledgement or payment to the officer inviting tender and the contractors shall be responsible for seeing that he procures a receipt signed by the officer inviting tender or a duly authorized cashier.
5. The tenderers shall sign a declaration under the official Secret Act 1923, for maintaining secrecy of the tender document drawings or other records connected with the work given to them.
6. The Contractor whose tender is accepted will be required to furnish Performance Security/guarantee of 10% (Ten Percent) of the tendered amount within specified period e.g. within 15 days of award of contract. This Security/guarantee amount will also be accepted in cash or in the shape of Govt. Securities. Fixed Deposit Receipt of a Scheduled Bank or State Bank of India will also be accepted for this purpose provided confirmatory advice is enclosed.
7. On acceptance of the tender, the name of the accredited representative(s) of the contractor who would be responsible for taking instructions from the Engineer-in-charge shall be communicated in writing to the Engineer-in-charge.
8. All the taxes including GST, or any other tax / CESS in respect of this contract shall be payable by the contractor and Institute will not entertain any claim whatsoever in respect of the same.
9. The contractor shall give a list of employees of MNIT Jaipur related to him.

10. The tender for the work shall not be witnessed by contractors who himself/ themselves has/ have tendered or who may and has/ have tendered for the same work. Failure to observe this condition would render, tenders of the contractors tendering, as well as witnessing the tender, liable to summary rejection.
11. Since this is a composite tender, items of the same nomenclature may appear under different sub-heads. The contractor has to ensure that for such identical items, the rates quoted are the same at all the places. In case any variation in the quoted rates is found for such items, the lowest of all such quoted rates will be taken as the tendered rate for that particular item, and the tender will be evaluated accordingly.

Section VI - ADDITIONAL CONDITIONS FOR MISUSE OF PAYMENT RECEIVED AGAINST ADVANCE PAYMENTS

1. All running account bills shall be supported with an account of up-to-date payments received to enable engineer-in-charge to check to his satisfaction that the payments made by engineer-in-charge are properly utilized only on the work."

2. COMMITTED PROGRAM OF COMPLETION FROM CONTRACTOR SIDE

(i) On acceptance of work, the contractor has to submit a committed program of completion keeping in the view of the prescribed mile stones, stipulated period of completion duly signed by him. The program submitted by contractor shall be monitorable in a format as may be acceptable to Engineer- in-charge.

(ii) On receipt of the prescribed Performance Security/ Guarantee and aforesaid committed program of completion, a necessary letter to commence the work shall be issued to the contractor by Registrar, MNIT Jaipur and the site of work would be handed over to contractor thereafter.

Section VII - GENERAL CONDITIONS OF CONTRACT

Definitions:

1. "PRE-BID Meeting" with the intending bidders shall be held at MNIT Jaipur on Wednesday , 26th Feb., 2025. The details and online link is as given below:

   Pre-bid meeting schedule: Wednesday , 26th Feb., 2025 11:00 – 11:30 AM, NKN-I, First Floor, Prabha Bhawan, MNIT Jaipur

   All prospective bidders are required to send eligibility proof one day before this meeting at cwn@mnit.ac.in. All prospective bidders are requested to send comments/ representations on or before the pre-bid meeting at cwn@mnit.ac.in. An intending bidder will be allowed to seek clarification on specifications, Conditions of the Contract, etc. in writing to MNIT JAIPUR, Jaipur, within 48 hours after the pre-bid meeting.

2. Rate: Prices of individual items should include all taxes and duties. It should also include packing, forwarding, transport, and insurance until the project is implemented, GST shall be extra. The rate should be quoted only in Indian Rupees (INR) on a DOOR Delivery Basis at MNIT JAIPUR, Rajasthan, Inclusive of all the Charges, with break-ups as

2.1 Basic Costs.
2.2 GST.
2.3 Total Cost (F.O.R. at MNIT JAIPUR, Jaipur).
Note: No other charges would be payable by the Institute except as mentioned in BOQ.

3. Specification: The Contractor must confirm in writing that the goods supplied & installed by them shall be as per the specification of goods mentioned in Required Items and Quantity Section and in case of any variation, the contract shall be liable to be canceled immediately. The Security cum Performance Security/ Guarantee will also be forfeited.
4. Validity: The quoted rates must be valid for a period of 90 days from the date of closing of the tender. The overall offer for the assignment and bidder(s) quoted price shall remain unchanged during the period of validity. If the bidder quoted a validity shorter than the required period, the same will be treated as unresponsive, and it may be rejected.
5. In case the tenderer withdraws, modifies, or changes his offer during the validity period, the bid is liable to be rejected. The tenderer should also be ready to extend the validity, if required, without changing any terms, conditions, etc. of their original tender.
6. Authority of the person signing the document: A person signing the tender form or any documents forming part of the contract on behalf of another shall be deemed to warranty, that he has authority to bind such other and if on inquiry, it appears that the person so, signing had no authority to do so, the MNIT Jaipur may without prejudice to other Civil and criminal remedies cancel the contract and held the signatory liable for all cost and damage
7. Delivery & Installation: The firm must supply & install the required item as per the time scheduled. All aspects of safe delivery shall be the exclusive responsibility of the supplier.
8. LD Clause: All aspects of safe delivery, installation, and commissioning shall be the exclusive responsibility of the supplier. If the supplier fails to deliver, install and commission the goods on or before the stipulated date, then a penalty at the rate of 0.5% per week or a part thereof of the total order value shall be levied subject to a maximum of 10% of the total order value.
9. Jurisdiction: The Courts of Jaipur alone will have the jurisdiction to try any matter, dispute, or difference between the parties arising out of this tender/contract. It is specifically agreed that no Court outside and other than Jaipur court shall have jurisdiction in the matter.
10. Performance Security: The successful tenderer will be required to furnish a Performance Security/guarantee Deposit of 10% of the total order amount in the form of a Fixed Deposit Receipt (FDR) or irrevocable Bank Guarantee (BG) from any Nationalized/ Scheduled Bank duly pledged in the name of the "Malaviya National Institute of Technology Jaipur". Please also refer to para 9 of Section V.
11. The security deposit can be forfeited by order of this Institute in the event of any breach or negligence or non–observance of any condition of the contractor for unsatisfactory performance or non–observance of any condition of the contract.
12. Technical Evaluation:

12.1 Detailed technical evaluation shall be carried out by the Institute pursuant to conditions in the tender document to determine the substantial responsiveness of each tender. For this clause, the substantially responsive bid is one that conforms to all the eligibility and terms and conditions of the tender without any deviation. The Institute's determination of the bid's responsiveness is to be based on the contents of the bid itself without recourse to extrinsic evidence. The Institute shall evaluate the technical bids also to determine whether they are complete, whether required sureties have been furnished, whether the documents have been properly signed, and whether the bids are in order.

12.2 MNIT Jaipur shall have the right to accept or reject any or all tenders without assigning any reasons thereof.

13. Financial Evaluation:

13.1 The financial bid shall be opened to only those bidders who have been found to be technically eligible.

13.2 If in the price structure quoted for the required goods, there is a discrepancy between the unit price and total price (which is obtained by multiplying the unit price by the quantity), the unit price shall prevail and the total price corrected accordingly.

13.3 If there is a discrepancy between words and figures, the amount in words shall prevail.

13.4 The bidder must quote for all the items otherwise the bid will be treated as unresponsive and will be rejected. Further, the financial evaluation would be done on a composite basis and MNIT Jaipur will award the contract accordingly.

13.5 After due evaluation of the bid(s), MNIT Jaipur will award the contract to the lowest evaluated responsive tenderer on an individual basis. The conditional bid will be treated as unresponsive and will be rejected.

13.6 The bidder must quote the financial bid as specified in BOQ.

14. Award of Contract: The Institute shall consider the placement of orders for jobs on those bidders whose offers have been found technical and financially acceptable. The Institute reserves the right to counter-offer price(s) against the price(s) quoted by any bidder.
15. Right of acceptance: The MNIT Jaipur reserves the right to accept the whole or any part or portion of the bid; and the bidder shall provide the same at the rates quoted. The MNIT Jaipur reserve the right to reject any or all tenders /quotations or all offers received in response to the tender or cancel or withdraw the tender notice without assigning any reason thereof and also does not bind itself to accept the lowest quotation or any tender and no claim in this regard shall be entertained.
16. Guarantee / Warranty Period: Bidder must provide Five (05) year comprehensive on-site warranty and it will be started from the date of the satisfactory installation/commissioning of goods, against the defect of any manufacturing, workmanship and poor quality of the components. No offer from the bidder will be accepted without a warranty/ guarantee of their supplied/ installed goods.
17. Inspection:

17.1 MNIT Jaipur shall have the right to inspect and/or to test the goods to confirm their conformity to the NIT Specifications at no extra cost to the Purchaser.

17.2 MNIT Jaipur's right to inspect, test, and, where necessary, reject the Goods after the goods arrive at the final destination shall in no way be limited or waived by reason of the Goods having previously been inspected, tested, and passed by MNIT Jaipur prior to the shipment of the goods.

17.3 The Director, MNIT Jaipur shall be the final authority to reject full or any part of the supply which is not conforming to the specification and other terms and conditions.

17.4 No payment shall be made for rejected Stores. Rejected items must be removed by the Bidders within two weeks of the date of rejection at their own cost and replaced immediately. In case these are not removed, these will be auctioned at the risk and responsibility of the suppliers without any further notice.

18. Payment Terms: As given above.

19. Specification: Bids which do not meet the bid specifications are not permitted and will be rejected.

20. Breach of Terms and Conditions: In Case of breach of any terms and conditions as mentioned above, the Competent Authority, will have the right to reject the bid at any stage without assigning any reason thereof and nothing will be payable by MNIT Jaipur.

21. Insolvency, etc: In the event of the firm being adjudged insolvent or having a receiver appointed for it by a court or any other order under the Insolvency Act made against them or in the case of a company the passing any resolution or making of any order for winding up, whether voluntary or otherwise, or in the event of the firm failing to comply with any of the conditions herein specified MNIT Jaipur shall have the power to terminate the contract without any prior notice.

22. The Purchase Committee will reject the quotations of the bidders whose quotation will not be found of the quality required by MNIT. MNIT Jaipur reserves the right to accept/ reject any quotation either in part or full without assigning any reason thereof or award the contract to the different supplier(s), for different item(s), if feasible after considering the credentials, manufacturing, capability, quality and distribution rights of the item(s). The firm is, therefore, requested to attach its credentials in regard to the supply of items and experience in the field, distribution rights, and annual turnover.

23. The quantity of items given in the tender is tentative and may be increased or decreased as per the institute's requirement.

24. The Tenderers should furnish a copy of their PAN Card and GSTIN registration number. Tenders not complying with this condition will be rejected.

25. A signed & stamped compliance sheet of the technical specification of the goods with technical printed literature must be enclosed with the bid.

26. Conditional bids will be treated as unresponsive and may be rejected.

27. The items will have to be supplied at MNIT JAIPUR, Jaipur. No transportation/ cartage charges will be provided for the same.

28. Bidder shall submit a copy of the tender document and addendum/corrigendum thereto, if any, with each page of this document should be signed and stamped to confirm the acceptance of the entire terms & conditions as mentioned in the tender inquiry document.

29. The Institute reserves the right to accept in part or in full or reject any or more tender(s) without assigning any reasons or cancel the tendering process and reject all tender(s) at any time prior to the award of the contract, without incurring any liability, whatsoever to the affected bidder or bidder(s).

30. The MNIT Jaipur reserves the right to accept the whole or any part or portion of the bid, and the bidder shall provide the same at the rates quoted. The MNIT Jaipur reserves the right to reject any or all tenders /quotations or all offers received in response to the tender or cancel or withdraw the tender notice without assigning any reason thereof and also does not bind itself to accept the lowest quotation or any tender and no claim in this regard shall be entertained.

31. Applicable Law:

31.1 The contract shall be governed by laws and procedures established by the Govt. of India within the framework of applicable legislation and enactments made from time to time concerning such commercial dealings/ processing.

31.2 Force Majeure: Any delay due to Force Majeure will not be attributable to the supplier.

32. The contract means the documents forming the tender and acceptance thereof and the formal agreement executed between the competent authority on behalf of the Director, MNIT Jaipur and the Contractor together with the documents referred to therein including these conditions, the specifications, designs, drawings and instructions issued from time to time by the Engineer-in-charge/ Architects and all these documents taken together shall be deemed to form one contract and shall be complementary to one another.

33. In the contract, the following expressions shall, unless the context otherwise requires have the meanings, hereby respectively assigned to them :-

i) The expression works or work shall, unless there be something either in the subject or context repugnant to such construction, be construed and taken to mean the works by or by virtue of the contract contracted to be executed whether temporary or permanent, and whether original, altered, substituted or additional.

ii) The site shall mean the land/ or other places on, into or through which work is to be executed under the contract or any adjacent land, path or street through which work is to be executed under the contract or any adjacent land, path or street which may be allotted or used for the purpose of carrying out the contract.

iii) The contractor/bidder/system-integrator (SI) shall mean the organization or company, from amongst CGO/CPSU/CPSE.

iv) OEM is an original equipment manufacturer.

v) The Director, MNIT Jaipur means their nominees also.

vi) Director means the Director of MNIT Jaipur.

vii) The Engineer-in-charge means the Faculty/Engineer/Committee of MNIT Jaipur who shall supervise and be in-charge of the work.

viii) Architect means the Architect appointed by MNIT

ix) Center means the MNIT Jaipur.

x) Department means MNIT Jaipur.

xi) Government means Govt of India or Govt. of Rajasthan as applicable.

xii) Accepting authority shall mean the authority who accepts the tender.

xiii) Excepted Risk are risks due to riots (other than those on account of contractor's employees), war (whether declared or not) invasion, act of foreign enemies, hostilities, civil war, rebellion revolution, insurrection, military or usurped power, any acts of Institute, damages from aircraft, acts of God, such as earthquake, lightening and unprecedented floods, and other causes over which the contractor has no control and accepted as such by the Accepting Authority or causes solely due to use or occupation by Institute of the part of the works in respect of which a certificate of completion has been issued or a cause solely due to Institute faulty design of works.

xiv) Tendered value means the value of the entire work as stipulated in the letter of award.

Scope & Performance

34. Where the context so requires, words imparting the singular only also include the plural and vice versa. Any reference to masculine gender shall whenever required include feminine gender and vice versa.

35. Headings and Marginal notes to these General Conditions of Contract shall not be deemed to form part thereof or be taken into consideration in the interpretation or construction thereof or of the contract.

36. The contractor shall be furnished, free of cost, one certified copy of the contract documents except standard specifications. Schedule of Rates and such other printed and published documents, together with all drawings as may be forming part of the tender papers. None of these documents shall be used for any purpose other than that of this contract.

Works to be carried out

37. The work to be carried out under the Contract shall, except as otherwise provided in these conditions, include all labor, materials, tools, plants, equipment

and transport which may be required in preparation of and in the full and entire execution and completion of the works. The descriptions given in the Schedule of quantities shall, unless otherwise stated, be held to include wastage on materials, carriage and cartage, carrying and return of empties, hoisting, setting, fitting and fixing in position and all other labors necessary in and for the full and entire execution and completion of the work as aforesaid in accordance with good practice and recognized principles.

Sufficiency of Tender:

38. The contractor shall be deemed to have satisfied himself before tendering as to the correctness and sufficiency of his tender for the works and the rates and price quoted in the Schedule of Quantities, which rates and prices shall except as otherwise provided, cover all his obligations under the Contract and all matters and things necessary for the proper completion and maintenance of the works.

Discrepancies and Adjustment of Errors

39. The several documents forming the contract are to be taken as mutually explanatory of one another, detailed drawings being followed in preference to small scale drawing and figured dimensions in preference to scale and special conditions in preference to General conditions.

39.1 In case of discrepancy between the schedule of Quantities, the specification and/or the drawing, the following order of preference shall be observed:

(i) Description of schedule of quantities/BoQ i.e. nomenclature of item.
(ii) Particular specification, additional conditions and special conditions, if any.
(iii) CPWD specifications.
(iv) Indian standard specifications of B.I.S.
(v) Drawings.
(vi) Decision of Engineer-in-charge.

If there are varying or conflicting provisions made in any one document forming part of the contract, the accepting authority shall be the deciding authority with regard to the intention of the document and his decision shall be final and binding on the contractor.

39.2 Any error in description, quantity or rate in Schedule of quantities or any omission therefrom shall not vitiate the contract or release the contractor from the execution of the whole or any part of the works comprising therein according to drawings and specifications or from any of his obligations under the contract.

Signing of Contract

40. The successful tenderer/contractor, on acceptance of his tender by the Accepting Authority shall, within 15 days from the stipulated date of start of the work sign the contract consisting of the notice inviting tender, all the documents if any, forming the tender as issued at the time of invitation of tender and acceptance thereof together with any correspondence leading thereto.

(i) No payment for the work done will be made unless the contract is signed by the contractor.

CLAUSES OF CONTRACT

APPLICABILITY SUBJECT TO PROFORMA OF SCHEDULES:

Clause – 1A Performance Security/ Guarantee

i) The contractor shall submit an irrevocable Performance Security/ Guarantee of 10% (Ten Percent) of the tendered amount in addition to other deposits mentioned elsewhere in the contract, if any, for his proper performance of the contract agreement, (notwithstanding and/or without prejudice to any other provisions in the contract) within period of 15 days, from the date of issue of letter of acceptance. In case a fixed deposit receipt of any bank is furnished by the contractor to the Institute as part of the Performance Security/ Guarantee and the bank is unable to make payment against the said fixed deposit receipt, the loss caused thereby shall fall on the contractor and the contractor shall forthwith on demand furnish additional security to the Institute to make good the deficit.

ii) The Performance Security/ Guarantee shall be initially valid from the stipulated date of completion till the warranty period (i.e. 5 years) plus 60 days additionally beyond. In case the time of completion of work gets enlarged, the contractor shall get the validity of Performance Security/ Guarantee extended to cover such enlarged time for completion of work plus warranty period. After recording of the completion certificate for the period of warranty as above by the competent authority, the Performance Security/ Guarantee shall be returned to the contractor, without any interest.

iii) The Institute shall not make a claim under the Performance Security/Guarantee except for amounts to which the Institute is entitled under the contract (notwithstanding and/or without prejudice to any other provisions in the contract agreement) in the event of:

(a) Failure by the contractor to extend the validity of the Performance Security/ Guarantee as described herein above, in which event the Institute may claim the full amount of the Performance Security/ Guarantee.

(b) Failure by the contractor to pay to the Institute any amount due, either as agreed by the contractor or determined under any of the clauses/conditions of the agreement, within 30 days of the service of notice to this effect by engineer-in-Charge.

iv) In the event of the contract being determined or rescinded under provision of any of the clause/condition of the agreement, the Performance Security/ Guarantee shall stand forfeited in full and shall be absolutely at the disposal of the Institute.

Clause – 1B Recovery of Security Deposit :-

In case a fixed deposit receipt of any Bank is furnished by the contractor to the Institute as part of the security deposit and the Bank is unable to make payment against the said fixed deposit receipt, the loss caused thereby shall fall on the contractor and the contractor shall forthwith on demand furnish additional security to the Institute to make good the deficit.

Clause -2

Compensation for Delay :-

If the contractor fails to maintain the required progress in terms of clause 5 or to complete the work and clear the site on or before the contract or extended date of completion, he shall without prejudice to any other right or remedy available under the law to the Institute on account of such breach, pay as agreed compensation the amount calculated at the rate of 1.5% (One decimal five percent) per month as the Director of Institute (whose decision in writing shall be final and binding) may decide on the amount of tendered value of the work for every completed month (as applicable) that the progress remains below that specified

in Clause 5 or that the work remains in-complete. This will also apply to items or groups of items for which a separate period of completion has been specified.

Provided always that the total amount of compensation for delay to be paid under this Condition shall not exceed 10% of the Tendered Value of work
The amount of compensation may be adjusted or set-off against any sum payable to the Contractor under this or any other contract with the Institute. In case, the contractor does not achieve a particular milestone as mentioned or the re-scheduled milestone (s) in terms of clause 5.4, the amount shown against that milestone shall be withheld to be adjusted against the compensation levied at the final grant of Extension of Time. Withholding of this amount on failure to achieve a milestone shall be automatic, without any notice to the contractor. However, if the contractor catches up with the progress of the work, on the subsequent milestone (s), the withheld amount shall be released. In case the contractor fails to make up for the delay in subsequent milestone (s), the amount mentioned against each milestone missed subsequently also shall be withheld. However, no interest, whatsoever, shall be payable on such withheld amount.

Clause – 3

When Contract can be determined: - Subject to other provisions contained in this clause the Director may, without prejudice to his any other rights or remedy against the contractor in respect of any delay, inferior workmanship, any claims for damages and/ or any other provisions of this contract or otherwise, and whether the date of completion has or has not elapsed, by notice in writing absolutely determine the contract in any of the following cases:

i). If the contractor having been given by the Director a notice in writing to rectify, reconstruct or replace any defective work or that the work is being performed in an inefficient or otherwise improper or unworkmanlike manner shall omit to comply with the requirement of such notice for a period of seven days thereafter.

ii). If the contractor being a company shall pass a resolution or the court shall make an order that the company shall be wound up or if a receiver or a manager on behalf of a creditor shall be appointed or if circumstances shall arise which entitle the court or the creditor to appoint a receiver or a manager or which entitle the court to make a winding up order.

iii). If the contractor has, without reasonable cause, suspended the progress of the work or has failed to proceed with the work with due diligence so that in the opinion of the Director (which shall be final and binding) he will be unable to secure completion of the work by the date for completion and continues to do so after a notice in writing of seven days from the Director.

iv). If the Contractor fails to complete the work within the stipulated date or items of work with individual date of completion, if any, stipulated, on or before such date(s) of completion and does not complete them within the period specified in a notice given in writing on that behalf by the Director.

v). If the contractor persistently neglects to carry out his obligations under the contract and / or commits default in complying with any of the terms and conditions of the contract and does not remedy it or take effective steps to remedy it within 7 days after a notice in writing is given to him in that behalf by the Director.

vi). If the contractor commits any acts mentioned in Clause 21 hereof:

When the contractor has made himself liable for action under any of the cases aforesaid, the Director on behalf of the MNIT Jaipur shall have powers:

a). To determine or rescind the contract as aforesaid (of which termination or rescission notice in writing to the contractor under the hand of the Director shall be conclusive evidence). Upon such determination or rescission the Performance Security/ Guarantee under the contract shall be liable to be forfeited and shall be absolutely at the disposal of the Institute.

b). After giving notice to the contractor to measure up the work of the contractor and to take such whole or the balance work as shall be un-executed out of his hands to give it to another contractor to complete the work. The contractor whose contract is determined or rescinded as above shall not be allowed to participate in the tendering process for the balance work.

In the event of above courses being adopted by the Director the contractor shall have no claim to compensation for any loss sustained by him by reasons of his having purchased or procured any materials or entered into any engagements or made any advances on account or with a view to the execution of the work or the performance of the contract. And in case action is taken under any of the provision aforesaid the contractor shall not be entitled to recover or be paid any sum for any work thereof or actually performed under this contract unless and until the Engineer –in-Charge has certified in writing the performance of such work and the value payable in respect thereof and he shall only be entitled to be paid the value so certified.

Clause – 3A

In case, the work cannot be started due to reasons not within the control of the contractor within 30 days of issue of award letter, either party may close the contract. In such eventuality, the Performance Security/ Guarantee of the Contractor shall be refunded, but no payment on account of interest, loss of profit or damages etc. shall be payable at all.

Clause – 4

Contractor liable to pay compensation even if action not taken under clause 3 :-

In any case in which any of the powers conferred upon the Director by Clause – 3 thereof, shall have become exercisable and the same are not exercised, the non exercise thereof shall not constitute a waiver of any of the conditions hereof and such powers shall notwithstanding be exercisable in the event of any future case of default by the contractor and the liability of the contractor for compensation shall remain unaffected. In the event of the Director putting in force all or any of the powers vested in him under the preceding clause he may, if he so desires after giving a notice in writing to the contractor, take possession of (or at the sole discretion of the Director which shall be final and binding on the contractor) use as on hire (the amount of the hire money being also in the final determination of the Director) all or any tools plant, materials and stores, in or upon the works, or the site thereof belonging to the contractor, or procured by the contractor and intended to be used for the execution of the work/or any part thereof, paying or allowing for the same in account at the contract rates or, in the case of these not being applicable, at current market rates to be certified by the Engineer-in-Charge whose certificate thereof shall be final, and binding on the contractor otherwise the Director by notice in writing may order the contractor or his clerk of the works, foreman or other authorized agent to remove such tools, plant, materials or stores from the premises (within a time to be specified in such notice) in the event of the contractor failing to comply with any such requisition, the Director may remove them at the contractor's expense or sell them by auction or private sale on account of the contractor and his risk in all respects and the certificate of the Engineer-in-Charge as to the expenses of any such removal and the amount of the proceeds and expense of any such sale shall be final and conclusive against the contractor.

Clause – 5

Time and Extension for delay:-

The time allowed for execution of the Works or the extended time in accordance with these conditions shall be the essence of the Contract. The execution of the works shall commence from such a time period as mentioned in the letter of award after the date on which the Director issues written orders to commence the work or from the date of handing over of the site whichever is later. If the contractor commits default in commencing the execution of the work as aforesaid Institute shall without prejudice to any other right or remedy available in law, be at liberty to forfeit the performance security/guarantee ~~earnest money~~ absolutely.

5.1 As soon as possible after the contract is concluded the contractor shall submit a Time and Progress Chart for each milestone and get it approved by the Engineer-in –charge. The chart shall be prepared in direct relation to the time stated in the Contract documents for completion of items of works. It shall indicate the forecast of the dates of commencement and completion of various trades of sections of the work and may be amended as necessary by agreement

between the Director and the contractor within the limitations of time imposed in the contract documents, and further to ensure good progress during the execution of the work, the contractor shall in all cases in which the time allowed for any work exceeds one month (save for special jobs for which a separate programme has been agreed upon) complete the work as per milestone.

5.2 If the work(s) be delayed by :-

i) Force majeure or
ii) Abnormally bad weather, or
iii) Serious loss or damage by fire or
iv) Civil commotion, local commotion of workmen, strike or lockout, affecting any of the trades employed on the work, or.
v) delay on the part of other contractors or tradesmen engaged by the Director in executing work not forming part of the contractor.
vi) Any other cause which, in the absolute discretion of the authority is beyond the contractor's control. Then upon the happening of any such event causing delay, the contractor shall immediately give notice thereof in writing to the Director but shall nevertheless use constantly his best endeavors to prevent or make good the delay and shall do all that may be reasonably required to the satisfaction of the Director to proceed with the works.

5.3 Request for rescheduling of milestones and extension of time, to be eligible for consideration, shall be made by the Contractor in writing within fourteen days of the happening of the event causing delay on the prescribed form. The contractor may also, if practicable, indicate in such a request the period for which extension is desired.

5.4 In any such case the Director of the Institute may give a fair and reasonable extension of time and reschedule the milestones for completion of work. Such extension shall be communicated to the contractor by the Director of the Institute in writing, within 3 months of the date of receipt of such request. Non-application by the contractor for extension of time shall not be a bar for giving a fair and reasonable extension by the Director and this shall be binding on the contractor.

Clause – 6
Measurements of Work Done :-

Engineer- in- Charge shall, except as otherwise provided, ascertain and determine by evaluation/measurement the value of work done in accordance with the contract. All measurements of all items having financial value shall be entered in Measurement Book and/ or level field book so that a complete record is obtained of all works performed under the contract.

All evaluations/measurements shall be taken jointly by the Engineer- in- Charge or his authorized representative and by the contractor or his authorized representative from time to time during the progress of the work and such evaluations/measurements shall be signed and dated by the Engineer- in- Charge or his authorized representative and the contractor or his authorized representative in token of their acceptance. If the contractor objects to any of the measurements recorded, a note shall be made to that effect with reason and signed by the concerned parties.

If for any reason the contractor or his authorized representative is not available and the work of recording evaluations/measurements is suspended by the Engineer- in- Charge or his representative, the Engineer- in- Charge and the department shall not entertain any claim from the contractor for any loss or damages on this account. If the contractor or his authorized representative does not remain present at the time of such evaluations/measurements after the contractor or his authorized representative has been given a notice in writing three (3) days in advance or fails to countersign or to record objection within a week from the date of the measurements, then such measurements recorded in his absence by the Engineer- in- Charge or his representative shall be deemed to be accepted by the Contractor.

The contractor shall, without extra charge, provide all assistance with every equipment, appliance, and other things necessary for evaluations/measurements and recording levels. Except where any general or detailed description of the work expressly shows to the contrary, evaluations/measurements shall be taken in accordance with the procedure set forth in the specifications notwithstanding any provision in the relevant `Standard method of measurement'.. In the case of items which are not covered by specifications, measurements shall be taken in accordance with the relevant standard method of measurement issued by the Bureau of Indian Standards and if for any item no such standard is available then a mutually agreed method shall be followed.

The bidder/contractor shall give not less than seven days notice to the Engineer- in- Charge or his authorized representative in charge of the work before covering up or otherwise placing beyond the reach of measurement any work in order that the same may be measured and correct dimensions thereof be taken before the same is covered up or placed beyond the reach of evaluation/measurement and shall not cover up and place beyond reach of evaluations/measurement any work without consent in writing of the Engineer- in- Charge or his authorized representative in charge of the work who shall within the aforesaid period of seven days inspect the work, and if any work shall be covered up or placed beyond the reach of evaluations/measurements without such notice having been given or the Engineer- in- Charge's consent being obtained in writing the same shall be uncovered at the contractor's expense, or in default thereof no payment or allowance shall be made for such work or the materials with which the same was executed.

Engineer- in- Charge or his authorized representative may cause either themselves or through another officer of the department to check the evaluations/measurements recorded jointly or otherwise as aforesaid and all provisions stipulated herein above shall be applicable to such checking of measurements or levels.

It is also a term of this contract that recording of evaluations/measurements of any item of work in the evaluations/measurement book and/ or its payment in the interim, on account of final bill shall not be considered as conclusive evidence as to the sufficiency of any work or material to which it relates nor shall it relieve the contractor from liabilities from any over evaluation/measurement or defects noticed till completion of the defects liability period.

Clause-6A
Deleted

Clause – 7
Payment on intermediate certificate to be regarded as advances:-

Engineer- in-charge shall arrange to have the bill verified by taking or causing to be taken, where necessary, the requisite evaluations/measurements of the work.

All such interim payments shall be regarded as payment by way of advances against final payment only and shall not preclude the requiring of bad, unsound and imperfect or unskilled work to be rejected, removed, taken away and reconstructed or re-erected. Any certificate given by the Engineer-in-charge relating to the work done or materials delivered forming part of such payment, may be modified or corrected by any subsequent such certificate (s) or by the final certificate and shall not by itself be conclusive evidence that any work or materials to which it relates is/ are in accordance with the contract and specifications. Any such interim payment, or any part thereof shall not in any respect conclude, determine or affect in any way powers of the Engineer-in-charge under the contract or any of such payments be treated as final settlement and adjustment of accounts or in any way vary or affect the contract.

Pending consideration of extension of date of completion interim payments shall continue to be made as herein provided, without prejudice to the right of the department to take action under the terms of this contract for delay in the completion of work, if the extension of date of completion is not granted by the competent authority.

Clause – 8

Completion certificate and acceptance protocol :-

Within ten days of the completion of the work, the contractor shall give notice of such completion to the Engineer-in-charge and within thirty days of the receipt of such notice the Engineer-in-charge shall inspect the work and if there is no defect in the work shall furnish the contractor with a final certificate of completion, otherwise a provisional certificate of physical completion indicating defects (a) to be rectified by the contractor and/or(b) for which payment will be made at reduced rates shall be issued. But no final certificate of completion shall be issued, nor shall the work be considered to be complete until the contractor shall have removed from the premises on which the work shall be executed all scaffolding, surplus materials, rubbish and all huts and sanitary arrangements required for his/ their work people on the site in connection with the execution of the works as shall have been erected or constructed by the contractor(s) and cleaned off the dirt from all wood work, doors, windows, walls, floor or other parts of the building, in, upon, or about which the work is to be executed or of which he may have had possession for the purpose of the execution thereof, and not until the work shall have been measured by the Engineer- in-charge. If the contractor shall fail to comply with the requirements of this clause as to removal of scaffolding, surplus materials and rubbish and all huts and sanitary arrangements as aforesaid and cleaning of dirt on or before the date fixed for the completion of work, the Engineer-in-Charge may at the expense of the contractor remove such scaffolding surplus materials and rubbish etc and dispose of the same as he thinks fit and clean off such dirt as aforesaid, and the contractor shall have no claim in respect of scaffolding or surplus materials as aforesaid except for any sum actually realized by the sale thereof. After the completion of all activities, an acceptance protocol as per Annexure 18 will be signed by MNIT Jaipur and bidder/SI certifying the completion of all works as well as activities as per purchase order. All the warranties/guarantees will start from the date of certificate of completion.

Clause 8A

Contractor to keep site clean :-

The splashes and droppings from white washing, color washing, painting etc on walls, floor windows etc shall be removed and the surface cleaned simultaneously with the completion of these items of work in the individual rooms, quarters or premises etc where the work is done without waiting for the actual completion of all the other items of work in the contract. In case the contractor fails to comply with the requirements of this clause, the Engineer-in- charge shall have the right to get this work done at the cost of the contractor either departmentally or through any other agency. Before taking such action, the Engineer-in-charge shall give ten days notice in writing to the contractor.

Clause 8 B

Deleted

Clause 9

Payment of final bill :-

The final bill shall be submitted by the contractor in the same manner as specified in interim bills within three months of physical completion of the work or within one month of the date of the final certificate of completion furnished by the Engineer-in-charge whichever is earlier. The contractor shall make no further claims after submission of the final bill and these shall be deemed to have been waived and extinguished and after submission of final bill by contract, no further claim of any kind shall be maintainable against Institute with regard to the Contract. Payments of those items of the bill in respect of which there is no dispute and of items in dispute, for quantities and rates as approved by engineer-in-charge, will as far as possible be made within six months from the date of receipt of the bill by the Engineer-in-charge or his authorized representative. No interest shall be payable to contractor.

Clause 10

Facilitation by MNIT Jaipur

MNIT Jaipur will be able to provide power-points at the time of installation of equipment.

Clause 10A

Materials to be provided by the contractor: -

The contractor shall ensure compliance to all PPP-MII provisions, in force from time to time. The contractor shall at his own cost provide all materials required for the works. The contractor shall, at his own expense and without delay, supply to Engineer-in-charge samples of materials to be used on the work and shall get these approved in advance. All such materials to be provided by the contractor shall be in conformity with the specifications laid down or referred to in the contract. The contractor shall, if requested by the Engineer-in-charge furnish proof, to the satisfaction of the Engineer-in-charge that the materials so comply. The Engineer-in-charge shall within five days of supply of samples or within five days of the receipt of test results intimate to the contractor in writing whether samples are approved by him or not. If samples are not approved the contractor shall forthwith arrange to supply to the Engineer-in-Charge for his approval fresh samples complying with the specifications laid down in the contract. When materials are required to be tested in accordance with specification, approval of the Engineer-in-charge shall be issued after the test results are received.

The contractor shall at his risk and cost submit the samples of materials to be tested or analyzed and shall not make use of or incorporate in the work any materials represented by the samples until the required tests or analysis have been made and materials finally accepted by the Engineer-in-charge. The contractor shall not be eligible for any claim or compensation either arising out of any delay in the work or due to any corrective measures required to be taken on account of and as a result of testing of materials.

The contractor shall at his risk and cost make all arrangements and shall provide all facilities as the Engineer-in-charge may require for collecting, and preparing the required number of samples for such tests at such time and to such place or places as may be directed by the Engineer-in-charge and bear all charges and cost of testing unless specifically provided for otherwise elsewhere in the contract or specifications. The Engineer-in-Charge or his authorized representative and Architect shall at all times have access to the work and to all such workshops and places where work is being prepared or from where materials manufactured articles, or machinery are being obtained for the works and the contractor shall afford every facility and every assistance in obtaining the right to such access.

The Engineer-in-charge shall have full powers to require the removal from the premises of all materials which in his opinion are not in accordance with the specifications and in case of default the Engineer-in-charge shall be at liberty to employ at the expense of the contractor, other persons to remove the same without being answerable or accountable for any loss or damage that may happen or arise to such materials. The Engineer-in-charge shall also have full powers to require other proper materials to be substituted thereof and in case of default the Engineer-in-Charge may cause the same to be supplied and all costs which may attend such removal and substitution shall be borne by the contractor.

Clause 10 B- Deleted

CLAUSE 10 C Deleted

CLAUSE 10 CA (NOT APPLICABLE)- Deleted
CLAUSE 10 CB (NOT APPLICABLE)- Deleted
CLAUSE 10 CC (NOT APPLICABLE)- Deleted

CLAUSE 10 D

Dismantled Material Institute Property
The contractor shall treat all materials obtained during dismantling of a structure, of the site for a work, etc. as Institute's property and such materials shall be disposed off to the best advantage of Institute according to the instructions in writing issued by the Engineer-in-Charge.

CLAUSE 10 E
Physical Damage of Property
The contractor shall be responsible for any mishap or accident due to negligence or proper protection of open trenches, and all claims arising from such accidents shall be settled by the contractor without any liabilities to MNIT. The contractor shall ensure that no damage is caused to any underground or surface installations belonging to other public utility services and/ or private parties.

Clause – 11
Work to be executed in accordance with specifications, drawings, orders etc.:-
The contractor shall also conform exactly, fully and faithfully to the design, drawings and instructions in writing in respect of the work signed by the Engineer-in-charge and the contractor shall be furnished free of charge one copy of the contract documents together with specifications, designs, drawings. All the active equipment must comply with certification of any accredited lab endorsed by Government of India i.e. TEC/TSEC, SQTC, BIS, EAL 2 NDcPP, ICSA Labs, IC3S.

The contractor shall comply with the provisions of the contract and with the care and diligence execute and maintain the works and provide all labor and materials, tools and plants including for measurements and supervision of all works structural plans and other things of temporary or permanent nature required for such execution and maintenance in so far as the necessity for providing these, is specified or is reasonably inferred from the contract. The contractor shall take full responsibility for adequacy, suitability and safety of all the works and methods of construction.

Clause 12
Deviations/Variations Extent and Pricing :- The Director shall have power (i) to make alteration in, omissions from, additions to, or substitutions for the original specifications, drawings, designs and instructions that may appear to him to be necessary or advisable during the progress of the work, and (ii) to omit a part of the works in case of non-availability of a portion of the site or for any other reasons and the contractor shall be bound to carry out the works in accordance with any instructions given to him in writing signed by the Director and such alterations, omissions, additions or substitutions shall form part of the contract as if originally provided therein and any altered, additional or substituted work which the contractor may be directed to do in the manner specified above as part of the works, shall be carried out by the contractor on the same conditions in all respects including price on which he agreed to do the main work except as hereinafter provided.

12.1 The time for completion of the works shall, in the event of any deviations resulting in additional cost over the tendered value sum being ordered, be extended, if requested by the contractor, as follows:-
i). In the proportion which the additional cost of the altered, additional or substituted work, bears to the original tendered value plus.
ii). 25% of the time calculated in (i) above or such further additional time as may be considered reasonable by the Engineer-in-charge.

12.2 In the case of extra item(s) the contractor may within fifteen days of receipt of order of occurrence of the item(s) claim rates, supported by proper analysis, for the work and the engineer-in-charge shall within one month of the receipt of the claims supported by analysis after giving consideration to the analysis of the rates submitted by the contractor, determine the rates on the basis of the market rates and the contractor shall be paid in accordance with the rates so determined.
In the case of substituted items, the rate for the agreement item (to be substituted) and substituted item shall also be determined in the manner as mentioned in the aforesaid para.
a) If the market rate for the substituted item so determined is more than the market rate of the agreement item (to be substituted) the rate payable to the contractor for the substituted item shall be the rate for the agreement item (to be substituted) so increased to the extent of the difference between the market rates of substituted item and the agreement item (to be substituted).
b) If the market rate for the substituted item so determined is less than the market rate of the agreement item (to be substituted) the rate payable to the contractor for the substituted item shall be the rate for the agreement item (to be substituted) so, decreased to the extent of the difference between the market rates of substituted item and the agreement item (to be substituted).

12.3 The contractor shall send to the Engineer-in-Charge once every three months and up to date account giving complete details of all claims for additional payments to which the contractor may consider himself entitled and of all additional work ordered by the Engineer-in-Charge which he has executed during the preceding quarter failing which the contractor shall be deemed to have waived his right. However, the Director may authorize consideration of such claims on merits.

12.4 Any operation incidental to or necessarily has to be in contemplation of tenderer while filling tender, or necessary for proper execution of the item included in the Schedule of quantities or in the schedule of rates mentioned above, whether or not, specifically indicated in the description of the item and the relevant specifications, shall be deemed to be included in the rates quoted by the tenderer or the rate given in the said schedule of rates, as the case may be. Nothing extra shall be admissible for such operations.

Clause 13
Foreclosure of Contract due to Abandonment or Reduction in Scope of Work :- If at any time after acceptance of the tender , Institute shall decide to abandon or reduce the scope of the works for any reason whatsoever and hence not require the whole or any part of the works to be carried out, the Director shall give notice in writing to that effect to the contractor and the contractor shall act accordingly in the matter. The contractor shall have no claim to any payment of compensation or otherwise whatsoever, on account of any profit or advantage which he might have derived from the execution of the works in full but which he did not derive in consequence of the foreclosure of the whole or part of the works.
The contractor shall be paid at contract rates full amount for works executed at site and in addition, a reasonable amount as certified by the Engineer-in-charge for the items hereunder mentioned which could not be utilized on the work to the full extent in view of the foreclosure:-
i). Any expenditure incurred on preliminary site work, e.g. temporary access roads, temporary labor huts, staff quarters and site office; storage accommodation and water storage tanks.

ii). Institute shall have the option to take over contractor's materials or any part thereof either brought to site or of which the contractor is legally bound to accept delivery from suppliers (for incorporation in or incidental to the work) provided, however, Institute shall be

iii). shall offer or give or agree to give to any person in Institute service or to any other person on his behalf any gift or consideration of any kind as an inducement or reward for doing or forbearing to do or for having done or forborne to do any act in relation to the obtaining or execution of this or any other contract for Institute; or

iv). Shall enter into a contract with Institute in connection with which commission has been paid or agreed to paid by him or to his knowledge, unless the particulars of any such commission and the terms of payment thereof have been previously disclosed in writing to the Accepting Authority/ Director ; or

v). Shall obtain a contract with Institute as a result of wrong tendering or other non- bonafide methods of competitive tendering; or

vi). being an individual , or if a firm, any partner thereof shall at any time be adjudged insolvent or have a receiving order or order for administration of his estate made against him or shall take any proceedings for liquidation or composition (other than a voluntary liquidation for the purpose of amalgamation or reconstruction) under any Insolvency Act for the time being in force or make any conveyance or assignment of his effects or composition or arrangement for the benefit of his creditors or purport so to do, or if any application be made under any Insolvency Act for the time being in force for the sequestration of his estate or if a trust deed be executed by him for benefit of his creditors: or

vii). Being a company, shall pass a resolution or the Court shall make an order for the winding up of the company, or a receiver or manager on behalf of the debenture holders or otherwise shall be appointed or circumstances shall arise which entitle the Court or debenture holders to appoint a receiver or manager ; or

viii). shall suffer an execution being levied on his goods and allow it to be continued for a period of 21 days; or

ix). assigns, transfers, sublets (engagement of labor on a piece-work basis or of labor with materials not to be incorporated in the work, shall not be deemed to be subletting) or otherwise parts with or attempts to assign, transfer sublet or otherwise parts with the entire works or any portion thereof without the prior written approval of the Accepting Authority :

The Accepting Authority may, without prejudice to any other right or remedy which shall have accrued or shall accrue hereafter to Institute, by a notice in writing to cancel the contract as whole or only such items of work in default from the Contract.

The Director shall on such cancellation by the Accepting Authority have powers to :

a). take possession of the site and any materials, constructional plant, implements, stores etc., thereon; and/or

b). carry out the incomplete work by any means at the risk and cost of the contractor.

On cancellation of the contract in full or in part, the Director shall determine what amount, if any, is recoverable from the contractor for completion of the works or part of the works or in case the works or part of the works is not to be completed, the loss or damage suffered by Institute. In determining the amount, credit shall be given to the contractor for the value of the work executed by him upto time of cancellation, the value of contractor's materials taken over and incorporated in the work and use of plant and machinery belonging to the contractor.

Any excess expenditure incurred or to be incurred by Institute in completing the works or part of the works or the excess loss or damages suffered or may be suffered by Institute as aforesaid after allowing such credit shall without prejudice to any other right or remedy available to Institute in law be recovered from any moneys due to the contractor on any account, and if such moneys are not sufficient the contractor shall be called upon in writing and shall be liable to pay the same within 30 days.

If the contractor shall fail to pay the required sum within the aforesaid period of 30 days the Director shall have the right to sell any or all of the contractor's unused materials, constructional plant, implements, temporary buildings, etc and apply the proceeds of sale thereof towards the satisfaction of any sums due from the contractor under the contract and if thereafter there be any balance outstanding from the contractor, it shall be recovered in accordance with the provisions of the contract.

Any sums in excess of the amounts due to the Institute and unsold materials, constructional plant, etc. shall be returned to the contractor, provided always that if cost or anticipated cost of completion by Institute of the works or part of the works is less than the amount which the contractor would have been paid had he completed the works or part of the works, such benefit shall not accrue to the contractor.

Clause -14

Carrying out part work at risk & cost of contractor

If contractor:

(i) At any time makes default during currency of works or does not execute any part of the work with due diligence and continues to do se even after a notice in writing of 7 days in the respect from the Engineer-in-charge or

(ii) Commits default in complying with any of the terms and conditions of the contract does not remedy it or takes effective steps to remedy it within 7 days even after a notice in writing is given in that behalf by the Engineer-in-charge or

(iii) Fails to complete the works or items of work with individual dates of completions, on or before the dates so determined and does not complete them within the period specified in the notice given in writing on that behalf by the Engineer-in-charge.

The Engineer-in-charge without invoking action under clause 3 may, without prejudice to any other right or remedy against the contractor which have either accrued or accrue thereafter to government, by a notice in writing to take the part work/ part incomplete work of any item(s) out of his hands and shall have powers to:

(a) Take possessions of the site and materials, constructional plant, implements, stores, etc. Thereon, and / or

(b) Carry out the part work / part incomplete work of any items by any means at the risk and cost of the contractor.

The Engineer-in-charge shall determine the amount, if any, is recoverable from the contractor for the completion of the part work / part incomplete work of any item(s) taken out his hands and execute at the risk and cost of the contractor, the liability of contractor on account of loss or damage suffered by the institute because of action under this clause shall not exceed 10% of the tendered value of the work.

In determining the amount, credit shall be given to contractor with the value of work done in all respect in the same manner and at the same rates as if it had been carried out by the original contractor under the terms of his contract, the value of contractor's material taken over and incorporated in the work and use of plant and machinery belonging to the contractor. The certificates of the Engineer-in-charge as to the value of work done shall be final and conclusive against the contractor provided also that if expenses incurred by the department are less than the amount payable to the contractor as his agreement rates, the difference shall not be payable to contractor.

Any excess expenditure incurred or to be incurred by the institute in completing the part work/part incomplete work of any item(s) or the excess loss of damages suffered or may be suffered by the institute as aforesaid after allowing such credit shall without prejudice to any other right or remedy available to institute in law or as per agreement be recovered from any money due to the contractor on any account , and if such money is insufficient , the contractor shall be called upon in writing and shall be liable to pay the same within 30 days.

If the contractor fails to pay the required sum within the aforesaid period of 30 days, the Engineer-in-charge shall have the right to sell any or all of the contractors' unused materials, construction plants, implements, temporary buildings at site etc. and adjust the proceeds of sale thereof towards the dues recoverable from the contractor under the contract and if thereafter there remains any balance outstanding, it shall be recovered in accordance with the provisions of the contract.

In the event of the above course being adopted by the Engineer-in-charge, the contractor shall have no claim to compensation for any loss sustained by him by reasons of his having purchased or produced any materials or entered into any engagement or made any advance on any account or with a view to the execution of the work or the performance of the contract.

Clause - 15 Suspension of work

i). The contractor shall, on receipt of the order in writing of the Director, (whose decision shall be final and binding on the contractor) suspend the progress of the works or any part thereof for such time and in such manner as the Director may consider necessary so as not to cause any damage or injury to the work already done or endanger the safety thereof for any of the following reasons :

a). On account of any default on the part of the contractor or

b). For proper execution of the works or part thereof for reasons other than the default of the contractor or

c). For safety of the works or part thereof

The contractor shall, during such suspension, properly protect and secure the works to the extent necessary and carry out the instructions given in that behalf by the Director.

ii). If the suspension is ordered for reasons (b) and (c) in sub-para (I) above :

a). The contractor shall be entitled to an extension of time equal to the period of every such suspension PLUS 25% for completion of the item or group of items of work for which a separate period of completion is specified in the contract and of which the suspended work forms a part and :

b). If the total period of all such suspensions in respect of an item or group of items or work for which a separate period of completion is specified in the contract exceeds thirty days, the contractor shall, in addition, be entitled to such compensation as the Director may consider reasonable in respect of salaries and/ or wages paid by the contractor to his employees and labour at site, remaining idle during the period of suspension, adding thereto 2% to cover indirect expenses of the contractor. Provided the contractor submits his claim supported by details to the Director within fifteen days of the expiry of the period of 30 days.

iii). If the works or part thereof is suspended on the orders of the Director for more than three months at a time, except when suspension is ordered for reason (a) in sub-para (I) above, the contractor may after receipt of such order serve a written notice on the Director requiring permission within fifteen days from receipt by the Director of the said notice, to proceed with the work or part thereof in regard to which progress has been suspended and if such permission is not granted within that time, the contractor, if he intends to treat the suspension, where it affects only a part of the works as an omission of such part by the Institute or where it affects whole of the works, as an abandonment of the works by the Institute, shall within ten days of expiry of such period of 15 days give notice in writing of his intention to the Director. In the event of the contractor treating the suspension as an abandonment of the contract by the Institute, he shall have no claim to payment of any compensation on account of any profit or advantage which he might have derived from the execution of the work in full but which he could not derive in consequence of the abandonment. He shall, however, be entitled to such compensation, as the Director may consider reasonable, in respect of salaries and/ or wages paid by him to his employees and labour at site, remaining idle in consequence adding to the total thereof 2% to cover indirect expenses of the contractor provided the contractor submits his claim supported by details to the Director within 30 days of the expiry of the period of 3 months.

Clause 16

Action in case work not done as per specifications :- All works under or in course of execution or executed in pursuance of the contract shall at all times be open and accessible to the inspection and supervision of the Director, his authorised subordinates in charge of the work / architect and all the superior officers of the Institute and the Chief Technical examiner's office, and the contractor shall, at all times, during the usual working hours and at all other times at which reasonable notice of the visit of such officers has been given to the contractor, either himself be present to receive orders and instructions or have a responsible agent duly accredited in writing, present for that purpose. Orders given to the contractor's agent shall be considered to have the same force as if they had been given to the contractor himself. If it shall appear to the Engineer-in-charge or his authorised subordinates incharge of the work or to the Architect or the Chief Technical Examiner or his subordinate officers, that any work has been executed with unsound, imperfect or unskillful workmanship, or with materials or articles provided by him for the execution of the work which are unsound or of a quality inferior to that contracted or otherwise not in accordance with the contract the contractor shall, on demand in writing which shall be made within six months of the completion of the work from the Engineer-in-charge specifying the work, materials or articles complained of notwithstanding that the same may have been passed, certified and paid for forthwith rectify, or remove and reconstruct the work so specified in whole or in part, as the case may require or as the case may be, remove the materials or articles so specified and provide other proper and suitable materials or articles at his own charge and cost. In the event of the failing to do so within a period specified by the Engineer-in-charge in his demand aforesaid, then the contractor shall be liable to pay compensation at the same rate as under clause 2 of the contract (for non-completion of the work in time) for this default. In such case the Engineer-in-charge may not accept the item of work at the rates applicable under the contract but may accept such items at reduced rates as the Director may consider reasonable during the preparation of on account bills or final bill if the item is so acceptable without detriment to the safety and utility of the item and the structure or he may reject the work outright without any payment and/ or get it and other connected and incidental items rectified, or removed and re-executed at the risk and cost of the contractor. Decision of the Director to be conveyed in writing in respect of the same will be final and binding on the contractor.

Clause – 17

Contractor Liable for damages, defects during maintenance period :- If the contractor or his working people or servants shall break, deface, injure or destroy any part of building in which they may be working, or any building, road, road curb, fence, enclosure, water pipe, cables, drains, electric or telephone post or wires, trees, grass or grassland, or cultivated ground contiguous to the premises on which the work or any part is being executed, or if any damage shall happen to the work while in progress, from any cause whatever of if any defect, shrinkage or other faults appear in the work within **twelve months** (**Six months** in the case of any work other than road work costing Rs. 1,00,000/- and below) after a certificate final or otherwise its completion shall have been given by the Director as aforesaid arising out of defect or improper materials or workmanship the contractor shall upon receipt of a notice in writing on that behalf make the same good by other workmen and deduct the expense from any sums that may be due or at any time thereafter may become due to the contractor, or from his security deposit or the proceeds of sale thereof or of a sufficient portion thereof. The security deposit of the contractor shall not be refunded before the expiry of **twelve months** after the issue of the certificate final or otherwise, of completion of work, or till the final bill has been prepared and passed whichever is later.

Clause 18

Contractor to Supply Tools & Plants etc. :- The contractor shall provide at his own cost all materials, plant, tools, appliances, implements, ladders, cordage, tackle, scaffolding and temporary works required for the proper execution of the work, whether original, altered or substituted and whether included in the specification or other documents forming part of the contract or referred to in these conditions or not, or which may be necessary for the purpose of satisfying or complying with the requirements of the Engineer-in-charge as to any matter as to which under these conditions he is entitled to be satisfied, or which he is entitled to require together with carriage there of to and from the work. The contractor shall also supply without charge the requisite number of persons with the means and materials, necessary for the purpose of setting out works, and counting, weighing and assisting the measurement for examination at any time and from time to time of the work or materials. Failing his so doing the same may be provided by the Engineer-in-charge at the expense of the contractor and the expenses may be deducted, from any money due to the contractor, under this contract or otherwise and/or from his security deposit or the proceeds of sale thereof, or of a sufficient portions thereof.

Clause 18A

Recovery of compensation paid to workman :- In every case in which by virtue of the provisions sub-section (1) of section 12, of the Workmen's Compensation Act, 1923, Institute is obliged to pay compensation to a workman employed by the contractor, in execution of the works, Institute will recover from the contractor for the amount of the compensation so paid ; and, without prejudice to the rights of the Institute under sub-section (2) of Section 12, of the said Act, Institute shall be at liberty to recover such amount or any part thereof by deducting it from the security deposit or from any sum due by Institute to the contractor whether under this contract or otherwise. Institute shall not be bound to contest any claim made against it under sub-section (1) Section 12, of the said Act, except on the written request of the contractor and upon his giving to Institute full security for all costs for which Institute might become liable in consequence of contesting such claim.

Clause 18 B

Ensuring Payment and Amenities to Workers if Contractor fails :- In every case in which by virtue of the provisions of the Contract Labour (Regulation and Abolition) Act, 1970 and of the Contract Labour (Regulation and Abolition) Central Rules, 1971, Institute is obliged to pay any amounts of wages to a workman employed by the contractor in execution of the works, or to incur any expenditure in providing welfare and health amenities required to be provided under the above said Act the Rules framed by Institute from time to time for the protection of health and sanitary arrangements for workers employed by Institute Contractors, Institute will recover from the contractor the amount of wages so paid or the amount of expenditure so incurred, and without prejudice to the rights of the Institute under sub-section (2) of Section 20 and sub-section (4) of Section 21, of the Contract Labour (Regulation and Abolition) Act, 1970, Institute shall

be at liberty to recover such amount or any part thereof by deducting it from the security deposit or from any sum due by Institute to the contractor whether under this contract or otherwise Institute shall not be bound to contest any claim made against it under sub-section (1) of Section 20, sub- section (4) of Section 21, of the said Act, except on the written request of the contractor and upon his giving to the Institute full security for all costs for which Institute might become liable in contesting such claim.

Clause 19

Labour Laws to be complied by the Contractor: - The contractor shall obtain a valid license under the Contract Labour (R & A) Act 1970, and the Contract Labour (Regulation and Abolition) Central Rules 1971, before the commencement of the work, and continue to have a valid license until the completion of the work. The contractor shall also abide by the Provisions of Child Labour (prohibition and Regulation) Act, 1986.

The contractor shall also comply with the provisions of the building and other construction workers (Regulation of Employment & Conditions of Service) Act, 1996 and the building and other Construction Welfare Cess Act, 1996. The Contractor shall also abide the provisions of Contract Labour (Regulations and Abolition) Act 1970 and the Contract Labour Regulation & Abolition Central Rules 1971.

Any failure to fulfil this requirement shall attract the penal provisions of this contract arising out of the resultant non-execution of the work. The Contractor shall also abide by the provisions of child labour (Prohibition and Regulations) Act, 1986.

Clause 20

Minimum Wages Act to be complied with:

The Contractor shall comply with all the provision of the Minimum Wages Act, 1948, amended from time to time and rules framed thereunder and other labour laws affecting contract labour that may be brought from time to time.

Clause 21

Work not to be sublet. Action in case of insolvency: The Contract shall not be assigned or sublet without the written approval of the Director. And if the contractor shall assign or sublet his contract, or attempt to do so or become insolvent or commence any insolvency proceedings or make any composition with his creditors or attempt to do so, or if any bribe, gratuity, gift, loan, perquisite, reward or advantage pecuniary or otherwise shall either directly or indirectly be given, promised or offered by the contractor, or any of his servants or agent to any public officer or persons in the employ of Institute in any way relating to his office or employment, or if any such officer or person shall become in any way directly or indirectly interested in the contract, the Director on behalf of the Board of Governors of the Institute shall have power to adopt any of the courses specified in Clause 3 hereof as he may deem best suited to the interest of the Institute and in the event of any of these courses being adopted the consequences specified in the said Clause 3 shall ensure.

CLAUSE 22 :

All sums payable by way of compensation under any of these conditions shall be considered as reasonable compensation to be applied to the use of the Institute without reference to the actual loss or damage sustained, and whether or not any damage shall have been sustained.

CLAUSE 23

Changes in firm's constitution to be intimated: Where the Contractor is a partnership firm, the previous approval in writing, of the Director shall be obtained before any change is made in the constitution of the firm. Where the Contractor is an individual or a Hindu undivided family business concern, such approval as aforesaid, shall likewise, be obtained before the Contractors enters into any partnership agreement where under the partnership firm would have the right to carry out the work hereby undertaken by the Contractor. If previous approval, aforesaid, is not obtained, the contract shall be deemed to have been assigned in contravention of Clause 21 hereof and the same action may be taken and the same consequences shall ensue as provided in the said Clause 21.

CLAUSE 24

Directions for execution of works: All works to be executed under the contract shall be executed under the direction and subject to the approval of the Director of the Institute who shall be entitled to direct at what point or points and in what manner they are to be commenced, and from time to time carried on.

CLAUSE 25 Settlement of Disputes

Any dispute arising out of the contract shall be resolved amicably by the parties failing which, either party is free to approach appropriate Court of Civil Jurisdiction situated at Jaipur.

CLAUSE 26

Contractor to Indemnify Institute against patent Rights: The Contractor shall fully indemnify and keep indemnified the Board of Governors of the Institute against any action, claim or proceeding relating to infringement or use of any patent or design or any alleged patent or design rights and shall pay any royalties which may be payable in respect of any article or part of thereof included in the Contract. In the event of any claims made under or action brought against Institute in respect of any such matter as aforesaid the Contractor shall be immediately notified thereof and the Contractor shall be at liberty at his own expense, to settle any dispute or to conduct any litigation that may arise therefrom. Provided that the Contractor shall not be liable to indemnify the Board of Governors of the Institute if the infringement of the patent or design or any alleged patent or design right is the direct result of an order passed by the Engineer in Charge on this behalf.

CLAUSE 27

Lump sum Provision in Tender: When the estimate on which a tender is made includes lump sum in respect of parts of the work, the Contractor shall be entitled to payment in respect of the items of work involved or the part of the work in question at the same rates, as are payable under this contract for such items, or if the part of the work in question is not in the opinion of the Engineer-in-Charge payable of measurement, the Engineer-in-Charge may at his discretion pay the lump sum amount entered in the estimate, and the certificate in writing of the Engineer-in-Charge shall be final and conclusive against the Contractor with regard to any sum payable to him under the provisions of the clause.

CLAUSE 28

Action where no specifications are specified: In case of any class of work for which there is no such specifications as referred to in Clause 11, such work shall be carried out in accordance with the Bureau of Indian Standard Specifications. In case there are no such specifications in Bureau of Indian Standards, the work shall be carried out as per accredited lab of Government of India- IC3S, TEC/ etc. if not available then manufacturer's specifications. In case there are no such specifications as required above, the work shall be carried out in all respects in accordance with the instructions and requirements of the Engineer- in-Charge.

CLAUSE 29

With-holding and lien in respect of Sums due from Contractor: (i) Whenever any claim, for payment of a sum of money arises out of or under the contract or against the contractor, the Institute shall be entitled to withhold and also have a lien to retain such sum or sums in whole or in part from the security, if any deposited by the contractor and for the purpose aforesaid, the Institute shall be entitled to withhold the security deposit, if any furnished as the case may be and also have a lien over the same pending finalization or adjudication of any such claim. In the event of the security being insufficient to cover the claimed amount or amounts or if no security has been taken from the Contractor, the Institute shall be entitled to withhold and have lien to retain to the extent of such claimed amount or amounts referred to above, from any sum or sums found payable or which may at any time thereafter become payable to the contractor under the same contract or any other contract with the Director pending finalization of adjudication of any such claim.

It is an agreed term of the contract that the sum of money or moneys so withheld or retained under the lien referred to above by the Institute will be kept withheld or retained as such by the Institute till the claim arising out of or under the contract is determined by the arbitrator (if the contract is governed by the arbitration clause) by the competent court, as the case may be and that the contractor will have no claim for interest or damages whatsoever on any account in respect of such withholding or retention under the lien referred to above and duly notified as such to the contractor. For the purpose of this clause where the contractor is a partnership firm or a limited company, the Institute shall be entitled to withhold and also have a lien to retain towards such claimed amount or amounts in whole or in part from any sum found payable to any partner/ limited company as the case may be, whether in his individual capacity or otherwise.

(ii) Institute shall have the right to cause an audit and technical examination of the works and the final bills of the contractor including all supporting vouchers, abstract etc. to be made after payment of the final bill and if as a result of such audit and technical examination any sum is found to have been overpaid in respect of any work done by the contractor under the contract or any work claimed to have been done by him under the contract and found not to have been executed, the contractor shall be liable to refund the amount of overpayment and it shall be lawful for Institute to recover the same from him in the manner prescribed in sub-clause (i) of this clause or in any other manner legally permissible and if it is found that the contractor was paid less than what was due to him under the contract in respect of any work executed by him under it, the amount of such under payment shall be duly paid by Institute to the contractor, without any interest thereon whatsoever.
Provided that the Institute shall not be entitled to recover any sum overpaid, nor the contractor shall be entitled to payment of any sum paid short where such payment has been agreed upon between the Institute on the one hand and the contractor on the other under any term of the contract permitting payment for work after assessment by the Engineer-in-Charge.

CLAUSE 30
Lien in respect of claims in other Contracts: Any sum of money due and payable to the Contractor (including security deposit returnable to him) under this contract may be withheld or retained by way of lien by the Institute or any other contracting person or persons through Engineer-in-Charge against any claim of the Institute or such other person or persons in respect of payment of a sum of money arising out of or under any other Contract made by the Contractor with the Institute or with such other person or persons.
It is an agreed term of the contract that the sum of money so withheld or retained under this clause by the Institute will be kept withheld or retained as such by the Institute or till his claim arising out of the same contract or any other contract is either mutually settled or determined by the arbitration clause or by the competent court, as the case may be and that the contractor shall have no claim for interest or damages whatsoever on this account or on any other ground in respect of any sum of money withheld or retained under this clause and duly notified as such to the contractor.

CLAUSE 31 Deleted
CLAUSE 32 Deleted

CLAUSE 33
Return of Surplus materials: Notwithstanding anything contained to the contrary in this contract, where any materials for the execution of the contract are procured with the assistance of Institute either by issue from Institute stocks or purchase made under orders or permits or licenses issued by Institute the contractor shall hold the said materials economically and solely for the purpose of the contract and not dispose of them without the written permission of the Institute and return, if required by the Engineer-in-Charge, all surplus or unserviceable materials that may be left with him after the completion of the contract or at its termination for any reason whatsoever on being paid or credited such price as the Engineer-in-Charge shall determine having due regard to the condition of the materials. The price allowed to the contractor however shall not exceed the amount charged to him excluding the element of storage charges. The decision of the Engineer-in-Charge shall be final and conclusive. In the event of breach of the aforesaid condition the contractor shall in addition to throwing himself open to action for contravention of the terms of the license or permit and / or for criminal breach of trust, be liable to Institute for all moneys, advantages or profits resulting or which in the usual course would have resulted to him by reason of such breach.

CLAUSE 34
Plant & Machinery: The contractor shall arrange at his own expense bring and take away all tools, plant, machinery and equipment.

CLAUSE 35: deleted

CLAUSE 36: Employment of technical staff and employee Contractor's Superintendence, Supervision, Technical Staff & Employees. The contractor shall provide all necessary superintendence during execution of the work and all along thereafter as may be necessary for proper fulfilling of the obligations under the contract The contractor shall immediately after receiving letter of acceptance of the tender and before commencement of the work, intimate in writing to the Engineer-In-Charge, the names, qualifications, experience, age, addresses and other particulars along with certificates of the principal technical representative to be in charge of the work and other technical representative who will be supervising the work. Minimum requirement of such technical representatives and their qualifications and experience shall not be lower than specified. The Engineer-In-Charge shall within 3 days of receipt of such communication intimate in writing his approval or otherwise of such a representative to the contractor. Any such approval may at any time be withdrawn and in case of such withdrawal, the contractor shall appoint another such representative according to the provisions of this clause. Decision of the tender accepting authority shall be final and binding on the contractor in this respect. Such a principal technical representative and other technical representative shall be appointed by the contractor soon after receipt of the approval from Engineer-In- Charge and shall be available at site before start of work.

All the provisions applicable to the principal technical representative under the clause will also be applicable to other technical representatives. The principal technical works for supervision at all times when any installation/commissioning/execution activity is in progress and also present him/ themselves as required, to the Engineer-In-Charge and or his designated representative to take instruction. Instructions given to the principal will have the same force as if these have been given to the contractor. The principal technical representative and other technical representative shall be actually available at site fully during all stages of execution of work, during recording/ checking/ test checking of measurements of works and whenever so required by the Engineer-In-Charge and shall also note down instructions conveyed by the Engineer-In-Charge or his designated representatives in the site order book and shall affix his/their signature in token of noting down the instructions and in token of acceptance of measurements look after any other work. Substitutes, duly approved by Engineer-In-Charge of the work in similar manner as aforesaid shall be provided in event of absence of any of the representative by more than two days. If the Engineer-In-Charge, whose decision in this respect is final and binding on the contractor, is convinced that no such technical representative is effectively appointed or is effectively attending or fulfilling the provision of this clause, a recovery (non-refundable) shall be effected from the contractor as specified and the decision of the Engineer-In-Charge as recorded in the site order book and measurement recorded checked/ test checked in measurement/log books shall be final and binding on the contractor. Further, if the contractor fails to appoint suitable technical principal technical representative and or other technical representatives and if such without duly approved substitute or do not discharge their responsibilities satisfactorily, the Engineer-In-Charge shall have full powers to suspend the execution of the work until such date as suitable other technical representative is appointed and the contractor shall be held responsible for the delay so caused to the work. The contractor shall submit a certificate of employment of the technical representative along with every on account bill/ final bill and shall produce evidence if at any time so required by the Engineer-In-Charge. The contractor shall provide and employ on the site only such technical assistants as are skilled and experienced in their respective fields and such foremen and supervisory staff as are competent to give proper supervision to the work. The contractor shall provide and employ skilled, semiskilled and unskilled labor as is necessary for proper and timely execution of the work. The Engineer-In-Charge shall be at liberty to object to and require the contractor

to remove from the works any person who in his opinion misconducts himself, or is incompetent or negligent in the performance of his duties or whose employment is otherwise considered by the Engineer-In-Charge to be undesirable. Such person shall not be employed again at works site without the written permission of the Engineer-In-Charge and the persons so removed shall be replaced as soon as possible by competent substitutes.

CLAUSE 37: Levy/Taxes payable by Contractor.

i) As per Section VII para 2: Sales Tax, service tax, VAT, Octroi, purchase tax or turnover tax or any other tax in respect of this contract shall be payable by the Contractor and Institute shall not entertain any claim whatsoever in this respect.

ii) If pursuant to or under any law, notification or order any royalty, cess or the like becomes payable by the Institute to the State Government, Local authorities in respect of any material used by the contractor in the works then in such a case, it shall be lawful to the Institute and it will have the right and be entitled to recover the amount paid in the circumstances as aforesaid from dues of the contractor.

CLAUSE 38:

Conditions for reimbursement for levy/taxes if levied after receipt of tenders.

(i) All tendered rates shall be inclusive of all taxes and levies (except service tax) payable under respective statutes. However, if any further tax or levy or cess is imposed by Statute, after the last stipulated date for the receipt of tender including extensions if any and the contractor thereupon necessarily and properly pays such taxes / levies/ cess the contractor shall be reimbursed the amounts so paid, provided such payments, if any, is not , in the opinion of the Registrar attributable to the delay in execution of work within the control of the contractor.

(ii) The contractor shall keep necessary books of accounts and other documents for the purpose of this conditions as may be necessary and shall allow inspection of the same by a duly authorized representative of the Government and/or the Engineer in charge may require from time to time.

(iii) The contractor shall, give a written period of 30 days of the imposition of any such further tax or levy, or cess give a written notice thereof to the Engineer in charge that the same is given pursuant to this condition, together with all necessary information relating thereto.

CLAUSE 39: Termination of Contract on death of contractor

Without prejudice to any of the rights or remedies under this contract if the contractor dies, the Director on behalf of the Board of Governors of the Institute shall have the option of terminating the contract without compensation to the contractor.

CLAUSE 40 :If relative working in MNIT then the contractor not allowed to tender

The contractor shall not be permitted to bid for works in the MNIT (responsible for award and execution of contracts), in which his near relative is posted as an officer in any capacity and member of Engineer-in-charge. He shall also intimate the names of persons who are working with him in any capacity or are subsequently employed by him and who are near relatives to any gazetted officer in the MNIT or in the Ministry of Education. Any breach of this condition by the contractor would render him liable to be removed from the approved list of contractors of MNIT.

NOTE: By the term "near relatives" means wife, husband, parents and grandparents' children and grandchildren, brothers and sisters, uncles, aunts and cousins and their corresponding in-laws.

CLAUSE 41: Deleted

No Gazetted Engineer to work as contractor within one year of retirement

CLAUSE 42: **Deleted**

CLAUSE 43

Compensation during warlike situations: The work (whether fully constructed or not) and all materials, machines, tools and plants, scaffolding, temporary buildings and other things connected therewith shall be at the risk of the contractor until the work has been delivered to the Engineer-in- Charge and a certificate from him to that effect obtained. In the event of the work or any materials properly brought to the site for incorporation in the work being damaged or destroyed in consequence of hostilities or warlike operation, the contractor shall when ordered (in writing) by the Engineer- in-Charge to remove any debris from the site, collect and properly stack or remove in store all serviceable materials salvaged from the damaged work and shall be paid at the contract rates in accordance with the provision of this agreement for the work of clearing the site of debris, stacking or removal of serviceable material and for reconstruction of all works ordered by the Engineer-in-Charge, such payments being in addition to compensation upto the value of the work originally executed before being damaged or destroyed and not paid for. In case of works damaged or destroyed but not already measured and paid for, the compensation shall be assessed by Engineer-in-Charge. The contractor shall be paid for the damages/ destruction suffered and for the restoring the material at the rate based on analysis of rates tendered for in accordance with the provision of the contract. The certificate of the Engineer-in-Charge regarding the quality and quantity of materials and the purpose for which they were collected shall be final and binding on all parties to this contract.

Provided that no compensation shall be payable for any loss in consequence of hostilities or warlike operations(a) unless the contractor had taken all such precautions against air raid as are deemed necessary by the A.R.P. Officers or the Engineer-in-Charge. (b) for any material etc. not on the site of the work or for any tools, plant, machinery, scaffolding, temporary building and other things not intended for the work. In the event of the contractor having to carry out reconstruction as aforesaid, he shall be allowed such extension of time for its completion as is considered reasonable by the Director.

CLAUSE 44:

Apprentices act provisions to be complied with

The contractor shall comply with the provisions of the Apprentices Act,1961 and the rules and orders issued thereunder from time to time. If he fails to do so, his failure will be a breach of the contract and the Registrar may, in his discretion, cancel the contract. The contractor shall also be liable for any pecuniary liability arising on account of any violation by him of the provisions of the said act.

CLAUSE 45 Deleted

Safety Code

1. Suitable scaffolds should be provided for workmen for all works that can not safely be done from the ground, or from solid construction except such short period work as can be done safely from ladders. When a ladder is used an extra mazdoor shall be engaged for holding the ladder and if the ladder is used for carrying materials as well as suitable footholds and hand-hold shall be provided on the ladder and the ladder shall be given an inclination not steeper than ¼ to 1 (1/4 horizontal and 1 vertical)
2. Scaffolding of staging more than 3.6m (12 ft) above the ground or floor, swung or suspended from an overhead support or erected with stationery support shall have a guard rail properly attached or bolted, braced and otherwise secured at least 90 cm (3ft) high above the floor or platform of such scaffolding or staging and extending along the entire length of the outside and ends thereof with only such opening as may be necessary for the delivery

of materials. Such scaffolding or staging shall be so fastened as to prevent it from swaying from the building or structure.

3. Working platform, gangways and stairways should be so constructed that they should not sag unduly or unequally, and if the height of the platform or the gangway or the stairway is more than 3.6 (12ft) above ground level or floor level, they should be closely boarded, should have adequate width and should be suitably fastened as described in (2) above.
4. Every opening in the floor of a building or in a working platform shall be provided with suitable means to prevent the fall of person or materials by providing suitable fencing or railing whose minimum height shall be 90cm (3ft).
5. Safe means of access shall be provided to all working platforms and other working places. Every ladder shall be securely fixed. No portable single ladder shall be over 9m (30ft) in length while the width between side rails in rung ladder shall in no case be less than 29 cm. (11 ½") for ladder upto and including 3m (10ft) in length. For longer ladders this width should be increased at least ¼" for each additional 30cm (1foot) of length. Uniform step spacing of not more than 30cm shall be kept. Adequate precautions shall be taken to prevent danger from electrical equipment. No materials on any of the sites or work shall be so stacked or placed as to cause danger or inconvenience to any person or the public. The contractor shall provide all necessary fencing and lights to protect the public from accident and shall be bound to bear the expenses of defiance of every suit, action or other proceedings at law that may be brought by any person for injury sustained owing to neglect of the above precautions and to pay any damages and cost which may be awarded in any such suit, action or proceedings to any such person or which may, with the consent of the contractor, be paid to compensate any claim by any such person.
6. Excavation and Trenching - All trenches 1.2m (4ft) or more in depth, shall at all times be supplied with the least one ladder for each 30m (100ft) in length or fraction thereof Ladder shall extend from bottom of the trench to at least 90 cm (3ft) above the surface of the ground. The side of the trenches which are 1.5m (5ft) or more in depth shall be stepped back to give suitable slope or securely held by timber bracing, so as to avoid the danger of sides collapsing. The excavated materials shall not be placed within 1.5m (5ft) of the edges of the trench or half of the depth of the trench whichever is more. Cutting shall be done from top to bottom. Under no circumstances undermining or undercutting shall be done.
7. Demolition – Before any demolition work is commenced and also during the progress of the work,
   a. All roads and open areas adjacent to the work site shall either be closed or suitably protected.
   b. No electric cable or apparatus which is liable to be a source of danger or a cable or apparatus used by the operator shall remain electrically charged.
   c. All practical steps shall be taken to prevent danger to persons employed from risk of fire or explosion or flooding. No floor, roof or other part of the building shall be so overloaded with debris or materials as to render it unsafe.
8. All necessary personal safety equipment as considered adequate by the Engineer-in-Charge should be kept available for the use of the person employed

on the site and maintained in a condition suitable for immediate use, and the contractor should take adequate steps to ensure proper use of equipment by those concerned. The following safety equipments shall invariably be provided :

i). Workers employed on mixing asphaltic materials, cement and lime mortars shall be provided with protective footwear and protective goggles.

ii). Those engaged in white washing and mixing or stacking of cement bags or any material which is injurious to the eyes shall be provided with protective goggles.

iii). Those engaged in welding works shall be provided with welder's protective eye shields.

iv). Stone breakers shall be provided with protective goggles and protective clothing and seated at sufficiently safe intervals.

v).When workers are employed in sewers and manholes, which are in active use, the contractor shall ensure that the manholes are opened and ventilated at least for an hour before the workers are allowed to get into the manholes, and the manholes so opened shall be cordoned off with suitable railing and provided with warning signals or boards to prevent accident to the public. In addition, the contractor shall ensure that the following safety measure are adhered to :

a). Entry for workers into the line shall not be allowed except under supervision of the Engineer-in-charge or any other higher officer.

b).At least 5 to 6 manholes upstream and downstream should be kept open for at least 2 to 3 hours before any man is allowed to enter into the manhole for working inside.

c). Before entry the presence of Toxic gasses should be tested by inserting wet lead acetate paper which changes color in the presence of such gasses and gives indication of their presence.

d).Presence of Oxygen should be verified by lowering a detector lamp into the manhole. In case, no Oxygen is found inside the sewer line, workers should be sent only with Oxygen kit.

e). Safety belt with rope should be provided to the workers. While working inside the manholes such rope should be handled by two men standing outside to enable him to be pulled out during an emergency.

f). The area should be barricaded or cordoned off by suitable means to avoid mishaps of any kind. Proper warning signs should be displayed for the safety of the public whenever cleaning works are undertaken during night or day.

g).No smoking or open flames shall be allowed near the blocked manhole being cleaned.

h).The malba obtained on account of cleaning of blocked manholes and sewer lines should be immediately removed to avoid accidents on account of the slippery nature of the malba.

i). Workers should not be allowed to work inside the manhole continuously. He should be given rest intermittently. The Engineer-in-Charge may decide the time up to which a worker may be allowed to work continuously inside the manhole.

j). Gas masks with Oxygen Cylinders should be kept at site for use in emergency.

k).Air-blowers should be used for flow of fresh air through the manholes. Whenever called for, portable air blowers are recommended for ventilating the manholes. The Motors for these shall be vapour proof and of totally enclosed type. Non sparking gas engines also could be used but they should be placed at least 2 meters away for the opening and on the leeward side protected from wind so that they will not be a source of friction on any inflammable gas that might be present.

l). The workers engaged in cleaning the manholes/ sewers should be properly trained before allowing them to work in the manhole.

m). The workers shall be provided with Gumboots or non sparking shoes bump helmets and gloves non sparking tools safety lights and gas masks and portable air blowers (when necessary). They must be supplied with barrier cream for anointing the limbs before working inside the sewer lines.

n).Workmen descending a manhole shall try each ladder stop or rung carefully before putting his full weight on it to guard against insecure fastening due to corrosion of the rung fixed to the manhole well.

o).If a man received a physical injury, he should be brought out of the sewer immediately and adequate medical aid should be provided to him. p).The extent to which these precautions are to be taken depend on individual situation but the decision of the Engineer-in-Charge regarding the steps to be taken in this regard in an individual case well be final.

vi). The Contractor shall not employ men and women below the age of 18 years on the work of painting with products containing lead in any form. Wherever men above the age of 18 are employed on the work of lead painting, the following precaution should be taken :-

a). No paint containing lead or lead products shall be used except in the form of paste or ready made paint.

b).Suitable face masks should be supplied for use by the workers when paint is applied in the form of spray or a surface having lead paint is dry rubbed and scraped.

c). Overalls shall be supplied by the contractors to the workmen and adequate facilities shall be provided to enable the working painters to wash during and on the cessation of work.

9. An additional clause (viiii) (i) of Safety Code (iv) the Contractor shall not employ women and men below the age of 18 on the work of painting with product

containing lead in any form. Wherever men above the age of 18 are employed on the work of lead painting, the following principles must be observed for such use :

i). While lead, sulfate of lead or product containing these pigments, shall not be used in painting operation except in the form of pastes or paint ready for use.

ii). Measures shall be taken, wherever required in order to prevent danger arising from the application of a paint in the form of spray.

iii). Measures shall be taken, wherever practicable, to prevent danger arising out of dust caused by dry rubbing down and scraping.

iv). Adequate facilities shall be provided to enable working painters to wash during and on cessation of work.

v). Overall shall be worn by working painters during the whole working period.

vi). Suitable arrangements shall be made to prevent clothing put off during working hours being spoiled by painting materials.

vii). Cases of lead poisoning and suspected lead poisoning shall be notified and shall be subsequently verified by a medical man appointed by competent authority of the Institute.

viii). Institutes may require, when necessary, medical examination of workers.

ix). Instruction with regard to special hygienic precautions to be taken in the painting trade shall be distributed to working painters.

10. When the work is done near any place where there is risk of drowning, all necessary equipments should be provided and kept ready for use and all necessary steps taken for prompt rescue of any person in danger and adequate provision, should be made for prompt first aid treatment of all injuries likely to be obtained during the course of the work.

11. Use of hoisting machines and tackle including their attachment, anchorage and supports shall conform to the following standards or conditions :-

i). a). These shall be of good mechanical construction, sound materials and adequate strength and free from patent defects and shall be kept repaired and in good working order.

b). Every rope used in hoisting or lowering materials or as a means of suspension shall be of durable quality and adequate strength, and free from patent defects.

ii). Every crane driver or hoisting appliance operator shall be properly qualified and no person under the age of 21 years should be in charge of any hoisting machine including any scaffolding winch or give signals to operators.

iii). In case of every hoisting machine and of every chain ring hook, shackle swivel and pulley block used in hoisting or as means of suspension the safe working load shall be ascertained by adequate means. Every hoisting machine and all gear referred to above shall be plainly marked with the

safe working load. In case of a hoisting machine having a variable safe working load each safe working load and the condition under which it is applicable shall be clearly indicated. No part of any machine or any gear referred to above in this paragraph shall be loaded beyond the safe working load except for the purpose of testing.

iv). The contractors shall notify the safe working load of their machines to the Engineer-in-charge whenever he brings any machinery to site of work and get it verified by the Engineer-in-charge.

12. Motors, gearing, transmission, electric wiring and other dangerous parts of hoisting appliances should be provided with efficient safeguards. Hoisting appliances should be provided with such means as will reduce to the minimum the risk of accidental descent of the load. Adequate precautions should be taken to reduce to the minimum the risk of any part of a suspended load becoming accidentally displaced. When workers are employed on electrical installations, which are already energized, insulating mats, wearing apparel, such as gloves, sleeves and boots and may be necessary should be provided. The worker should not wear any rings, watches and carry keys or other materials which are good conductors of electricity.

13. All scaffolds, ladders and other safety devices mentioned or described herein shall be maintained in safe condition and no scaffold, ladder or equipment shall be altered or removed while it is in use. Adequate washing facilities should be provided at or near places of work.

14. These safety provisions should be brought to the notice of all concerned by display on a notice board at a prominent place of work spot. The person responsible for compliance of the safety code shall be named therein by the contractor.

15. To ensure effective enforcement of the rules and regulations relating to safety precautions the arrangements made by the contractor shall be open to inspection by the Labour Officer or Engineer-in-charge or their representatives.

16. Notwithstanding the above clauses from (1) to (15) there is nothing in these to exempt the contractor from the operations of any other Act or Rules in force in the Republic of India.

Section VIII - Schedule of Requirements

S. No	Name	Quantity
1	Security Solution	1 Nos
2	Link Load balancer	1 Nos
3	WAN Router	1 Nos
4	AAA Solution	1 Nos
5	Core Switch	2 Nos
6	Distribution Switch	15 Nos
7	Access switch type 1	70 Nos
8	Access switch type 2	180 Nos
9	Access switch type 3	80 Nos
10	Access switch Type 4	20 Nos
11	Wireless Controller	1 Nos
12	Access point type 1	200 Nos
13	Access point type 2	450 Nos
14	Access point type 3	100 Nos
15	Access Point Type 4	300 Nos
16	XGSPON OLT	3 Nos
17	ONU type 1	400 Nos
18	ONU type 2	1400 Nos
19	Smart rack	1 Nos
20	Outdoor Racks/ Street Cabinet 42 U rack Size	20 Nos
21	Outdoor Racks/ Street Cabinet 15 U rack Size	20 Nos
22	Indoor Network racks 42 U	20 Nos
23	Indoor Network racks 15 U	40 Nos
24	Indoor Network racks 6 U	30 Nos
25	144 Port rack mounted LIU with single mode pigtail and coupler	8 Nos
26	24 Port rack mounted LIU with single mode pigtail and coupler	450 Nos
27	6 Port rack mounted LIU with single mode pigtail and coupler	130 Nos
28	2 Port Joint Closer box/ Home termination box with pigtails and couplers	1900 Nos
29	Joint Closer bamboo Type suitable for 144-core fiber	50 Nos
30	144 cores armoured Single-mode fiber cable, multi-tube, 12 cores per tube	17000 Meter
31	24 Core armoured single-mode fiber cable	5000 Meter
32	12 Core armoured single-mode fiber cable	15000 Meter
33	6 Core armoured single-mode fiber cable	45000 Meter
34	2 Core single-mode fiber cable	150000 Meter
35	Fibre patch cord SC-LC 2-meter Duplex	2000 Nos
36	Fibre patch cord SC-LC 10-meter Duplex	100 Nos
37	Fibre patch cord LC-LC 2-meter Duplex	50 Nos
38	Fibre patch cord LC-LC 10-meter Duplex	50 Nos
39	Fibre patch cord SC-SC 2-meter simplex	10000 Nos
40	Fibre patch cord SC-SC 10-meter simplex	200 Nos
41	2X2 Splitter box type	40 Nos
42	2X8 Splitter box type	130 Nos

43	1X16 Splitter box type	270 Nos
44	CAT6A UTP cable	140000 Meter
45	24 port jack panel CAT6A	200 Nos
46	1-meter UTP patch cord CAT6A	5000 Nos
47	CAT6A Information outlet with faceplate and gang box	3000 Nos
48	RJ 45 Termination plug	300 Nos
49	8” DWC duct pipe	13000 Meter
50	1” PVC conduit	200000 Meter
51	32mm HDPE duct pipe	4000 Meter
52	100X50 ISI casing	2000 Meter
53	Route Marker	2000 Nos
54	3X3 feet Chamber	400 Nos
55	Moiling/ Digging/Recarpeting	14000 Meter
56	Fiber fusion splicing	15000 Nos
57	Fibre Tags	3000 Nos
58	Buyback of existing infra	1 Time as per BOQ
59	Network lab using existing infra	1 Nos
60	Any other accessories	1 Nos

S. No	Name of Item	Detailed Specifications
1.	Security Solution	Supply, configuration, integration, and installation of next-generation security solutions with software firewall as a backup as per the following specification. **Type** 1. The proposed security solution should be Next Generation Enterprise Firewall. 2. The proposed security solution should be certified by any accredited lab endorsed by Government of India i.e. TEC/TSEC, SQTC, BIS, EAL 2 NDcPP, ICSA Labs, IC3S. **Architecture**: 1. The proposed security solution should be based on multi-core CPUs to protect & scale against the latest dynamic security threats. 2. The proposed security solution architecture must enable complete, contextual traffic classification, followed by a rich set of enforcement and threat prevention options. 3. The proposed security solution should support multiple internet links in Active-Active, load balancing, and active-standby failover modes. **Storage** 1. The proposed security solution must have 2 TB or more of usable space for logging (SSD drive in RAID). **Power Supply, deamination, and FAN** 1. The proposed security solution must have internal hot-swappable redundant Power Supplies from day 1. 2. The proposed security solution must have (i) redundant fans or (ii) hot-swappable fans from day one. **Interface Requirement** 1. The proposed security solution should have a minimum of 4 x 1/10G SFP/SFP+ Interfaces. 2. The proposed security solution should have a minimum of 4 x 100G QSFP28 Interfaces populated with 4X100G SR transceivers of the same OEM. 3. The proposed security solution should have dedicated ports of high availability. 4. The proposed security solution should have a dedicated console, management, and USB port. **Performance Capacity** 1. The proposed security solution must have 50 Gbps or more Next Gen Firewall application throughput. 2. The performance should be in the real world/ production environment (enabling and measuring with application ID/ AVC, user-ID/ Agent-ID, and application traffic mixes such as HTTPS, SMTP, and other protocols) logging enabled. 3. The proposed security solution should have 25 Gbps or more threat prevention/protection throughput. 4. Threat prevention throughput should be measured in the real world/production environment with Application Control, IPS, antivirus, anti-spyware, zero-day, file blocking, and all (traffic and threats) with logging enabled. 5. The proposed security solution must support IPSec & SSL VPN. 6. The proposed security solution should support 5 Gbps Minimum VPN throughput.

		7. The proposed security solution must support at least 100 SSL VPN users from day 1. 8. The proposed security solution should support 5 million concurrent sessions. 9. The proposed security solution should support 200K new sessions per second. 10. The proposed security solution should support stateful inspection. **High Availability** 1. The proposed security solution should support high availability. 2. The proposed security solution shall support stateful session maintenance in the event of a fail-over to a standby unit. 3. The proposed security solution should support high availability configurations in active/active and active/ passive modes. **Next-Generation Firewall Features** 1. The proposed security solution should be able to handle (alert, block, or allow) unknown/unidentified applications like unknown UDP & TCP. 2. The proposed security solution should have network traffic classification which identifies applications across all ports irrespective of port/protocol/evasive tactic. 3. The proposed security solution should be able to create custom application signatures without any third-party tool. 4. The proposed security solution should be able to implement zones, IP addresses, port numbers, user-id, application-id, and threat protection profiles under the same firewall rule or policy configuration. 5. The proposed security solution must support creating a policy based on wildcard addresses to match multiple objects for easy deployment. 6. The proposed security solution must support policy-based forwarding based on zone, source or destination address and port, application, AD/ LDAP user or user group, and services or ports. 7. The proposed security solution should delineate different parts of the application (i.e., allowing Facebook chat but blocking its file-transfer capability inside the chat application) based on the content. 8. The proposed security solution should be able to protect the user from malicious content upload or download by applications (i.e., Facebook chat or any other file sharing) by enforcing the total threat protection for known and unknown malicious content such as viruses, malware, bad URLs. 9. The proposed security solution should be able to identify, decrypt, and evaluate SSL traffic in an outbound and inbound connection (forward proxy). 10. The proposed security solution should be able to identify, decrypt, and evaluate SSH Tunnel traffic in inbound and outbound connections. 11. The proposed security solution should be able to identify port-based rules/ policies so the admin/ security team can convert them to application-based allowlist rules or add applications to existing rules without compromising application availability. 12. The proposed security solution should be able to identify rules configured with unused applications and prioritize which rules to migrate or clean up first. 13. The proposed security solution should be able to restrict application traffic to its default ports to prevent

		evasive applications from running on non-standard ports. 14. The proposed security solution must have the capability to create a DOS prevention policy to prevent DOS attacks on per zone basis (outbound to inbound, inbound to inbound, and inbound to outbound) and the ability to create and define DOS policy based on attacks like UDP flood, ICMP flood, SYN flood (random early drop and SYN cookie), IP address sweeps, IP address spoofs, port scan, ping of death, teardrop attacks, unknown protocol protection, etc. 15. The proposed security solution's IPS system shall have at least 6000 + signatures. 16. The proposed security solution should have a sandboxing capability. **Threat Protection** 1. The proposed security solution should support protocol decoder-based analysis, state fully decodes the protocol, and then intelligently apply signatures to detect network and application exploits. 2. The proposed security solution's Intrusion prevention signatures should be built based on the vulnerability for a single signature should stop multiple exploit attempts on a known system or application vulnerability. 3. The proposed security solution should block known network and application-layer vulnerability exploits. 4. The proposed security solution should perform content-based signature matching beyond the traditional hash-based signatures. 5. The proposed security solution should have local (on-device) Anti-Virus/ Malware Anti Spyware signatures, updated at least every hour. 6. OEM should create all the protection signatures based on their threat intelligence. They should not use any 3rd party IPS or AV engines. 7. The proposed security solution should perform stream-based antivirus inspection and not store-and-forward traffic inspection to maximize security solution performance. Stream-based antivirus scanning should scan the contents of the files being transferred over the network for viruses/malware and block the file transfer when a virus or malware signature is triggered. 8. The proposed security solution should be able to perform anti-virus scans for SMB traffic. 9. The proposed security solution should support DNS sink holding for malicious DNS requests from inside hosts to outside bad domains. It should be able to integrate and query third-party external threat intelligence databases to block or sinkhole bad IP addresses, domains, and URLs. 10. The proposed security solution should support DNS security. 11. The proposed security solution should have a dynamic response to find infected machines and respond immediately. There should be provision for administrators to automate the process of sinkhole malicious domains to cut off command and control and quickly identify infected users. 12. The proposed security solution should be able to call 3rd party threat intelligence data on malicious IPs, URLs, and domains to the same firewall policy to block those malicious attributes, and the list should get updated dynamically with the latest data. 13. The OEM should automatically push a dynamic block list with the latest threat intelligence data based on malicious IPs, URLs, and domains to the firewall policy as an additional protection service. **URL Filtering and Web Protection**

		1. The proposed security solution should be scalable to provide URL filtering, web protection and maintain the same performance/ throughputs mentioned in the performance capacity. 2. The proposed security solution should have the URL filtering and web protection database locally on the device. 3. The proposed security solution should provide a web filtering inspection based on a real-time URL categorization database of at least 100+ million URLs with 70+ categories. 4. The proposed security solution should have custom URL categorization. 5. The proposed security solution must have at least 2500+ application signatures and be able to understand well-known applications like P2P, Voice, etc., without any dependency on the ports. 6. The proposed security solution should display custom block pages. 7. The proposed security solution must have an authentication portal. 8. The proposed security solution should block and continue (i.e., allowing a user to access a website that potentially violates policy by displaying a block page with a warning and continue option allowing them to proceed for a certain time). 9. The proposed security solution should have logs populated with end-user activity reports for site monitoring within the local security solution. 10. The proposed security solution should have URL filtering policies by AD user, group, machines, and IP address/ range. 11. The proposed security solution should have a full-path categorization of URLs only to block the malicious malware path, not the full domain or website. 12. The proposed security solution should have a zero-day malicious website or URL blocking update of fewer than 60 minutes for URL database update for zero-day malware command and control, spyware, and phishing website access protection. 13. The proposed security solution should protect against never-before-seen phishing and JavaScript attacks. 14. The proposed security solution should be capable of using signature and ML-based signature-less technology. 15. The URL filtering service should be able to categorize a site by multiple categories, not just a single and custom category. 16. The proposed security solution should prevent credential theft attacks (without the need for endpoint agents). 17. The OEM should provide features that can prevent the theft and abuse of stolen credentials, one of the most common methods cyber adversaries use to successfully compromise and maneuver within an organization to steal valuable assets. It should also complement additional malware, threat prevention, and secure application enablement functionality to extend customer organizations' ability to prevent cyber breaches. 18. The proposed security solution should support automatically identifying and blocking phishing sites. 19. The proposed security solution should prevent users from submitting credentials to phishing sites. 20. The proposed security solution should prevent the use of stolen credentials.

		21. The proposed security solution shall allow the administrator to prevent sensitive data based on file type and extensions from the network. The administrator shall be able to define sensitive data patterns and data matching these patterns that will be blocked and logged when passing through the unit. **SSL/SSH Decryption** 1. The proposed security solution should be able to identify, decrypt, and evaluate SSL traffic in an outbound connection and inbound connection. 2. The proposed security solution shall be able to identify, decrypt, and evaluate SSH tunnel traffic in inbound and outbound connections. 3. The proposed security solution shall support the ability to have an SSL inspection policy that differentiates personal SSL connections, i.e., banking, shopping, health, and non-personal traffic. 4. The proposed security solution should support SSL decryption on non-standard ports. **Network Address Translation (NAT)** 1. The proposed security solution should support NAT and PAT. 2. The proposed security solution should support Dual Stack IPv4 / IPv6. 3. The proposed security solution should support Dynamic IP reservation, tunable dynamic IP and port oversubscription, IPv6 Support L2, L3, tap, and transparent mode. **Routing and Multicast support** 1. The proposed security solution should support static routing. 2. The proposed security solution should support routing protocols like OSPF v2/ v3, BGP v4, Policy-based forwarding, PIM-SM, PIM-SSM, IGMP v1, v2, and v3, Bidirectional Forwarding Detection (BFD), MPLS, etc. **Authentication** 1. The proposed security solution should support authentication protocols like LDAP, Radius, Token-based solutions (i.e., Secure-ID), Kerberos, and any combination above. 2. The proposed security solution's SSL VPN should support authentication protocols like LDAP, Radius, Token-based solutions (i.e., Secure-ID), Kerberos, and any combination above. **Monitoring, Management, and Reporting** 1. The proposed security solution should keep six months' logs for future analysis and report generation. 2. The proposed security solution should have separate real-time logging based on all traffic, threats, user IDs, URL filtering, data filtering, content filtering, unknown malware analysis, authentication, tunneled traffic, and correlated log view based on other logging activities. 3. The proposed security solution should support report generation on a manual or scheduled (daily, weekly, monthly, etc.) basis. 4. The proposed security solution should allow the report to be exported into other formats such as PDF, HTML, CSV, XML, etc. 5. The proposed security solution should have built-in report templates based on applications, users, threats, traffic, and URLs. 6. The proposed security solution should be able to create reports based on user activity. 7. The proposed security solution should be able to create a custom report based on a custom query from

		logging attributes. 8. The proposed security solution's on-device management service should be able to provide all the mentioned features in case of central management server failure. 9. The proposed security solution must be able to identify unused security policies. 10. To optimize configuration, the proposed security solution must provide detailed information regarding individual security policies' first-hit counts, last-hit counts, and total hit counts. **Support & Warranty** 1. The proposed security solution should have five years of support bundled with 24x7x365 days TAC support, RMA, software updates, and subscription update support. 2. The proposed security solution should be proposed with five years subscription licenses for NGFW, NGIPS, Anti-Virus, URL Filtering, Anti Spyware, Anti Botnet and SSL VPN, sandboxing, etc. 3. OEM should not have announced the "End of Sale" and "End of Life" for the proposed product at the time of bidding

2.	Link load balancer	Supply, configuration, integration, and installation of link load balancer per the following specifications. 1. The proposed LLB must be a dedicated appliance-based solution with purpose-built hardware for high performance. 2. The proposed LLB should not be a part of the router or UTM. 3. The proposed LLB should be supplied with a minimum of 128GB or more RAM and 500GB or more SSD drives. 4. The proposed LLB should have a minimum L4 throughput of 80 Gbps. 5. The proposed LLB should have a minimum L7 throughput of 70 Gbps. 6. The proposed LLB should have a minimum of 4 x 10/25G ports populated with 4 x 10G SFP+ SR transceivers and be upgraded to 25G by changing transceivers only. 7. The proposed LLB should have a minimum of 2 x 40G QSFP+ / 100G QSFP28 ports populated with 2 x 100G QSFP28 SR transceivers. 8. The proposed LLB should have a hot-swappable redundant power supply from day one. 9. The proposed LLB should have a 1RU/2RU form factor for a 19”-inch rack-mountable. 10. The proposed LLB should support multiple internet links in Active-Active, load balancing, and active standby failover modes. 11. The proposed LLB should support inbound, and outbound load balancing algorithms like round robin, weighted round robin, shortest response, target proximity, and dynamic detection. 12. The proposed LLB should support Static NAT, Port-based NAT, and advanced NAT for the transparent use of multiple WAN / Internet links. 13. The proposed LLB should provide full ipv6 support, and OEM should be IPv6 certified. 14. The proposed LLB should have L3/L4 DDOS protection with a network, DNS, and SIP levels with a predefined attack vector. 15. The proposed LLB should generate dynamic DOS/DDOS protection signatures based on changing traffic patterns over time. 16. In case of link failure, the proposed LLB should detect it in less than 30 seconds and divert the traffic to other available links. 17. The proposed LLB should support a proven scheme-based health checks for intelligent traffic routing and failover. (i.e., dynamic detect (DD)/Proximity-based etc.) 18. The proposed LLB should provide individual link health checks based on physical ports, ICMP Protocols, user- defined l4 ports, and destination path health checks. 19. The proposed LLB should provide a mechanism to bind multiple health checks, support application-specific VIP health checks and subsequent gateway health checks. 20. The proposed LLB should support persistence features, including RTS (return to sender) and IP flow persistence. 21. The proposed LLB should support an authoritative name server, DNS proxy/ DNS NAT, a full DNS server with DNSSEC, DNS DDOS, and application load balancing. 22. The proposed LLB should be capable of handling complete DNS bind records, including A and AAAA.

		23. The proposed LLB should support global server load balancing algorithms, including - round robin, least connections, geography, proximity, response, network, QoS, and minimization. 24. The proposed LLB should provide comprehensive and reliable support for high availability. 25. The proposed LLB should support L2-L7 Load balancing, server persistence, content routing, content switching, SSL offload, L7 application scripting, and route L4 routing. 26. The proposed LLB should support application, server, and link health checks based on ARP, ICMP, TCP, HTTP/HTTPS, DNS, Radius, RTSP, SIP single port/ protocol, multi-port, physical port, ICMP, and user-defined L4, Next gateway health checks. 27. The proposed LLB must support multiple bootable Images for better availability and easy upgrade/fallback. 28. The proposed LLB should be certified by any accredited lab endorsed by Government of India i.e. TEC/TSEC, SQTC, BIS, EAL 2 NDcPP, ICSA Labs, IC3S. **Warranty** 1. The proposed LLB should be supplied with a five-year warranty. The OEM should have a 24x7 support center. OEM should have an India toll-free number reflected on the official website. The vendor will provide documentary proof regarding support and warranty directly from the OEM. 2. OEM should not have announced the "End of Sale" and "End of Life" for the proposed product at the time of bidding.
3	WAN Router	Supply, configuration, integration, and installation of WAN router per the following specifications. **Architecture** 1. The proposed router shall facilitate all applications like voice, video, and data to run over an IP infrastructure. **Interface** 1. The proposed router should have at least 4 x 10 G SFP+ ports with 2 X 10G SFP+ SR transceivers and 2 X 10G SFP+ ER (up to 40 KM distance) transceivers of the same OEM. 2. The proposed router should support 4 x 40 G/100 G ports for future upgradation. **Features and Scalability** 1. The proposed router should have a minimum of 180 Gbps system throughput. 2. The proposed router should have a minimum of 64K multicast routes. 3. The proposed router should have a minimum of 16 GB RAM. 4. The proposed router should have a minimum of 32 GB flash memory/storage. 5. The proposed router should have a minimum 4M routing information base. 6. The proposed router should have a minimum 4M forwarding information base **Protocol supported** 1. The proposed router should support static routing. 2. The proposed router should support OSPF, BGP, LDP, Multiprotocol BGP, MPLS, and segment routing. **Security** 1. The proposed router should support an inbuilt firewall or access control list for control plane protection.

		2. The proposed router should support load balancing/sharing for multiple ISPs. 3. The proposed router should support access list and QoS. 4. The proposed router should support 128 K hardware queues. 5. The proposed router should be certified by EAL 2/NDcPP, ICSA Labs, TEC/TSEC, STQC, IC3S or any accredited lab by governemnt of India. 6. The proposed router should have Federal Information Processing Standards (FIPS 140-2) FIPS or equivalent Indian standards. 7. The proposed router should support NAT (2 million NAT Sessions) and 2K IPsec tunnels. **Dimension and Environmental** 1. The proposed router should be 8 U or fewer rack units in size (1 U height = 4.4cm). 2. The proposed router should support operating temperatures 0º to 40 ºC. 3. The proposed router should support operating relative humidity of 10% to 85%. **Power Supply and FAN** 1. The proposed router should have a hot-swappable redundant power supply. 2. The proposed router should have at least one field-replaceable fan unit/module. **Management** 1. The proposed router should have a console port. 2. The proposed router should have a management port. 3. The proposed router should support management protocols like SSH, telnet, SNMPv1, v2, v3, RADIUS, etc. **Warranty** 1. The proposed router should be supplied with a five-year comprehensive warranty. The OEM should have a 24x7 support center. OEM should have an India toll-free number reflected on the official website. The vendor will provide documentary proof regarding support and warranty directly from the OEM. 2. OEM should not have announced the "End of Sale" and "End of Life" for the proposed product at the time of bidding.
4.	AAA Solution	Installation and configuration of AAA solution per the following specifications. 1. The proposed AAA should provide an easy-to-use BYOD-ready granular secure access control solution that is context-aware, identity-enabled, location and device-based. 2. The proposed AAA must combine authentication, authorization, accounting (AAA), posture, profiling, and guest access management services onto a single platform with a minimum endpoint footprint and support the ability to be managed from a single management console. 3. The proposed AAA should be deployed in out-of-band mode. 4. The proposed AAA should support centralized deployment and must be deployed in High Availability Active-Standby mode. 5. The proposed AAA must have built-in TACACS+ and Radius along with 802.1x and MAB capabilities. 6. The proposed AAA can be provided with an HW/Virtual machine and Perpetual Licenses, supporting a minimum of 10000 devices for AAA (Radius & TACACS+) from Day 1. 7. The solution must be provided with a 10,000 Profiler license from day 1 for device visibility.

		8. The proposed AAA should be vendor-agnostic and support integration with any network infrastructure device that supports standard AAA protocols. 9. The proposed AAA should support configuration migration from third-party AAA solutions through CSV and other standard methods. 10. The proposed AAA should be able to detect both new and existing endpoints and categorize them based on the type of endpoint (e.g., Switch, Router, Firewall, Windows, Network Device, etc.) 11. The proposed AAA should be able to detect and profile IoT devices. 12. The proposed AAA should support network-based profiling by targeting specific endpoints (based on policy) for specific attribute device scans, resulting in higher accuracy and comprehensive visibility of what is on your network 13. The proposed AAA should support profiling devices automatically based on their Category, OS, MAC address, etc. 14. The proposed AAA should provide support for the discovery, profiling, policy-based placement, and monitoring of endpoint devices on the network, all within the same appliance. 15. The proposed AAA must support Profiling via Passive and Active Collectors using various methods like SNMP, DHCP fingerprinting, HTTP-agent, NMAP, WMI, SSH, TCP-IP, etc. 16. The proposed AAA should support sponsored-based device management for network access. For example, if a new system is introduced in the network, AAA should send an email alert to the IT admin to approve network access from that device. 17. The proposed AAA should provide the ability to create custom profiling rules and groups for enforcement 18. The proposed AAA should provide flexible filtering capabilities to sort out device information based on different attributes (e.g., MAC address, Manufacturer name, hostname, IP address, etc.) 19. The proposed AAA should produce a real-time endpoint discovery with detailed information, including which switch port the device is connected to. 20. The proposed AAA must provide device inventory in both CSV and PDF exportable format. 21. The proposed AAA must provide the capability to import/export device inventory via CSV and encrypted binary files. 22. The proposed AAA must provide information on how many devices are not profiled, how many devices are newly seen in day/week/month, etc. 23. The proposed AAA solution shall include the following key components that are out of the box. The solution should not act as a proxy and should not be dependent on an external solution for the following capabilities. a) Radius server b) TACACS+ server c) Local Profiler 24. Authentication - The proposed solution should support different options for user authentication. It should be able to support the following authentication servers: Local Authentication, Active Directory, LDAP, External Radius, RSA/SecureID, and Certificate. 25. Authorization - The solution should provide fine-grained control over user capabilities for the duration of the user's session, which includes idle time-out and session duration. It should allow enforcing restrictions

		on what commands a user/admin may execute by configuring the privilege level for administrators. Within the privilege level, further control can be forced by specifying a command or regex match. 26. The solution should support Exec authorization, which determines a user's privilege level when they are authenticated. The admins can run the commands that are allowed at the user's privilege level. 27. The solution should support Command authorization, which provides centralized control of the commands available to AAA admin users. Every command must be sent to the AAA server for authorization, and the command is permitted after getting authorized by AAA. 28. Accounting - The solution should collect information on the AAA server for auditing. Network device administrators should be able to use the accounting facility to track user activity for a security audit or to provide information for user billing. Accounting records should include user identities, start and stop, and executed commands. 29. The solution should have a built-in Radius server with Authentication, Authorization, and Accounting capabilities available out-of-the-box without any dependency on an external server. 30. The built-in local Radius server should support 802.1x for user and device authentication. 31. The solution should support TACACS+ as a built-in capability to simplify device administration and enhance security through flexible, granular control of access to network devices. 32. TACACS+ device administration should support role-based access control and command-level authorization with detailed logs for auditing 33. The solution should be able to create a TACACS+ authorization policy for the device administrator containing specific lists of commands a device admin can execute. Command sets should support the exact match, case sensitive, (any character), * (matches any), etc., and support stacking as well. 34. The proposed AAA solution must support authenticating protocols like PAP, MS-CHAP, MS-CHAP-V2, EAP-MD5-Challenge, EAP-MS-CHAP-V2, (EAP)-MD5, Protected EAP (PEAP), EAP-Transport Layer Security (TLS), EAP Tunneled Transport Layer Security (EAP-TTLS), and EAP Generic Token Card (EAP-GTC). 35. The solution should support role-based access control and allow the creation of different admin roles to define granular administrative access privileges. For example, an organization would require multiple admin roles with different privilege levels to ensure protection from sensitive company information. 36. The AAA solution should support Idle Time-out for TACACS+ user sessions so that if no input is received or sent in the period specified, the session is disconnected. 37. The AAA solution should support the Max session length option to specify the maximum length of time that the session can exist. After this value has expired, the session should get disconnected. 38. The solution should allow network devices to be associated with specific device groups to be easily managed. In a heterogeneous network where there are devices from multiple vendors, the device group helps to manage devices easily, as each vendor device has a different command syntax and command set. 39. The proposed solution must be capable of supporting 802.1X authentication and shall work with endpoint devices (supplicant) and network devices (authenticator) that are enabled for IEEE 802.1X authentication. 40. The proposed solution must make use of alternate authentication methods, such as MAC address authentication, to authenticate endpoint devices that do not support 802.1X auth.entication

		41. The proposed AAA should support built-in monitoring, reporting, and troubleshooting console to assist helpdesk operators and administrators in streamlining operations 42. AAA GUI should support the Dashboard with contextual information 43. AAA GUI should support historical data on contextual information 44. The solution should support integration with the Syslog server for log retention. 45. The solution should support an archiving option to automatically back up and save device/user logs and system configurations on the external machines. It should support scheduling the backup activity. 46. The proposed Port Probe option is to check specific TCP and UDP port status on the network devices for troubleshooting integration or connectivity issues. 47. The proposed solution must provide the options of RTF (Return to Factory), ND (Next Day), and SD (Same Day) to be supported directly by the manufacturer as part of its general support offerings. 48. The proposed solution should be certified by any accredited lab endorsed by Government of India i.e. TEC/TSEC, SQTC, BIS, EAL 2 NDcPP, ICSA Labs, IC3S. 49. The proposed AAA should be supplied with a five-year comprehensive warranty. The OEM should have a 24x7 support center. OEM should have an India toll-free number reflected on the official website. The vendor will provide documentary proof regarding support and warranty directly from the OEM. 50. OEM should not have announced the “End of Sale” and “End of Life” for the proposed product at the time of bidding.

5	Core Switch	Supply, configuration, integration, and installation of L3 core switches in high availability mode as per the following specification. **Interface.** 1. The proposed core switch should have a non-blocking architecture. 2. The proposed core switch should have at least 32 x 40/100G (QSFP+/QSFP28) ports populated with 20 QSFP28 (100G) long-range transceivers and 12 X QSFP28 (100G) SR transceivers of the same OEM with each switch. **Dimension and Environmental** 1. The proposed core switch should be 19" Rack Mountable. 2. The proposed distribution switch should be a 1U/2U/3U/4U rack unit in size (height = 4.4cm). 3. The proposed distribution switch should support operating temperatures 0º to 40ºC. 4. The proposed distribution switch should support operating relative humidity of 10% to 85%. **Power Supply and FAN** 1. The proposed core switch should have a Hot-swappable internal redundant power supply. 2. The proposed core switch should have at least two front-to-back airflow fan units/modules. **Performance and Scalability** 1. The proposed core switch should have a minimum of 6.4 Tbps switching bandwidth/capacity. 2. The proposed core switch should have a minimum of 2 Bpps forwarding rate/ Throughput. 3. The proposed core switch should have a minimum of 64 GB flash memory/SSD. 4. The proposed core switch should have a minimum of 16 GB RAM. 5. The proposed distribution switch should support the jumbo frame of a minimum size of 9K. 6. The proposed distribution switch should support Fabric Management/SDN integration using open flow/ OpenStack/ Rest API. 7. The proposed core switch should support the VXLAN feature. **High Availability** 1. The proposed core switch should support high availability in Active-Active, and Active-Passive modes. **L2 L3 Features** 1. The proposed core switch should support a minimum of 250K MAC addresses. 2. The proposed core switch should have a minimum of 32 MB packet buffers. 3. The proposed core switch should support a minimum of 4k VLANs. 4. The proposed core switch should support static routing for both IPv4 and IPv6. 5. The proposed core switch should support IEEE 802.1Q VLAN tagging. 6. The proposed core switch should support a minimum of 200K IPv4 and 100K IPv6 routes/ entries. 7. The proposed core switch should support a minimum of 40K IPV4 and 40K IPV6 multicast routes/ entries. 8. The proposed core switch should support STP, RSTP, MSTP, STP root guard, and IGMP v1/v2/v3 snooping. 9. The proposed core switch should support OSPF, OSPFv3, PIM SM, and MLD V1/V2. **Security**

		1. The proposed core switch should support ACL based on L2/ L3 headers. 2. The proposed core switch should support Dynamic VLAN assignment and DHCP snooping. 3. The proposed core switch should support management ACL. 4. The proposed core switch should support authentication (MAC and IEEE 802.1x), Radius, and TACACS+. 5. The proposed core switch should support sflow, LAG, loop detection, and Loop protection. 6. The proposed core switch /switch's operating system should be certified by any accredited lab endorsed by Government of India i.e. TEC/TSEC, SQTC, BIS, EAL 2 NDcPP, ICSA Labs, IC3S. 7. The proposed core switch should follow safety and EMC standards, including UL60950, CAN/CSA 22.2 No.60950, EN 60950, IEC60950, FCC 47CFR Part 15, EN 55022/55032, VCCI, CISPR 22 or 24, EN 55024, Reduction of Hazardous Substances (ROHS) 6, or equivalent Indian standards. **Management** 1. The proposed core switch should have a console port. 2. The proposed core switch should have a management port. 3. The proposed core switch should support management through CLI, ssh, telnet, RMON 4 groups, SNMPv3, and LLDP. 4. The proposed distribution switch should support Layer 2 traceroute to ease troubleshooting by identifying the physical path a packet takes from source to destination, or the switch should support Layer 3 Traceroute. 5. The proposed distribution switch should support Trivial File Transfer Protocol (TFTP) for software upgrades. **Quality of Services** 1. The proposed core switch should support eight priority queues per port. 2. The proposed core switch should support policy-based QoS based on VLAN, port, and MAC. 3. The proposed core switch should support IEEE 802.1Q VLAN Tagging. 4. The proposed core switch should support Generic VLAN Registration Protocol (GVRP)/MVRP or equivalent. **Warranty** 1. The proposed core switch should be supplied with a five-year comprehensive warranty. The OEM should have a 24x7 support center. OEM should have an India toll-free number reflected on the official website. The vendor will provide documentary proof regarding support and warranty directly from the OEM. 2. OEM should not have announced the "End of Sale" and "End of Life" for the proposed product at the time of bidding.

6	Distribution Switch	Supply, configuration, and installation of the distribution switch per the following specification. **General Features** 1. The proposed distribution switch should have a non-blocking architecture. 2. The proposed distribution switch should have a minimum of 48 no's of 25G/10G/1G downlink fiber ports with 10 X 25G SFP28 LR transceivers of the same OEM. 3. The proposed distribution switch should have a minimum of 8 no's of 100G (QSFP28)/40G (QSFP+) ports populated with 2X100G QSFP28 SM LR transceivers of the same OEM. 4. The proposed distribution switch should have at least 56 Ports (48 SFP+ ports and 8 QSFP28 ports). **Performance and Scalability** 1. The proposed distribution switch should have a minimum of 4 Tbps switching bandwidth/ capacity. 2. The proposed distribution switch should have a minimum of 2 Bpps forwarding rate/ throughput. 3. The proposed distribution switch should have a minimum of 32 GB flash memory/storage. 4. The proposed distribution switch should have a minimum of 16 GB RAM. 5. The proposed distribution switch should support a minimum of 4K VLANs. 6. The proposed distribution switch should support the VXLAN feature. 7. The proposed distribution switch should support a jumbo frame of a minimum 9K size. 8. The proposed distribution switch should support Fabric Management/SDN integration using open flow/ OpenStack/ Rest API. **Dimension and Environmental** 1. The proposed distribution switch should be one rack unit in size (height = 4.4cm). 2. The proposed distribution switch should support operating temperatures 0º to 40ºC. 3. The proposed distribution switch should support operating relative humidity of 10% to 85%. **Power Supply and FAN** 1. The proposed distribution switch should have a Hot-swappable internal redundant power supply. 2. The proposed distribution switch should have at least two airflow fan units/modules. **Industry Standards** 1. The proposed distribution switch should support IEEE 802.1D spanning tree protocol (STP). 2. The proposed distribution switch should support IEEE 802.1p multicasting. 3. The proposed distribution switch should support IEEE 802.1Q trunking. 4. The proposed distribution switch should support IEEE 802.1s multiple spanning tree protocol (MSTP). 5. The proposed distribution switch should support IEEE 802.1w rapid spanning tree protocol (RSTP). 6. The proposed distribution switch should support IEEE 802.1x port-based network access control (PNAC) or Port-based traffic group/QoS. 7. The proposed distribution switch should support IEEE 802.1AB link layer discovery protocol (LLDP). 8. The proposed distribution switch should support IEEE 802.3ad link aggregation control protocol (LACP). 9. The proposed distribution switch should support SNMP v1, v2, and v3. 10. The proposed distribution switch /switch's operating system should be certified by any accredited lab endorsed by Government of India i.e. TEC/TSEC, SQTC, BIS, EAL 2 NDcPP, ICSA Labs, IC3S.

		11. The proposed distribution switch should follow safety and EMC standards, including UL-60950, CAN/CSA 22.2 No.60950, EN 60950, IEC60950, FCC 47CFR Part 15, EN 55022/55032, VCCI, CISPR 22 or 24, EN 55024, Reduction of Hazardous Substances (ROHS) 6, or equivalent Indian standards. **Layer-3 Features** 1. The proposed distribution switch should support IPv4/IPv6 static routing. 2. The proposed distribution switch should support Virtual Router Redundancy Protocol (VRRP). 3. The proposed distribution switch should support the OSPF protocol. 4. The proposed distribution switch should support policy-based switching/ routing. 5. The proposed distribution switch must support a minimum of 100K IPv4 and 100K IPv6 routes. 6. The proposed distribution switch should support a minimum of 32K IPv4 and 32K IPv6 multicast routes. 7. The proposed distribution switch should support Multicast Routing Protocols for IPv4 and IPv6. 8. The proposed distribution switch must support IP Source Guard/Source IP Lockdown, DHCP snooping, and Dynamic ARP Inspection. **Layer-2 Features** 1. The proposed distribution switch should have a minimum of 200K MAC address support. 2. The proposed distribution switch should support IGMP filtering/IGMP snooping filters. 3. The proposed distribution switch should support the discovery of the same vendor's neighboring device to help troubleshoot connectivity problems. 4. The proposed distribution switch should support per-port broadcast storm control to prevent faulty end stations from degrading overall system performance, or it should support flood rate limitation or storm control to minimize the network impact of ingress flooding traffic. 5. The proposed distribution switch should support IGMP v1, v2 & v3 Snooping. 6. The proposed distribution switch should support eight egress queues per port. 7. The proposed distribution switch should support stacking/ Virtual Chassis Technology. **Quality of Service (QoS) & Control** 1. The proposed distribution switch should support Command Line Interface (CLI). 2. The proposed distribution switch system should support 802.1P classification and the mark of packet QoS, DSCP, etc. 3. The proposed distribution switch should support flow control of ethernet ports to control traffic rates during congestion by allowing congested nodes to pause link operation at the other end for receiving traffic as per IEEE 802.3x **Management** 1. The proposed distribution switch should support Layer 2 traceroute to ease troubleshooting by identifying the physical path a packet takes from source to destination, or the switch should support Layer 3 Traceroute. 2. The proposed distribution switch should support Trivial File Transfer Protocol (TFTP) for software upgrades. 3. The proposed distribution switch should have an out-of-band management. 4. The proposed distribution switch should have a console port.

		5. The proposed distribution switch should support SNMPv1, SNMPv2, and SNMPv3. 6. The proposed distribution switch should support Port security to secure access to an access or trunk port based on MAC address. 7. The proposed distribution switch should support Simple Network Time Protocol (SNTP) for time synchronization. **Warranty** 1. The product should be supplied with a five-year warranty. The OEM should have a 24x7 support center. OEM should have an India toll-free number reflected on the official website. The vendor will provide documentary proof regarding support and warranty directly from the OEM. 2. OEM should not have announced the “End of Sale” and “End of Life” for the proposed product at the time of bidding.

7	Access switch type 1	Supply, configuration, and installation of an access switch per the following specifications. **General Features** 1. The proposed access switch should have a non-blocking architecture. 2. The proposed access switch should have a minimum of 24 nos. 10/100/1000 base T Ethernet Ports. 3. The proposed access switch should have a minimum of 4 SFP+ ports. 4. The proposed access switch should have two separate stacking/VC ports. The port should be populated with 1 meter Stack/DAC cable and all necessary licenses and accessories required for stacking with at least 80 Gbps stacking/VC bandwidth. 5. The proposed access switch should have at least 30 Ports (4 SFP+ ports, 2 X stacking ports, and 24 copper ports). **Performance and Scalability** 1. The proposed access switch should have a minimum of 128 Gbps switching bandwidth/capacity excluding stacking bandwidth. 2. The proposed access switch should have a minimum of 95 Mpps forwarding rate/ Throughput, excluding stacking bandwidth. 3. The proposed access switch should have a minimum of 2GB flash memory. 4. The proposed access switch should have a minimum of 2GB DRAM. 5. The proposed access switch should support a minimum of 4K VLANs. 6. The proposed access switch should support a minimum of 9 K frame size. **Dimension and Environmental** 1. The proposed access switch should be one rack unit in size (height = 4.4cm). 2. The proposed access switch should support Operating temperatures 0ºC to 40ºC. 3. The proposed access switch should support operating relative humidity of 10 % to 85%. **Power Supply and Fan** 1. The proposed access switch should support a hot-swappable internal redundant power supply. 2. The proposed access switch should have at least one field-replaceable fan unit/module. **Industry Standards** 1. The proposed access switch should support IEEE 802.1D spanning tree protocol (STP). 2. The proposed access switch should support IEEE 802.1p multicasting. 3. The proposed access switch should support IEEE 802.1Q trunking. 4. The proposed access switch should support IEEE 802.1s multiple spanning tree protocol (MSTP). 5. The proposed access switch should support IEEE 802.1w rapid spanning tree protocol (RSTP). 6. The proposed access switch should support IEEE 802.1x port-based network access control (PNAC) or Port-based traffic group/QoS. 7. The proposed access switch should support IEEE 802.1AB link layer discovery protocol (LLDP). 8. The proposed access switch should support IEEE 802.3ad link aggregation control protocol (LACP). 9. The proposed access switch should support SNMP v1, v2, and v3. 10. The proposed access switch /switch's operating system should be certified by any accredited lab endorsed

		by Government of India i.e. TEC/TSEC, SQTC, BIS, EAL 2 NDcPP, ICSA Labs, IC3S. 11. The proposed access switch should follow safety and EMC standards, including UL-UL60950, CAN/CSA 22.2 No.60950, EN 60950, IEC60950, FCC 47CFR Part 15, EN 55022/55032, VCCI, CISPR 22 or 24, EN 55024, Reduction of Hazardous Substances (ROHS) 6, or better. **Basic Layer-3 Protocol** 1. The proposed access switch should support Ipv4/Ipv6 static routing. 2. The proposed access switch should support a minimum of 8K IPv4 and 8K IPv6 routes. 3. The proposed access switch should support multicast routes/entries with a minimum of 2K for both IPv4 and IPv6. **Layer-2 Features** 1. The proposed access switch should have a minimum of 32K MAC address support. 2. The proposed access switch should support IGMP filtering/ IGMP snooping filters. 3. The proposed access switch should support the discovery of the neighboring device of the same vendor to help troubleshoot connectivity problems. 4. The proposed access switch should support Voice VLAN to simplify IP telephony installations by keeping voice traffic on a separate VLAN. 5. The proposed access switch should support stacking/ Virtual chassis Technology to allow at least six switches (Same model or with a higher model of the same OEM) as a single logical device. **Quality of Service (QoS) & Control** 1. The proposed access switch should support Command Line Interface (CLI). 2. The proposed access switch should have a management port. 3. The proposed access switch should support 802.1P classification and the mark of packet QoS, DHCP, etc. 4. The proposed access switch should support flow control of ethernet ports to control traffic rates during congestion by allowing congested nodes to pause link operation at the other end for receiving traffic as per IEEE 802.3x. **Management** 1. The proposed access switch should support software upgrades. 2. The proposed access switch should have a console port. 3. The proposed access switch should support port security to secure access to an access or trunk port based on the MAC address. 4. The proposed access switch should support a Simple Network Time Protocol (SNTP) for synchronization. **Warranty** 1. The proposed access switch should be supplied with a five-year comprehensive warranty. The OEM should have a 24x7 support center. OEM should have an India toll-free number reflected on the official website. The vendor will provide documentary proof regarding support and warranty directly from the OEM. 2. OEM should not have announced the “End of Sale” and “End of Life” for the proposed product at the time of bidding.

8	Access switch type 2	Supply, configuration, and installation of an access switch as per the following specification. **General Features** 1. The proposed access switch should have a non-blocking architecture. 2. The proposed access switch should have a minimum of 48 nos. 10/100/1000 base T Ethernet Ports. 3. The proposed access switch should have a minimum of 4 SFP+ ports. 4. The proposed access switch should have two separate stacking/VC ports. The port should be populated with one meter Stack/DAC cable, licenses, and accessories required for stacking with at least 80 Gbps stacking/VC bandwidth. 5. The proposed access switch should have at least 54 Ports (4 SFP+ ports, 2 X stacking ports, and 48 copper ports). **Performance and Scalability** 1. The proposed access switch should have a minimum of 176 Gbps switching bandwidth/capacity excluding stacking bandwidth. 2. The proposed access switch should have a minimum of 130 Mpps forwarding rate/ throughput excluding stacking bandwidth. 3. The proposed access switch should have a minimum of 2GB flash memory. 4. The proposed access switch should have a minimum of 2GB or more DRAM. 5. The proposed access switch should support a minimum of 4K VLANs. 6. The proposed access switch should support a minimum of 9K jumbo frame size. **Dimension and Environmental** 1. The proposed access switch should be one rack unit in size (height = 4.4cm). 2. The proposed access switch should support Operating temperatures 0º to 40ºC. 3. The proposed access switch should support operating relative humidity of 10% to 85%. **Power Supply and Fan** 1. The proposed access switch should support Hot swappable internal redundant power supply. 2. The proposed access switch should have at least one field-replaceable fan unit/module. **Industry Standards** 1. The proposed access switch should support IEEE 802.1D spanning tree protocol (STP). 2. The proposed access switch should support IEEE 802.1p multicasting. 3. The proposed access switch should support IEEE 802.1Q trunking. 4. The proposed access switch should support IEEE 802.1s multiple spanning tree protocol (MSTP). 5. The proposed access switch should support IEEE 802.1w rapid spanning tree protocol (RSTP). 6. The proposed access switch should support IEEE 802.1x port-based network access control (PNAC) or port-based traffic group/QoS. 7. The proposed access switch should support IEEE 802.1AB link layer discovery protocol (LLDP). 8. The proposed access switch should support IEEE 802.3ad link aggregation control protocol (LACP). 9. The proposed access switch should support SNMP v1, v2, and v3. 10. The proposed access switch /switch's operating system should be certified by any accredited lab endorsed

		by Government of India i.e. TEC/TSEC, SQTC, BIS, EAL 2 NDcPP, ICSA Labs, IC3S. 11. The proposed access switch should follow safety and EMC standards, including UL-60950, CAN/CSA 22.2 No.60950, EN 60950, IEC60950, FCC 47CFR Part 15, EN 55022/55032, VCCI, CISPR 22 or 24, EN 55024, Reduction of Hazardous Substances (ROHS) 6, or equivalent Indian standards. **Basic Layer-3 Protocol** 1. The proposed access switch should support Ipv4/Ipv6 static routing. 2. The proposed access switch should support a minimum of 8K IPv4 and 8K IPv6 routes. 3. The proposed access switch should support multicast routes/entries with a minimum of 2K for both IPv4 and IPv6. **Layer-2 Features** 1. The proposed access switch should have a minimum of 32K MAC address support. 2. The proposed access switch should support IGMP filtering. 3. The proposed access switch should support the discovery of the neighboring device of the same vendor to help troubleshoot connectivity problems. 4. The proposed access switch should support Voice VLAN to simplify IP telephony installations by keeping voice traffic on a separate VLAN. 5. The proposed access switch should support stacking/ virtual chassis technology to allow at least six switches (Same model or with a higher model of the same OEM) as a single logical device. **Quality of Service (QoS) & Control** 1. The proposed access switch should support a command line interface (CLI). 2. The proposed access switch should have a management port. 3. The proposed access switch should support 802.1P classification and the mark of packet QoS, DSCP, etc. 4. The proposed access switch should support Flow control of Ethernet ports to control traffic rates during congestion by allowing congested nodes to pause link operation at the other end for receiving traffic as per IEEE 802.3x. **Management** 1. The proposed access switch should support software upgrades. 2. The proposed access switch should have a serial console port. 3. The proposed access switch should support Port security to secure access to an access or trunk port based on MAC address. 4. The proposed access switch should support a Simple Network Time Protocol (SNTP) for synchronization. **Warranty** 1. The proposed access switch should be supplied with a five-year comprehensive warranty. The OEM should have a 24x7 support center. OEM should have an India toll-free number reflected on the official website. The vendor will provide documentary proof regarding support and warranty directly from the OEM. 2. OEM should not have announced the “End of Sale” and “End of Life” for the proposed access switch.

9	Access Switch type 3	Supply, configuration, and installation of a POE switch as per the following specifications. **General Features** 1. The proposed POE switch should have a non-blocking architecture. 2. The proposed POE switch should have a minimum of 24 x 100M/1/2.5/5/10GbE PoE access port. 3. The proposed POE switch should have a minimum of 4 SFP28 ports (25G port) populated with 2X25G SFP28 SM LR transceivers of the same OEM. 4. The proposed POE switch should have two separate stacking/VC ports. The stacking ports should be populated with one meter Stack/DAC cable, licenses, and accessories with at least 160 Gbps stacking/VC bandwidth. 5. The proposed POE switch should have at least 30 Ports (4 SFP28 ports, 2X stacking ports, and 24 copper ports). 6. The proposed POE switch should have an overall PoE power budget of 1700W with a dual power supply. **Performance and Scalability** 1. The proposed POE switch should have a minimum of 680 Gbps switching bandwidth/ capacity excluding stacking bandwidth. 2. The proposed POE switch should have a minimum of 505 Mpps forwarding rate/ throughput excluding stacking bandwidth. 3. The proposed POE switch should have a minimum of 8 GB flash memory. 4. The proposed POE switch should have a minimum of 4 GB RAM. 5. The proposed POE switch should support a minimum of 4K VLANs. 6. The proposed POE switch should support a minimum of 9K jumbo frame size. **Dimension and Environmental** 1. The proposed POE switch should be one rack unit in size (height = 4.4cm). 2. The proposed POE switch should support operating temperatures of 0ºC to 40ºC. 3. The proposed POE switch should support 10% to 85% operating humidity. **Power Supply and FAN** 1. The proposed POE switch should have a hot-swappable internal redundant power supply. 2. The proposed POE switch should have hot-swappable field-replaceable redundant fans. **Industry Standards** 1. The proposed POE switch should support IEEE 802.1D spanning tree protocol (STP). 2. The proposed POE switch should support IEEE 802.1p multicasting. 3. The proposed POE switch should support IEEE 802.1Q trunking. 4. The proposed POE switch should support IEEE 802.1s multiple spanning tree protocol (MSTP). 5. The proposed POE switch should support IEEE 802.1w rapid spanning tree protocol (RSTP). 6. The proposed POE switch should support IEEE 802.1x port-based network access control (PNAC) or port-based traffic groups/QoS. 7. The proposed POE switch should support IEEE 802.1AB link layer discovery protocol (LLDP). 8. The proposed POE switch should support IEEE 802.3ad link aggregation control protocol (LACP).

		9. The proposed POE switch should support SNMP v1, v2, and v3. 10. The proposed POE switch /switch's operating system should be certified by any accredited lab endorsed by Government of India i.e. TEC/TSEC, SQTC, BIS, EAL 2 NDcPP, ICSA Labs, IC3S. 11. The proposed POE switch should follow safety and EMC standards, including UL-UL60950, CAN/CSA 22.2No.60950, EN 60950, IEC60950, FCC 47CFR Part 15, EN 55022/55032, VCCI, CISPR 22 or 24, EN 55024, Reduction of Hazardous Substances (ROHS) 6, or better. 13. The proposed POE switch should support IEEE 802.3af: PoE. 14. The proposed POE switch should support IEEE 802.3at: PoE+. 15. The proposed POE switch should support IEEE 802.3bt: PoE++. **Basic Layer-3 Protocol** 1. The proposed POE switch should support Ipv4/Ipv6 static routing. 2. The proposed POE switch should support a minimum of 16K IPv4 and 16K IPv6 routes. 3. The proposed POE switch should support multicast routes/entries of 8K for IPV4 and 8K for IPV6. **Layer-2 Features** 1. The proposed POE switch should have a minimum of 64K MAC address support. 2. The proposed POE switch should support IGMP filtering. 3. The proposed POE switch should support the discovery of the neighboring device of the same vendor to help troubleshoot connectivity problems. 4. The proposed POE switch should support Voice VLAN to simplify IP telephony installations by keeping voice traffic on a separate VLAN. 5. The proposed POE switch should support stacking/ Virtual chassis Technology to allow at least six switches (Same modal or with a higher modal of the same OEM) as a single logical device. **Quality of Service (QoS) & Control** 1. The proposed POE switch should support a command line interface (CLI). 2. The proposed POE switch should have a management port. **Management** 1. The proposed POE switch should support software upgrades. 2. The proposed POE switch should have a console port. 3. The proposed POE switch should support Port security to secure access to an access or trunk port based on MAC address. 4. The proposed POE switch should support synchronization with a Simple Network Time protocol (SNTP). **Warranty** 1. The proposed POE switch should be supplied with a five-year comprehensive warranty. The OEM should have a 24x7 support center. OEM should have an India toll-free number reflected on the official website. The vendor will provide documentary proof regarding support and warranty directly from the OEM. 12. OEM should not have announced the "End of Sale" and "End of Life" for the proposed POE switch at the time of bidding.

10	Access switch type 4	Supply, configuration, and installation of an access switch per the following specifications. **General Features** 1. The proposed access switch should have a non-blocking architecture. 2. The proposed access switch should have a minimum of 24 nos. 10/100/1000 base T POE Ethernet Ports. 3. The proposed access switch should have a minimum of 4 SFP+ ports. 4. The proposed access switch should have two separate stacking/VC ports. The port should be populated with a 1-meter Stack/DAC cable and all necessary licenses and accessories required for stacking with at least 80 Gbps stacking/VC bandwidth. 5. The proposed access switch should have at least 30 Ports (4 SFP+ ports, 2 X stacking ports, and 24 copper ports). 6. The proposed POE switch should have an overall PoE power budget of 700 W with a dual power supply. **Performance and Scalability** 1. The proposed access switch should have a minimum of 128 Gbps switching bandwidth/capacity, excluding stacking bandwidth. 2. The proposed access switch should have a minimum of 95 Mpps forwarding rate/ Throughput, excluding stacking bandwidth. 3. The proposed access switch should have a minimum of 2GB flash memory. 4. The proposed access switch should have a minimum of 2GB DRAM. 5. The proposed access switch should support a minimum of 4K VLANs. 6. The proposed access switch should support a minimum of 9K frame size. **Dimension and Environmental** 1. The proposed access switch should be one rack unit in size (height = 4.4cm). 2. The proposed access switch should support Operating temperatures 0º to 40ºC. 3. The proposed access switch should support Operating relative humidity of 10% to 85%. **Power Supply and Fan** 1. The proposed access switch should support a hot-swappable internal redundant power supply. 2. The proposed access switch should have at least one field-replaceable fan unit/module. **Industry Standards** 1. The proposed access switch should support IEEE 802.1D spanning tree protocol (STP). 2. The proposed access switch should support IEEE 802.1p multicasting. 3. The proposed access switch should support IEEE 802.1Q trunking. 4. The proposed access switch should support IEEE 802.1s multiple spanning tree protocol (MSTP). 5. The proposed access switch should support IEEE 802.1w rapid spanning tree protocol (RSTP). 6. The proposed access switch should support IEEE 802.1x port-based network access control (PNAC) or Port-based traffic group/QoS. 7. The proposed access switch should support IEEE 802.1AB link layer discovery protocol (LLDP). 8. The proposed access switch should support IEEE 802.3ad link aggregation control protocol (LACP). 9. The proposed access switch should support SNMP v1, v2, and v3.

		10. The proposed access switch /switch's operating system should be certified by any accredited lab endorsed by Government of India i.e. TEC/TSEC, SQTC, BIS, EAL 2 NDcPP, ICSA Labs, IC3S. 11. The proposed core switch should follow safety and EMC standards, including UL60950, CAN/CSA 22.2 No.60950, EN 60950, IEC60950, FCC 47CFR Part 15, EN 55022/55032, VCCI, CISPR 22 or 24, EN 55024, Reduction of Hazardous Substances (ROHS), or equivalent Indian standards. 12. The proposed POE switch should support IEEE 802.3af: PoE. 13. The proposed POE switch should support IEEE 802.3at: PoE+. **Basic Layer-3 Protocol** 1. The proposed access switch should support Ipv4/Ipv6 static routing. 2. The proposed access switch should support a minimum of 8K IPv4 and 8K IPv6 routes. 3. The proposed access switch should support multicast routes/entries with a minimum of 2K for IPV4 and 2K for IPV6. **Layer-2 Features** 1. The proposed access switch should have a minimum of 32K MAC address support. 2. The proposed access switch should support IGMP filtering/ IGMP snooping filters. 3. The proposed access switch should support the discovery of the neighboring device of the same vendor to help troubleshoot connectivity problems. 4. The proposed access switch should support Voice VLAN to simplify IP telephony installations by keeping voice traffic on a separate VLAN. 5. The proposed access switch should support stacking/ Virtual chassis Technology to allow at least six switches (Same model or with a higher model of the same OEM) as a single logical device. **Quality of Service (QoS) & Control** 1. The proposed access switch should support the Command Line Interface (CLI). 2. The proposed access switch should have a management port. 3. The proposed access switch should support 802.1P classification and the mark of packet QoS, DHCP, etc. 4. The proposed access switch should support flow control of ethernet ports to control traffic rates during congestion by allowing congested nodes to pause link operation at the other end for receiving traffic as per IEEE 802.3x. **Management** 1. The proposed access switch should support software upgrades. 2. The proposed access switch should have a console port. 3. The proposed access switch should support port security to secure access to an access or trunk port based on the MAC address. 4. The proposed access switch should support a Simple Network Time Protocol (SNTP) for synchronization. **Warranty** 1. The proposed access switch should be supplied with a five-year comprehensive warranty. The OEM should have a 24x7 support center. OEM should have an India toll-free number reflected on the official website. The vendor will provide documentary proof regarding support and warranty directly from the OEM.

		2. OEM should not have announced the “End of Sale” and “End of Life” for the proposed product at the time of bidding.
11	Wireless Controller	Supply, configuration, and installation of a wireless controller as per the following specifications. **Essential Features** 1. The proposed wireless controller can be on-premises or cloud-based as well. 2. The proposed on-premises wireless controller should have 10Gbps of throughput dedicated hardware appliance, purpose-built for Wi-Fi control and management. 3. The proposed on-premises wireless controller should have a minimum of 2x 10/100/1000 RJ45 Ethernet Ports and 2 x 10G ports populated with 2 X 10G SFP+ SR transceivers. 4. The proposed on-premises wireless controller should have a redundant power supply and redundant fans. 5. The proposed wireless controller should have an easy setup through PnP/ZTP network discovery and the installation wizard. 6. The proposed wireless controller should support 1000 APs from day one and be scalable up to 2000 APs. 7. The proposed wireless controller should handle at least 32,000 concurrent devices. **Redundancy Features:** 1. The proposed on-premises wireless controller should provide active/active or active/passive with 1+1 redundancy. 2. The proposed wireless controller should provide air-time fairness between these different speed clients, the faster clients should not starve slower clients, and faster clients should not be adversely affected by slower clients. 3. The proposed wireless controller should be able to map SSID to VLAN and dynamic VLAN support for the same SSID. 4. The proposed wireless controller should support automatic channel selection for interference avoidance. 5. The proposed wireless controller should support a client troubleshooting feature that allows an administrator to focus on a specific client device and its connectivity status. 6. The proposed wireless controller should support the ability to create different zones in which AP can be grouped logically or physically based on location, e.g., different buildings on campus can be configured as different zones so that each zone will have different configurations and policies. 7. The proposed wireless controller should support hotspot 2.0 (passport). 8. The proposed on-premises wireless controller should support the auto-deployment of APs at different locations. 9. Access points can discover the proposed wireless controllers across the Layer-2/Layer-3 network through DHCP or DNS. **Security & Monitoring** 1. The proposed wireless controller should support open, 802.1x/EAP, PSK, EPSK/DPSK/MPSK/PPSK/IPSK, WPA, WPA2-AES, WPA-TKIP, WEP, EAP-SIM, EAP-AKA for security. 2. The proposed wireless controller should support authentication through the external radius /directory

		services. 3. The proposed wireless controller should support WIDS/WIPS for security, including rogue AP detection and prevention. 4. The proposed wireless controller should support L2 Client Isolation so users cannot access each other's devices. Isolation should have the option to apply on AP or SSIDs. 5. The proposed on-premises architecture should be a controller-based Architecture with thin/thick AP deployment and able to perform encryption/decryption of 802.11 packets at the AP. 6. The proposed wireless controller should support operating system/device fingerprinting, bandwidth rate limit, and VLAN mapping. 7. The proposed wireless controller should be able to present a suitable dashboard with information on the status of the wireless network. 8. The proposed wireless controller should be able to raise critical alarms/alerts by emailing. 9. The proposed wireless controller should provide customized reporting with at least seven days or more of historical wireless LAN information. 10. The proposed wireless controller should filter the alarms and event Logs based on APs, SSID, or zones. 11. The proposed wireless controller should support the syslog towards the external syslog server. 12. The proposed wireless controller should support access point locations on floor plans and visual indication of AP online & offline/heat-map. **QoS features** 1. The proposed wireless controller should support per-SSID or per-user bandwidth rate limiting. 2. The proposed wireless controller must support band steering where 5 GHz clients are forced to connect to over 5 GHz radio to provide better load balancing among 2.4 GHz and 5 GHz radios. 3. The proposed wireless controller should support quality of service features like 802.11e-based QoS enhancements, WMM, or equivalent. **Client/ Guest Management** 1. The proposed wireless controller should provide a guest login portal to authenticate users outside the organization. 2. The proposed wireless controller should support guest access. 3. The proposed wireless controller should be able to provide a web-based application that allows the administrator to create guest accounts with validity for a fixed duration, like hours or days. **Management Features** 1. The proposed wireless controller should have administration access through HTTPS GUI. 2. The proposed wireless controller should have security features for administrative users. 3. The proposed wireless controller should have a library of well-documented REST APIs to allow integration with 3rd party apps. 4. The proposed wireless controller should have all the necessary licenses for the above-mentioned features. **Warranty** 1. The proposed wireless controller should be supplied with a five-year warranty. The OEM should have a

		24x7 support center. OEM should have an India toll-free number reflected on the official website. The vendor will provide documentary proof regarding support and warranty directly from the OEM. 3. OEM should not have announced the “End of Sale” and “End of Life” for the proposed product at the time of bidding.
12	Access point type 1	Supply, configuration, and installation of 4:4X4 Wi-Fi indoor access point as per the following specifications. **Radio Specifications** 1. The proposed access point should be a dual-band, dual-radio indoor access point. The minimum data rate supported shall be 2400 Mbps in 5 GHz and 570 Mbps in 2.4 GHz. 2. The proposed access point should have 4x4:4 MU-MIMO antennas for transmission in 5 GHz and 2X2:2 MU-MIMO in 2.4 GHz. 3. The proposed access point must have MU-MIMO antennas. 4. The proposed access point should have at least a 3 dBi antenna gain for 5GHz and 3 dBi for 2.4GHz radio. 5. The proposed access point should support a minimum of 2.9 Gbps aggregate data rates. 6. The proposed access point should support the latest amendments of IEEE 802.11 a/b/g/n/ac/ax. 7. The proposed access point should provide at least 18 dBm transmit power on both radios. 8. The proposed access point should support at least 16 SSID. 9. The proposed access point should have adaptive antenna technology/beam forming technology for performance optimization and interference mitigation features. **Interface and Power Requirements** 1. The proposed access point should have at least one 100/1000/2500 Mbps RJ-45-based Ethernet PoE port. 2. The proposed access point should have at least one 100/1000 Mbps RJ-45-based Ethernet port, preferably PoE. 3. The proposed access point should have a maximum of 35 Watts of power consumption for full functionality. 4. The proposed access point should have IoT/BLE radio. **Networking Requirements** 1. The proposed access point should handle a minimum of 100 concurrent devices. 2. The proposed access point should be flexible hardware that can be deployed standalone, or controller based. 3. The proposed access point should support IPv6, IEEE 802.1Q, band balancing, airtime fairness, QoS, and ACL features. 4. The proposed access point should be able to act as WIDs/WIPS. 5. The proposed access point should provide zero service interruption and handle client traffic if the controller goes down.

		Security & Monitoring 1. The proposed access point should support auth/encryption methods for wireless, i.e., Open, WEP, WPA2-AES, WPA3-SAE, IEEE 802.1X/EAP, and AAA. 2. The proposed access point should follow Wi-Fi alliance standards WMM, 802.11d, 802.11h, and 802.11e. 3. The proposed access point should support role-based access control, rate-limiting, device fingerprinting, 802.11w MFP, and 802.11r fast roaming. 4. The proposed access point should support management frame protection. **Management Features** 1. The proposed access point should have administration access through a secure graphic user interface. 2. Apart from controller-based configuration, the proposed access point should provide standalone operation without changing AP hardware. If the controller configuration disallows GUI/CLI access, it should follow the same. **Mandatory Compliance:** 1. The proposed access point should be plenum-rated (UL 2043). 2. The proposed access point should have an operating temperature of 0-40 ºC. 3. The proposed access point should have been approved by the Wireless Planning Commission (TRAI, Govt of India). ETA certificates or Wi-Fi alliance certificates are also mandatory. **Warranty** 1. The proposed access point, all licenses, and accessories should be supplied with a five-year warranty. The OEM should have a 24x7 support center. OEM should have an India toll-free number reflected on the official website. The vendor will provide documentary proof regarding support and warranty directly from the OEM. 2. OEM should not have announced the “End of Sale” and “End of Life” for the proposed product at the time of bidding.
13	Access point type 2	Supply, configuration, and installation of 8:8X8 Wi-Fi indoor access point as per the following specifications. **Radio Specifications** 1. The proposed access point should be a dual-band, dual-radio indoor access point. The minimum data rate supported shall be 4800 Mbps in 5 GHz and 1140 Mbps in 2.4 GHz. 2. The proposed access point should have 8x8:8 MU-MIMO antennas for transmission in 5 GHz and 4X4:4 MU-MIMO in 2.4 GHz. 3. The proposed access point should have at least a 2 dBi antenna gain for both radios. 4. The proposed access point must have MU-MIMO antennas. 5. The proposed access point should support the latest amendments of IEEE 802.11 a/b/g/n/ac/ax. 6. The proposed access point should provide at least 18 dBm transmit power on both radios. 7. The proposed access point should have adaptive antenna technology/beam forming technology for performance optimization and interference mitigation features. **Interface and Power Requirements** 1. The proposed access point should have at least one 100/1000/2500/5000 Mbps RJ-45-based ethernet PoE

		port. 2. The proposed access point should have at least one 100/1000 Mbps RJ-45-based ethernet port. 3. The proposed access point should have a maximum power consumption of 35 Watts for full functionality. 1. The proposed access point should have IoT /BLE Radio. **Networking Requirements** 1. The proposed access point should handle a minimum of 200 concurrent devices. 2. The proposed access point should be flexible hardware to be deployed as standalone and controller based. 3. The proposed access point should support IPv6, IEEE 802.1Q, band balancing, airtime fairness, QoS, and ACL features. 4. The proposed access point should be able to act as WIDs/WIPS. 5. The proposed access point should provide zero service interruption and handle client traffic if the controller goes down. **Security & Monitoring** 1. The proposed access point should support auth/encryption methods for wireless, i.e., Open, WEP, WPA2-AES, WPA3-SAE, IEEE 802.1X/EAP, and AAA. 2. The proposed access point should follow Wi-Fi alliance standards WMM, 802.11d, 802.11h, and 802.11e. 3. The proposed access point should support role-based access control, rate-limiting, device fingerprinting, 802.11w MFP, and 802.11r fast roaming. 4. The proposed access point should support management frame protection. **Management Features** 1. The proposed access point should have administration access through a secure graphic user interface. 2. Apart from a controller-based configuration, the proposed access point should provide standalone operation without changing the AP hardware. If the controller configuration disallows GUI/CLI access, it should follow the same. **Mandatory Compliance:** 1. The proposed access point should be plenum-rated (UL 2043). 2. The proposed access point should have an operating temperature of 0-40 ºC. 3. The proposed access point should have been approved by the Wireless Planning Commission (TRAI, Govt of India). ETA certificate or Wi-Fi alliance certificate is also mandatory. **Warranty** 1. The proposed access point should be supplied with a five-year warranty. The OEM should have a 24x7 support center. OEM should have an India toll-free number reflected on the official website. The vendor will provide documentary proof regarding support and warranty directly from the OEM. 2. OEM should not have announced the “End of Sale” and “End of Life” for the proposed product at the time of bidding.

14.	Access point type 3	Supply, configuration, and installation of 2:2X2 Wi-Fi outdoor access point per the following specifications. 1. The proposed access point should be a dual-band, dual-radio outdoor. The minimum data rate supported shall be 1150 Mbps in 5 GHz and 570 Mbps in 2.4 GHz. 2. The proposed access point should have 2x2:2 MU-MIMO antennas for transmission in both bands. 3. The proposed access point must have MU-MIMO antennas. 4. The proposed access point should support the latest amendments of IEEE 802.11 a/b/g/n/ac/ax. 5. The proposed access point should have a 1 X 10/100/1000/2500 Mbps RJ-45 POE port. 6. The proposed access point should be centrally managed and able to work as a standalone. 7. The proposed access point should operate in full MU-MIMO mode with 802.3af/at POE. 8. The proposed access point must be supplied with a POE Injector from the same OEM. 9. The proposed access point should support security mechanisms to protect the communication between the wireless controller and the access point. 10. The proposed access point should detect clients with dual-band capability and automatically steer such clients to use the 5 GHz band instead of the 2.4 GHz band. 11. The proposed access point should have dual-polarized antennas, which should be integrated inside the access point enclosure to minimize damage and create a low-profile unit that does not stand out visually. 12. The proposed access point should have omnidirectional antennas. 13. The proposed access point should support 802.1q VLAN tagging. 14. The proposed access point should support authentication/encryption methods for wireless, i.e., Open, WEP, WPA2-AES, IEEE 802.1X/EAP, and AAA. 15. The proposed access point should support role-based access control, rate-limiting, device fingerprinting, 802.11w MFP, and 802.11r fast roaming. 16. The proposed access point should support management frame protection. 17. The proposed access point should follow Wi-Fi alliance standards WMM, 802.11d, 802.11h, and 802.11e. 18. The proposed access point should select channels based on measuring throughput capacity in real-time. The proposed access point should support transmit power tuning in 1dB increments to reduce interference and RF hazards. 20. The proposed access point should have at least a 5 dBi antenna gain for both radios. 21. The proposed access point should support 8 BSSIDs on both radios for multiple differentiated user services. 22. The proposed access point should support 250 or more clients. 23. The proposed access point should support 16 SSID. 24. The proposed access point should support IPv6 clients. 25. The proposed access point should support remote capture of 802.11 and/or 802.3 frames without disrupting client access. 26. The proposed access point should have an operating temperature of -10°C to 60°C. 27. The proposed access point should have an operating humidity of 5% to 90%. 28. The proposed access point should have been approved by the Wireless Planning Commission (TRAI, Govt of India). ETA certificate or Wi-Fi alliance certificate is also mandatory.

		29. The proposed access point must be IP67 rated and have a minimum of 100 km/h wind survivability. 30. The proposed access point should have a mechanism for physical device locking using a padlock /Kensington lock/equivalent. This mechanism could be used with metallic mounts, if required. **Warranty** 1. The proposed access point should be supplied with a five-year warranty. The OEM should have a 24x7 support center. OEM should have an India toll-free number reflected on the official website. The vendor will provide documentary proof regarding support and warranty directly from the OEM. 2. OEM should not have announced the "End of Sale" and "End of Life" for the proposed product at the time of bidding.
15	Access Point Type 4	Supply, configuration, and installation of 2:2X2 Wi-Fi indoor access point per the following specifications. **Radio Specifications** 1. The proposed access point should be a dual-band, dual-radio indoor access point. The minimum data rate supported shall be 1200 Mbps in 5 GHz and 570 Mbps in 2.4 GHz. 2. The proposed access point should have 2x2:2 MU-MIMO antennas for transmission on both bands. 3. The proposed access point must have MU-MIMO antennas. 4. The proposed access point should have at least a 3 dBi antenna gain for 5GHz and 3 dBi for 2.4GHz radio. 5. The proposed access point should support a minimum of 1.7 Gbps aggregate data rates. 6. The proposed access point should support the latest amendments of IEEE 802.11 a/b/g/n/ac/ax. 7. The proposed access point should provide at least 18 dBm transmit power on both radios. 8. The proposed access point should support at least 16 SSIDs. 9. The proposed access point should have adaptive antenna technology/beam forming technology for performance optimization and interference mitigation features. **Interface and Power Requirements** 1. The proposed access point should have at least one 100/1000 Mbps RJ-45-based Ethernet PoE port. 2. The proposed access point should have a maximum of 35 Watts of power consumption for full functionality. 3. The proposed access point should have IoT /BLE Radio. **Networking Requirements** 1. The proposed access point should handle a minimum of 100 concurrent devices. 2. The proposed access point should be flexible hardware that can be deployed standalone, and controller based. 3. The proposed access point should support IPv6, IEEE 802.1Q, band balancing, airtime fairness, QoS, and ACL features. 4. The proposed access point should be able to act as WIDs/WIPS. 5. The proposed access point should provide zero service interruption and handle client traffic if the controller goes down. **Security & Monitoring** 1. The proposed access point should support auth/encryption methods for wireless, i.e., Open, WEP, WPA2-AES, WPA3-SAE, IEEE 802.1X/EAP, and AAA.

		2. The proposed access point should follow Wi-Fi alliance standards WMM, 802.11d, 802.11h, and 802.11e. 3. The proposed access point should support role-based access control, rate-limiting, device fingerprinting, 802.11w MFP, and 802.11r fast roaming. 4. The proposed access point should support management frame protection. **Management Features** 1. The proposed access point should have administration access through a secure graphic user interface. 2. Apart from controller-based configuration, the proposed access point should provide standalone operation without changing AP hardware. If the controller configuration disallows GUI/CLI access, it should follow the same. **Mandatory Compliance:** 1. The proposed access point should be plenum-rated (UL 2043). 2. The proposed access point should have an operating temperature of 0-40 ºC. 3. The proposed access point should have been approved by the Wireless Planning Commission (TRAI, Govt of India). ETA certificate or Wi-Fi alliance certificate is also mandatory. **Warranty** 1. The proposed access point, all licenses, and accessories should be supplied with a five-year warranty. The OEM should have a 24x7 support center. OEM should have an India toll-free number reflected on the official website. The vendor will provide documentary proof regarding support and warranty directly from the OEM. 2. OEM should not have announced the "End of Sale" and "End of Life" for the proposed product when bidding.
16	XGS-PON OLT	Supply, installation, and configuration of fully populated/ loaded OLT device with EMS per the following specifications- **ITU-T standard:** 1. The proposed XGS-PON OLT should support G.984.1 (General Characteristics). 2. The proposed XGS-PON OLT should support G.984.2 (Physical Media Dependent (PMD) layer). 3. The proposed XGS-PON OLT should support G.984.3 (Transmission convergence layer specification). 4. The proposed XGS-PON OLT should support G.984.4 (ONT management and control interface specification). 5. The proposed XGS-PON OLT should support G.9807.1 (10-Gigabit-capable symmetric passive optical network). 6. The proposed XGS-PON OLT should support GPON cards with an upstream rate of 1.244 Gbps and a downstream rate of 2.488 Gbps. 7. The proposed XGS-PON OLT should support XGS-PON cards with an upstream rate of 9.95 Gbps and a downstream rate of 9.95 Gbps. **Features:** 1. The proposed XGS-PON OLT should support dynamic bandwidth allocation (DBA) for upstream traffic. 2. The proposed XGS-PON OLT should support advanced encryption standards (AES) for downstream traffic.

		3. The proposed XGS-PON OLT should support forward error correction (FEC) for upstream and downstream traffic. 4. The proposed XGS-PON OLT should support IP telephony. **Chassis:** 1. The proposed XGS-PON OLT should be Pizza Box with a minimum of 16P combo supported. 2. The proposed XGS-PON OLT should have 16 no's XGS-PON ports populated with 16 no's XGS-PON transceivers of the same OEM. 3. The proposed XGS-PON OLT should have a redundant power supply. 4. The proposed XGS-PON OLT should support 128 ONTs per XGS-PON/ GPON port. 5. The proposed XGS-PON OLT should support Class B+, C+, and C++ PON transceivers. 6. The proposed XGS-PON OLT should support XGS-PON and GPON ports at the same time. **Switching:** 1. The proposed XGS-PON OLT should support a minimum of 4K VLAN. 2. The proposed XGS-PON OLT should support VLAN models per ONT, XGS-pon port, and VLAN Translation. 3. The proposed XGS-PON OLT should support a minimum of 64K MAC addresses. 4. The proposed XGS-PON OLT should support spanning tree protocols like STP, MSTP, etc. 5. The proposed XGS-PON OLT should support 1K multicast groups. 6. The proposed XGS-PON OLT should support VLAN Mapping as untagged, port-based, 802.1Q tagged, and QinQ VLAN. 7. The proposed XGS-PON OLT should support IGMPv2 and IGMPv3 snooping. 8. The proposed XGS-PON OLT should support static routing for IPv4 and IPv6. 9. The proposed XGS-PON OLT should support ONU remote loop detection and prevention. 10. The proposed XGS-PON OLT should support security mechanisms for DOS attacks such as ARP, Syn flood, Smurf, and ICMP attacks. 11. The proposed XGS-PON OLT should support SNI and XGS-PON port mirroring. **Network card:** 1. The proposed XGS-PON OLT should support a 100G uplink port. 2. The proposed XGS-PON OLT should have at least 2 x 100G optical uplink interfaces. 3. The proposed XGS-PON OLT should have two no's QSFP28 SR transceivers of the same OEM. **Voice:** 1. The proposed XGS-PON OLT should support Asterisk-based IP telephony. **Security:** 1. The proposed XGS-PON OLT should support DHCP snooping, filtering, and relay. 2. The proposed XGS-PON OLT should support port MAC-based IP binding. 3. The proposed XGS-PON OLT should support broadcast/ Multicast protection/ IP anti-spoofing protection, MAC spoofing prevention, IP source guard, and uplink loop detection. 4. The proposed XGS-PON OLT should support rogue ONU/ONT detection, isolation, and mitigation, ONU auto registration & ONU auto-discovery.

		5. The proposed XGS-PON OLT should support ACL based on packet filtering, QoS policing (IPv4 & Ipv6), and CLI access control. **Management:** 1. The proposed XGS-PON OLT should have a management and console port. 2. The proposed XGS-PON OLT should support CLI with multiple privileges. 3. The proposed XGS-PON OLT should support remote management using SNMP v1/v2/v3, telnet, and SSH. 4. The proposed XGS-PON OLT should support RADIUS, TACACS+ server for authentication. 5. The proposed XGS-PON OLT should support monitoring using RMON for temperature, humidity, fan speed, and CPU. 6. The proposed XGS-PON OLT should generate alarms with different categories, i.e., critical/major/minor severity. 7. The proposed XGS-PON OLT should support local and remote syslog logging. 8. The proposed XGS-PON OLT should support NTPv4 for time synchronization. **Operating Requirements:** 1. The proposed XGS-PON OLT should support operating temperatures from 0º to 45ºC. 2. The proposed XGS-PON OLT should support operating humidity from 10% to 85%. **Physical Requirements:** 1. The proposed XGS-PON OLT should be 1 RU 19" standard rack mountable. 2. The proposed XGS-PON OLT must have full front access only. 3. The proposed XGS-PON OLT should have a field-replaceable fan module/tray. **Power Supply:** 1. The proposed XGS-PON OLT should have a redundant power supply with a 6/16 Amp Indian power socket. 2. The proposed XGS-PON OLT should have an AC power supply. **XGS-PON transceiver specifications:** 3. The proposed XGS-PON OLT should have 16 no XGS-PON transceivers. 4. The proposed XGS-PON transceiver should be ITU-TG.9807.1 single fiber bi-directional optical transceiver. 5. The proposed XGS-PON transceiver should be a single-mode, single-fiber transceiver. 6. The proposed XGS-PON transceiver should be a 1577nm 9.95 Gbps transmitter and a 1270nm 9.95 Gbps receiver. 7. The proposed XGS-PON transceiver should be hot-swappable. 8. The proposed XGS-PON transceiver should be SC simplex receptacle form factor. 9. The proposed XGS-PON transceiver should have transmitter power from 1.5 dBm to 7 dBm. 10. The proposed XGS-PON transceiver should have a receiver sensitivity of less than or equal to -28dBm. **Element Management Systems.** 1. The proposed XGS-PON OLT must be supplied with EMS (element management system). 2. The EMS should be supplied with compatible hardware and operating systems. 3. The EMS should support OLT remote software upgrades. 4. The EMS should be able to manage the uplink and PON interface.

		5. The EMS should be able to manage the service profile (ONU profile). 6. The EMS should be able to manage the VLAN profile. 7. The EMS should be able to manage ONU's subscriber interface. 8. The EMS should be able to manage ONU's service management. 9. The EMS should be able to create, activate, deactivate, and delete ONT. 10. The EMS should be able to ONT remote software upgrades. 11. The EMS should be able to manage ONT Profile. 12. The EMS should be able to monitor current and historical alarms. 13. The EMS should be able to monitor events. 14. The EMS should be able to filter alarms. 15. The EMS should be able to monitor the equipment's (OLT, ONT) performance. 16. The EMS should be able to monitor interface performance. 17. The EMS should be able to export performance reports. 18. The EMS should be able to view topology based on graphical and hierarchical based. 19. The EMS should discover ONT automatically and manually. 20. The EMS should support multiple user accounts. 21. The EMS should support user group management. 22. The EMS should support role-based access controls. 23. The EMS should support manual and scheduled backups of all types of equipment configuration. 24. The EMS should support manual and scheduled backups of the EMS database. 25. The EMS should support EMS log management. 26. The EMS should support inventory management Warranty 27. The proposed XGS-PON OLT and all components should be supplied with a five-year warranty. The OEM should have a 24x7 support center. OEM should have an India toll-free number reflected on the official website. The vendor will provide documentary proof regarding support and warranty directly from the OEM. 28. OEM should not have announced the "End of Sale" and "End of Life" for the proposed product at the time of bidding.
17	ONU type 1	Supply, installation, and configuration of XGS-PON ONU device per the following specifications- 1. The Proposed XGS ONU should have at least 4 Gigabit Ethernet ports. 2. The Proposed XGS ONU should have one XGS-PON port. 3. The Proposed XGS ONU should have dual-band wireless. 4. The Proposed XGS ONU should support the IEEE 802.1D bridge. 5. The Proposed XGS ONU should support IEEE 802.1p QoS. 6. The Proposed XGS ONU should support ITU-T G.987. 7. The Proposed XGS ONU should support IGMP Snooping v2/v3. 8. The Proposed XGS ONU should support a 1K MAC address. 9. The Proposed XGS ONU should support the MAC address limit.

		10. The Proposed XGS ONU should support IEEE 802.1Q (VLAN). 11. The Proposed XGS ONU should support VLAN Translation. 12. The Proposed XGS ONU should have a 1x RJ-11 port for a traditional landline phone. 13. The Proposed XGS ONU should have an operating temperature of 0 to 45 ºC. 14. The Proposed XGS ONU should have 10% to 85% operating humidity. 15. The Proposed XGS ONU should be wall or table mountable. 16. The Proposed XGS ONU should support the band starting. 17. The Proposed XGS ONU should support 802.11 b/g/n/ac with integrated antennas. 18. The Proposed XGS ONU should have a power supply with input 100-240VAC, 50/60Hz with a 6 Amp Indian socket. **Warranty** 1. The proposed XGS-PON ONU should be supplied with a five-year warranty. The OEM should have a 24x7 support center. OEM should have an India toll-free number reflected on the official website. The vendor will provide documentary proof regarding support and warranty directly from the OEM. 2. OEM should not have announced the “End of Sale” and “End of Life” for the proposed product at the time of bidding.
18	ONU type 2	Supply, installation, and configuration of XGS-PON ONU device as per the following specifications- 1. The Proposed XGS ONU should have at least one Gigabit Ethernet port. 2. The Proposed XGS ONU should have one XGS-PON port. 3. The Proposed XGS ONU should have wireless. 4. The Proposed XGS ONU should support the IEEE 802.1D bridge. 5. The Proposed XGS ONU should support IEEE 802.1p QoS. 6. The Proposed XGS ONU should support ITU-T G.987. 7. The Proposed XGS ONU should support IGMP Snooping v2/v3. 8. The Proposed XGS ONU should support a 1K MAC address. 9. The Proposed XGS ONU should support the MAC address limit. 10. The Proposed XGS ONU should support IEEE 802.1Q (VLAN). 11. The Proposed XGS ONU should support VLAN Translation. 12. The Proposed XGS ONU should have an operating temperature of 0 to 45 ºC. 13. The Proposed XGS ONU should have operating humidity from 10% to 85%. 14. The Proposed XGS ONU should be wall or table mountable. 15. The Proposed XGS ONU should support 802.11 b/g/n with integrated antennas. 16. The Proposed XGS ONU should have a power supply with input 100-240VAC, 50/60Hz with a 6 Amp Indian socket. Warranty 1. The proposed XGS-PON ONU should be supplied with a five-year warranty. The OEM should have a 24x7 support center. OEM should have an India toll-free number reflected on the official website. The vendor

		will provide documentary proof regarding support and warranty directly from the OEM. 2. OEM should not have announced the “End of Sale” and “End of Life” for the proposed product at the time of bidding.
19	Smart Rack	Supply, installation, and configuration of smart rack as per the following specifications- **General Requirements** 1. The proposed smart racks should be self-contained. 2. The proposed smart rack should have proper air circulation within the rack. 3. The proposed smart rack should have 100% assured compatibility with all equipment conforming to DIN 41494 (General Industrial Standard for equipment) or Equivalent EIA /ISO / EN Standard. 4. The proposed smart racks should be at least 42U in height with 800X1200 for Network/ Server applications. **Physical Specifications** 1. The proposed smart rack should support a static load of at least 1,500 kg. 2. The proposed smart rack should have a front glass door and a back metal door. 3. The proposed smart rack should have two side panels, a top Cover, four vertical frame posts, four adjustable 19” verticals, and grounding and bonding accessories pre-installed by the manufacturer. **Equipment Access & Installation** 1. The proposed smart rack should have 42U usable Space. 2. The proposed smart rack should have 4 No’s adjustable, 19” verticals with punched 10mm square hole and Universal 12.7mm-15.875mm-15.875mm alternating hole pattern that offers greater mounting flexibility, with Numbered U positions. 3. The proposed smart rack should include mounting hardware for equipment fixing. 4. The proposed smart rack’s front and back doors should be easily detachable. 5. The proposed smart rack’s side panels should flush with the frame so the overall width of the unit does not change with the side panels installed. **Material Requirements** 1. The proposed smart rack’s weight-bearing components should be made from steel with a thickness not less than 2.0 mm, the 19” equipment mounting angle should be 2.5MM, and other parts not less than 1mm. 2. The proposed smart rack’s sheet metal parts should be pre-treated and powder-coated to meet ASTM standards. **Grounding Requirements** 1. The proposed smart rack’s enclosure components, i.e., frame and door, should be bonded together and to the rack ground point. 2. The proposed smart rack should be provided with a rack ground point to further ground the telecom ground bus bar system. 3. The proposed smart rack should be provided with all grounding and bonding as per UL Standards. 4. The proposed smart rack should have horizontal or vertical ground bus bars for equipment grounding. **Certifications, Environmental and Safety Requirements**

		1. The proposed smart rack should be manufactured by ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 & ISO 27001:2013 certified companies and should have proper EHS Policy. 2. The proposed smart rack must be UL Certified. 3. The proposed smart rack must be RoHS Compliance. 4. The proposed smart rack must comply with DIN41494 and Equivalent EIA/ISO/EN /CEA Standards. 5. The proposed smart rack should comply with a minimum IP 50 rating for protection against touch, ingress of foreign bodies, and ingress of water. 6. The proposed smart rack should protect the user from mechanical hazards and generally meet the requirements for a mechanical enclosure (stability, mechanical strength, aperture sizes, etc.) as defined in IEC 60950 Third Edition. **Ventilation and Thermal Management** 1. The proposed smart rack should have no ventilation on the front & rear doors to avoid cold air leakage. 2. The proposed smart rack should provide the means to mount optional cooling accessories for high-density. 3. The proposed smart rack should provide a blanking panel kit to prevent the Recirculation of hot exhaust air. 4. The proposed smart rack should provide an air seal kit to seal all gaps to prevent the recirculation of hot air. 5. The proposed smart rack should have PG gland entry and exit cutouts to avoid cold air leakage. **Rack AC Unit** 1. The proposed smart rack‘s AC unit should be in rack cooling type. 2. The proposed smart rack’s AC should be able to deliver a cooling capacity of 7kW. 3. The proposed smart rack’s AC unit should be provided with a fixed scroll compressor. 4. The proposed smart rack’s AC unit should be running on R 407C Refrigerant. 5. The proposed smart rack’s indoor unit should not exceed 900mm D x 483 mm W x 268 mm H. 6. The proposed smart rack’s outdoor unit should not exceed 450mm D x 900mm W x 700mm H. **Intelligent Power Distribution Units** 1. The proposed smart rack’s iPDU should have UL-based busbar architecture to minimize downtime. 2. The proposed smart rack’s iPDU should have a 1-phase 16A load as per site requirements. 3. The proposed smart rack’s iPDU should have an MTBF minimum of 1 million hours. 4. The proposed smart rack’s iPDU should have 24 Outlets: IEC C13 X 20 and IEC C19 X 4 sockets. 5. The proposed smart rack’s iPDU controller should have a minimum configuration of 128MB DDR2 RAM, ARM Cortex A5 536 MHz, and 16MB SPI Flash. 6. The proposed smart rack’s iPDU should have a field-replaceable controller to avoid downtime during maintenance. 7. The proposed smart rack’s iPDU should provide data on billing grade accuracy, i.e., +/- 1%. 8. The proposed smart rack’s iPDU controller should have two nos x 1G network ports for network redundancy or access from different networks, thereby differentiating external and internal networks. 9. The proposed smart rack’s iPDU should support USB or Ethernet Cascading up to 16 PDUs.

		10. The proposed smart rack's iPDU should support multiple sensors like Temperature & Humidity, Water Leakage Detection, Proximity, Differential Air Pressure, Smoke detection, contact closure, Airflow, Web Camera, and Asset Management System, i.e., iPDU should support connecting up to 32 Sensors using appropriate Hardware / Hubs. 11. The proposed smart rack's iPDU should support a smart lock door system, asset management tags & sensors. 12. The proposed smart rack's iPDU should have dual USB ports, supporting auto mass & independent configuration, Wi-Fi, Webcam, and cascading between PDUs. 13. The proposed smart rack's iPDU should support sending/recording alerts to users via SNMP, SMTP, GSM SMS, Syslog, etc. 14. The proposed smart rack's iPDU should support a variety of access protocols, including HTTP, HTTPS, NTP, SMTP, SSH, Telnet, SSL, SNMP v1, v2 and v3, SNMP INFORMS, and JSON-RPC. 15. The proposed smart rack's iPDU should support integration with LDAP/LDAPS and AD for secure authentication, support setting Password Policies, and strong encryption **UPS** 1. The proposed smart rack's UPS capacity shall be 6 KVA Online Double Conversion UPS with 1 Ph I/P & 1 Ph output. 2. The proposed smart rack's UPS shall be mounted on a 19-inch Rack through proper Rack support brackets as required. 3. The proposed smart rack's UPS shall have an input voltage range of 305-480 V AC. 4. The proposed smart rack's UPS should have a noise level of less than 50 Dba. 5. The proposed smart rack's UPS Input Current harmonic distortion shall be less than 3%. 6. The proposed smart rack's UPS shall be supplied with an SNMP Card to monitor all vital parameters. 7. The proposed smart rack's UPS should have an operating temperature of 40 deg C for Continuous operation without any derating. 8. The proposed smart rack's UPS model/capacity offered shall have EN 62040-1, 62040-2, 62040-3 & PEP certifications. 9. The proposed smart rack's UPS battery backup shall comprise 20 blocks of 12V, 5 AH VRLA SMF Batteries. **Warranty** 1. The proposed smart rack should be supplied with a five-year warranty. The OEM should have a 24x7 support center. OEM should have an India toll-free number reflected on the official website. The vendor will provide documentary proof regarding support and warranty directly from the OEM. 2. OEM should not have announced the "End of Sale" and "End of Life" for the proposed product at the time of bidding

20	Outdoor Racks/ Street Cabinet 42 U rack Size	Supply, installation, and configuration of network rack as per the following specifications- Usable Rack Size: - 42U Robust steel sheet welded construction consisting of top, bottom, and side panels equipped with base plinth. Front metal door with gasket protection and provided with IP 55 compatible multi-point lock. The door is equipped with a filter and hood. The hood is provided with louvers for ventilation. Ventilation and protection are provided through an IP 54/IP 55 compatible filter. Rear metal door with gasket protection and provided with IP 55 compatible multi-point lock. The door is equipped with a filter and hood. The hood is provided with louvers for ventilation. Ventilation and protection are provided through an IP 54/IP 55 compatible filter. The fan is fitted along with the filter at the top cover. Applicable Standard: IS 9606-1980, IP 54/IP 55 certified product according to IEC 60529:2013, ISO 9001:2008, ISO 14001: 2015. Corrosion Resistance: Salt spray test according to ISO 9227 (NSS test) and IEC EN 60068-2-11 (Ka test) for 168 hours: degree of Rusting Ri1 according to ISO 4628-3, propagation ≤1 mm according to ISO 4628-8 Rack Type: - Floor mount rack Depth: -800 mm width: - 600 mm Degree of protection: - IP 54 4 Cable Manager Installation: - floor mount as per requirement.
21	Outdoor Racks/ Street Cabinet 15 U rack Size	Supply, installation, and configuration of network rack as per the following specifications- Usable Rack Size: - 15U. Robust steel sheet welded construction consisting of top, bottom, rear, and side panels. Front metal door with gasket protection and double-bit lock. The door is equipped with a filter and hood. The hood is provided with louvers for ventilation. Ventilation and protection are provided through an IP 54/IP 55 compatible filter. The fan is fitted along with the filter at the top cover. Ventilation and protection are provided through an IP 54/IP 55 compatible filter. Applicable Standard: IS 9606-1980, IP54/IP55 certified product according to IEC 60529:2013, ISO 9001:2008, ISO 14001: 2015 Usable Depth: -600 mm Usable width: - 600 mm Degree of protection: - IP 54 4 Cable Manager Corrosion Resistance: Salt spray test according to ISO 9227 (NSS test) and IEC EN 60068-2-11 (Ka test) for 168 hours: degree of Rusting Ri1 according to ISO 4628-3, propagation ≤1 mm according to ISO 4628-8. Installation: - wall mount, pole mount, or as per requirement.

22	Indoor Network racks 42 U	Supply and installation of network rack with the following specifications. Rack Size: - 42U modular construction of the rack made of 4 vertical, 4 horizontal & 4 depth extruded aluminum alloy multi-hollow profiles bolted and joined together with links and a corner block. 2 or 3 pairs of support channels to equate the load evenly and castor provision at the bottom side. Front perforated door with 3-point lock Rear perforated door with 3-point lock Compliance & standard: IS 9606-1980, UL 2416, IEC EN 60529, IEC EN 62262, ISO 9001:2008, ISO 14001: 2015. Degree of Protection: IP 20 according to IEC 60529:2013, IK 08 according to IEC EN 62262:2002 Weight capacity: Load Capacity of up to 1200 Kg. Corrosion resistance: Salt spray test according to ISO 9227 (NSS test) and IEC EN 60068-2-11 (Ka test) for 168 hours: degree of Rusting Ri1 according to ISO 4628-3, propagation ≤1 mm according to ISO 4628-8. Rack Type: - floor mounted rack Depth: - 1000 mm width: - 800 mm 10 Cable Manager 2 Power distribution unit of 6/16 amp 10 sockets each Installation: - floor Mount only or as per requirement.
23	Indoor Network racks 15 U	Supply and installation of network rack with the following specifications Rack Size: - 15U Rack Type: - Wall mount rack single section side openable, 2 side panels are made up of steel sheet with slots for ventilation and equipped with slam latch Compliance & standard: IS 9606-1980, UL 2416, ISO 9001:2008, ISO 14001: 2015 Weight Capacity: Load capacity of up to 50 Kg. Corrosion resistance: Salt spray test according to ISO 9227 (NSS test) and IEC EN 60068-2-11 (Ka test) for 168 hours: degree of Rusting Ri1 according to ISO 4628-3, propagation ≤1 mm according to ISO 4628-8 Depth: - 600 mm width: - 600 mm 4 Nos Cable Managers Insta llation: - On the wall with the help of fasteners screw or as per requirement.

24	Indoor Network racks 6 U	Supply and installation of network rack with the following specifications. Rack Size: - 6U Rack Type: - Wall mount rack single section side openable, two side panels are made up of steel sheet with slots for ventilation and equipped with slam latch Compliance & standard: IS 9606-1980, UL 2416, ISO 9001:2008, ISO 14001: 2015 Weight Capacity: Load capacity of up to 50 Kg. Corrosion resistance: Salt spray test according to ISO 9227 (NSS test) and IEC EN 60068-2-11 (Ka test) for 168 hours: degree of Rusting Ri1 according to ISO 4628-3, propagation ≤1 mm according to ISO 4628-8 Depth: - 500 mm width: - 600 mm 2 Nos Cable Manager Installation: - On the wall with the help of fasteners screw or as per requirement.
25	144 Port rack mounted LIU with single mode pigtail and coupler	Supply and installation of fully populated/loaded Fiber LIU with single mode SC APC type pigtails G.657A1 and coupler plate or splice cassette. Hook and loop style features are incorporated in the top and bottom of the rear of the enclosure to assist in cable strain relief and slack management. Accommodates up to 24 universal splice cassettes with a 24-splice capacity. The LIU should have 4 no's cutouts for cable entry. The material used: - Cold rolled steel Pigtails type: - Single-mode connector type: - SC APC Number of Ports: - 144 Size: - 4 Rack unit Suitable for pigtail splicing or IFC Breakout cables
26	24 Port rack mounted LIU with single mode pigtail and coupler	Supply and installation of fully populated/loaded Fiber LIU with single mode SC APC type pigtails G.657A1 and coupler. The material used: - Cold rolled steel Pigtail type: - Single-mode connector type: - SC APC duplex Number of Ports: - 24 Size: - 1 Rack unit Suitable for pigtail splicing or IFC Breakout cables

27	6 Port rack mounted LIU with single mode pigtail and coupler	Supply and installation of fully populated/loaded Fiber LIU with single mode SC APC type pigtails G.657A1 and coupler. The material used: - Cold rolled steel Pigtail type: - Single-mode connector type: - SC APC simplex Number of Ports: - 6 Size: - 1 Rack unit Suitable for pigtail splicing or IFC Breakout cables
28	2 Port Joint Closer box/ Home termination box with pigtails and couplers	Supply and installation of fully populated/loaded Fiber joint closure box rectangular type with single mode SC APC type pigtails and couplers. Pigtail type: - Single-mode G.657A1 connector type: - SC APC Number of Ports: - 2 Installation: - On the wall or as per requirement.
29	Joint Closer bamboo Type suitable for 144-core fiber	Supply and installation of IP68 mechanical type, waterproof fiber optic splice closure box. The enclosure box must have 4 round ports and six trays suitable for 144 core fiber cable (8-17mm diameter cable). Used for aerial, wall- mounted, pole-mounted, manhole, and duct mounting.
30	144 cores armored Single-mode fiber cable, multi-tube, 12 cores per tube	Supply and laying of 144 core single-mode armored fiber cable as per the following specifications. Fiber type: Single-mode (SM) G.657A1 Core count: 144 Tube count: 12 tubes Fiber count: 12 fibers per tube Cable Type: Loose Tube Outer jacket material: Water-tight, Flame retardant, Low smoke zero-halogen Armour: Corrugated steel tape-armored of greater than 0.15mm thickness. Cable overall diameter: 16.0 mm or more Conductor type: loose tube, gel-filled Cable minimum tensile strength of the installation should be more than 3200 N Cable minimum crush resistance of the installation should be more than 21 kN/km Industry Standard: - With the latest amendments of IEC 60794/Telcordia (BELLCORE) GR 20, IEC 60793. IEC Flammability: IEC 60332-1-2/IEC 60332-3-22 Laying: On the wall, underground with the help of GI saddle clips, in the DWC pipe, or as per requirement.

31	24 Core armored single-mode fiber cable	Supply and laying of 24-core single-mode armored fiber cable as per the following specifications. Fiber type: Single-mode (SM) G.657A1 Core count: 24 cores Cable Type: Loose tube Outer jacket material: Water-tight, Flame retardant, Low smoke zero halogen Armour: Corrugated steel tape-armored Cable overall diameter: 15.0 mm or more Conductor type: loose tube, gel-filled Cable minimum tensile strength of the installation should be more than 3500 N Cable minimum crush resistance of the installation should be more than 21 kN/km Industry Standard: - With the latest amendments of IEC 60794/Telcordia (BELLCORE) GR 20, IEC 60793. IEC Flammability: IEC 60332-1-2/IEC 60332-3-22 Laying: On the wall, underground with the help of GI saddle clips, in the DWC pipe, or as per requirement.
32	12 Core armored single-mode fiber cable	Supply and laying of 12-core single-mode armored fiber cable per the following specifications. Fiber type: Single-mode (SM) G.657A1 Core count: 12 cores Cable Type: Loose Tube Outer jacket material: Water-tight, Flame retardant, Low smoke zero halogen Armor: Corrugated steel tape armored Cable overall diameter: 12.0 mm or more Conductor type: loose tube, gel-filled Cable minimum tensile strength of the installation should be more than 2200 N Cable minimum crush resistance of the installation should be more than 21 kN/km Industry Standard: - With the latest amendments of IEC 60794/Telcordia (BELLCORE) GR 20, IEC 60793. IEC Flammability: IEC 60332-1-2/IEC 60332-3-22 Laying: On the wall and underground with the help of GI saddle clips or in HDPE pipe.
33	6 Core armored single-mode fiber cable	Supply and laying of 6-core single-mode armored fiber cable per the following specifications. Fiber type: Single-mode (SM) G.657A1 Core count: 6 cores Cable Type: Loose Tube Outer jacket material: Water-tight, Flame retardant, Low smoke zero halogen Armor: Corrugated steel tape armored Cable overall diameter: 8.5 mm or more Conductor type: loose tube, gel-filled Cable minimum tensile strength of the installation should be more than 2200 N Cable minimum crush resistance of the installation should be more than 21 kN/km Industry Standard: - With the latest amendments of IEC 60794/Telcordia (BELLCORE) GR 20, IEC 60793. IEC Flammability: IEC 60332-1-2/IEC 60332-3-22

		Laying: On the wall and underground with the help of GI saddle clips or in HDPE pipe
34	2 Core single-mode fiber cable	Supply and laying of 2-core single-mode fiber cable per the following specifications. Fiber type: Single-mode (SM) G.657A1/G.657A2 Core count: 2 cores Cable Type: Tight buffered Outer jacket material: Water-tight, Flame retardant, Low smoke zero halogen Conductor type: Tight buffer, gel-free. The cable minimum tensile strength of the installation should be more than 100 N. Industry Standard: - With the latest amendments of IEC 60794/Telcordia (BELLCORE) GR 20, IEC 60793. IEC Flammability: IEC 60332-1-2/IEC 60332-3-22 Laying: On the wall and underground with the help of GI saddle clips or in HDPE pipe.
35	Fiber patch cord SC- LC 2-meter Duplex	Supply and installation of Fiber Patch cord with the following specifications. Fiber type: Single mode (SM) Standard: - G.657A2 Patch cord type: - duplex Jacket material: - Low smoke zero halogens (LSZH) Cable length: - 2 meter/ 7 Feet Connector type (A): - SC APC Connector type (B): - LC APC
36	Fiber patch cord SC- LC 10-meter Duplex	Supply and installation of Fiber Patch cord with the following specifications. Fiber type: Single mode (SM) Standard: - G.657A2 Patch cord type: - duplex Jacket material: - Low smoke zero halogens (LSZH) Cable length: - 10 meter/ 33 Feet Connector type (A): - SC APC Connector type (B): - LC APC
37	Fiber patch cord LC- LC 2-meter Duplex	Supply and installation of Fiber Patch cord with the following specifications. Fiber type: multi-mode (MM) Standard: - G.657A2 Patch cord type: - duplex Jacket material: - Low smoke zero halogens (LSZH) Cable length: - 2 meter/ 7 Feet Connector type (A): - LC APC Connector type (B): - LC APC

38	Fiber patch cord LC- LC 10-meter Duplex	Supply and installation of Fiber Patch cord with the following specifications. Fiber type: Multi-mode (MM) Standard: - G.657A2 Patch cord type: - duplex Jacket material: - Low smoke zero halogens (LSZH) Cable length: - 10 meter/ 33 Feet Connector type (A): - LC APC Connector type (B): - LC APC
39	Fiber patch cord SC- SC 2-meter simplex	Supply and installation of Fiber Patch cord with the following specifications. Fiber type: Single mode (SM) Standard: - G.657A2 Patch cord type: - simplex Jacket material: - Low smoke Zero-halogen (LSZH) Cable length: - 2 meters/ 7 Feet Connector type (A): - SC APC Connector type (B): - SC APC
40	Fiber patch cord SC- SC 2-meter simplex	Supply and installation of Fiber Patch cord with the following specifications. Fiber type: Single mode (SM) Standard: - G.657A2 Patch cord type: - simplex Jacket material: - Low smoke Zero-halogen (LSZH) Cable length: - 10 meters/ 33 Feet Connector type (A): - SC APC simplex Connector type (B): - SC APC simplex
41	2X2 Splitter box type	Supply and installation of rack mounted fiber splitter box with the following specifications. 2×2 ABS PLC Splitter Box Fiber Mode: Single Mode Corning SMF G.657A1 Typical insertion loss: 5 db 2x Input fiber 2x Output fibers connectorized with SC APC connectors Operating bandwidth: - 1260~1650nm
42	2X8 Splitter box type	Supply and installation of rack mounted fiber splitter box with the following specifications. 2×8 ABS PLC Splitter Box Fiber Mode: Single Mode Corning SMF G.657A1 Typical insertion loss: 11 dB 2x Input fiber 8x Output fibers connectorized with SC APC connectors Operating bandwidth: -1260~1650 nm

43	1X16 Splitter box type	Supply and installation of rack mounted fiber splitter box with the following specifications. 1×16 ABS PLC Splitter Box Fiber Mode: Single Mode Corning SMF G.657A1 Typical insertion loss: 14 dB 1x Input Fiber 16x Output Fibers connectorized with SC APC connectors Operating bandwidth: - 1260~1650nm
44	CAT6A UTP cable	Supply, Laying and Testing of 4 pair, 23 AWG UTP Cat 6A Cable as per latest amendments of ANSI/TIA-568.2-D specifications with ferruled at both ends for identification with necessary tools for stripping, crimping and testing required. Cable Performance should be tested with the latest standards of ANSI/TIA-568.2-D from Intertek/ETL/3P Reports to be submitted. IEC Flammability: IEC 60332-3-22 Laying: with the help of flexible pipe, in supplied PVC pipe or as per requirement
45	24 port jack panel CAT6A	Supply, punching, and installation of fully populated/loaded CAT6A jack panel with the following specification Category: CAT-6A Size: 19” rackmount 1 rack unit with rear cable management. Number of ports. 24 Nos Accepts all RJ45 keystone jacks Accepts 23-26 AWG solid or stranded cable copper conductor 50 um gold plated on the plug contact area RJ45 Jack’s Performance should be ETL Verified, cULus listed and tested with the latest standards from Intertek/ETL/3P. Only applicable to RJ45 jacks
46	1-meter UTP patch cord CAT6A	Supply and installation of CAT6A UTP patch cord with following specifications. Type: - CAT6A Pair: - 4 pair 24/26 AWG Stranded wire pre-terminated with RJ45 plugs with slim clear anti-snag slip-on boots Suitable for EIA 568A or 568B wiring applications Sheath LSZH sheath Length 3 feet/1.0 meter
47	CAT6A Information outlet with faceplate and gang box	Supply, punching, and installation of single port CAT6A information outlet with faceplate/wall plate of 86 X 86 mm size with gang box of following specifications: - The information outlet should meet or exceed channel specifications of the latest amendments of ANSI/TIA/EIA-568-C.2 Category 6A and ISO/IEC 11801 2nd edition (2002). The information outlet should be tested for performance to the latest amendments of ANSI/TIA/EIA-568-C.2 at a minimum of 250 MHz or higher frequency for 10Gbps bandwidth at 328 feet cable length. The information outlet should have contact material with 50µ” gold/100µ” nickel plating. The information outlet must comply with the latest standards of ANSI/TIA/EIA-568, ISO/IEC: 11801, and ETL/UL/3P. The test reports of the same should be

		attached. The information outlet should have the durability of more than 700 plugin cycles. The faceplate should be made of ABS plastic. The faceplate should be white color only. The faceplate should accept CAT6/CAT6A information outlets. The faceplate should be RoHS approved and have a flame rating of UL-94 V0.
48	RJ 45 Termination plugs	Supply installation and testing of RJ45 Termination plugs as per the following specifications: - CAT6A UTP/STP Field Mount Plug, TIA Category 6A, ISO Class E, Front Connection RJ 45: Copper Clad Flexible PCB, Gold plated contacts over Palladium/Nickel, Rear Connection Copper Clad PCB, Gold plated contacts over Nickel, Connector Body Polycarbonate - UL94V-0, Category 6A - TIA 568.C.2, Category 6A - ISO/IEC 11801:2002 Ed.2, 250 MHz or Better Guaranteed 10 Gbps bandwidth for 100 meters Channel Link, c(UL)us Listed. The termination plug should suit IEEE 802.3af, 802.3at, and 802.3bt PoE applications. -40 Deg C to +70 Deg C operating temperature The transmission plug performance should be CAT 6A/Class EA and must be IP 20. The termination plug should have a wiring label for TIA 568A/B. The termination plug should have the capability for the solid wire of 22~26 AWG and support a cable diameter of 6~9 mm.
49	8” DWC duct pipe	Supply and laying of ISI marked double wall Corrugated pipe with the following specifications along with accessories in Trench/surface/recessed using saddles, clamps, fastener as required, including cutting the wall, covering DWC and making good the same as required. Inner Diameter: - 200mm +- 5 Outer Diameter: - 230mm +-5 Wall Thickness E4 & E5 min: - 1.5 & 1.1 Bar length: - 6 Meter Stiffness Class: - SN8 Standard: - IS-16098 Laying: - Underground. The Vendor/SI also needs to put a stainless-steel wire (1mm or more in diameter) for pulling fiber cables in the future
50	1” PVC conduit	Supply and laying of ISI marked medium duty PVC conduit/casing capping (25mm or more with Construction - Both the surfaces should be smooth and free from burrs, Maximum OD - 25.00 MM, Minimum OD - 24.60 MM, Minimum ID - 21.40 MM, Wall Thickness - 1.6 MM, Electrical Strength - Shall withstand 2000V for 15 Minutes, Insulation Resistance - Min 100 Mega Ohm, ISI Marked) along with accessories in surface / recessed using saddles, clamps, fasteners as required including cutting the wall, covering conduit and making goods the same as required. Laying: - On the wall with the help of GI saddle clip or as per requirement.

51	32mm HDPE duct pipe	Supply and laying of ISI-marked HDPE (High-Density Polyethylene) telecom ducts for use as Optical Fiber Cable ducts. The surface of the HDPE duct should be smooth inside and outside, free from blisters, shrinkage, holes, scratches & roughness. Outer diameter: 32 + 0.4 / - 0.0 mm, Wall Thickness: 3.0 +/- 0.2 mm, Inner diameter: 26 + 0.4 / - 0.0 mm, Thickness of Permanent lubricant: > 0.2 mm, Pressure Rating: 6 kg/sq cm, Length - 500 Meter Roll, minimum weight 240-260 gm /meter with accessories like coupler, end plug, end cap shall be included, Suitable for direct burial applications. Laying: - In Trench, underground, on the wall with the help of GI saddle clip or as required.
52	100X50 ISI casing	Supply and laying of ISI marked medium duty PVC casing capping/ trunking with the following specifications. Size - 100 X 50 mm, Wall thickness 2mm or more, Electrical strength – No breakdown at 2KV x 50 Hz for 15 Minutes, Insulation resistance - min 100 Mega Ohm, ISI marked, Dielectric constant 1.7 - 3.00 ASTM D150, Flammability – UL94V-0, Hardness 70-75 D Duro ASTM D2240) along with accessories in surface / recessed using saddles, clamps, fasteners as required including cutting the wall, covering CMS and making goods the same as required
53	Route Marker	Supplying and making cable route marker with cement concrete 1:2:4 (1 cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size) of size 60cm X 60 cm at the bottom and 50 cm X 50 cm at the top with a thickness of 10cm including MNIT-OFC inscription duly engraved as required
54	3X3 feet Chamber	Making a 3X3 feet chamber/Manhole with 6” or more wall thickness of concrete and cement and steel structure with 6 feet depth. The chamber should be installed with a removable concrete cover. The bottom of the chamber should also be made of concrete. Manholes shall be provided at every proposed and future joint location to house the joint box and the extra length of optical fiber cable (service loops). The location for Joint boxes shall be decided during the installation, and the maximum distance between 2 chambers cannot exceed 50 meters in any circumstances.
55	Moiling/ Digging/Recarpeting	Moiling/boring, refiling, and re-carpeting of soil, road, and footpath at a minimum 1524 mm depth from natural ground level and at least 10 feet distance between two man-holes or hand-holes with the help of manual labor or machinery. The Contractor may use the following trench/trench digging methods to install the DWC duct pipes: 1. Manual/hand augering (recommended up to 10 meters between manholes) 2. Impact Moling (recommended for 10-30 meters between manholes) Caution:- The contractor shall be responsible for any mishap or accident due to negligence or proper protection of open trenches, and all claims arising from such accidents shall be settled by the contractor without any liabilities to MNIT. The contractor shall ensure that no damage is caused to any underground or surface installations belonging to other public utility services and/or private parties. The contractor shall remove all bushes, undergrowth, stems, rocks, and other obstacles, etc., ensuring the minimum amount of bushes and shrubs are removed to clear the way. The contractor shall consider

		preserving trees within the right of way. Machines can be used for clearing small bushes along the route. However, trees shall not be cut or uprooted for the purpose of the movement of excavating machines. Where such necessity arises, permission from MNIT authorities must be obtained in writing to cut such trees partially.
56	Fiber fusion Splicing	Making fiber connectorization/ termination using the fusion splicing method with the following specification Coupling/Termination losses less than 0.2 dB Termination should use a fusion splicing mechanism Termination should meet EIA and IEC standards for repeatability. Operating Temperature: -40 deg C. to +85 deg C.
57	Fiber Tags	Supply and installation of fiber tags to identify fiber cable or fiber patch cord.
58	Buyback of existing infra	Buyback of existing non-functional Wi-Fi access points, network switches, UPS, racks, and jack panels. The SI should share an item-wise price list as mentioned in section XI.
59	Network lab using existing infra	Creating a network lab using existing working infra to demonstrate network equipment to CSE and ECE students.
60	Any other accessories	Supply and installation of any other accessories required at the time of installation, i.e., power cable, screw, fastener, patch cord, etc.

Section X - Sample Forms

Sl	Format Number	Format Name
	Annexure 1	Manufacturers' Authorization Form
	Annexure 2	Performance Bank Guarantee
	Annexure 3	After Sale Service Certificate
	Annexure 4	Declaration Regarding Non-Banning
	Annexure 5	No Deviation Certificate
	Annexure 6	Self-Certificate for Proven-ness
	Annexure 7	Lowest Price Certificate
	Annexure 8	Quality Certificate
	Annexure 9	Letter of Bid
	Annexure 10	Declaration of Local Content
	Annexure 11	Integrity Pact
	Annexure 12	Declaration of Land Border Clause
	Annexure 13	Similar Work Experience Criteria
	Annexure 14	Declaration Sheet
	Annexure 15	Bidders Information
	Annexure 16	Service Level Agreement
	Annexure 17	Warranty Terms and Conditions
	Annexure 18	Acceptance Protocol
	Annexure 19	PPP MII Certificate by Bidder

MANUFACTURERS' AUTHORIZATION FORM

[The Bidder shall require the Manufacturer to fill in this Form in accordance with the instructions indicated. This letter of authorization should be on the letterhead of the Manufacturer. It should be signed by a person with the proper authority to sign documents that are binding on the Manufacturer.]

Date : [.....]

Tender No. :[.....]

To : [.....]

WHEREAS

We [.....], who are official manufacturers of [.....], having factories at [.....], do hereby authorize [.....]to submit a bid the purpose of which is to provide the following Goods, manufactured by us [.....].

As principals, we commit ourselves to extend our full support for warranty obligations, as applicable as per the Tender Document, for the Goods and incidental Works/ Services offered for supply by the above firm against this Tender Document.

We are committed to communicating important milestones throughout the EOL period, including the initial EOL notification, the LOD for a product, End of Support ("EOS") milestone dates, as well as other key information found in(OEM)EOL Policy at……

Signed: [.....]

Name: [.....]

Duly authorized to sign this Authorization on behalf of: [.....]

Dated on _____ days of _____, _____ [.....]

*(Not required in case the bidder itself is the manufacturer)

PERFORMANCE BANK GUARANTEE

(To be executed on Stamp Paper of Rs. 100/- or such higher value as per the Stamp Act of the State in which the Guarantee is issued. Stamp Paper should be in the name of the Bank Issuing the Guarantee.)

BANK GUARANTEE NO. :

DATED:

Dear Sirs,

1. THIS DEED OF GUARANTEE made on this day of ……..

between **MALAVIYA NATIONAL INSTITUTE OF TECHNOLOGY, JAIPUR** (hereinafter called the "**MNIT"** which expression shall unless excluded by or repugnant to the context includes its successors and assignees) of the one part and the ..... (hereinafter called the **"Bank"** which expression shall unless excluded by or repugnant to the context include its successors and assignees) of the other part.

2. AND WHEREAS as per clause _____ of the purchase order in question the supplier shall furnish a Performance Bank Guarantee of 10% of P.O. Value i.e. Rs. ……..

(Rs.....
.....
..... only) valid for the period of two

months beyond the warranty period as and by way of security

for the satisfactory working of the ……..... .....

..... AND WHEREAS at the request of the supplier, the Bank executes these presents.

3.1 THIS DEED WITNESSETH AND IT IS HEREBY AGREED AND DECLARED BY AND BETWEEN PARTIES HERETO AS FOLLOWS:

3.2 The Bank hereby guarantees to the MNIT Jaipur that the equipment/service contracted is capable of performing the work as demanded by the MNIT Jaipur. In the event of equipment/service failing to perform to the satisfaction of the MNIT Jaipur, which shall be final and conclusive of the factum of non-performance, the Bank shall indemnify and keep the indemnified to the extent of ..... of P.O. Value i.e. Rs. ..... (Rupees .....

.....) valid for the period of two months beyond the warranty period against any loss or damage that may be caused to or suffered by the MNIT Jaipur consequent to non-performance of the contracted equipment/services to be supplied by the supplier.

3.2 In consideration of the aforesaid premise and at the request of the supplier, we the Bank hereby irrevocably and unconditionally guarantee that the supplier shall perform in an orderly manner their contractual obligations in accordance with the terms and conditions set forth in the Purchase order dated ..... and in the event of the supplier's failure to do so, the Bank unconditionally pay to the MNIT Jaipur on demand, any amount up to the value mentioned in Clause 3.1 above without any reference to the supplier and without questioning the claim.

3.3 The guarantee herein shall remain in full force for a period of two months beyond the warranty period from the date of certification by the MNIT Jaipur of successful installation and commissioning of the equipment/ service contracted. The date of start of the warranty period will be notified by MNIT Jaipur to the Bank.

3.4 The decision of the MNIT Jaipur regarding the liability of the Bank under the guarantee and the amount payable there shall be final and conclusive, and binding on us without question. The Bank shall pay forthwith the amount demanded by the MNIT Jaipur notwithstanding any dispute, if any, between the MNIT Jaipur, and the supplier.

3.5 The Bank further agrees that the guarantee herein shall remain in full force during the pendency of the aforesaid period mentioned in Clause 3.3 above and also any extension of the guarantee which has been provided by the Bank for this purpose beyond the aforesaid period provided, further, that if any claim accrues or against the Bank by virtue of this guarantee, should be lodged with us within a period of 60 days from the date of expiry of the guarantee period.

3.6 This Guarantee shall not be affected by any change in the constitution of the supplier, MNIT Jaipur, or us nor shall it be affected by any change in the constitution or by any amalgamation or absorption or reconstruction thereof otherwise, but will ensure for and be available to and endorsable by the absorbing amalgamated company or concern.

3.7 The MNIT Jaipur has the fullest liberty without affecting the guarantee to postpone at any time or from the time any of the powers exercisable by it against the supplier, either to enforce or forbear the clause governing guarantee in the terms and conditions of the said contract and Bank shall not be released from its liabilities under the guarantee by any matter referred to or by reason of time being given to the supplier or any other forbearance, act or omission on the part of the MNIT Jaipur or any material or things whatsoever which under the law relating to sureties shall but for the provisions hereof have the effect of so releasing the Bank from its liabilities.

3.8 We further agree that the MNIT Jaipur shall have the fullest liberty without affecting in any way our obligations hereunder with or without our consent or knowledge to vary any of the terms and conditions of the said contract or to extend the time of delivery from time to time.

3.9 The Bank undertakes not to revoke this guarantee during its currency except with the previous consent in writing of the MNIT Jaipur.

3.10 We further agree that in order to give full effect to the guarantee herein contained MNIT Jaipur shall be entitled to act as if we were its principal debtors in respect of its claim against the Supplier hereby guaranteed by us as aforesaid and we hereby expressly waive all our rights of suretyship and other rights if any which are in any way inconsistent with the above provision of this Guarantee.

Notwithstanding anything herein before, the liability of the Bank under this guarantee is restricted to Rs. ..... (Rupees ..... only) and it will remain in force up to the period specified in Clause 3.3 unless a suit to enforce any claim under the Guarantee is filed against the Bank before the period specified in Clause 3.4. All your rights under this Guarantee shall be forfeited and we shall be relieved and discharged from all liabilities thereunder.

COUNTERSIGNED

Signature:	Signature:
Name:	Name:
Designation:	Designation:
Organization:	Organization:

Seal of the Firm

Annexure 3

AFTER SALE SERVICE CERTIFICATE

From

To

The Registrar,

Malaviya National Institute of Technology (MNIT),

Jaipur

Whereas, we M/s (Bidder Name) are established & reputable manufacturers (Make of items) of [items name] having service offices at Delhi, Jaipur and in the state of Rajasthan. Details are as under

---

Sr.No.	Address of Service Centre	Phone No.	A number of Engineers
1.			
2.			
3.			

We do hereby confirm that:

Services including repair/replacement of defective parts will be done by us. Replacement of defective Systems/parts will be done by equivalent or better systems/parts of the same make. We will attend to all the complaints/service calls within 24 working hours and not beyond 3 working days. Downtime will not exceed 3 working days. In case, the time exceeds 3 working days then we will extend the warranty period of that item(s) by four times the downtime.

Signature of Bidder/ Agent

Name:.....

Designation: .....

Organization Name: .....

Contact No. : .....

Seal of the Firm

Declaration Regarding Non-Banning

The bidder, as well as the manufacturer (if the bidder is not the manufacturer), will give a declaration "We have not been banned or de-listed or debarred or 'Put on Holiday' by any Government or quasi-government agencies or PSUs."

Date

Signature
of Bidder/ Agent

Name:.....

Designation: .....

Organization Name: .....

Contact No. : .....

Seal of the Firm

Note: If a bidder has been banned or de- listed or debarred or 'Put on Holiday' by any Government or quasi-Government agencies or PSU, this fact must be clearly stated and it may not necessarily be a cause for disqualifying them. If this declaration is not given, the bid will be rejected as non-responsive.

No Deviation Certificate

"We declare that there is no deviation from the NIT terms and conditions in the offer submitted by us."

Date

Signature of
Bidder/ Agent

Name:.....

Designation: .....

Organization Name: .....

Contact No. : .....

Seal of the Firm

Annexure 6

Self-Certificate for Proven-ness

"The items covered in the Purchase Order(s)/ Rate Contract(s) copies enclosed with our offer have been fully executed and have performed satisfactorily as per the provisions of respective Purchase Order(s)/ Rate Contract(s) and all the complaints/claim (s) lodged by the purchaser if any, have been attended to and no complaints/ claim s(s) are pending".

Date

Signature of Bidder/ Agent

Name:.....

Designation: .....

Organization Name: .....

Contact No. : .....

Seal of the Firm

Annexure 7

Lowest Price Certificate

I/We do hereby certify that prices quoted by us against this tender are the lowest and are the same as applicable to other Government Departments/ Undertakings/ Other Organisations. We also certify that the quoted rates are not higher than rates quoted / prices charged by us

for the same items to other Customers.

Date

Signature of
Bidder/ Agent

Name:.....

Designation: .....

Organization Name: .....

Contact No. : .....

Seal of the Firm

Annexure 8

Quality Certificate

I/We certify that there has not been any complaint against the quality of our products supplied to Government Departments or Public Sector Undertakings/Other organizations.

Date:

Signature of
Bidder/ Agent

Name:.....

Designation: .....

Organization Name: .....

Contact No. : .....

Seal of the Firm

Letter of Bid (LOB)

To,
Malviya National Institute of Technology
Malviya Nagar, Jaipur (Rajasthan) 302017

Sub: Tender No. …… Date: ……..

Dear Sirs,

1. We have gone through the tender documents carefully, and we confirm that the contents of the offer are given after fully understanding of tender documents and that all information furnished by us is correct and true, and complete in every respect.
2. Having examined the Bid Documents, including Addenda/Corrigenda, if any, I / We, the undersigned, offer to supply and deliver the material as per our offer submitted in conformity with the said Bid Documents.
3. We confirm to accept all terms and conditions contained in the tender document unconditionally.
4. We confirm that until a formal contract is prepared and executed, this bid, together with your written acceptance thereof and your notification of award, shall constitute a binding Contract between us.
5. We understand that you are not bound to accept the lowest or any bid you may receive.
6. We confirm that all information/documents/credentials submitted along with the tender are genuine, authentic, true, and valid.
7. We confirm that if any information or document submitted is found to be false/incorrect, the said offer shall be considered absolutely null & void, and action as the deemed fit may be taken against us, including termination of the contract, forfeiture of all dues including EMD / Security Deposit and Banning of our firm and all partners of the firm as per provisions of law.

Dated:

Signature of
Bidder/ Agent
Name:.....
Designation: .....
Organization Name: .....
Contact No. : .....

Seal of the Firm

Duly authorized to sign bid on behalf of ----------

1. This letter should be on the letterhead of the Bidder and should be signed by the bidder.
2. In case the bidder who has signed the LOB is the DSC holder, no additional documents are required.
3. In case the bidder who has signed the LOB is not the DSC holder, then Power of Attorney or authorization on non-judicial stamp paper duly notarized as per format mentioned on the next page by the person signing the LOB i.e., the bidder, in favor of person bidding online i.e. DSC holder, is required to be uploaded along with this Letter of Bid.

DECLARATION OF LOCAL CONTENT

[For Local Content of Products, Services or Works]
(To be given on Company Letter Head – For a tender value below Rs.10 Crores)
(**To be given by Statutory Auditor/Cost Auditor/Cost Accountant/CA for tender value above Rs.10 Crores**)

To,
The Registrar
MNIT Jaipur
Subject: Declaration of Local Content
Tender reference No.

1. Country of Origin of Goods being offered:
2. With reference to Order No. P- 45021/2/2017-PP(BE-II) dated 16-09-2020 read with OM No. P-45021//102/2019-BE-II-Part(1) (E-50310) Dt. 04.03.2021 of DPIIT, Ministry of Commerce and Industry, Govt. of India, and OMs from other relevant ministries[2], Govt. of India, we fall under the following category of supplier (please tick the correct category) for the items for which this tender has been floated and being bided.
   - Class I local supplier – has local content equal to more than 50%. Local contents added at .....(name of location).
   - Class II local supplier – has local content of more than or equal to 20% but less than 50%. Local content added at .....(name of location).
   - Non-local supplier – has local content less than 20%. Local contents added at .....(name of location).
3. Details of value addition in India:

	Particulars	Content (In %)
(a)	Addition of indigenous items (manufactured in India) inclusive of taxes	
(b)	Addition of Locally sourced imported items inclusive of taxes	
(c)	License/Royalty paid/Technical expertise etc.	

4. Certificate from OEM for Country of Origin has been attached (mandatory if bidder is reseller) (Strike down if not applicable).
5. We are solely responsible for the above mentioned declaration in respect of category of supplier. False declarations will be in breach of the Code of Integrity under Rule 175(1)(i)(h) of the General Financial Rules for which we may be debarred for up to 2 years as per Rule 151(iii) of the General Financial Rules along with such other actions as may be permissible under law.

Signature of OEM/Supplier/~~Bidder/~~ Agent
Name:.....
Designation: .....
Organization Name: .....
Contact No. : .....

Seal of the Firm

[2] Please see para 5.(j) of Section II, for select list of such OMs

INTEGRITY PACT

(To be executed on plain paper and submitted along with technical bid/tender documents)

Malaviya National Institute of Technology jaipur (MNIT) hereinafter referred to as "The Principal".

AND

…….hereinafter referred to as "The Bidder/Contractor"

PREAMBLE

The Principal intends to award, under laid down organizational procedures, contract/s for . The Principal values full compliance with all relevant laws of the land, rules, regulations, economic use of and of fairness/transparency in its relations with its Bidder(s) and/or Contractor(s).

In order to achieve these goals, the Principal will appoint an Independent External Monitor (IEM), who will monitor the tender process and the execution of the contract for compliance with the principles mentioned above.

Action 1 – Commitments of the Principal.

1. The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles:-

a) No employee of the Principal, personally or through family members, will in connection with the tender for, or the execution of a contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the personal is not legally entitled.

b) The Principal will during the tender process treat all Bidder(s) with equity and reason. The Principal will in particular, before and during the tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential/additional information through which the Bidder(s) could obtain an advantage in relation to the process or the contract execution.

c) The Principal will exclude from the process all known prejudiced persons.

2. If the Principal obtains information on the conduct of any of its employees which is a criminal offence under the IPC/PC Act, or if there be a substantive suspicion in this regard, the Principal will inform the Chief Vigilance Officer and in addition can initiate disciplinary actions.

Section 2 – Commitments of the Bidder(s)/Contractor(s)

1. The Bidder(s)/Contractor(s) commit himself to take all measures necessary to prevent corruption. He commits himself to observe the following principles during his participation in the tender process and during the contract execution.

a. The Bidder(s)/contractor(s) will not, directly or through any other persons or firm, offer promise or give to any of the Principal's employees involved in the tender process or the execution of the contract or to any third person any material or other benefit which he/she is not legally entitled to, in order to obtain in exchange any advantage or during the execution of the contract.

b. The Bidder(s)/Contractor(s) will not enter with other Bidders into any undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts,

submission or non submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process.

c. The Bidder(s)/Contractor(s) will not commit any offence under the relevant IPC/PC Act; further the Bidder(s)/Contractors will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or documents provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.

d. The Bidder(s)/Contractor(s) of foreign origin shall disclose the name and address of the Agents/representatives in India, if any. Similarly, the bidder(s)/contractor(s) of Indian Nationality shall furnish the name and address of the foreign principals, if any. All the payments made to the India agent/representative have to be in Indian Rupees only.

e. The Bidder(s)/Contractor(s) will, when presenting his bid, disclose any and all payments he has made, is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract.

f. The Bidder(s)/Contractor (s) who have signed the Integrity Pact shall not approach the courts while representing the matter to IEMs and shall wait for their decision on the matter.

2. The Bidder(s)/Contractor(s) will not instigate third persons to commit offenses outlined above or be an accessory to such offenses.

Section 3: Disqualification from tender process and exclusion from future contract

If the Bidder(s)/Contractor(s), before award or during execution has committed a transgression through a violation of Section 2 above or in any other form such as to put his reliability or credibility in question, the Principal is entitled to disqualify the Bidder(s)/Contractor(s) from the tender process or to terminate the contract, if already signed, for such reasons.

Section 4 : Compensation for Damages

1. If the Principal has disqualified the Bidder(s) from the tender process prior to the award according to Section 3, the Principal is entitled to demand and recover the damages.

2. If the Principal has terminated the contract according to Section3, or if the Principal is entitled to terminate the contract according to Section3, The Principal shall be entitled to demand and recover from the Contractor liquidated damages of the Contract value or the amount equivalent to Performance Bank Guarantee.

Section 5 : Previous Transgression

1. The Bidder declares that no previous transgressions occurred in the last three years with any other company in any country conforming to the TII's anti corruption approach or with any other public sector enterprise in India that could justify his exclusion from the tender process.

2. If the bidder makes incorrect statement on this subject, he can be disqualified from the tender process and appropriate action can be taken including termination of the contract, if already awarded, for suchreason.

Section 6: Equal treatment of all Bidders / Contractors / Sub -contractors.

1. In case of sub –contracting, the Principal Contractor shall take the responsibility of adoption of Integrity Pact by the Sub – Contractor.

2. The Principal will enter into agreements with the identical conditions as this one with all bidders andContractors.

3. The Principal will disqualify from the tender process all bidders who do notsign this Pact or violate its provisions.

Section 7: Criminal charges against violation Bidder(s) / Contractor(s) / Subcontractors(s).
If the Principal obtains knowledge of conduct of a Bidder(s)/ Contractor(s) which constitutes corruption, or if the Principal has substantive suspicion in this regard, the Principal will inform the same to the Chief Vigilance Officer.

Section 8 : Independent External Monitor/Monitors
1. The Principal appoints competent and credible Independent External Monitor for this Pact after approval of Central Vigilance Commission. The task of the Monitor is to review independently and objectively, whether and to what extent the parties comply with the obligations underthis agreement.

2. The Monitor is not subject to instructions by the representatives of the parties and performs his functions neutrally and independently. The Monitor will have access to all contract documents, whenever required. It will be obligatory for him to treat the information and documents of bidders /contractors as confidential. He reports to the Registrar of MNIT.

3. The Bidder(s)/Contractor(s) accepts that the Monitor has the right to access without restriction to all project documentation of the Principal including that provided by the Contractor. The Contractor will also grant the Monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his project documentation. The same is applicable to Subcontractors.

4. The Monitor is under contractual obligation to treat the information and documents of the Bidder(s)/Contractor(s)/Subcontractor(s) with confidentiality. The Monitor has also signed declarations on "Non – Disclosure of Confidential Information" and of "Absence of Conflict of Interest" In case of any conflict of interest arising at a later date, the IEM shall inform Registrar of MNIT and recuse himself/herself from the case.

5. The Principal will provide to the Monitor sufficient information about all meetings among the parties related to the Project provided such meetings could have an impact on the contractual relations between the Principal and the Contractor. The parties offer to the Monitor the option to participate in such meetings.

6. As soon as the Monitor notices, or believes to notice, a violation of this agreement, he will so inform the Management of the Principal and request the Management to discontinue or take corrective action, or to take other relevant action. The monitor can in this regard submit non-binding recommendations. Beyond this, the Monitor has no right to demand from the parties that they act in a specific manner, refrain from action or tolerate action.

7. The Monitor will submit a written report to the Registrar of MNIT within 8 to 10 weeks from the date of reference or intimation to him by the Principal and, should the occasion arise, submit proposals for correcting problematic situations.

8. If the Monitor has reported to the Registrar of MNIT, a substantiated suspicion of an offence under relevant IPC/PC Act, and the Registrar of MNIT has not, within the reasonable time taken visible action to proceed against such offence or reported it to the Chief Vigilance Officer, the Monitor may also transmit this information directly to the Central Vigilance Commissioner.

9. The word "Monitor" word include both singular and plural.

Section 10 : Pact Duration
This pact begins when both parties have legally signed it. It expires for the Contractor 12 months after the last payment under the contract, and for all other Bidder 6 months after the contract has been awarded.

If any claim is made/lodged during this time, the same shall be binding and continue to be valid despite the lapse of this pact as specified above, unless it is discharged/determined by Registrar of MNIT.

Section 11 : Other Provisions

· This agreement is subject to Indian Law. Place of performance and jurisdiction is the registered office of the Principal i.e. Jaipur (Rajasthan)

· Changes and supplements as well as termination notices need to be made in writing. Side agreements have not been made.

· If the contractor is a partnership or a consortium, this agreement must be signed by all partners or consortium members.

· Should one or several provisions of this agreement turn out to be invalid, the remainder of this agreement remains valid. In this case, the parties will strive to come to an agreement to their original intentions.

· Issues like Warranty/Guarantee etc. shall be outside the purview of the IEMs.

· In the event of any contradiction between the Integrity Pact and its Annexure, the clause in the Integrity Pact will prevail.

(For & on behalf of the Principal) (For & on behalf of Bidder/Contractor)

(Office Seal) (Office Seal)

Place

Date

Witness 1 : Witness 1:
(Name &Address) (Name & Address)

_____
_____
_____
_____
_____
_____
_____
_____

Witness 2 : Witness 2:
(Name & Address) (Name & Address)

_____
_____
_____
_____
_____
_____

Seal of the Firm

Declaration for land border clause

No…….. **Date: ……..…..**

Certificate

I have read the clause regarding restrictions on procurement from a bidder of a country that shares a land border with India and hereby certify that the organization is not from such a country.

OR (whichever is applicable)

I have read the clause regarding restrictions on procurement from a bidder of a country that shares a land border with India. We hereby certify that the organization is from ……. (Name of Country) and has been registered with the Competent Authority. I also certify that the organization fulfils all the requirements in this regard and is eligible to be considered.

(Copy/evidence of valid registration by the Competent Authority is to be attached.)

Signature of Bidder/ Agent

Name:.....

Designation: .....

Organization Name: .....

Contact No. : .....

Seal of the Firm

Annexure 13

Similar Work Experience Criteria				
List of the organizations for whom the bidder has undertaken such works during the last three years (must be supported with Purchase order and work completion certificate.				
S. No	**Name of Organization**	**Name of the Contact person**	**Contact details**	**Copy of Purchase Orders (page No)**

Note: Without submission of the relevant Purchase orders, the experience will not be considered.

Signature of Bidder/ Agent
Name:.....
Designation: .....
Organization Name: .....
Contact No. : .....

Seal of the Firm

<<Organization letter head>>

Declaration Sheet

We, ……. Hereby certify that all the information and data furnished by our organization with regard to these tender specifications are true at complete to the best of our knowledge. I have gone through the specifications, conditions, and stipulations in detail and agree to comply with the requirements and intent of the specifications.

This is certified that our organization has been authorized (copy attached) by the OEM to participate in the tender. We further certify that our organization meets all the conditions of the eligibility criteria laid down in this tender document. Moreover, OEM has agreed to support on regular basis with technology/ product updates and extend support for the warranty.

We further specifically certify that our organization has not been blacklisted/ delisted or put on any holiday by any institutional agency/ Government Department/ Public sector undertaking in the last three years.

The prices quoted in the financial bids are subsidies due to academic discounts given to MNIT Jaipur and the rates quoted are not more than those quoted to any other institution in India or abroad during the last year.

Signature of Bidder/ Agent

Name:.....

Designation: .....

Organization Name: .....

Contact No. : .....

Seal of the Firm

Annexure 15

BIDDER's INFORMATION		
1) Bidder's Full Legal Name		
2) Authorized representative of Bidder for evaluation purposes (e.g., clarifications)	Name:	
	Title:	
	Address:	
	Telephone number:	
	Mobile Number:	
	Email address:	
3) Signature of Authorized Representative of the Bidder		
	Signature	
	Name (printed or typed)	

Signature of Bidder/ Agent
Name:.....
Designation: .....
Organization Name: .....
Contact No. : .....

Seal of the Firm

Service Level Agreement (SLA)

a. Service Level Definitions:

Service Level	Description- one or more of the following	Priority of the bidder/SI
Critical (May be called Severity-1)	Complete loss of a core organizational or business process where work cannot reasonably continue. Catastrophic impact on business. Workflow cannot move forward until the issue is resolved. The issue may be caused by a critical failure that causes data failure or precludes the use of the function of the product. e.g., the Whole network is down due to a failure.	The bidder/SI's priority should be service restoration and not debugging the problem.
Major (May be called Severity-2)	High impact on organizational or business processes. Operation of an existing network is severely degraded, or significant aspects of a customer's business operation are negatively impacted by inadequate performance of the products. Inability to deploy a key feature or function. Network/Internet usage is affected but can continue for a reasonable amount of time before the problem becomes catastrophic. e.g., the network in a department/ building/ block network is down	The bidder/SI's priority should be to restore/ improve the service, not debug the problem.
Minor (May be called Severity-3)	Minimal organizational or business impact. Anything which is not out of service or Major is classified as Minor. e.g., at least one user/one Lab is affected due to network down, etc.	The bidder/SI's priority should be to restore/ improve the service, not to debug the problem.

b. Escalations and Notifications:

The bidder/SI ensures that all the stakeholders are notified in a timely manner on the status of the event/ ticket. The bidder/SI's IT-based Services Desk system notifies users during the following events:

Logging of tickets with the ticket number.

Status change of ticket.

Support/ Resident engineers-initiated notifications.

c. In order to ensure that issues are resolved within SLA, contractors will have to use defined escalation mechanisms. The bidder/SI must provide escalation names and contact numbers. Below is the standard Functional Escalation process followed for different severity calls:

Severity of Call	Type of Call(Call logging)	First Escalation (Tier-II)	Second Escalation (Tier-III)
Severity-1: Critical	incident	6th Hour	12th Hour
Severity-2: Major	incident	12th Hour	24th Hour
Severity-3: Minor	incident	24th Hour	48th Hour

d. The bidder/SI shall ensure that the escalation process is implemented in his/her IT-based Service Desk system, provide escalation contact numbers, and update the status to MNIT JAIPUR at every escalation.

e. Penalty for a branch of SLA:

S. No.	Incident/Fault Resolution - SLA	Time Allotted	Penalty
1	Call/Ticket/Incident Resolution for Critical, Severity-1 incident	<6 Hrs.	0%
		>6 Hrs. and <12 Hrs.	0.5 % of Performance bank guarantee each time
		>12 Hrs. and <24 Hrs.	1.0 % of Performance bank guarantee each time
		>24 Hrs. and <48 Hrs.	2.0 % of Performance bank guarantee each time
		>48 Hrs.	2.0 % of Performance bank guarantee each time +1 % for each day beyond 48 Hrs.
2	Call/Ticket/Incident Resolution for Critical, Severity-2 incident	<12 Hrs.	0%
		>12 Hrs. and <24 Hrs.	0.5 % of Performance bank guarantee each time
		>24 Hrs. and <48 Hrs.	1.0 % of Performance bank guarantee each time
		>48 Hrs.	1.0 % of Performance bank guarantee of each time +0.5 % for each day beyond 48 Hrs.
3	Call/Ticket/Incident Resolution for Critical, Severity-3 incident	<24 Hrs.	0%
		>24 Hrs. and <48 Hrs.	0.1 % of Performance bank guarantee each time
		>48 Hrs. and <72 Hrs.	0.2 % of Performance bank guarantee each time
		>72 Hrs.	0.5 % of Performance bank guarantee each time.

The Maximum penalty at a time is capped at 10% of the total performance bank guarantee value.

f. SLA Review Process and disputes resolution:

MNIT JAIPUR or the selected Bidder may raise an issue by documenting the business or technical problem, presenting a reasonably objective summary of both points of view, and identifying specific points of disagreement with possible solutions.

A meeting or conference call will be conducted to resolve the issue in a timely manner. The documented issues will be distributed to the participants at least 24 hours prior to the discussion if the issue is not an emergency requiring immediate attention.

MNIT JAIPUR and the selected Bidder shall develop an interim solution if required and, subsequently, the permanent solution for the problem at hand. The selected Bidder will then communicate the resolution to all interested parties.

In case the issue is still unresolved, the decision of MNIT JAIPUR or its representatives shall be final, and the successful bidder shall be bound to follow the directions.

The bidder/SI must provide printed technical catalogs/ brochures/ technical datasheets containing technical specifications and features for the quoted models.

All services registered by the bidder/SI with the OEM must use cwn@mnit.ac.in and ad.ni@mnit.ac.in email addresses for registration.

g. Resident engineer: -

i. The bidder/SI will provide a resident engineer for a period of five years or a contractual period.

ii. The working shift of the resident engineer will be at least 9 hours per day, six days a week.

iii. The resident engineer must have minimum technical qualifications such as a Degree/ Diploma in a relevant Engineering discipline and at least two years of experience handling a network of more than 1000 nodes with similar OEM equipment.

iv. The cost of the resident engineer is to be included in the tender cost only. MNIT will not be responsible for the salary of the resident engineer.

The bidder/ SI must provide an alternate in case the resident engineer is on leave/absence.

Annexure 17

Warranty Terms and Conditions

The warranty should satisfy the below-mentioned conditions.

- All active components must have at least a 5-year warranty and support.
- All the proposed active components should have at least five years of support bundled with 24x7x365 days TAC support, Return Merchant Authorization (RMA), software updates, and subscription update support.
- OEM should not have announced the “End of Sale” and “End of Life” for all the proposed active components when bidding.
- All passive components must have at least a 20-year warranty.
- All the active components should be in the Next Business Day (NBD) replacement/ repair warranty.
- Cover any defects in materials used to manufacture your product.
- Cover any defects in workmanship.
- Cover any broken components.
- The company will repair/ replace the defective product at no cost if the product is still under warranty.
- The company will repair/ replace any broken product parts using new or replacement parts.
- The product will be exchanged for a new product
- The price of the product will be refunded
- Conditions during the process. This can include things like:
- The product would be returned in the advance replacement package packaging.
- If an RMA is required, it should be generated by the Resident Engineer.
- Any additional charges, i.e., shipping, handling, etc., will be borne by the OEM/SI only.
- Any active storage components (SSD/ HDD) will not be returned due to privacy issues.

Acceptance Protocol

The completion certificate shall be signed after the below mentioned checks are completed.

1. Objectives
   - Define the goals of the LAN implementation, WiFi system installation, etc.
   - Identify key performance indicators (KPIs) for network performance.
2. Documentation Review
   - Ensure all network design documents, specifications, and configurations are complete and accurate.
   - Review network diagrams and device placements.
3. Testing Procedures
   - **Connectivity Tests:**
     - Check connections between devices (switches, routers, PCs).
     - Ensure all devices can communicate on the network.
   - **Performance Tests:**
     - Measure bandwidth and latency under different load conditions.
     - Test network throughput and response times.
   - **Reliability Tests:**
     - Simulate failure scenarios (e.g., device or link failure) and check failover processes.
   - **Security Tests:**
     - Conduct vulnerability scans.
     - Verify firewall settings and access controls.
4. User Acceptance Testing (UAT)
   - Engage end-users to validate the network's functionality.
   - Gather feedback on usability and performance.
5. Compliance Checks
   - Ensure compliance with relevant standards and regulations.
   - Verify that all software and hardware meet vendor specifications.
6. Training and Support
   - Provide training for staff on network usage and troubleshooting.
   - Establish a support plan for ongoing issues and maintenance.
7. Sign-off Procedure
   - Create a formal sign-off document for stakeholders to approve the network.
   - Include criteria for what constitutes successful implementation.
8. Post-Implementation Review
   - Schedule a review meeting to discuss the implementation process and any issues encountered.
   - Document lessons learned for future projects.
9. Monitoring and Maintenance Plan
   - Set up ongoing monitoring for performance and security.
   - Develop a maintenance schedule for hardware and software updates.

Annexure 19

PPP MII Certificate by Bidder

It is certified that we have complied with/will comply with PPP MII's latest policies of the Government of India, declared through various OMs/orders from DP-IIT, Ministries (Electronics, Telecom, Petroleum, Finance etc.) and GeM[3].

Signatures
(Bidder)

Designation & Seal

Contact including email/phone-

[3] Please see para 5.(j) of Section II, of this bid-document:
Various OMs till date but not limited to-
OMs- All such relevant OMs/notices issued till date by DP-IIT (Sep-2020, Mar-2021, Dec-2022, May-2023, Apr-2024, July-2024), Dept of Telecom (Aug-2018, gazette notification 21-Oct-2024), Ministry of Electronics & IT (Sept-2017, Mar-2021, Mar-2022, Aug-2022), Ministry of PNG (Apr-2022);
And also refer to GeM document-
https://fulfilment.gem.gov.in/contract/slafds?fileDownloadPath=SLA_UPLOAD_PATH/2024/Jan/GEM_2024_B_4429570/CLM0014/MII_e21c80a6-49d0-4e48-956e1704438778496_buycon3.ongc.delhi.pdf

Technical Compliance sheet						
S. No	**Name of Item**	**Detailed Specifications**	**Compliance (Y/N)**	**PART/ Model No.**	**Support/Doc Pg. No.**	**Deviation/Remarks**
1.	Security Solution	Supply, configuration, integration, and installation of next-generation security solutions with software firewall as a backup as per the following specification. **Type** 1. The proposed security solution should be Next Generation Enterprise Firewall. 2. The proposed security solution should be certified by any accredited lab endorsed by Government of India i.e. TEC/TSEC, SQTC, BIS, EAL 2 NDcPP, ICSA Labs, IC3S. **Architecture**: 4. The proposed security solution should be based on multi-core CPUs to protect & scale against the latest dynamic security threats. 5. The proposed security solution architecture must enable complete, contextual traffic classification, followed by a rich set of enforcement and threat prevention options. 6. The proposed security solution should support multiple internet links in Active-Active, load balancing, and active-standby failover modes. **Storage** 2. The proposed security solution must have 2 TB or more of usable space for logging (SSD drive in RAID). **Power Supply, deamination, and FAN** 3. The proposed security solution must have internal hot-swappable redundant Power Supplies from day 1. 4. The proposed security solution must have (i) redundant fans or (ii) hot-swappable fans from day one. **Interface Requirement** 5. The proposed security solution should have a minimum of 4 x 1/10G SFP/SFP+ Interfaces. 6. The proposed security solution should have a minimum of 4 x 100G QSFP28 Interfaces populated with 4X100G SR transceivers of the same OEM.				

Technical Compliance sheet						
S. No	**Name of Item**	**Detailed Specifications**	**Compliance (Y/N)**	**PART/ Model No.**	**Support/Doc Pg. No.**	**Deviation/Remarks**
		7. The proposed security solution should have dedicated ports of high availability. 8. The proposed security solution should have a dedicated console, management, and USB port. **Performance Capacity** 11. The proposed security solution must have 50 Gbps or more Next Gen Firewall application throughput. 12. The performance should be in the real world/ production environment (enabling and measuring with application ID/ AVC, user-ID/ Agent-ID, and application traffic mixes such as HTTPS, SMTP, and other protocols) logging enabled. 13. The proposed security solution should have 25 Gbps or more threat prevention/protection throughput. 14. Threat prevention throughput should be measured in the real world/production environment with Application Control, IPS, antivirus, anti-spyware, zero-day, file blocking, and all (traffic and threats) with logging enabled. 15. The proposed security solution must support IPSec & SSL VPN. 16. The proposed security solution should support 5 Gbps Minimum VPN throughput. 17. The proposed security solution must support at least 100 SSL VPN users from day 1. 18. The proposed security solution should support 5 million concurrent sessions. 19. The proposed security solution should support 200K new sessions per second. 20. The proposed security solution should support stateful inspection. **High Availability** 4. The proposed security solution should support high availability. 5. The proposed security solution shall support stateful session maintenance in the event of a fail-over to a standby unit. 6. The proposed security solution should support high availability configurations in active/active and active/ passive modes.				

Technical Compliance sheet						
S. No	**Name of Item**	**Detailed Specifications**	**Compliance (Y/N)**	**PART/ Model No.**	**Support/Doc Pg. No.**	**Deviation/Remarks**
		Next-Generation Firewall Features 17. The proposed security solution should be able to handle (alert, block, or allow) unknown/unidentified applications like unknown UDP & TCP. 18. The proposed security solution should have network traffic classification which identifies applications across all ports irrespective of port/protocol/evasive tactic. 19. The proposed security solution should be able to create custom application signatures without any third-party tool. 20. The proposed security solution should be able to implement zones, IP addresses, port numbers, user-id, application-id, and threat protection profiles under the same firewall rule or policy configuration. 21. The proposed security solution must support creating a policy based on wildcard addresses to match multiple objects for easy deployment. 22. The proposed security solution must support policy-based forwarding based on zone, source or destination address and port, application, AD/ LDAP user or user group, and services or ports. 23. The proposed security solution should delineate different parts of the application (i.e., allowing Facebook chat but blocking its file-transfer capability inside the chat application) based on the content. 24. The proposed security solution should be able to protect the user from malicious content upload or download by applications (i.e., Facebook chat or any other file sharing) by enforcing the total threat protection for known and unknown malicious content such as viruses, malware, bad URLs. 25. The proposed security solution should be able to identify, decrypt, and evaluate SSL traffic in an outbound and inbound connection (forward proxy). 26. The proposed security solution should be able to identify, decrypt, and evaluate SSH Tunnel traffic in inbound and outbound connections.				

Technical Compliance sheet						
S. No	**Name of Item**	**Detailed Specifications**	**Compliance (Y/N)**	**PART/ Model No.**	**Support/Doc Pg. No.**	**Deviation/Remarks**
		27. The proposed security solution should be able to identify port-based rules/ policies so the admin/ security team can convert them to application-based allowlist rules or add applications to existing rules without compromising application availability. 28. The proposed security solution should be able to identify rules configured with unused applications and prioritize which rules to migrate or clean up first. 29. The proposed security solution should be able to restrict application traffic to its default ports to prevent evasive applications from running on non-standard ports. 30. The proposed security solution must have the capability to create a DOS prevention policy to prevent DOS attacks on per zone basis (outbound to inbound, inbound to inbound, and inbound to outbound) and the ability to create and define DOS policy based on attacks like UDP flood, ICMP flood, SYN flood (random early drop and SYN cookie), IP address sweeps, IP address spoofs, port scan, ping of death, teardrop attacks, unknown protocol protection, etc. 31. The proposed security solution's IPS system shall have at least 6000 + signatures. 32. The proposed security solution should have a sandboxing capability. **Threat Protection** 14. The proposed security solution should support protocol decoder-based analysis, state fully decodes the protocol, and then intelligently apply signatures to detect network and application exploits. 15. The proposed security solution's Intrusion prevention signatures should be built based on the vulnerability for a single signature should stop multiple exploit attempts on a known system or application vulnerability. 16. The proposed security solution should block known network and application-layer vulnerability exploits. 17. The proposed security solution should perform content-based signature matching beyond the traditional hash-based signatures.				

Technical Compliance sheet						
S. No	**Name of Item**	**Detailed Specifications**	**Compliance (Y/N)**	**PART/ Model No.**	**Support/Doc Pg. No.**	**Deviation/Remarks**
		18. The proposed security solution should have local (on-device) Anti-Virus/ Malware Anti Spyware signatures, updated at least every hour. 19. OEM should create all the protection signatures based on their threat intelligence. They should not use any 3rd party IPS or AV engines. 20. The proposed security solution should perform stream-based antivirus inspection and not store-and-forward traffic inspection to maximize security solution performance. Stream-based antivirus scanning should scan the contents of the files being transferred over the network for viruses/malware and block the file transfer when a virus or malware signature is triggered. 21. The proposed security solution should be able to perform anti-virus scans for SMB traffic. 22. The proposed security solution should support DNS sink holding for malicious DNS requests from inside hosts to outside bad domains. It should be able to integrate and query third-party external threat intelligence databases to block or sinkhole bad IP addresses, domains, and URLs. 23. The proposed security solution should support DNS security. 24. The proposed security solution should have a dynamic response to find infected machines and respond immediately. There should be provision for administrators to automate the process of sinkhole malicious domains to cut off command and control and quickly identify infected users. 25. The proposed security solution should be able to call 3rd party threat intelligence data on malicious IPs, URLs, and domains to the same firewall policy to block those malicious attributes, and the list should get updated dynamically with the latest data. 26. The OEM should automatically push a dynamic block list with the latest threat intelligence data based on malicious IPs, URLs, and domains to the firewall policy as an additional protection service. **URL Filtering and Web Protection**				

Technical Compliance sheet						
S. No	**Name of Item**	**Detailed Specifications**	**Compliance (Y/N)**	**PART/ Model No.**	**Support/Doc Pg. No.**	**Deviation/Remarks**
		22. The proposed security solution should be scalable to provide URL filtering, web protection and maintain the same performance/ throughputs mentioned in the performance capacity. 23. The proposed security solution should have the URL filtering and web protection database locally on the device. 24. The proposed security solution should provide a web filtering inspection based on a real-time URL categorization database of at least 100+ million URLs with 70+ categories. 25. The proposed security solution should have custom URL categorization. 26. The proposed security solution must have at least 2500+ application signatures and be able to understand well-known applications like P2P, Voice, etc., without any dependency on the ports. 27. The proposed security solution should display custom block pages. 28. The proposed security solution must have an authentication portal. 29. The proposed security solution should block and continue (i.e., allowing a user to access a website that potentially violates policy by displaying a block page with a warning and continue option allowing them to proceed for a certain time). 30. The proposed security solution should have logs populated with end-user activity reports for site monitoring within the local security solution. 31. The proposed security solution should have URL filtering policies by AD user, group, machines, and IP address/ range. 32. The proposed security solution should have a full-path categorization of URLs only to block the malicious malware path, not the full domain or website. 33. The proposed security solution should have a zero-day malicious website or URL blocking update of fewer than 60 minutes for URL database update for zero-day malware command and control, spyware, and phishing website access protection. 34. The proposed security solution should protect against never-				

Technical Compliance sheet						
S. No	**Name of Item**	**Detailed Specifications**	**Compliance (Y/N)**	**PART/ Model No.**	**Support/Doc Pg. No.**	**Deviation/Remarks**
		before-seen phishing and JavaScript attacks. 35. The proposed security solution should be capable of using signature and ML-based signature-less technology. 36. The URL filtering service should be able to categorize a site by multiple categories, not just a single and custom category. 37. The proposed security solution should prevent credential theft attacks (without the need for endpoint agents). 38. The OEM should provide features that can prevent the theft and abuse of stolen credentials, one of the most common methods cyber adversaries use to successfully compromise and maneuver within an organization to steal valuable assets. It should also complement additional malware, threat prevention, and secure application enablement functionality to extend customer organizations' ability to prevent cyber breaches. 39. The proposed security solution should support automatically identifying and blocking phishing sites. 40. The proposed security solution should prevent users from submitting credentials to phishing sites. 41. The proposed security solution should prevent the use of stolen credentials. 42. The proposed security solution shall allow the administrator to prevent sensitive data based on file type and extensions from the network. The administrator shall be able to define sensitive data patterns and data matching these patterns that will be blocked and logged when passing through the unit. **SSL/SSH Decryption** 5. The proposed security solution should be able to identify, decrypt, and evaluate SSL traffic in an outbound connection and inbound connection. 6. The proposed security solution shall be able to identify, decrypt, and evaluate SSH tunnel traffic in inbound and outbound connections. 7. The proposed security solution shall support the ability to have an				

Technical Compliance sheet						
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		SSL inspection policy that differentiates personal SSL connections, i.e., banking, shopping, health, and non-personal traffic. 8. The proposed security solution should support SSL decryption on non-standard ports. **Network Address Translation (NAT)** 4. The proposed security solution should support NAT and PAT. 5. The proposed security solution should support Dual Stack IPv4 / IPv6. 6. The proposed security solution should support Dynamic IP reservation, tunable dynamic IP and port oversubscription, IPv6 Support L2, L3, tap, and transparent mode. **Routing and Multicast support** 3. The proposed security solution should support static routing. 4. The proposed security solution should support routing protocols like OSPF v2/ v3, BGP v4, Policy-based forwarding, PIM-SM, PIM-SSM, IGMP v1, v2, and v3, Bidirectional Forwarding Detection (BFD), MPLS, etc. **Authentication** 3. The proposed security solution should support authentication protocols like LDAP, Radius, Token-based solutions (i.e., Secure-ID), Kerberos, and any combination above. 4. The proposed security solution's SSL VPN should support authentication protocols like LDAP, Radius, Token- based solutions (i.e., Secure-ID), Kerberos, and any combination above. **Monitoring, Management, and Reporting** 11. The proposed security solution should keep six months' logs for future analysis and report generation. 12. The proposed security solution should have separate real-time logging based on all traffic, threats, user IDs, URL filtering, data filtering, content filtering, unknown malware analysis, authentication, tunneled traffic, and correlated log view based on other logging activities. 13. The proposed security solution should support report generation on				

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		a manual or scheduled (daily, weekly, monthly, etc.) basis. 14. The proposed security solution should allow the report to be exported into other formats such as PDF, HTML, CSV, XML, etc. 15. The proposed security solution should have built-in report templates based on applications, users, threats, traffic, and URLs. 16. The proposed security solution should be able to create reports based on user activity. 17. The proposed security solution should be able to create a custom report based on a custom query from logging attributes. 18. The proposed security solution's on-device management service should be able to provide all the mentioned features in case of central management server failure. 19. The proposed security solution must be able to identify unused security policies. 20. To optimize configuration, the proposed security solution must provide detailed information regarding individual security policies' first-hit counts, last-hit counts, and total hit counts. **Support & Warranty** 4. The proposed security solution should have five years of support bundled with 24x7x365 days TAC support, RMA, software updates, and subscription update support. 5. The proposed security solution should be proposed with five years subscription licenses for NGFW, NGIPS, Anti-Virus, URL Filtering, Anti Spyware, Anti Botnet and SSL VPN, sandboxing, etc. 6. OEM should not have announced the "End of Sale" and "End of Life" for the proposed product at the time of bidding				

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2.	Link load balancer	Supply, configuration, integration, and installation of link load balancer per the following specifications. 29. The proposed LLB must be a dedicated appliance-based solution with purpose-built hardware for high performance. 30. The proposed LLB should not be a part of the router or UTM. 31. The proposed LLB should be supplied with a minimum of 128GB or more RAM and 500GB or more SSD drives. 32. The proposed LLB should have a minimum L4 throughput of 80 Gbps. 33. The proposed LLB should have a minimum L7 throughput of 70 Gbps. 34. The proposed LLB should have a minimum of 4 x 10/25G ports populated with 4 x 10G SFP+ SR transceivers and be upgraded to 25G by changing transceivers only. 35. The proposed LLB should have a minimum of 2 x 40G QSFP+ / 100G QSFP28 ports populated with 2 x 100G QSFP28 SR transceivers. 36. The proposed LLB should have a hot-swappable redundant power supply from day one. 37. The proposed LLB should have a 1RU/2RU form factor for a 19”-inch rack-mountable. 38. The proposed LLB should support multiple internet links in Active-Active, load balancing, and active standby failover modes. 39. The proposed LLB should support inbound, and outbound load balancing algorithms like round robin, weighted round robin, shortest response, target proximity, and dynamic detection. 40. The proposed LLB should support Static NAT, Port-based NAT, and advanced NAT for the transparent use of multiple WAN / Internet links. 41. The proposed LLB should provide full ipv6 support, and OEM should be IPv6 certified. 42. The proposed LLB should have L3/L4 DDOS protection with a network, DNS, and SIP levels with a predefined attack vector.				

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		43. The proposed LLB should generate dynamic DOS/DDOS protection signatures based on changing traffic patterns over time. 44. In case of link failure, the proposed LLB should detect it in less than 30 seconds and divert the traffic to other available links. 45. The proposed LLB should support a proven scheme-based health checks for intelligent traffic routing and failover. (i.e., dynamic detect (DD)/Proximity-based etc.) 46. The proposed LLB should provide individual link health checks based on physical ports, ICMP Protocols, user- defined l4 ports, and destination path health checks. 47. The proposed LLB should provide a mechanism to bind multiple health checks, support application-specific VIP health checks and subsequent gateway health checks. 48. The proposed LLB should support persistence features, including RTS (return to sender) and IP flow persistence. 49. The proposed LLB should support an authoritative name server, DNS proxy/ DNS NAT, a full DNS server with DNSSEC, DNS DDOS, and application load balancing. 50. The proposed LLB should be capable of handling complete DNS bind records, including A and AAAA. 51. The proposed LLB should support global server load balancing algorithms, including - round robin, least connections, geography, proximity, response, network, QoS, and minimization. 52. The proposed LLB should provide comprehensive and reliable support for high availability. 53. The proposed LLB should support L2-L7 Load balancing, server persistence, content routing, content switching, SSL offload, L7 application scripting, and route L4 routing. 54. The proposed LLB should support application, server, and link health checks based on ARP, ICMP, TCP, HTTP/HTTPS, DNS, Radius, RTSP, SIP single port/ protocol, multi-port, physical port, ICMP, and user-defined L4, Next gateway health checks. 55. The proposed LLB must support multiple bootable Images for better				

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		availability and easy upgrade/fallback. 56. The proposed LLB should be certified by EAL 2/NDcPP, ICSA Labs, TEC/TSEC, STQC, IC3S or any accredited lab by governemnt of India. **Warranty** 3. The proposed LLB should be supplied with a five-year warranty. The OEM should have a 24x7 support center. OEM should have an India toll-free number reflected on the official website. The vendor will provide documentary proof regarding support and warranty directly from the OEM. 4. OEM should not have announced the "End of Sale" and "End of Life" for the proposed product at the time of bidding.				
3	WAN Router	Supply, configuration, integration, and installation of WAN router per the following specifications. **Architecture** 2. The proposed router shall facilitate all applications like voice, video, and data to run over an IP infrastructure. **Interface** 3. The proposed router should have at least 4 x 10 G SFP+ ports with 2 X 10G SFP+ SR transceivers and 2 X 10G SFP+ ER (up to 40 KM distance) transceivers of the same OEM. 4. The proposed router should support 4 x 40 G/100 G ports for future upgradation. **Features and Scalability** 7. The proposed router should have a minimum of 180 Gbps system throughput. 8. The proposed router should have a minimum of 64K multicast routes. 9. The proposed router should have a minimum of 16 GB RAM. 10. The proposed router should have a minimum of 32 GB flash memory/storage. 11. The proposed router should have a minimum 4M routing information base.				

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		12. The proposed router should have a minimum 4M forwarding information base **Protocol supported** 3. The proposed router should support static routing. 4. The proposed router should support OSPF, BGP, LDP, Multiprotocol BGP, MPLS, and segment routing. **Security** 8. The proposed router should support an inbuilt firewall or access control list for control plane protection. 9. The proposed router should support load balancing/sharing for multiple ISPs. 10. The proposed router should support access list and QoS. 11. The proposed router should support 128 K hardware queues. 12. The proposed router should be certified by any accredited lab endorsed by Government of India i.e. TEC/TSEC, SQTC, BIS, EAL 2 NDcPP, ICSA Labs, IC3S. 13. The proposed router should have Federal Information Processing Standards (FIPS 140-2) FIPS or equivalent Indian standards. 14. The proposed router should support NAT (2 million NAT Sessions) and 2K IPsec tunnels. **Dimension and Environmental** 4. The proposed router should be 8 U or fewer rack units in size (1 U height = 4.4cm). 5. The proposed router should support operating temperatures 0º to 40 ºC. 6. The proposed router should support operating relative humidity of 10% to 85%. **Power Supply and FAN** 3. The proposed router should have a hot-swappable redundant power supply. 4. The proposed router should have at least one field-replaceable fan unit/module. **Management**				

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		4. The proposed router should have a console port. 5. The proposed router should have a management port. 6. The proposed router should support management protocols like SSH, telnet, SNMPv1, v2, v3, RADIUS, etc. **Warranty** 3. The proposed router should be supplied with a five-year comprehensive warranty. The OEM should have a 24x7 support center. OEM should have an India toll-free number reflected on the official website. The vendor will provide documentary proof regarding support and warranty directly from the OEM. 4. OEM should not have announced the "End of Sale" and "End of Life" for the proposed product at the time of bidding.				
4.	AAA Solution	Installation and configuration of AAA solution per the following specifications. 51. The proposed AAA should provide an easy-to-use BYOD-ready granular secure access control solution that is context-aware, identity-enabled, location and device-based. 52. The proposed AAA must combine authentication, authorization, accounting (AAA), posture, profiling, and guest access management services onto a single platform with a minimum endpoint footprint and support the ability to be managed from a single management console. 53. The proposed AAA should be deployed in out-of-band mode. 54. The proposed AAA should support centralized deployment and must be deployed in High Availability Active-Standby mode. 55. The proposed AAA must have built-in TACACS+ and Radius along with 802.1x and MAB capabilities. 56. The proposed AAA can be provided with an HW/Virtual machine and Perpetual Licenses, supporting a minimum of 10000 devices for AAA (Radius & TACACS+) from Day 1. 57. The solution must be provided with a 10,000 Profiler license from day 1 for device visibility.				

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		58. The proposed AAA should be vendor-agnostic and support integration with any network infrastructure device that supports standard AAA protocols. 59. The proposed AAA should support configuration migration from third-party AAA solutions through CSV and other standard methods. 60. The proposed AAA should be able to detect both new and existing endpoints and categorize them based on the type of endpoint (e.g., Switch, Router, Firewall, Windows, Network Device, etc.) 61. The proposed AAA should be able to detect and profile IoT devices. 62. The proposed AAA should support network-based profiling by targeting specific endpoints (based on policy) for specific attribute device scans, resulting in higher accuracy and comprehensive visibility of what is on your network 63. The proposed AAA should support profiling devices automatically based on their Category, OS, MAC address, etc. 64. The proposed AAA should provide support for the discovery, profiling, policy-based placement, and monitoring of endpoint devices on the network, all within the same appliance. 65. The proposed AAA must support Profiling via Passive and Active Collectors using various methods like SNMP, DHCP fingerprinting, HTTP-agent, NMAP, WMI, SSH, TCP-IP, etc. 66. The proposed AAA should support sponsored-based device management for network access. For example, if a new system is introduced in the network, AAA should send an email alert to the IT admin to approve network access from that device. 67. The proposed AAA should provide the ability to create custom profiling rules and groups for enforcement 68. The proposed AAA should provide flexible filtering capabilities to sort out device information based on different attributes (e.g., MAC address, Manufacturer name, hostname, IP address, etc.) 69. The proposed AAA should produce a real-time endpoint discovery with detailed information, including which switch port the device is connected to.				

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		70. The proposed AAA must provide device inventory in both CSV and PDF exportable format. 71. The proposed AAA must provide the capability to import/export device inventory via CSV and encrypted binary files. 72. The proposed AAA must provide information on how many devices are not profiled, how many devices are newly seen in day/week/month, etc. 73. The proposed AAA solution shall include the following key components that are out of the box. The solution should not act as a proxy and should not be dependent on an external solution for the following capabilities. a) Radius server b) TACACS+ server c) Local Profiler 74. Authentication - The proposed solution should support different options for user authentication. It should be able to support the following authentication servers: Local Authentication, Active Directory, LDAP, External Radius, RSA/SecureID, and Certificate. 75. Authorization - The solution should provide fine-grained control over user capabilities for the duration of the user's session, which includes idle time-out and session duration. It should allow enforcing restrictions on what commands a user/admin may execute by configuring the privilege level for administrators. Within the privilege level, further control can be forced by specifying a command or regex match. 76. The solution should support Exec authorization, which determines a user's privilege level when they are authenticated. The admins can run the commands that are allowed at the user's privilege level. 77. The solution should support Command authorization, which provides centralized control of the commands available to AAA admin users. Every command must be sent to the AAA server for authorization, and the command is permitted after getting authorized by AAA. 78. Accounting - The solution should collect information on the AAA server for auditing. Network device administrators should be able to use the accounting facility to track user activity for a security audit				

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		or to provide information for user billing. Accounting records should include user identities, start and stop, and executed commands. 79. The solution should have a built-in Radius server with Authentication, Authorization, and Accounting capabilities available out-of-the-box without any dependency on an external server. 80. The built-in local Radius server should support 802.1x for user and device authentication. 81. The solution should support TACACS+ as a built-in capability to simplify device administration and enhance security through flexible, granular control of access to network devices. 82. TACACS+ device administration should support role-based access control and command-level authorization with detailed logs for auditing 83. The solution should be able to create a TACACS+ authorization policy for the device administrator containing specific lists of commands a device admin can execute. Command sets should support the exact match, case sensitive, (any character), * (matches any), etc., and support stacking as well. 84. The proposed AAA solution must support authenticating protocols like PAP, MS-CHAP, MS-CHAP-V2, EAP-MD5-Challenge, EAP-MS-CHAP-V2, (EAP)-MD5, Protected EAP (PEAP), EAP-Transport Layer Security (TLS), EAP Tunneled Transport Layer Security (EAP-TTLS), and EAP Generic Token Card (EAP-GTC). 85. The solution should support role-based access control and allow the creation of different admin roles to define granular administrative access privileges. For example, an organization would require multiple admin roles with different privilege levels to ensure protection from sensitive company information. 86. The AAA solution should support Idle Time-out for TACACS+ user sessions so that if no input is received or sent in the period specified, the session is disconnected. 87. The AAA solution should support the Max session length option to specify the maximum length of time that the session can exist. After this value has expired, the session should get disconnected.				

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		88. The solution should allow network devices to be associated with specific device groups to be easily managed. In a heterogeneous network where there are devices from multiple vendors, the device group helps to manage devices easily, as each vendor device has a different command syntax and command set. 89. The proposed solution must be capable of supporting 802.1X authentication and shall work with endpoint devices (supplicant) and network devices (authenticator) that are enabled for IEEE 802.1X authentication. 90. The proposed solution must make use of alternate authentication methods, such as MAC address authentication, to authenticate endpoint devices that do not support 802.1X auth.entication 91. The proposed AAA should support built-in monitoring, reporting, and troubleshooting console to assist helpdesk operators and administrators in streamlining operations 92. AAA GUI should support the Dashboard with contextual information 93. AAA GUI should support historical data on contextual information 94. The solution should support integration with the Syslog server for log retention. 95. The solution should support an archiving option to automatically back up and save device/user logs and system configurations on the external machines. It should support scheduling the backup activity. 96. The proposed Port Probe option is to check specific TCP and UDP port status on the network devices for troubleshooting integration or connectivity issues. 97. The proposed solution must provide the options of RTF (Return to Factory), ND (Next Day), and SD (Same Day) to be supported directly by the manufacturer as part of its general support offerings. 98. The proposed solution should be certified by EAL 2/NDcPP, ICSA Labs, TEC/TSEC, STQC, IC3S or any accredited lab by governemnt of India.				

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		99. The proposed AAA should be supplied with a five-year comprehensive warranty. The OEM should have a 24x7 support center. OEM should have an India toll-free number reflected on the official website. The vendor will provide documentary proof regarding support and warranty directly from the OEM. 100. OEM should not have announced the “End of Sale” and “End of Life” for the proposed product at the time of bidding.				

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5	Core Switch	Supply, configuration, integration, and installation of L3 core switches in high availability mode as per the following specification. **Interface.** 3. The proposed core switch should have a non-blocking architecture. 4. The proposed core switch should have at least 32 x 40/100G (QSFP+/QSFP28) ports populated with 20 QSFP28 (100G) long-range transceivers and 12 X QSFP28 (100G) SR transceivers of the same OEM with each switch. **Dimension and Environmental** 5. The proposed core switch should be 19" Rack Mountable. 6. The proposed distribution switch should be a 1U/2U/3U/4U rack unit in size (height = 4.4cm). 7. The proposed distribution switch should support operating temperatures 0º to 40ºC. 8. The proposed distribution switch should support operating relative humidity of 10% to 85%. **Power Supply and FAN** 3. The proposed core switch should have a Hot-swappable internal redundant power supply. 4. The proposed core switch should have at least two front-to-back airflow fan units/modules. **Performance and Scalability** 8. The proposed core switch should have a minimum of 6.4 Tbps switching bandwidth/capacity. 9. The proposed core switch should have a minimum of 2 Bpps forwarding rate/ Throughput. 10. The proposed core switch should have a minimum of 64 GB flash memory/SSD. 11. The proposed core switch should have a minimum of 16 GB RAM. 12. The proposed distribution switch should support the jumbo frame of a minimum size of 9K. 13. The proposed distribution switch should support Fabric Management/SDN integration using open flow/ OpenStack/ Rest				

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		API. 14. The proposed core switch should support the VXLAN feature. **High Availability** 2. The proposed core switch should support high availability in Active-Active, and Active-Passive modes. **L2 L3 Features** 10. The proposed core switch should support a minimum of 250K MAC addresses. 11. The proposed core switch should have a minimum of 32 MB packet buffers. 12. The proposed core switch should support a minimum of 4k VLANs. 13. The proposed core switch should support static routing for both IPv4 and IPv6. 14. The proposed core switch should support IEEE 802.1Q VLAN tagging. 15. The proposed core switch should support a minimum of 200K IPv4 and 100K IPv6 routes/ entries. 16. The proposed core switch should support a minimum of 40K IPV4 and 40K IPV6 multicast routes/ entries. 17. The proposed core switch should support STP, RSTP, MSTP, STP root guard, and IGMP v1/v2/v3 snooping. 18. The proposed core switch should support OSPF, OSPFv3, PIM SM, and MLD V1/V2. **Security** 8. The proposed core switch should support ACL based on L2/ L3 headers. 9. The proposed core switch should support Dynamic VLAN assignment and DHCP snooping. 10. The proposed core switch should support management ACL. 11. The proposed core switch should support authentication (MAC and IEEE 802.1x), Radius, and TACACS+. 12. The proposed core switch should support sflow, LAG, loop detection, and Loop protection. 13. The proposed core switch /switch's operating system should be				

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		certified by any accredited lab endorsed by Government of India i.e. TEC/TSEC, SQTC, BIS, EAL 2 NDcPP, ICSA Labs, IC3S. 14. The proposed core switch should follow safety and EMC standards, including UL60950, CAN/CSA 22.2 No.60950, EN 60950, IEC60950, FCC 47CFR Part 15, EN 55022/55032, VCCI, CISPR 22 or 24, EN 55024, Reduction of Hazardous Substances (ROHS) 6, or equivalent Indian standards. **Management** 6. The proposed core switch should have a console port. 7. The proposed core switch should have a management port. 8. The proposed core switch should support management through CLI, ssh, telnet, RMON 4 groups, SNMPv3, and LLDP. 9. The proposed distribution switch should support Layer 2 traceroute to ease troubleshooting by identifying the physical path a packet takes from source to destination, or the switch should support Layer 3 Traceroute. 10. The proposed distribution switch should support Trivial File Transfer Protocol (TFTP) for software upgrades. **Quality of Services** 5. The proposed core switch should support eight priority queues per port. 6. The proposed core switch should support policy-based QoS based on VLAN, port, and MAC. 7. The proposed core switch should support IEEE 802.1Q VLAN Tagging. 8. The proposed core switch should support Generic VLAN Registration Protocol (GVRP)/MVRP or equivalent. **Warranty** 3. The proposed core switch should be supplied with a five-year comprehensive warranty. The OEM should have a 24x7 support center. OEM should have an India toll-free number reflected on the official website. The vendor will provide documentary proof regarding support and warranty directly from the OEM.				

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		4. OEM should not have announced the “End of Sale” and “End of Life” for the proposed product at the time of bidding.				

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6	Distribution Switch	Supply, configuration, and installation of the distribution switch per the following specification. **General Features** 5. The proposed distribution switch should have a non-blocking architecture. 6. The proposed distribution switch should have a minimum of 48 no's of 25G/10G/1G downlink fiber ports with 10 X 25G SFP28 LR transceivers of the same OEM. 7. The proposed distribution switch should have a minimum of 8 no's of 100G (QSFP28)/40G (QSFP+) ports populated with 2X100G QSFP28 SM LR transceivers of the same OEM. 8. The proposed distribution switch should have at least 56 Ports (48 SFP+ ports and 8 QSFP28 ports). **Performance and Scalability** 9. The proposed distribution switch should have a minimum of 4 Tbps switching bandwidth/ capacity. 10. The proposed distribution switch should have a minimum of 2 Bpps forwarding rate/ throughput. 11. The proposed distribution switch should have a minimum of 32 GB flash memory/storage. 12. The proposed distribution switch should have a minimum of 16 GB RAM. 13. The proposed distribution switch should support a minimum of 4K VLANs. 14. The proposed distribution switch should support the VXLAN feature. 15. The proposed distribution switch should support a jumbo frame of a minimum 9K size. 16. The proposed distribution switch should support Fabric Management/SDN integration using open flow/ OpenStack/ Rest API. **Dimension and Environmental**				

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		4. The proposed distribution switch should be one rack unit in size (height = 4.4cm). 5. The proposed distribution switch should support operating temperatures 0º to 40ºC. 6. The proposed distribution switch should support operating relative humidity of 10% to 85%. **Power Supply and FAN** 3. The proposed distribution switch should have a Hot-swappable internal redundant power supply. 4. The proposed distribution switch should have at least two airflow fan units/modules. **Industry Standards** 12. The proposed distribution switch should support IEEE 802.1D spanning tree protocol (STP). 13. The proposed distribution switch should support IEEE 802.1p multicasting. 14. The proposed distribution switch should support IEEE 802.1Q trunking. 15. The proposed distribution switch should support IEEE 802.1s multiple spanning tree protocol (MSTP). 16. The proposed distribution switch should support IEEE 802.1w rapid spanning tree protocol (RSTP). 17. The proposed distribution switch should support IEEE 802.1x port-based network access control (PNAC) or Port-based traffic group/QoS. 18. The proposed distribution switch should support IEEE 802.1AB link layer discovery protocol (LLDP). 19. The proposed distribution switch should support IEEE 802.3ad link aggregation control protocol (LACP). 20. The proposed distribution switch should support SNMP v1, v2, and v3. 21. The proposed distribution switch /switch's operating system should be certified by EAL 2/NDcPP, ICSA Labs, TEC/TSEC, STQC, IC3S or any accredited lab by governemnt of India.				

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		22. The proposed distribution switch should follow safety and EMC standards, including UL-60950, CAN/CSA 22.2 No.60950, EN 60950, IEC60950, FCC 47CFR Part 15, EN 55022/55032, VCCI, CISPR 22 or 24, EN 55024, Reduction of Hazardous Substances (ROHS) 6, or equivalent Indian standards. **Layer-3 Features** 9. The proposed distribution switch should support IPv4/IPv6 static routing. 10. The proposed distribution switch should support Virtual Router Redundancy Protocol (VRRP). 11. The proposed distribution switch should support the OSPF protocol. 12. The proposed distribution switch should support policy-based switching/ routing. 13. The proposed distribution switch must support a minimum of 100K IPv4 and 100K IPv6 routes. 14. The proposed distribution switch should support a minimum of 32K IPv4 and 32K IPv6 multicast routes. 15. The proposed distribution switch should support Multicast Routing Protocols for IPv4 and IPv6. 16. The proposed distribution switch must support IP Source Guard/Source IP Lockdown, DHCP snooping, and Dynamic ARP Inspection. **Layer-2 Features** 8. The proposed distribution switch should have a minimum of 200K MAC address support. 9. The proposed distribution switch should support IGMP filtering/IGMP snooping filters. 10. The proposed distribution switch should support the discovery of the same vendor's neighboring device to help troubleshoot connectivity problems. 11. The proposed distribution switch should support per-port broadcast storm control to prevent faulty end stations from degrading overall system performance, or it should support flood				

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		rate limitation or storm control to minimize the network impact of ingress flooding traffic. 12. The proposed distribution switch should support IGMP v1, v2 & v3 Snooping. 13. The proposed distribution switch should support eight egress queues per port. 14. The proposed distribution switch should support stacking/ Virtual Chassis Technology. **Quality of Service (QoS) & Control** 4. The proposed distribution switch should support Command Line Interface (CLI). 5. The proposed distribution switch system should support 802.1P classification and the mark of packet QoS, DSCP, etc. 6. The proposed distribution switch should support flow control of ethernet ports to control traffic rates during congestion by allowing congested nodes to pause link operation at the other end for receiving traffic as per IEEE 802.3x **Management** 8. The proposed distribution switch should support Layer 2 traceroute to ease troubleshooting by identifying the physical path a packet takes from source to destination, or the switch should support Layer 3 Traceroute. 9. The proposed distribution switch should support Trivial File Transfer Protocol (TFTP) for software upgrades. 10. The proposed distribution switch should have an out-of-band management. 11. The proposed distribution switch should have a console port. 12. The proposed distribution switch should support SNMPv1, SNMPv2, and SNMPv3. 13. The proposed distribution switch should support Port security to secure access to an access or trunk port based on MAC address. 14. The proposed distribution switch should support Simple Network Time Protocol (SNTP) for time synchronization.				

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		Warranty 3. The product should be supplied with a five-year warranty. The OEM should have a 24x7 support center. OEM should have an India toll-free number reflected on the official website. The vendor will provide documentary proof regarding support and warranty directly from the OEM. 4. OEM should not have announced the “End of Sale” and “End of Life” for the proposed product at the time of bidding.				

Technical Compliance sheet						
S. No	**Name of Item**	**Detailed Specifications**	**Compliance (Y/N)**	**PART/ Model No.**	**Support/Doc Pg. No.**	**Deviation/Remarks**
7	Access switch type 1	Supply, configuration, and installation of an access switch per the following specifications. **General Features** 6. The proposed access switch should have a non-blocking architecture. 7. The proposed access switch should have a minimum of 24 nos. 10/100/1000 base T Ethernet Ports. 8. The proposed access switch should have a minimum of 4 SFP+ ports. 9. The proposed access switch should have two separate stacking/VC ports. The port should be populated with 1 meter Stack/DAC cable and all necessary licenses and accessories required for stacking with at least 80 Gbps stacking/VC bandwidth. 10. The proposed access switch should have at least 30 Ports (4 SFP+ ports, 2 X stacking ports, and 24 copper ports). **Performance and Scalability** 7. The proposed access switch should have a minimum of 128 Gbps switching bandwidth/capacity excluding stacking bandwidth. 8. The proposed access switch should have a minimum of 95 Mpps forwarding rate/ Throughput, excluding stacking bandwidth. 9. The proposed access switch should have a minimum of 2GB flash memory. 10. The proposed access switch should have a minimum of 2GB DRAM. 11. The proposed access switch should support a minimum of 4K VLANs. 12. The proposed access switch should support a minimum of 9 K frame size. **Dimension and Environmental** 4. The proposed access switch should be one rack unit in size (height = 4.4cm). 5. The proposed access switch should support Operating temperatures 0ºC to 40ºC. 6. The proposed access switch should support operating relative humidity of 10 % to 85%.				

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		Power Supply and Fan 3. The proposed access switch should support a hot-swappable internal redundant power supply. 4. The proposed access switch should have at least one field-replaceable fan unit/module. **Industry Standards** 12. The proposed access switch should support IEEE 802.1D spanning tree protocol (STP). 13. The proposed access switch should support IEEE 802.1p multicasting. 14. The proposed access switch should support IEEE 802.1Q trunking. 15. The proposed access switch should support IEEE 802.1s multiple spanning tree protocol (MSTP). 16. The proposed access switch should support IEEE 802.1w rapid spanning tree protocol (RSTP). 17. The proposed access switch should support IEEE 802.1x port-based network access control (PNAC) or Port-based traffic group/QoS. 18. The proposed access switch should support IEEE 802.1AB link layer discovery protocol (LLDP). 19. The proposed access switch should support IEEE 802.3ad link aggregation control protocol (LACP). 20. The proposed access switch should support SNMP v1, v2, and v3. 21. The proposed access switch /switch's operating system should be certified by any accredited lab endorsed by Government of India i.e. TEC/TSEC, SQTC, BIS, EAL 2 NDcPP, ICSA Labs, IC3S. 22. The proposed access switch should follow safety and EMC standards, including UL-UL60950, CAN/CSA 22.2 No.60950, EN 60950, IEC60950, FCC 47CFR Part 15, EN 55022/55032, VCCI, CISPR 22 or 24, EN 55024, Reduction of Hazardous Substances (ROHS) 6, or better. **Basic Layer-3 Protocol** 4. The proposed access switch should support Ipv4/Ipv6 static routing. 5. The proposed access switch should support a minimum of 8K IPv4 and 8K IPv6 routes.				

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		6. The proposed access switch should support multicast routes/entries with a minimum of 2K for both IPv4 and IPv6. **Layer-2 Features** 6. The proposed access switch should have a minimum of 32K MAC address support. 7. The proposed access switch should support IGMP filtering/ IGMP snooping filters. 8. The proposed access switch should support the discovery of the neighboring device of the same vendor to help troubleshoot connectivity problems. 9. The proposed access switch should support Voice VLAN to simplify IP telephony installations by keeping voice traffic on a separate VLAN. 10. The proposed access switch should support stacking/ Virtual chassis Technology to allow at least six switches (Same model or with a higher model of the same OEM) as a single logical device. **Quality of Service (QoS) & Control** 5. The proposed access switch should support Command Line Interface (CLI). 6. The proposed access switch should have a management port. 7. The proposed access switch should support 802.1P classification and the mark of packet QoS, DHCP, etc. 8. The proposed access switch should support flow control of ethernet ports to control traffic rates during congestion by allowing congested nodes to pause link operation at the other end for receiving traffic as per IEEE 802.3x. **Management** 5. The proposed access switch should support software upgrades. 6. The proposed access switch should have a console port. 7. The proposed access switch should support port security to secure access to an access or trunk port based on the MAC address. 8. The proposed access switch should support a Simple Network Time Protocol (SNTP) for synchronization. **Warranty**				

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		3. The proposed access switch should be supplied with a five-year comprehensive warranty. The OEM should have a 24x7 support center. OEM should have an India toll-free number reflected on the official website. The vendor will provide documentary proof regarding support and warranty directly from the OEM. 4. OEM should not have announced the “End of Sale” and “End of Life” for the proposed product at the time of bidding.				

Technical Compliance sheet						
S. No	**Name of Item**	**Detailed Specifications**	**Compliance (Y/N)**	**PART/ Model No.**	**Support/Doc Pg. No.**	**Deviation/Remarks**
8	Access switch type 2	Supply, configuration, and installation of an access switch as per the following specification. **General Features** 6. The proposed access switch should have a non-blocking architecture. 7. The proposed access switch should have a minimum of 48 nos. 10/100/1000 base T Ethernet Ports. 8. The proposed access switch should have a minimum of 4 SFP+ ports. 9. The proposed access switch should have two separate stacking/VC ports. The port should be populated with one meter Stack/DAC cable, licenses, and accessories required for stacking with at least 80 Gbps stacking/VC bandwidth. 10. The proposed access switch should have at least 54 Ports (4 SFP+ ports, 2 X stacking ports, and 48 copper ports). **Performance and Scalability** 6. The proposed access switch should have a minimum of 176 Gbps switching bandwidth/capacity excluding stacking bandwidth. 7. The proposed access switch should have a minimum of 130 Mpps forwarding rate/ throughput excluding stacking bandwidth. 8. The proposed access switch should have a minimum of 2GB flash memory. 9. The proposed access switch should have a minimum of 2GB or more DRAM. 10. The proposed access switch should support a minimum of 4K VLANs. 6. The proposed access switch should support a minimum of 9K jumbo frame size. **Dimension and Environmental** 4. The proposed access switch should be one rack unit in size (height = 4.4cm). 5. The proposed access switch should support Operating temperatures 0º to 40ºC. 6. The proposed access switch should support operating relative				

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		humidity of 10% to 85%. **Power Supply and Fan** 3. The proposed access switch should support Hot swappable internal redundant power supply. 4. The proposed access switch should have at least one field-replaceable fan unit/module. **Industry Standards** 12. The proposed access switch should support IEEE 802.1D spanning tree protocol (STP). 13. The proposed access switch should support IEEE 802.1p multicasting. 14. The proposed access switch should support IEEE 802.1Q trunking. 15. The proposed access switch should support IEEE 802.1s multiple spanning tree protocol (MSTP). 16. The proposed access switch should support IEEE 802.1w rapid spanning tree protocol (RSTP). 17. The proposed access switch should support IEEE 802.1x port-based network access control (PNAC) or port-based traffic group/QoS. 18. The proposed access switch should support IEEE 802.1AB link layer discovery protocol (LLDP). 19. The proposed access switch should support IEEE 802.3ad link aggregation control protocol (LACP). 20. The proposed access switch should support SNMP v1, v2, and v3. 21. The proposed access switch /switch's operating system should be certified by EAL 2/NDcPP, ICSA Labs, TEC/TSEC, STQC, IC3S or any accredited lab by governemnt of India. 22. The proposed access switch should follow safety and EMC standards, including UL-60950, CAN/CSA 22.2 No.60950, EN 60950, IEC60950, FCC 47CFR Part 15, EN 55022/55032, VCCI, CISPR 22 or 24, EN 55024, Reduction of Hazardous Substances (ROHS) 6, or equivalent Indian standards. **Basic Layer-3 Protocol** 4. The proposed access switch should support Ipv4/Ipv6 static routing. 5. The proposed access switch should support a minimum of 8K IPv4				

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		and 8K IPv6 routes. 6. The proposed access switch should support multicast routes/entries with a minimum of 2K for both IPv4 and IPv6. **Layer-2 Features** 3. The proposed access switch should have a minimum of 32K MAC address support. 4. The proposed access switch should support IGMP filtering. 6. The proposed access switch should support the discovery of the neighboring device of the same vendor to help troubleshoot connectivity problems. 7. The proposed access switch should support Voice VLAN to simplify IP telephony installations by keeping voice traffic on a separate VLAN. 8. The proposed access switch should support stacking/ virtual chassis technology to allow at least six switches (Same model or with a higher model of the same OEM) as a single logical device. **Quality of Service (QoS) & Control** 5. The proposed access switch should support a command line interface (CLI). 6. The proposed access switch should have a management port. 7. The proposed access switch should support 802.1P classification and the mark of packet QoS, DSCP, etc. 8. The proposed access switch should support Flow control of Ethernet ports to control traffic rates during congestion by allowing congested nodes to pause link operation at the other end for receiving traffic as per IEEE 802.3x. **Management** 5. The proposed access switch should support software upgrades. 6. The proposed access switch should have a serial console port. 7. The proposed access switch should support Port security to secure access to an access or trunk port based on MAC address. 8. The proposed access switch should support a Simple Network Time Protocol (SNTP) for synchronization.				

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		Warranty 3. The proposed access switch should be supplied with a five-year comprehensive warranty. The OEM should have a 24x7 support center. OEM should have an India toll-free number reflected on the official website. The vendor will provide documentary proof regarding support and warranty directly from the OEM. 4. OEM should not have announced the “End of Sale” and “End of Life” for the proposed access switch.				
9	Access Switch type 3	Supply, configuration, and installation of a POE switch as per the following specifications. **General Features** 7. The proposed POE switch should have a non-blocking architecture. 8. The proposed POE switch should have a minimum of 24 x 100M/1/2.5/5/10GbE PoE access port. 9. The proposed POE switch should have a minimum of 4 SFP28 ports (25G port) populated with 2X25G SFP28 SM LR transceivers of the same OEM. 10. The proposed POE switch should have two separate stacking/VC ports. The stacking ports should be populated with one meter Stack/DAC cable, licenses, and accessories with at least 160 Gbps stacking/VC bandwidth. 11. The proposed POE switch should have at least 30 Ports (4 SFP28 ports, 2X stacking ports, and 24 copper ports).				

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		12. The proposed POE switch should have an overall PoE power budget of 1700W with a dual power supply. **Performance and Scalability** 7. The proposed POE switch should have a minimum of 680 Gbps switching bandwidth/ capacity excluding stacking bandwidth. 8. The proposed POE switch should have a minimum of 505 Mpps forwarding rate/ throughput excluding stacking bandwidth. 9. The proposed POE switch should have a minimum of 8 GB flash memory. 10. The proposed POE switch should have a minimum of 4 GB RAM. 11. The proposed POE switch should support a minimum of 4K VLANs. 12. The proposed POE switch should support a minimum of 9K jumbo frame size. **Dimension and Environmental** 4. The proposed POE switch should be one rack unit in size (height = 4.4cm). 5. The proposed POE switch should support operating temperatures of 0ºC to 40ºC. 6. The proposed POE switch should support 10% to 85% operating humidity. **Power Supply and FAN** 3. The proposed POE switch should have a hot-swappable internal redundant power supply. 4. The proposed POE switch should have hot-swappable field-replaceable redundant fans. **Industry Standards** 13. The proposed POE switch should support IEEE 802.1D spanning tree protocol (STP). 14. The proposed POE switch should support IEEE 802.1p multicasting. 15. The proposed POE switch should support IEEE 802.1Q trunking. 16. The proposed POE switch should support IEEE 802.1s multiple spanning tree protocol (MSTP). 17. The proposed POE switch should support IEEE 802.1w rapid spanning tree protocol (RSTP).				

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		18. The proposed POE switch should support IEEE 802.1x port-based network access control (PNAC) or port-based traffic groups/QoS. 19. The proposed POE switch should support IEEE 802.1AB link layer discovery protocol (LLDP). 20. The proposed POE switch should support IEEE 802.3ad link aggregation control protocol (LACP). 21. The proposed POE switch should support SNMP v1, v2, and v3. 22. The proposed POE switch /switch's operating system should be certified by any accredited lab endorsed by Government of India i.e. TEC/TSEC, SQTC, BIS, EAL 2 NDcPP, ICSA Labs, IC3S. 23. The proposed POE switch should follow safety and EMC standards, including UL-UL60950, CAN/CSA 22.2No.60950, EN 60950, IEC60950, FCC 47CFR Part 15, EN 55022/55032, VCCI, CISPR 22 or 24, EN 55024, Reduction of Hazardous Substances (ROHS) 6, or better. 16. The proposed POE switch should support IEEE 802.3af: PoE. 17. The proposed POE switch should support IEEE 802.3at: PoE+. 18. The proposed POE switch should support IEEE 802.3bt: PoE++. **Basic Layer-3 Protocol** 4. The proposed POE switch should support Ipv4/Ipv6 static routing. 5. The proposed POE switch should support a minimum of 16K IPv4 and 16K IPv6 routes. 6. The proposed POE switch should support multicast routes/entries of 8K for IPV4 and 8K for IPV6. **Layer-2 Features** 6. The proposed POE switch should have a minimum of 64K MAC address support. 7. The proposed POE switch should support IGMP filtering. 8. The proposed POE switch should support the discovery of the neighboring device of the same vendor to help troubleshoot connectivity problems. 9. The proposed POE switch should support Voice VLAN to simplify IP telephony installations by keeping voice traffic on a separate VLAN. 10. The proposed POE switch should support stacking/ Virtual chassis				

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		Technology to allow at least six switches (Same modal or with a higher modal of the same OEM) as a single logical device. **Quality of Service (QoS) & Control** 3. The proposed POE switch should support a command line interface (CLI). 4. The proposed POE switch should have a management port. **Management** 5. The proposed POE switch should support software upgrades. 6. The proposed POE switch should have a console port. 7. The proposed POE switch should support Port security to secure access to an access or trunk port based on MAC address. 8. The proposed POE switch should support synchronization with a Simple Network Time protocol (SNTP). **Warranty** 2. The proposed POE switch should be supplied with a five-year comprehensive warranty. The OEM should have a 24x7 support center. OEM should have an India toll-free number reflected on the official website. The vendor will provide documentary proof regarding support and warranty directly from the OEM. 24. OEM should not have announced the “End of Sale” and “End of Life” for the proposed POE switch at the time of bidding.				
10	Access switch type 4	Supply, configuration, and installation of an access switch per the following specifications. **General Features** 7. The proposed access switch should have a non-blocking architecture. 8. The proposed access switch should have a minimum of 24 nos. 10/100/1000 base T POE Ethernet Ports. 9. The proposed access switch should have a minimum of 4 SFP+ ports. 10. The proposed access switch should have two separate stacking/VC ports. The port should be populated with a 1-meter Stack/DAC cable and all necessary licenses and accessories required for stacking with at least 80 Gbps stacking/VC bandwidth. 11. The proposed access switch should have at least 30 Ports (4 SFP+ ports, 2 X stacking ports, and 24 copper ports).				

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		12. The proposed POE switch should have an overall PoE power budget of 700 W with a dual power supply. **Performance and Scalability** 7. The proposed access switch should have a minimum of 128 Gbps switching bandwidth/capacity, excluding stacking bandwidth. 8. The proposed access switch should have a minimum of 95 Mpps forwarding rate/ Throughput, excluding stacking bandwidth. 9. The proposed access switch should have a minimum of 2GB flash memory. 10. The proposed access switch should have a minimum of 2GB DRAM. 11. The proposed access switch should support a minimum of 4K VLANs. 12. The proposed access switch should support a minimum of 9K frame size. **Dimension and Environmental** 4. The proposed access switch should be one rack unit in size (height = 4.4cm). 5. The proposed access switch should support Operating temperatures 0º to 40ºC. 6. The proposed access switch should support Operating relative humidity of 10% to 85%. **Power Supply and Fan** 3. The proposed access switch should support a hot-swappable internal redundant power supply. 4. The proposed access switch should have at least one field-replaceable fan unit/module. **Industry Standards** 14. The proposed access switch should support IEEE 802.1D spanning tree protocol (STP). 15. The proposed access switch should support IEEE 802.1p multicasting. 16. The proposed access switch should support IEEE 802.1Q trunking. 17. The proposed access switch should support IEEE 802.1s multiple spanning tree protocol (MSTP). 18. The proposed access switch should support IEEE 802.1w rapid spanning tree protocol (RSTP).				

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		19. The proposed access switch should support IEEE 802.1x port-based network access control (PNAC) or Port-based traffic group/QoS. 20. The proposed access switch should support IEEE 802.1AB link layer discovery protocol (LLDP). 21. The proposed access switch should support IEEE 802.3ad link aggregation control protocol (LACP). 22. The proposed access switch should support SNMP v1, v2, and v3. 23. The proposed access switch /switch's operating system should be certified by any accredited lab endorsed by Government of India i.e. TEC/TSEC, SQTC, BIS, EAL 2 NDcPP, ICSA Labs, IC3S. 24. The proposed core switch should follow safety and EMC standards, including UL60950, CAN/CSA 22.2 No.60950, EN 60950, IEC60950, FCC 47CFR Part 15, EN 55022/55032, VCCI, CISPR 22 or 24, EN 55024, Reduction of Hazardous Substances (ROHS), or equivalent Indian standards. 25. The proposed POE switch should support IEEE 802.3af: PoE. 26. The proposed POE switch should support IEEE 802.3at: PoE+. **Basic Layer-3 Protocol** 4. The proposed access switch should support Ipv4/Ipv6 static routing. 5. The proposed access switch should support a minimum of 8K IPv4 and 8K IPv6 routes. 6. The proposed access switch should support multicast routes/entries with a minimum of 2K for IPV4 and 2K for IPV6. **Layer-2 Features** 6. The proposed access switch should have a minimum of 32K MAC address support. 7. The proposed access switch should support IGMP filtering/ IGMP snooping filters. 8. The proposed access switch should support the discovery of the neighboring device of the same vendor to help troubleshoot connectivity problems. 9. The proposed access switch should support Voice VLAN to simplify IP telephony installations by keeping voice traffic on a separate VLAN.				

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		10. The proposed access switch should support stacking/ Virtual chassis Technology to allow at least six switches (Same model or with a higher model of the same OEM) as a single logical device. **Quality of Service (QoS) & Control** 5. The proposed access switch should support the Command Line Interface (CLI). 6. The proposed access switch should have a management port. 7. The proposed access switch should support 802.1P classification and the mark of packet QoS, DHCP, etc. 8. The proposed access switch should support flow control of ethernet ports to control traffic rates during congestion by allowing congested nodes to pause link operation at the other end for receiving traffic as per IEEE 802.3x. **Management** 5. The proposed access switch should support software upgrades. 6. The proposed access switch should have a console port. 7. The proposed access switch should support port security to secure access to an access or trunk port based on the MAC address. 8. The proposed access switch should support a Simple Network Time Protocol (SNTP) for synchronization. **Warranty** 3. The proposed access switch should be supplied with a five-year comprehensive warranty. The OEM should have a 24x7 support center. OEM should have an India toll-free number reflected on the official website. The vendor will provide documentary proof regarding support and warranty directly from the OEM. 4. OEM should not have announced the “End of Sale” and “End of Life” for the proposed product at the time of bidding.				

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11	Wireless Controller	Supply, configuration, and installation of a wireless controller as per the following specifications. **Essential Features** 8. The proposed wireless controller can be on-premises or cloud-based as well. 9. The proposed on-premises wireless controller should have 10Gbps of throughput dedicated hardware appliance, purpose-built for Wi-Fi control and management. 10. The proposed on-premises wireless controller should have a minimum of 2x 10/100/1000 RJ45 Ethernet Ports and 2 x 10G ports populated with 2 X 10G SFP+ SR transceivers. 11. The proposed on-premises wireless controller should have a redundant power supply and redundant fans. 12. The proposed wireless controller should have an easy setup through PnP/ZTP network discovery and the installation wizard. 13. The proposed wireless controller should support 1000 APs from day one and be scalable up to 2000 APs. 14. The proposed wireless controller should handle at least 32,000 concurrent devices. **Redundancy Features:** 1. The proposed on-premises wireless controller should provide active/active or active/passive with 1+1 redundancy. 2. The proposed wireless controller should provide air-time fairness between these different speed clients, the faster clients should not starve slower clients, and faster clients should not be adversely affected by slower clients. 3. The proposed wireless controller should be able to map SSID to VLAN and dynamic VLAN support for the same SSID. 4. The proposed wireless controller should support automatic channel selection for interference avoidance. 5. The proposed wireless controller should support a client troubleshooting feature that allows an administrator to focus on a				

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		specific client device and its connectivity status. 6. The proposed wireless controller should support the ability to create different zones in which AP can be grouped logically or physically based on location, e.g., different buildings on campus can be configured as different zones so that each zone will have different configurations and policies. 7. The proposed wireless controller should support hotspot 2.0 (passport). 8. The proposed on-premises wireless controller should support the auto-deployment of APs at different locations. 9. Access points can discover the proposed wireless controllers across the Layer-2/Layer-3 network through DHCP or DNS. **Security & Monitoring** 1. The proposed wireless controller should support open, 802.1x/EAP, PSK, EPSK/DPSK/MPSK/PPSK/IPSK, WPA, WPA2-AES, WPA-TKIP, WEP, EAP-SIM, EAP-AKA for security. 13. The proposed wireless controller should support authentication through the external radius /directory services. 14. The proposed wireless controller should support WIDS/WIPS for security, including rogue AP detection and prevention. 15. The proposed wireless controller should support L2 Client Isolation so users cannot access each other's devices. Isolation should have the option to apply on AP or SSIDs. 16. The proposed on-premises architecture should be a controller-based Architecture with thin/thick AP deployment and able to perform encryption/decryption of 802.11 packets at the AP. 17. The proposed wireless controller should support operating system/device fingerprinting, bandwidth rate limit, and VLAN mapping. 18. The proposed wireless controller should be able to present a suitable dashboard with information on the status of the wireless network. 19. The proposed wireless controller should be able to raise critical				

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		alarms/alerts by emailing. 20. The proposed wireless controller should provide customized reporting with at least seven days or more of historical wireless LAN information. 21. The proposed wireless controller should filter the alarms and event Logs based on APs, SSID, or zones. 22. The proposed wireless controller should support the syslog towards the external syslog server. 23. The proposed wireless controller should support access point locations on floor plans and visual indication of AP online & offline/heat-map. **QoS features** 4. The proposed wireless controller should support per-SSID or per-user bandwidth rate limiting. 5. The proposed wireless controller must support band steering where 5 GHz clients are forced to connect to over 5 GHz radio to provide better load balancing among 2.4 GHz and 5 GHz radios. 6. The proposed wireless controller should support quality of service features like 802.11e-based QoS enhancements, WMM, or equivalent. **Client/ Guest Management** 4. The proposed wireless controller should provide a guest login portal to authenticate users outside the organization. 5. The proposed wireless controller should support guest access. 6. The proposed wireless controller should be able to provide a web-based application that allows the administrator to create guest accounts with validity for a fixed duration, like hours or days. **Management Features** 4. The proposed wireless controller should have administration access through HTTPS GUI. 5. The proposed wireless controller should have security features for administrative users. 5. The proposed wireless controller should have a library of well-documented REST APIs to allow integration with 3rd party apps.				

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		6. The proposed wireless controller should have all the necessary licenses for the above-mentioned features. **Warranty** 2. The proposed wireless controller should be supplied with a five-year warranty. The OEM should have a 24x7 support center. OEM should have an India toll-free number reflected on the official website. The vendor will provide documentary proof regarding support and warranty directly from the OEM. 6. OEM should not have announced the "End of Sale" and "End of Life" for the proposed product at the time of bidding.				
12	Access point type 1	Supply, configuration, and installation of 4:4X4 Wi-Fi indoor access point as per the following specifications. **Radio Specifications** 10. The proposed access point should be a dual-band, dual-radio indoor access point. The minimum data rate supported shall be 2400 Mbps in 5 GHz and 570 Mbps in 2.4 GHz. 11. The proposed access point should have 4x4:4 MU-MIMO antennas for transmission in 5 GHz and 2X2:2 MU- MIMO in 2.4 GHz. 12. The proposed access point must have MU-MIMO antennas. 13. The proposed access point should have at least a 3 dBi antenna gain for 5GHz and 3 dBi for 2.4GHz radio. 14. The proposed access point should support a minimum of 2.9 Gbps aggregate data rates. 15. The proposed access point should support the latest amendments of IEEE 802.11 a/b/g/n/ac/ax. 16. The proposed access point should provide at least 18 dBm transmit power on both radios. 17. The proposed access point should support at least 16 SSID. 18. The proposed access point should have adaptive antenna technology/beam forming technology for performance optimization and interference mitigation features. **Interface and Power Requirements** 5. The proposed access point should have at least one 100/1000/2500				

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		Mbps RJ-45-based Ethernet PoE port. 6. The proposed access point should have at least one 100/1000 Mbps RJ-45-based Ethernet port, preferably PoE. 7. The proposed access point should have a maximum of 35 Watts of power consumption for full functionality. 8. The proposed access point should have IoT/BLE radio. **Networking Requirements** 3. The proposed access point should handle a minimum of 100 concurrent devices. 4. The proposed access point should be flexible hardware that can be deployed standalone, or controller based. 6. The proposed access point should support IPv6, IEEE 802.1Q, band balancing, airtime fairness, QoS, and ACL features. 7. The proposed access point should be able to act as WIDs/WIPS. 8. The proposed access point should provide zero service interruption and handle client traffic if the controller goes down. **Security & Monitoring** 5. The proposed access point should support auth/encryption methods for wireless, i.e., Open, WEP, WPA2-AES, WPA3-SAE, IEEE 802.1X/EAP, and AAA. 6. The proposed access point should follow Wi-Fi alliance standards WMM, 802.11d, 802.11h, and 802.11e. 7. The proposed access point should support role-based access control, rate-limiting, device fingerprinting, 802.11w MFP, and 802.11r fast roaming. 8. The proposed access point should support management frame protection. **Management Features** 3. The proposed access point should have administration access through a secure graphic user interface. 4. Apart from controller-based configuration, the proposed access point should provide standalone operation without changing AP				

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		hardware. If the controller configuration disallows GUI/CLI access, it should follow the same. **Mandatory Compliance:** 1. The proposed access point should be plenum-rated (UL 2043). 2. The proposed access point should have an operating temperature of 0-40 ºC. 3. The proposed access point should have been approved by the Wireless Planning Commission (TRAI, Govt of India). ETA certificates or Wi-Fi alliance certificates are also mandatory. **Warranty** 3. The proposed access point, all licenses, and accessories should be supplied with a five-year warranty. The OEM should have a 24x7 support center. OEM should have an India toll-free number reflected on the official website. The vendor will provide documentary proof regarding support and warranty directly from the OEM. 4. OEM should not have announced the “End of Sale” and “End of Life” for the proposed product at the time of bidding.				
13	Access point type 2	Supply, configuration, and installation of 8:8X8 Wi-Fi indoor access point as per the following specifications. **Radio Specifications** 5. The proposed access point should be a dual-band, dual-radio indoor access point. The minimum data rate supported shall be 4800 Mbps in 5 GHz and 1140 Mbps in 2.4 GHz. 6. The proposed access point should have 8x8:8 MU-MIMO antennas for transmission in 5 GHz and 4X4:4 MU- MIMO in 2.4 GHz. 7. The proposed access point should have at least a 2 dBi antenna gain for both radios. 8. The proposed access point must have MU-MIMO antennas. 8. The proposed access point should support the latest amendments of IEEE 802.11 a/b/g/n/ac/ax. 9. The proposed access point should provide at least 18 dBm transmit power on both radios.				

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		10. The proposed access point should have adaptive antenna technology/beam forming technology for performance optimization and interference mitigation features. **Interface and Power Requirements** 4. The proposed access point should have at least one 100/1000/2500/5000 Mbps RJ-45-based ethernet PoE port. 5. The proposed access point should have at least one 100/1000 Mbps RJ-45-based ethernet port. 6. The proposed access point should have a maximum power consumption of 35 Watts for full functionality. 2. The proposed access point should have IoT /BLE Radio. **Networking Requirements** 6. The proposed access point should handle a minimum of 200 concurrent devices. 7. The proposed access point should be flexible hardware to be deployed as standalone and controller based. 8. The proposed access point should support IPv6, IEEE 802.1Q, band balancing, airtime fairness, QoS, and ACL features. 9. The proposed access point should be able to act as WIDs/WIPS. 10. The proposed access point should provide zero service interruption and handle client traffic if the controller goes down. **Security & Monitoring** 5. The proposed access point should support auth/encryption methods for wireless, i.e., Open, WEP, WPA2-AES, WPA3-SAE, IEEE 802.1X/EAP, and AAA. 6. The proposed access point should follow Wi-Fi alliance standards WMM, 802.11d, 802.11h, and 802.11e. 7. The proposed access point should support role-based access control, rate-limiting, device fingerprinting, 802.11w MFP, and 802.11r fast roaming. 8. The proposed access point should support management frame protection. **Management Features**				

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		3. The proposed access point should have administration access through a secure graphic user interface. 4. Apart from a controller-based configuration, the proposed access point should provide standalone operation without changing the AP hardware. If the controller configuration disallows GUI/CLI access, it should follow the same. **Mandatory Compliance:** 4. The proposed access point should be plenum-rated (UL 2043). 5. The proposed access point should have an operating temperature of 0-40 ºC. 6. The proposed access point should have been approved by the Wireless Planning Commission (TRAI, Govt of India). ETA certificate or Wi-Fi alliance certificate is also mandatory. **Warranty** 3. The proposed access point should be supplied with a five-year warranty. The OEM should have a 24x7 support center. OEM should have an India toll-free number reflected on the official website. The vendor will provide documentary proof regarding support and warranty directly from the OEM. 4. OEM should not have announced the “End of Sale” and “End of Life” for the proposed product at the time of bidding.				
14.	Access point type 3	Supply, configuration, and installation of 2:2X2 Wi-Fi outdoor access point per the following specifications. 19. The proposed access point should be a dual-band, dual-radio outdoor. The minimum data rate supported shall be 1150 Mbps in 5 GHz and 570 Mbps in 2.4 GHz. 20. The proposed access point should have 2x2:2 MU-MIMO antennas for transmission in both bands. 21. The proposed access point must have MU-MIMO antennas. 22. The proposed access point should support the latest amendments of IEEE 802.11 a/b/g/n/ac/ax. 23. The proposed access point should have a 1 X 10/100/1000/2500 Mbps RJ-45 POE port. 24. The proposed access point should be centrally managed and able to				

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		work as a standalone. 25. The proposed access point should operate in full MU-MIMO mode with 802.3af/at POE. 26. The proposed access point must be supplied with a POE Injector from the same OEM. 27. The proposed access point should support security mechanisms to protect the communication between the wireless controller and the access point. 28. The proposed access point should detect clients with dual-band capability and automatically steer such clients to use the 5 GHz band instead of the 2.4 GHz band. 29. The proposed access point should have dual-polarized antennas, which should be integrated inside the access point enclosure to minimize damage and create a low-profile unit that does not stand out visually. 30. The proposed access point should have omnidirectional antennas. 31. The proposed access point should support 802.1q VLAN tagging. 32. The proposed access point should support authentication/encryption methods for wireless, i.e., Open, WEP, WPA2-AES, IEEE 802.1X/EAP, and AAA. 33. The proposed access point should support role-based access control, rate-limiting, device fingerprinting, 802.11w MFP, and 802.11r fast roaming. 34. The proposed access point should support management frame protection. 35. The proposed access point should follow Wi-Fi alliance standards WMM, 802.11d, 802.11h, and 802.11e. 36. The proposed access point should select channels based on measuring throughput capacity in real-time. The proposed access point should support transmit power tuning in 1dB increments to reduce interference and RF hazards. 31. The proposed access point should have at least a 5 dBi antenna gain for both radios. 32. The proposed access point should support 8 BSSIDs on both radios				

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		for multiple differentiated user services. 33. The proposed access point should support 250 or more clients. 34. The proposed access point should support 16 SSID. 35. The proposed access point should support IPv6 clients. 36. The proposed access point should support remote capture of 802.11 and/or 802.3 frames without disrupting client access. 37. The proposed access point should have an operating temperature of -10°C to 60°C. 38. The proposed access point should have an operating humidity of 5% to 90%. 39. The proposed access point should have been approved by the Wireless Planning Commission (TRAI, Govt of India). ETA certificate or Wi-Fi alliance certificate is also mandatory. 40. The proposed access point must be IP67 rated and have a minimum of 100 km/h wind survivability. 41. The proposed access point should have a mechanism for physical device locking using a padlock /Kensington lock/equivalent. This mechanism could be used with metallic mounts, if required. **Warranty** 3. The proposed access point should be supplied with a five-year warranty. The OEM should have a 24x7 support center. OEM should have an India toll-free number reflected on the official website. The vendor will provide documentary proof regarding support and warranty directly from the OEM. 4. OEM should not have announced the “End of Sale” and “End of Life” for the proposed product at the time of bidding.				

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15	Access Point Type 4	Supply, configuration, and installation of 2:2X2 Wi-Fi indoor access point per the following specifications. **Radio Specifications** 10. The proposed access point should be a dual-band, dual-radio indoor access point. The minimum data rate supported shall be 1200 Mbps in 5 GHz and 570 Mbps in 2.4 GHz. 11. The proposed access point should have 2x2:2 MU-MIMO antennas for transmission on both bands. 12. The proposed access point must have MU-MIMO antennas. 13. The proposed access point should have at least a 3 dBi antenna gain for 5GHz and 3 dBi for 2.4GHz radio. 14. The proposed access point should support a minimum of 1.7 Gbps aggregate data rates. 15. The proposed access point should support the latest amendments of IEEE 802.11 a/b/g/n/ac/ax. 16. The proposed access point should provide at least 18 dBm transmit power on both radios. 17. The proposed access point should support at least 16 SSIDs. 18. The proposed access point should have adaptive antenna technology/beam forming technology for performance optimization and interference mitigation features. **Interface and Power Requirements** 4. The proposed access point should have at least one 100/1000 Mbps RJ-45-based Ethernet PoE port. 5. The proposed access point should have a maximum of 35 Watts of power consumption for full functionality. 6. The proposed access point should have IoT /BLE Radio. **Networking Requirements** 6. The proposed access point should handle a minimum of 100 concurrent devices. 7. The proposed access point should be flexible hardware that can be deployed standalone, and controller based. 8. The proposed access point should support IPv6, IEEE 802.1Q, band balancing, airtime fairness, QoS, and ACL features.				

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		9. The proposed access point should be able to act as WIDs/WIPS. 10. The proposed access point should provide zero service interruption and handle client traffic if the controller goes down. **Security & Monitoring** 5. The proposed access point should support auth/encryption methods for wireless, i.e., Open, WEP, WPA2-AES, WPA3-SAE, IEEE 802.1X/EAP, and AAA. 6. The proposed access point should follow Wi-Fi alliance standards WMM, 802.11d, 802.11h, and 802.11e. 7. The proposed access point should support role-based access control, rate-limiting, device fingerprinting, 802.11w MFP, and 802.11r fast roaming. 8. The proposed access point should support management frame protection. **Management Features** 3. The proposed access point should have administration access through a secure graphic user interface. 4. Apart from controller-based configuration, the proposed access point should provide standalone operation without changing AP hardware. If the controller configuration disallows GUI/CLI access, it should follow the same. **Mandatory Compliance:** 4. The proposed access point should be plenum-rated (UL 2043). 5. The proposed access point should have an operating temperature of 0-40 ºC. 6. The proposed access point should have been approved by the Wireless Planning Commission (TRAI, Govt of India). ETA certificate or Wi-Fi alliance certificate is also mandatory. **Warranty** 3. The proposed access point, all licenses, and accessories should be supplied with a five-year warranty. The OEM should have a 24x7 support center. OEM should have an India toll-free number reflected on the official website. The vendor will provide documentary proof regarding support and warranty directly from the OEM.				

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		4. OEM should not have announced the "End of Sale" and "End of Life" for the proposed product when bidding.				
16	XGS-PON OLT	Supply, installation, and configuration of fully populated/ loaded OLT device with EMS per the following specifications- **ITU-T standard:** 8. The proposed XGS-PON OLT should support G.984.1 (General Characteristics). 9. The proposed XGS-PON OLT should support G.984.2 (Physical Media Dependent (PMD) layer). 10. The proposed XGS-PON OLT should support G.984.3 (Transmission convergence layer specification). 11. The proposed XGS-PON OLT should support G.984.4 (ONT management and control interface specification). 12. The proposed XGS-PON OLT should support G.9807.1 (10-Gigabit-capable symmetric passive optical network). 13. The proposed XGS-PON OLT should support GPON cards with an upstream rate of 1.244 Gbps and a downstream rate of 2.488 Gbps. 14. The proposed XGS-PON OLT should support XGS-PON cards with an upstream rate of 9.95 Gbps and a downstream rate of 9.95 Gbps. **Features:** 1. The proposed XGS-PON OLT should support dynamic bandwidth allocation (DBA) for upstream traffic. 2. The proposed XGS-PON OLT should support advanced encryption standards (AES) for downstream traffic. 3. The proposed XGS-PON OLT should support forward error correction (FEC) for upstream and downstream traffic.				

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		4. The proposed XGS-PON OLT should support IP telephony. **Chassis:** 7. The proposed XGS-PON OLT should be Pizza Box with a minimum of 16P combo supported. 8. The proposed XGS-PON OLT should have 16 no's XGS-PON ports populated with 16 no's XGS-PON transceivers of the same OEM. 9. The proposed XGS-PON OLT should have a redundant power supply. 10. The proposed XGS-PON OLT should support 128 ONTs per XGS-PON/ GPON port. 11. The proposed XGS-PON OLT should support Class B+, C+, and C++ PON transceivers. 12. The proposed XGS-PON OLT should support XGS-PON and GPON ports at the same time. **Switching:** 12. The proposed XGS-PON OLT should support a minimum of 4K VLAN. 13. The proposed XGS-PON OLT should support VLAN models per ONT, XGS-pon port, and VLAN Translation. 14. The proposed XGS-PON OLT should support a minimum of 64K MAC addresses. 15. The proposed XGS-PON OLT should support spanning tree protocols like STP, MSTP, etc. 16. The proposed XGS-PON OLT should support 1K multicast groups. 17. The proposed XGS-PON OLT should support VLAN Mapping as untagged, port-based, 802.1Q tagged, and QinQ VLAN. 18. The proposed XGS-PON OLT should support IGMPv2 and IGMPv3 snooping. 19. The proposed XGS-PON OLT should support static routing for IPv4 and IPv6. 20. The proposed XGS-PON OLT should support ONU remote loop detection and prevention. 21. The proposed XGS-PON OLT should support security mechanisms for DOS attacks such as ARP, Syn flood, Smurf, and ICMP attacks. 22. The proposed XGS-PON OLT should support SNI and XGS-PON port mirroring.				

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		Network card: 4. The proposed XGS-PON OLT should support a 100G uplink port. 5. The proposed XGS-PON OLT should have at least 2 x 100G optical uplink interfaces. 6. The proposed XGS-PON OLT should have two no's QSFP28 SR transceivers of the same OEM. **Voice:** 2. The proposed XGS-PON OLT should support Asterisk-based IP telephony. **Security:** 1. The proposed XGS-PON OLT should support DHCP snooping, filtering, and relay. 2. The proposed XGS-PON OLT should support port MAC-based IP binding. 3. The proposed XGS-PON OLT should support broadcast/ Multicast protection/ IP anti-spoofing protection, MAC spoofing prevention, IP source guard, and uplink loop detection. 4. The proposed XGS-PON OLT should support rogue ONU/ONT detection, isolation, and mitigation, ONU auto registration & ONU auto-discovery. 5. The proposed XGS-PON OLT should support ACL based on packet filtering, QoS policing (IPv4 & Ipv6), and CLI access control. **Management:** 9. The proposed XGS-PON OLT should have a management and console port. 10. The proposed XGS-PON OLT should support CLI with multiple privileges. 11. The proposed XGS-PON OLT should support remote management using SNMP v1/v2/v3, telnet, and SSH. 12. The proposed XGS-PON OLT should support RADIUS, TACACS+ server for authentication. 13. The proposed XGS-PON OLT should support monitoring using RMON for temperature, humidity, fan speed, and CPU. 14. The proposed XGS-PON OLT should generate alarms with different				

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		categories, i.e., critical/major/minor severity. 15. The proposed XGS-PON OLT should support local and remote syslog logging. 16. The proposed XGS-PON OLT should support NTPv4 for time synchronization. **Operating Requirements:** 3. The proposed XGS-PON OLT should support operating temperatures from 0º to 45ºC. 4. The proposed XGS-PON OLT should support operating humidity from 10% to 85%. **Physical Requirements:** 4. The proposed XGS-PON OLT should be 1 RU 19" standard rack mountable. 5. The proposed XGS-PON OLT must have full front access only. 6. The proposed XGS-PON OLT should have a field-replaceable fan module/tray. **Power Supply:** 11. The proposed XGS-PON OLT should have a redundant power supply with a 6/16 Amp Indian power socket. 12. The proposed XGS-PON OLT should have an AC power supply. **XGS-PON transceiver specifications:** 13. The proposed XGS-PON OLT should have 16 no XGS-PON transceivers. 14. The proposed XGS-PON transceiver should be ITU-TG.9807.1 single fiber bi-directional optical transceiver. 15. The proposed XGS-PON transceiver should be a single-mode, single-fiber transceiver. 16. The proposed XGS-PON transceiver should be a 1577nm 9.95 Gbps transmitter and a 1270nm 9.95 Gbps receiver. 17. The proposed XGS-PON transceiver should be hot-swappable. 18. The proposed XGS-PON transceiver should be SC simplex receptacle form factor. 19. The proposed XGS-PON transceiver should have transmitter power from 1.5 dBm to 7 dBm.				

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		20. The proposed XGS-PON transceiver should have a receiver sensitivity of less than or equal to -28dBm. **Element Management Systems.** 29. The proposed XGS-PON OLT must be supplied with EMS (element management system). 30. The EMS should be supplied with compatible hardware and operating systems. 31. The EMS should support OLT remote software upgrades. 32. The EMS should be able to manage the uplink and PON interface. 33. The EMS should be able to manage the service profile (ONU profile). 34. The EMS should be able to manage the VLAN profile. 35. The EMS should be able to manage ONU's subscriber interface. 36. The EMS should be able to manage ONU's service management. 37. The EMS should be able to create, activate, deactivate, and delete ONT. 38. The EMS should be able to ONT remote software upgrades. 39. The EMS should be able to manage ONT Profile. 40. The EMS should be able to monitor current and historical alarms. 41. The EMS should be able to monitor events. 42. The EMS should be able to filter alarms. 43. The EMS should be able to monitor the equipment's (OLT, ONT) performance. 44. The EMS should be able to monitor interface performance. 45. The EMS should be able to export performance reports. 46. The EMS should be able to view topology based on graphical and hierarchical based. 47. The EMS should discover ONT automatically and manually. 48. The EMS should support multiple user accounts. 49. The EMS should support user group management. 50. The EMS should support role-based access controls. 51. The EMS should support manual and scheduled backups of all types of equipment configuration. 52. The EMS should support manual and scheduled backups of the EMS database.				

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		53. The EMS should support EMS log management. 54. The EMS should support inventory management Warranty 55. The proposed XGS-PON OLT and all components should be supplied with a five-year warranty. The OEM should have a 24x7 support center. OEM should have an India toll-free number reflected on the official website. The vendor will provide documentary proof regarding support and warranty directly from the OEM. 56. OEM should not have announced the "End of Sale" and "End of Life" for the proposed product at the time of bidding.				
17	ONU type 1	Supply, installation, and configuration of XGS-PON ONU device per the following specifications- 19. The Proposed XGS ONU should have at least 4 Gigabit Ethernet ports. 20. The Proposed XGS ONU should have one XGS-PON port. 21. The Proposed XGS ONU should have dual-band wireless. 22. The Proposed XGS ONU should support the IEEE 802.1D bridge. 23. The Proposed XGS ONU should support IEEE 802.1p QoS. 24. The Proposed XGS ONU should support ITU-T G.987. 25. The Proposed XGS ONU should support IGMP Snooping v2/v3. 26. The Proposed XGS ONU should support a 1K MAC address. 27. The Proposed XGS ONU should support the MAC address limit. 28. The Proposed XGS ONU should support IEEE 802.1Q (VLAN). 29. The Proposed XGS ONU should support VLAN Translation. 30. The Proposed XGS ONU should have a 1x RJ-11 port for a traditional landline phone. 31. The Proposed XGS ONU should have an operating temperature of 0 to 45 ºC. 32. The Proposed XGS ONU should have 10% to 85% operating humidity. 33. The Proposed XGS ONU should be wall or table mountable. 34. The Proposed XGS ONU should support the band starting. 35. The Proposed XGS ONU should support 802.11 b/g/n/ac with integrated antennas. 36. The Proposed XGS ONU should have a power supply with input 100-				

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		240VAC, 50/60Hz with a 6 Amp Indian socket. **Warranty** 3. The proposed XGS-PON ONU should be supplied with a five-year warranty. The OEM should have a 24x7 support center. OEM should have an India toll-free number reflected on the official website. The vendor will provide documentary proof regarding support and warranty directly from the OEM. 4. OEM should not have announced the "End of Sale" and "End of Life" for the proposed product at the time of bidding.				
18	ONU type 2	Supply, installation, and configuration of XGS-PON ONU device as per the following specifications- 17. The Proposed XGS ONU should have at least one Gigabit Ethernet port. 18. The Proposed XGS ONU should have one XGS-PON port. 19. The Proposed XGS ONU should have wireless. 20. The Proposed XGS ONU should support the IEEE 802.1D bridge. 21. The Proposed XGS ONU should support IEEE 802.1p QoS. 22. The Proposed XGS ONU should support ITU-T G.987. 23. The Proposed XGS ONU should support IGMP Snooping v2/v3. 24. The Proposed XGS ONU should support a 1K MAC address. 25. The Proposed XGS ONU should support the MAC address limit. 26. The Proposed XGS ONU should support IEEE 802.1Q (VLAN). 27. The Proposed XGS ONU should support VLAN Translation. 28. The Proposed XGS ONU should have an operating temperature of 0 to 45 ºC. 29. The Proposed XGS ONU should have operating humidity from 10% to 85%. 30. The Proposed XGS ONU should be wall or table mountable. 31. The Proposed XGS ONU should support 802.11 b/g/n with integrated antennas. 32. The Proposed XGS ONU should have a power supply with input 100-240VAC, 50/60Hz with a 6 Amp Indian socket. Warranty				

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		3. The proposed XGS-PON ONU should be supplied with a five-year warranty. The OEM should have a 24x7 support center. OEM should have an India toll-free number reflected on the official website. The vendor will provide documentary proof regarding support and warranty directly from the OEM. 4. OEM should not have announced the "End of Sale" and "End of Life" for the proposed product at the time of bidding.				
19	Smart Rack	Supply, installation, and configuration of smart rack as per the following specifications- **General Requirements** 5. The proposed smart racks should be self-contained. 6. The proposed smart rack should have proper air circulation within the rack. 7. The proposed smart rack should have 100% assured compatibility with all equipment conforming to DIN 41494 (General Industrial Standard for equipment) or Equivalent EIA /ISO / EN Standard. 8. The proposed smart racks should be at least 42U in height with 800X1200 for Network/ Server applications. **Physical Specifications** 4. The proposed smart rack should support a static load of at least 1,500 kg. 5. The proposed smart rack should have a front glass door and a back metal door. 6. The proposed smart rack should have two side panels, a top Cover, four vertical frame posts, four adjustable 19" verticals, and grounding and bonding accessories pre-installed by the manufacturer. **Equipment Access & Installation** 6. The proposed smart rack should have 42U usable Space. 7. The proposed smart rack should have 4 No's adjustable, 19" verticals with punched 10mm square hole and Universal 12.7mm-15.875mm-				

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		15.875mm alternating hole pattern that offers greater mounting flexibility, with Numbered U positions. 8. The proposed smart rack should include mounting hardware for equipment fixing. 9. The proposed smart rack's front and back doors should be easily detachable. 10. The proposed smart rack's side panels should flush with the frame so the overall width of the unit does not change with the side panels installed. **Material Requirements** 3. The proposed smart rack's weight-bearing components should be made from steel with a thickness not less than 2.0 mm, the 19" equipment mounting angle should be 2.5MM, and other parts not less than 1mm. 4. The proposed smart rack's sheet metal parts should be pre-treated and powder-coated to meet ASTM standards. **Grounding Requirements** 5. The proposed smart rack's enclosure components, i.e., frame and door, should be bonded together and to the rack ground point. 6. The proposed smart rack should be provided with a rack ground point to further ground the telecom ground bus bar system. 7. The proposed smart rack should be provided with all grounding and bonding as per UL Standards. 8. The proposed smart rack should have horizontal or vertical ground bus bars for equipment grounding. **Certifications, Environmental and Safety Requirements** 7. The proposed smart rack should be manufactured by ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 & ISO 27001:2013 certified companies and should have proper EHS Policy. 8. The proposed smart rack must be UL Certified. 9. The proposed smart rack must be RoHS Compliance. 10. The proposed smart rack must comply with DIN41494 and Equivalent EIA/ISO/EN /CEA Standards.				

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		11. The proposed smart rack should comply with a minimum IP 50 rating for protection against touch, ingress of foreign bodies, and ingress of water. 12. The proposed smart rack should protect the user from mechanical hazards and generally meet the requirements for a mechanical enclosure (stability, mechanical strength, aperture sizes, etc.) as defined in IEC 60950 Third Edition. **Ventilation and Thermal Management** 6. The proposed smart rack should have no ventilation on the front & rear doors to avoid cold air leakage. 7. The proposed smart rack should provide the means to mount optional cooling accessories for high-density. 8. The proposed smart rack should provide a blanking panel kit to prevent the Recirculation of hot exhaust air. 9. The proposed smart rack should provide an air seal kit to seal all gaps to prevent the recirculation of hot air. 10. The proposed smart rack should have PG gland entry and exit cutouts to avoid cold air leakage. **Rack AC Unit** 7. The proposed smart rack's AC unit should be in rack cooling type. 8. The proposed smart rack's AC should be able to deliver a cooling capacity of 7kW. 9. The proposed smart rack's AC unit should be provided with a fixed scroll compressor. 10. The proposed smart rack's AC unit should be running on R 407C Refrigerant. 11. The proposed smart rack's indoor unit should not exceed 900mm D x 483 mm W x 268 mm H. 12. The proposed smart rack's outdoor unit should not exceed 450mm D x 900mm W x 700mm H. **Intelligent Power Distribution Units** 16. The proposed smart rack's iPDU should have UL-based busbar architecture to minimize downtime.				

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		17. The proposed smart rack's iPDU should have a 1-phase 16A load as per site requirements. 18. The proposed smart rack's iPDU should have an MTBF minimum of 1 million hours. 19. The proposed smart rack's iPDU should have 24 Outlets: IEC C13 X 20 and IEC C19 X 4 sockets. 20. The proposed smart rack's iPDU controller should have a minimum configuration of 128MB DDR2 RAM, ARM Cortex A5 536 MHz, and 16MB SPI Flash. 21. The proposed smart rack's iPDU should have a field-replaceable controller to avoid downtime during maintenance. 22. The proposed smart rack's iPDU should provide data on billing grade accuracy, i.e., +/- 1%. 23. The proposed smart rack's iPDU controller should have two nos x 1G network ports for network redundancy or access from different networks, thereby differentiating external and internal networks. 24. The proposed smart rack's iPDU should support USB or Ethernet Cascading up to 16 PDUs. 25. The proposed smart rack's iPDU should support multiple sensors like Temperature & Humidity, Water Leakage Detection, Proximity, Differential Air Pressure, Smoke detection, contact closure, Airflow, Web Camera, and Asset Management System, i.e., iPDU should support connecting up to 32 Sensors using appropriate Hardware / Hubs. 26. The proposed smart rack's iPDU should support a smart lock door system, asset management tags & sensors. 27. The proposed smart rack's iPDU should have dual USB ports, supporting auto mass & independent configuration, Wi-Fi, Webcam, and cascading between PDUs. 28. The proposed smart rack's iPDU should support sending/recording alerts to users via SNMP, SMTP, GSM SMS, Syslog, etc. 29. The proposed smart rack's iPDU should support a variety of access protocols, including HTTP, HTTPS, NTP, SMTP, SSH, Telnet, SSL, SNMP v1, v2 and v3, SNMP INFORMS, and JSON-RPC.				

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		30. The proposed smart rack's iPDU should support integration with LDAP/LDAPS and AD for secure authentication, support setting Password Policies, and strong encryption **UPS** 10. The proposed smart rack's UPS capacity shall be 6 KVA Online Double Conversion UPS with 1 Ph I/P & 1 Ph output. 11. The proposed smart rack's UPS shall be mounted on a 19-inch Rack through proper Rack support brackets as required. 12. The proposed smart rack's UPS shall have an input voltage range of 305-480 V AC. 13. The proposed smart rack's UPS should have a noise level of less than 50 Dba. 14. The proposed smart rack's UPS Input Current harmonic distortion shall be less than 3%. 15. The proposed smart rack's UPS shall be supplied with an SNMP Card to monitor all vital parameters. 16. The proposed smart rack's UPS should have an operating temperature of 40 deg C for Continuous operation without any derating. 17. The proposed smart rack's UPS model/capacity offered shall have EN 62040-1, 62040-2, 62040-3 & PEP certifications. 18. The proposed smart rack's UPS battery backup shall comprise 20 blocks of 12V, 5 AH VRLA SMF Batteries. **Warranty** 3. The proposed smart rack should be supplied with a five-year warranty. The OEM should have a 24x7 support center. OEM should have an India toll-free number reflected on the official website. The vendor will provide documentary proof regarding support and warranty directly from the OEM. 4. OEM should not have announced the "End of Sale" and "End of Life" for the proposed product at the time of bidding				

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20	Outdoor Racks/ Street Cabinet 42 U rack Size	Supply, installation, and configuration of network rack as per the following specifications- Usable Rack Size: - 42U Robust steel sheet welded construction consisting of top, bottom, and side panels equipped with base plinth. Front metal door with gasket protection and provided with IP 55 compatible multi-point lock. The door is equipped with a filter and hood. The hood is provided with louvers for ventilation. Ventilation and protection are provided through an IP 54/IP 55 compatible filter. Rear metal door with gasket protection and provided with IP 55 compatible multi-point lock. The door is equipped with a filter and hood. The hood is provided with louvers for ventilation. Ventilation and protection are provided through an IP 54/IP 55 compatible filter. The fan is fitted along with the filter at the top cover. Applicable Standard: IS 9606-1980, IP 54/IP 55 certified product according to IEC 60529:2013, ISO 9001:2008, ISO 14001: 2015. Corrosion Resistance: Salt spray test according to ISO 9227 (NSS test) and IEC EN 60068-2-11 (Ka test) for 168 hours: degree of Rusting Ri1 according to ISO 4628-3, propagation ≤1 mm according to ISO 4628-8 Rack Type: - Floor mount rack Depth: -800 mm width: - 600 mm Degree of protection: - IP 54 4 Cable Manager Installation: - floor mount as per requirement.				
21	Outdoor Racks/ Street Cabinet 15 U rack Size	Supply, installation, and configuration of network rack as per the following specifications- Usable Rack Size: - 15U. Robust steel sheet welded construction consisting of top, bottom, rear, and side panels. Front metal door with gasket protection and double-bit lock. The door is equipped with a filter and hood. The hood is provided with louvers for ventilation. Ventilation and protection are provided through an IP 54/IP 55 compatible filter. The fan is fitted along with the filter at the top cover. Ventilation and protection are provided through an IP 54/IP 55 compatible filter. Applicable Standard: IS 9606-1980, IP54/IP55 certified product according to IEC 60529:2013, ISO 9001:2008, ISO 14001: 2015				

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		Usable Depth: -600 mm Usable width: - 600 mm Degree of protection: - IP 54 4 Cable Manager Corrosion Resistance: Salt spray test according to ISO 9227 (NSS test) and IEC EN 60068-2-11 (Ka test) for 168 hours: degree of Rusting Ri1 according to ISO 4628-3, propagation ≤1 mm according to ISO 4628-8. Installation: - wall mount, pole mount, or as per requirement.				
22	Indoor Network racks 42 U	Supply and installation of network rack with the following specifications. Rack Size: - 42U modular construction of the rack made of 4 vertical, 4 horizontal & 4 depth extruded aluminum alloy multi-hollow profiles bolted and joined together with links and a corner block. 2 or 3 pairs of support channels to equate the load evenly and castor provision at the bottom side. Front perforated door with 3-point lock Rear perforated door with 3-point lock Compliance & standard: IS 9606-1980, UL 2416, IEC EN 60529, IEC EN 62262, ISO 9001:2008, ISO 14001: 2015. Degree of Protection: IP 20 according to IEC 60529:2013, IK 08 according to IEC EN 62262:2002 Weight capacity: Load Capacity of up to 1200 Kg. Corrosion resistance: Salt spray test according to ISO 9227 (NSS test) and IEC EN 60068-2-11 (Ka test) for 168 hours: degree of Rusting Ri1 according to ISO 4628-3, propagation ≤1 mm according to ISO 4628-8. Rack Type: - floor mounted rack Depth: - 1000 mm width: - 800 mm 10 Cable Manager 2 Power distribution unit of 6/16 amp 10 sockets each Installation: - floor Mount only or as per requirement.				

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23	Indoor Network racks 15 U	Supply and installation of network rack with the following specifications Rack Size: - 15U Rack Type: - Wall mount rack single section side openable, 2 side panels are made up of steel sheet with slots for ventilation and equipped with slam latch Compliance & standard: IS 9606-1980, UL 2416, ISO 9001:2008, ISO 14001: 2015 Weight Capacity: Load capacity of up to 50 Kg. Corrosion resistance: Salt spray test according to ISO 9227 (NSS test) and IEC EN 60068-2-11 (Ka test) for 168 hours: degree of Rusting Ri1 according to ISO 4628-3, propagation ≤1 mm according to ISO 4628-8 Depth: - 600 mm width: - 600 mm 4 Nos Cable Managers Installation: - On the wall with the help of fasteners screw or as per requirement.				
24	Indoor Network racks 6 U	Supply and installation of network rack with the following specifications. Rack Size: - 6U Rack Type: - Wall mount rack single section side openable, two side panels are made up of steel sheet with slots for ventilation and equipped with slam latch Compliance & standard: IS 9606-1980, UL 2416, ISO 9001:2008, ISO 14001: 2015 Weight Capacity: Load capacity of up to 50 Kg. Corrosion resistance: Salt spray test according to ISO 9227 (NSS test) and IEC EN 60068-2-11 (Ka test) for 168 hours: degree of Rusting Ri1 according to ISO 4628-3, propagation ≤1 mm according to ISO 4628-8 Depth: - 500 mm width: - 600 mm 2 Nos Cable Manager Installation: - On the wall with the help of fasteners screw or as per				

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S. No	**Name of Item**	**Detailed Specifications**	**Compliance (Y/N)**	**PART/ Model No.**	**Support/Doc Pg. No.**	**Deviation/Remarks**
		requirement.				
25	144 Port rack mounted LIU with single mode pigtail and coupler	Supply and installation of fully populated/loaded Fiber LIU with single mode SC APC type pigtails G.657A1 and coupler plate or splice cassette. Hook and loop style features are incorporated in the top and bottom of the rear of the enclosure to assist in cable strain relief and slack management. Accommodates up to 24 universal splice cassettes with a 24-splice capacity. The LIU should have 4 no's cutouts for cable entry. The material used: - Cold rolled steel Pigtails type: - Single-mode connector type: - SC APC Number of Ports: - 144 Size: - 4 Rack unit Suitable for pigtail splicing or IFC Breakout cables				
26	24 Port rack mounted LIU with single mode pigtail and coupler	Supply and installation of fully populated/loaded Fiber LIU with single mode SC APC type pigtails G.657A1 and coupler. The material used: - Cold rolled steel Pigtail type: - Single-mode connector type: - SC APC duplex Number of Ports: - 24 Size: - 1 Rack unit Suitable for pigtail splicing or IFC Breakout cables				
27	6 Port rack mounted LIU with single mode pigtail	Supply and installation of fully populated/loaded Fiber LIU with single mode SC APC type pigtails G.657A1 and coupler. The material used: - Cold rolled steel Pigtail type: - Single-mode connector type: - SC APC simplex Number of Ports: - 6 Size: - 1 Rack unit Suitable for pigtail splicing or IFC Breakout cables				

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S. No	**Name of Item**	**Detailed Specifications**	**Compliance (Y/N)**	**PART/ Model No.**	**Support/Doc Pg. No.**	**Deviation/Remarks**
	and coupler					
28	2 Port Joint Closer box/ Home termination box with pigtails and couplers	Supply and installation of fully populated/loaded Fiber joint closure box rectangular type with single mode SC APC type pigtails and couplers. Pigtail type: - Single-mode G.657A1 connector type: - SC APC Number of Ports: - 2 Installation: - On the wall or as per requirement.				
29	Joint Closer bamboo Type suitable for 144-core fiber	Supply and installation of IP68 mechanical type, waterproof fiber optic splice closure box. The enclosure box must have 4 round ports and six trays suitable for 144 core fiber cable (8-17mm diameter cable). Used for aerial, wall- mounted, pole-mounted, manhole, and duct mounting.				
30	144 cores armored Single-mode fiber cable, multi-tube, 12	Supply and laying of 144 core single-mode armored fiber cable as per the following specifications. Fiber type: Single-mode (SM) G.657A1 Core count: 144 Tube count: 12 tubes Fiber count: 12 fibers per tube Cable Type: Loose Tube Outer jacket material: Water-tight, Flame retardant, Low smoke zero-halogen				

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S. No	**Name of Item**	**Detailed Specifications**	**Compliance (Y/N)**	**PART/ Model No.**	**Support/Doc Pg. No.**	**Deviation/Remarks**
	cores per tube	Armour: Corrugated steel tape-armored of greater than 0.15mm thickness. Cable overall diameter: 16.0 mm or more Conductor type: loose tube, gel-filled Cable minimum tensile strength of the installation should be more than 3200 N Cable minimum crush resistance of the installation should be more than 21 kN/km Industry Standard: - With the latest amendments of IEC 60794/Telcordia (BELLCORE) GR 20, IEC 60793. IEC Flammability: IEC 60332-1-2/IEC 60332-3-22 Laying: On the wall, underground with the help of GI saddle clips, in the DWC pipe, or as per requirement.				
31	24 Core armored single-mode fiber cable	Supply and laying of 24-core single-mode armored fiber cable as per the following specifications. Fiber type: Single-mode (SM) G.657A1 Core count: 24 cores Cable Type: Loose tube Outer jacket material: Water-tight, Flame retardant, Low smoke zero halogen Armour: Corrugated steel tape-armored Cable overall diameter: 15.0 mm or more Conductor type: loose tube, gel-filled Cable minimum tensile strength of the installation should be more than 3500 N Cable minimum crush resistance of the installation should be more than 21 kN/km Industry Standard: - With the latest amendments of IEC 60794/Telcordia (BELLCORE) GR 20, IEC 60793. IEC Flammability: IEC 60332-1-2/IEC 60332-3-22 Laying: On the wall, underground with the help of GI saddle clips, in the DWC pipe, or as per requirement.				

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S. No	**Name of Item**	**Detailed Specifications**	**Compliance (Y/N)**	**PART/ Model No.**	**Support/Doc Pg. No.**	**Deviation/Remarks**
32	12 Core armored single-mode fiber cable	Supply and laying of 12-core single-mode armored fiber cable per the following specifications. Fiber type: Single-mode (SM) G.657A1 Core count: 12 cores Cable Type: Loose Tube Outer jacket material: Water-tight, Flame retardant, Low smoke zero halogen Armor: Corrugated steel tape armored Cable overall diameter: 12.0 mm or more Conductor type: loose tube, gel-filled Cable minimum tensile strength of the installation should be more than 2200 N Cable minimum crush resistance of the installation should be more than 21 kN/km Industry Standard: - With the latest amendments of IEC 60794/Telcordia (BELLCORE) GR 20, IEC 60793. IEC Flammability: IEC 60332-1-2/IEC 60332-3-22 Laying: On the wall and underground with the help of GI saddle clips or in HDPE pipe.				
33	6 Core armored single-mode fiber cable	Supply and laying of 6-core single-mode armored fiber cable per the following specifications. Fiber type: Single-mode (SM) G.657A1 Core count: 6 cores Cable Type: Loose Tube Outer jacket material: Water-tight, Flame retardant, Low smoke zero halogen Armor: Corrugated steel tape armored Cable overall diameter: 8.5 mm or more Conductor type: loose tube, gel-filled Cable minimum tensile strength of the installation should be more than 2200 N Cable minimum crush resistance of the installation should be more than 21 kN/km				

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S. No	**Name of Item**	**Detailed Specifications**	**Compliance (Y/N)**	**PART/ Model No.**	**Support/Doc Pg. No.**	**Deviation/Remarks**
		Industry Standard: - With the latest amendments of IEC 60794/Telcordia (BELLCORE) GR 20, IEC 60793. IEC Flammability: IEC 60332-1-2/IEC 60332-3-22 Laying: On the wall and underground with the help of GI saddle clips or in HDPE pipe				
34	2 Core single-mode fiber cable	Supply and laying of 2-core single-mode fiber cable per the following specifications. Fiber type: Single-mode (SM) G.657A1/G.657A2 Core count: 2 cores Cable Type: Tight buffered Outer jacket material: Water-tight, Flame retardant, Low smoke zero halogen Conductor type: Tight buffer, gel-free. The cable minimum tensile strength of the installation should be more than 100 N. Industry Standard: - With the latest amendments of IEC 60794/Telcordia (BELLCORE) GR 20, IEC 60793. IEC Flammability: IEC 60332-1-2/IEC 60332-3-22 Laying: On the wall and underground with the help of GI saddle clips or in HDPE pipe.				
35	Fiber patch cord SC-LC 2-meter Duplex	Supply and installation of Fiber Patch cord with the following specifications. Fiber type: Single mode (SM) Standard: - G.657A2 Patch cord type: - duplex Jacket material: - Low smoke zero halogens (LSZH) Cable length: - 2 meter/ 7 Feet Connector type (A): - SC APC Connector type (B): - LC APC				

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S. No	**Name of Item**	**Detailed Specifications**	**Compliance (Y/N)**	**PART/ Model No.**	**Support/Doc Pg. No.**	**Deviation/Remarks**
36	Fiber patch cord SC-LC 10-meter Duplex	Supply and installation of Fiber Patch cord with the following specifications. Fiber type: Single mode (SM) Standard: - G.657A2 Patch cord type: - duplex Jacket material: - Low smoke zero halogens (LSZH) Cable length: - 10 meter/ 33 Feet Connector type (A): - SC APC Connector type (B): - LC APC				
37	Fiber patch cord LC-LC 2-meter Duplex	Supply and installation of Fiber Patch cord with the following specifications. Fiber type: multi-mode (MM) Standard: - G.657A2 Patch cord type: - duplex Jacket material: - Low smoke zero halogens (LSZH) Cable length: - 2 meter/ 7 Feet Connector type (A): - LC APC Connector type (B): - LC APC				
38	Fiber patch cord LC-LC 10-meter Duplex	Supply and installation of Fiber Patch cord with the following specifications. Fiber type: Multi-mode (MM) Standard: - G.657A2 Patch cord type: - duplex Jacket material: - Low smoke zero halogens (LSZH) Cable length: - 10 meter/ 33 Feet Connector type (A): - LC APC Connector type (B): - LC APC				
39	Fiber patch cord SC-SC 2-meter simplex	Supply and installation of Fiber Patch cord with the following specifications. Fiber type: Single mode (SM) Standard: - G.657A2 Patch cord type: - simplex Jacket material: - Low smoke Zero-halogen (LSZH) Cable length: - 2 meters/ 7 Feet Connector type (A): - SC APC Connector type (B): - SC APC				

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S. No	**Name of Item**	**Detailed Specifications**	**Compliance (Y/N)**	**PART/ Model No.**	**Support/Doc Pg. No.**	**Deviation/Remarks**
40	Fiber patch cord SC-SC 2-meter simplex	Supply and installation of Fiber Patch cord with the following specifications. Fiber type: Single mode (SM) Standard: - G.657A2 Patch cord type: - simplex Jacket material: - Low smoke Zero-halogen (LSZH) Cable length: - 10 meters/ 33 Feet Connector type (A): - SC APC simplex Connector type (B): - SC APC simplex				
41	2X2 Splitter box type	Supply and installation of rack mounted fiber splitter box with the following specifications. 2×2 ABS PLC Splitter Box Fiber Mode: Single Mode Corning SMF G.657A1 Typical insertion loss: 5 db 2x Input fiber 2x Output fibers connectorized with SC APC connectors Operating bandwidth: - 1260~1650nm				
42	2X8 Splitter box type	Supply and installation of rack mounted fiber splitter box with the following specifications. 2×8 ABS PLC Splitter Box Fiber Mode: Single Mode Corning SMF G.657A1 Typical insertion loss: 11 dB 2x Input fiber 8x Output fibers connectorized with SC APC connectors Operating bandwidth: -1260~1650 nm				
43	1X16 Splitter box type	Supply and installation of rack mounted fiber splitter box with the following specifications. 1×16 ABS PLC Splitter Box Fiber Mode: Single Mode Corning SMF G.657A1 Typical insertion loss: 14 dB 1x Input Fiber 16x Output Fibers connectorized with SC APC connectors Operating bandwidth: - 1260~1650nm				

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44	CAT6A UTP cable	Supply, Laying and Testing of 4 pair, 23 AWG UTP Cat 6A Cable as per latest amendments of ANSI/TIA-568.2-D specifications with ferruled at both ends for identification with necessary tools for stripping, crimping and testing required. Cable Performance should be tested with the latest standards of ANSI/TIA-568.2-D from Intertek/ETL/3P Reports to be submitted. IEC Flammability: IEC 60332-3-22 Laying: with the help of flexible pipe, in supplied PVC pipe or as per requirement				
45	24 port jack panel CAT6A	Supply, punching, and installation of fully populated/loaded CAT6A jack panel with the following specification Category: CAT-6A Size: 19” rackmount 1 rack unit with rear cable management. Number of ports. 24 Nos Accepts all RJ45 keystone jacks Accepts 23-26 AWG solid or stranded cable copper conductor 50 um gold plated on the plug contact area RJ45 Jack’s Performance should be ETL Verified, cULus listed and tested with the latest standards from Intertek/ETL/3P. Only applicable to RJ45 jacks				
46	1-meter UTP patch cord CAT6A	Supply and installation of CAT6A UTP patch cord with following specifications. Type: - CAT6A Pair: - 4 pair 24/26 AWG Stranded wire pre-terminated with RJ45 plugs with slim clear anti-snag slip-on boots Suitable for EIA 568A or 568B wiring applications Sheath LSZH sheath Length 3 feet/1.0 meter				

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S. No	**Name of Item**	**Detailed Specifications**	**Compliance (Y/N)**	**PART/ Model No.**	**Support/Doc Pg. No.**	**Deviation/Remarks**
47	CAT6A Information outlet with faceplate and gang box	Supply, punching, and installation of single port CAT6A information outlet with faceplate/wall plate of 86 X 86 mm size with gang box of following specifications: - The information outlet should meet or exceed channel specifications of the latest amendments of ANSI/TIA/EIA-568-C.2 Category 6A and ISO/IEC 11801 2nd edition (2002). The information outlet should be tested for performance to the latest amendments of ANSI/TIA/EIA-568-C.2 at a minimum of 250 MHz or higher frequency for 10Gbps bandwidth at 328 feet cable length. The information outlet should have contact material with 50µ" gold/100µ" nickel plating. The information outlet must comply with the latest standards of ANSI/TIA/EIA-568, ISO/IEC: 11801, and ETL/UL/3P. The test reports of the same should be attached. The information outlet should have the durability of more than 700 plugin cycles. The faceplate should be made of ABS plastic. The faceplate should be white color only. The faceplate should accept CAT6/CAT6A information outlets. The faceplate should be RoHS approved and have a flame rating of UL-94 V0.				
48	RJ 45 Termination plugs	Supply installation and testing of RJ45 Termination plugs as per the following specifications: - CAT6A UTP/STP Field Mount Plug, TIA Category 6A, ISO Class E, Front Connection RJ 45: Copper Clad Flexible PCB, Gold plated contacts over Palladium/Nickel, Rear Connection Copper Clad PCB, Gold plated contacts over Nickel, Connector Body Polycarbonate - UL94V-0, Category 6A - TIA 568.C.2, Category 6A - ISO/IEC 11801:2002 Ed.2, 250 MHz or Better Guaranteed 10 Gbps bandwidth for 100 meters Channel Link, c(UL)us Listed. The termination plug should suit IEEE 802.3af, 802.3at, and 802.3bt PoE applications. -40 Deg C to +70 Deg C operating temperature The transmission plug performance should be CAT 6A/Class EA and must be IP 20. The termination plug should have a wiring label for TIA 568A/B. The termination plug should have the capability for the solid wire of 22~26				

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		AWG and support a cable diameter of 6~9 mm.				
49	8" DWC duct pipe	Supply and laying of ISI marked double wall Corrugated pipe with the following specifications along with accessories in Trench/surface/recessed using saddles, clamps, fastener as required, including cutting the wall, covering DWC and making good the same as required. Inner Diameter: - 200mm +- 5 Outer Diameter: - 230mm +-5 Wall Thickness E4 & E5 min: - 1.5 & 1.1 Bar length: - 6 Meter Stiffness Class: - SN8 Standard: - IS-16098 Laying: - Underground. The Vendor/SI also needs to put a stainless-steel wire (1mm or more in diameter) for pulling fiber cables in the future				
50	1" PVC conduit	Supply and laying of ISI marked medium duty PVC conduit/casing capping (25mm or more with Construction - Both the surfaces should be smooth and free from burrs, Maximum OD - 25.00 MM, Minimum OD - 24.60 MM, Minimum ID - 21.40 MM, Wall Thickness - 1.6 MM, Electrical Strength - Shall withstand 2000V for 15 Minutes, Insulation Resistance - Min 100 Mega Ohm, ISI Marked) along with accessories in surface / recessed using saddles, clamps, fasteners as required including cutting the wall, covering conduit and making goods the same as required. Laying: - On the wall with the help of GI saddle clip or as per requirement.				
51	32mm HDPE duct pipe	Supply and laying of ISI-marked HDPE (High-Density Polyethylene) telecom ducts for use as Optical Fiber Cable ducts. The surface of the HDPE duct should be smooth inside and outside, free from blisters, shrinkage, holes, scratches & roughness. Outer diameter: 32 + 0.4 / - 0.0 mm, Wall Thickness: 3.0 +/- 0.2 mm, Inner diameter: 26 + 0.4 / - 0.0 mm, Thickness of Permanent lubricant: > 0.2 mm, Pressure Rating: 6 kg/sq cm, Length - 500 Meter Roll, minimum weight 240-260 gm /meter with accessories like coupler, end plug, end cap shall be included, Suitable for direct burial applications. Laying: - In Trench, underground, on the wall with the help of GI saddle clip or as required.				

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S. No	**Name of Item**	**Detailed Specifications**	**Compliance (Y/N)**	**PART/ Model No.**	**Support/Doc Pg. No.**	**Deviation/Remarks**
52	100X50 ISI casing	Supply and laying of ISI marked medium duty PVC casing capping/ trunking with the following specifications. Size - 100 X 50 mm, Wall thickness 2mm or more, Electrical strength – No breakdown at 2KV x 50 Hz for 15 Minutes, Insulation resistance - min 100 Mega Ohm, ISI marked, Dielectric constant 1.7 - 3.00 ASTM D150, Flammability – UL94V-0, Hardness 70-75 D Duro ASTM D2240) along with accessories in surface / recessed using saddles, clamps, fasteners as required including cutting the wall, covering CMS and making goods the same as required				
53	Route Marker	Supplying and making cable route marker with cement concrete 1:2:4 (1 cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size) of size 60cm X 60 cm at the bottom and 50 cm X 50 cm at the top with a thickness of 10cm including MNIT-OFC inscription duly engraved as required				
54	3X3 feet Chamber	Making a 3X3 feet chamber/Manhole with 6” or more wall thickness of concrete and cement and steel structure with 6 feet depth. The chamber should be installed with a removable concrete cover. The bottom of the chamber should also be made of concrete. Manholes shall be provided at every proposed and future joint location to house the joint box and the extra length of optical fiber cable (service loops). The location for Joint boxes shall be decided during the installation, and the maximum distance between 2 chambers cannot exceed 50 meters in any circumstances.				
55	Moiling/ Digging/Recarpeting	Moiling/boring, refiling, and re-carpeting of soil, road, and footpath at a minimum 1524 mm depth from natural ground level and at least 10 feet distance between two man-holes or hand-holes with the help of manual labor or machinery. The Contractor may use the following trench/trench digging methods to install the DWC duct pipes: 3. Manual/hand augering (recommended up to 10 meters between manholes) 4. Impact Moling (recommended for 10-30 meters between manholes) Caution:- The contractor shall be responsible for any mishap or accident due to negligence or proper protection of open trenches, and all claims				

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S. No	**Name of Item**	**Detailed Specifications**	**Compliance (Y/N)**	**PART/ Model No.**	**Support/Doc Pg. No.**	**Deviation/Remarks**
		arising from such accidents shall be settled by the contractor without any liabilities to MNIT. The contractor shall ensure that no damage is caused to any underground or surface installations belonging to other public utility services and/or private parties. The contractor shall remove all bushes, undergrowth, stems, rocks, and other obstacles, etc., ensuring the minimum amount of bushes and shrubs are removed to clear the way. The contractor shall consider preserving trees within the right of way. Machines can be used for clearing small bushes along the route. However, trees shall not be cut or uprooted for the purpose of the movement of excavating machines. Where such necessity arises, permission from MNIT authorities must be obtained in writing to cut such trees partially.				
56	Fiber fusion Splicing	Making fiber connectorization/ termination using the fusion splicing method with the following specification Coupling/Termination losses less than 0.2 dB Termination should use a fusion splicing mechanism Termination should meet EIA and IEC standards for repeatability. Operating Temperature: -40 deg C. to +85 deg C.				
57	Fiber Tags	Supply and installation of fiber tags to identify fiber cable or fiber patch cord.				
58	Buyback of existing infra	Buyback of existing non-functional Wi-Fi access points, network switches, UPS, racks, and jack panels. The SI should share an item-wise price list as mentioned in section XI.				
59	Network lab using existing infra	Creating a network lab using existing working infra to demonstrate network equipment to CSE and ECE students.				

Technical Compliance sheet						
S. No	**Name of Item**	**Detailed Specifications**	**Compliance (Y/N)**	**PART/ Model No.**	**Support/Doc Pg. No.**	**Deviation/Remarks**
60	Any other accessories	Supply and installation of any other accessories required at the time of installation, i.e., power cable, screw, fastener, patch cord, etc.				

Section XII - Buyback items

S. No	Name of items	Qty.
1	24 port managed Access Switch	20
2	48 port managed Access Switch	19
3	24 port managed POE Switch	34
4	24 port Semi-managed Access Switch	11
5	48 port Semi-managed Access Switch	4
6	24 port unmanaged Access Switch	20
7	16 port unmanaged Access Switch	2
8	8 port unmanaged Access Switch	5
9	24 port managed Distribution Switch	3
10	24 port CAT6 Jack Panel	78
11	24 port fiber LIU	10
12	12 port fiber LIU	8
13	10/100 Mbps Media Converter	24
14	KVM Switch	1
15	Router	2
16	Server	2
17	Server RAM	2
18	WiFi Controller	2
19	Outdoor Wi-Fi Access Point	29
20	Indoor Wi-Fi Access Point	13
21	Wi-Fi access point 150 Mbps	10
22	Wi-Fi access point 300 Mbps	31
23	6 U rack	3
24	UPS 1 KVA	2
25	UPS 2 KVA	5
26	UPS 5 KVA	1

Signature of Bidder/ Agent
Name:.....
Designation: .....
Organization Name: .....
Contact No.: .....

Seal of the Firm