



राष्ट्रीय प्रौद्योगिकी संस्थान मेघालय
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Ref. No. NITMGH/CPPP/ICT/2021-2022/3017

Date: 28.03.2022.

E-NOTICE INVITING QUOTATION (E-NIQ) FOR SUPPLY, INSTALLATION, TESTING & COMMISSIONING OF “CAMPUS ICT INFRASTRUCTURE ON TURNKEY BASIS” AT THE PERMANENT CAMPUS, NIT MEGHALAYA, SOHRA (CHERRAPUNJEE) CAMPUS.

NIT Meghalaya invites online Tenders through **CPP Portal** <https://eprocure.gov.in/eprocure/app> from eligible Bidders for procurement of equipment.

Prescribed Tender document, detailed fees and specifications, bid instructions and Terms & Conditions can be downloaded from the CPP Portal (<https://eprocure.gov.in/eprocure/app>) or from the Institute website (<http://www.nitm.ac.in/>). However, the bidding process (submission and finalization) will be done in online mode at CPP Portal. The bidders may submit their bid only through uploading in the CPP Portal <https://eprocure.gov.in/eprocure/app>

The bidders are requested to read the tender document carefully and ensure complete compliance with all specifications/instructions herein. Non-compliance with specifications/instructions in this document may disqualify the bidders from the tender exercise. The Director, NIT Meghalaya, reserves the right to select the item (in single or multiple units) or to reject any quotation wholly or partly without assigning any reason thereof. Incomplete tenders, amendments, and additions to tender after opening or late tenders are liable to be ignored and rejected.

LAST DATE OF SUBMISSION: - 28.04.2022 at 1:00 PM.

Technical bids will be opened on 29.04.2022 at 3:30 p.m.

INSTRUCTIONS TO BIDDERS :

The tender shall be submitted in accordance with these instructions and any tender not conforming to the instructions as under is liable to be rejected. These instructions shall form the part of the tender and the contract.

1. For Online Bid Submission as per the directives of Department of Expenditure, this tender document has been published on the Central Public Procurement Portal (URL: <http://eprocure.gov.in/eprocure/app>). The bidders are required to submit copies of their bids electronically on the CPP Portal, using valid Digital Signature Certificates.
2. More information useful for submitting the online bids on the CPP Portal is available/ obtained at [URL:http://eprocure.gov.in/eprocure/app](http://eprocure.gov.in/eprocure/app).
3. The offer must be submitted in Two Bid – Two Files/Covers only through uploading in the CPP Portal, before the last date & time for bid submission. Bidders must submit their digitally signed bids. The covers will contain the following documents:
 - (i) **Cover 1 which consists of Technical Bid** (Product specifications compliance duly filled-in with cross – reference to product datasheet, Product Datasheet, MAFs from OEM and all other documents as per the requirement of GTC for eligibility of bidders).
 - (ii) **Cover 2 which consists of the Price Bid** (in BoQ Ms-Excel format).
4. **No manual bid will be accepted. All quotations (both technical & financial) should be submitted in the e-procurement portal only.**
5. NIT Meghalaya shall not be responsible for non-receipt of bid due to internet issues or any other reasons.
6. While submitting the tender, if any of the prescribed conditions are not fulfilled or are incomplete in any form, the tender is liable to be rejected. If any tenderer stipulates any condition of his own, such conditional tender is liable to be rejected.
7. NIT Meghalaya reserves the right to reject any tender/bid wholly or partly without assigning any reason.
8. The technical committee constituted by the NIT Meghalaya shall have the right to verify the particulars furnished by the bidder independently.
9. Tenderer shall take into account all costs including installation, commissioning, cartage etc. for giving delivery of material at site i.e. NIT Meghalaya, Sohra (Cherrapunjee) Campus, Meghalaya before quoting the rates. In this regard no claim for any extra payment for any reason shall be entertained.
10. The item should be delivered at NIT Meghalaya, Sohra (Cherrapunjee) Campus, Meghalaya on DOOR DELIVERY basis and the supplier shall be responsible for any damage during the transit of goods.
11. For e-way bill the successful vendor has to apply online via <https://ewaybill.nic.in/ewb.html>
12. All the tender documents & price bid to be uploaded as per this tender are to be digitally signed by the bidder.
13. The bidders may submit duly filled and completed bidding document ONLINE as per instruction contained in the bidding documents. Incomplete bid shall be rejected. The conditions of tender shall be governed by the details contained in complete bid document.
14. In case, holiday is declared by the Government on the day of opening the bids, the bids will be opened on the next working day at the same time. NIT Meghalaya reserves the right to accept or reject any or all the tenders.
15. After evaluation of technical bids, financial bids of the successful bidders (technically qualified) will be opened on a later date which will be duly notified through the **CPP Portal Only**.

16. Submission of Compliance Certificate: Duly filled and signed Compliance Certificates (as per formats at **Annexure-I**) are must with the technical bid.
17. **Bid not transferable:** The bid documents are not transferable and the seal and signature of the authorized official of the firms must appear on all the papers and envelopes submitted.
18. The quantity mentioned for each item in the **Annexure-II** may increase/decrease depending on requirements.
19. GST Registration Certificate should be enclosed along with the tender documents.
20. **Bidder's Qualification Requirement (Q.R.)** for submission of bid documents: The bidder shall meet the following minimum requirement:
 - a. Firms having minimum experience, of 05 years in the relevant field, i.e., in supplying and Installation of Networking Items in the Government Ministries /Central and State Department and having the requisite competence / capacity to do / handle the jobs relating to the supply & Installation efficiently and effectively are eligible to participate in the tender process. Copy of CST/VAT/GST certificate to be submitted as a proof of no of years in similar business.
 - b. The average annual financial turnover of the bidder during the last THREE years (FY-2018-19, FY-2019-20, and FY-2020-21), should be at least Rs. 450 Lakh as per the annual report. The same should be supported by the following authentic documentary evidence:
 - i. Audited Balance Sheet with Profit and Loss Account, and
 - ii. Income Tax Return along with Computation of Income
 - iii. A Certificate from Chartered Accountant with declaration of Annual Turnover for last THREE years to be uploaded.
 - c. The bidder should have implemented similar solution during last FIVE years.
 - i. **Three similar work** each of value not less than **Rs.360 lakhs** OR
 - ii. **Two similar work** each of value not less than **Rs.540 lakhs** OR
 - iii. **One similar work** of value not less than **Rs.720 lakhs**.

Similar work shall mean works of “**Supplying, installation, Testing & Commissioning of Campus LAN system, OFC Backbone cabling, Wired & Wireless Campus LAN, Datacenter Infrastructure, IP Surveillance & IP Telephony Network**” in NIT/IIT/IIM/Central Government/State Governments / PSU / Govt. Educational Institution etc. Copy of work order / project completion certificate must be furnished along with Technical Bid.

 - d. The bidder should have supplied, installed, and commissioned at least two similar Datacenter infrastructure with minimum value of Rs. 100 Lakhs, as proposed in the BID document in last five years, prior to submission of this bid. Copy of Purchase Order /Installation Completion Certificate from the Customer to be uploaded along with the Bid. Contact details of the customers (email id and phone numbers must be provided for taking feedback from the end user).
 - e. **After Sales Service:** Vendor should clearly state the after-sales service facilities/centers available nearest to NIT Meghalaya without which the offer will be rejected. Copy of documentary evidence (trade license/GST registration certificate) as proof of address with contact details of their support person must in the bidder's letterhead must be enclosed in the technical bid.
21. **Scope of supply** (Bid price to include all cost components): Supply Installation Testing, Commissioning of Goods, and training of users (IT Support Staffs) and on-site warranty support by posting manpower for 3 (Three) Years from the date of completion and handover of the project.
 - (i) Bidders shall quote only those products in the bid which are not obsolete in the market and has at least 5 years residual market life i.e., the offered product shall not be declared end-of-life by the OEM before this period.

- (ii) **No piece-meal solutions shall be accepted, Bidder should submit their offer for entire solution**
- (iii) Tender specific authorization letter from the respective OEMs for all major components, viz. Cabling Products, Datacenter, Networking Switches & Wireless Products, Security solutions (Camera & Access Control), IP Telephony System, etc. whose products are being proposed in the bid should be submitted along with the bid.
- (iv) **All the Passive materials Cabling products (OFC & UTP) shall be from same OEM.**
- (v) **All Datacenter components including all UPS should be from same OEM.**
- (vi) **All Access Control System and IP Surveillance components must be from same OEM for better integration and management.**
- (vii) **All types of Networking switches, transceivers module and Wireless Networking products proposed must be from the same OEM.**

22. **Site Visit (Local Conditions):**

- (i) It will be incumbent upon each Bidder to fully acquaint himself with the local conditions and other relevant factors at the proposed site which would have any effect on the performance of the contract and / or the cost. For site visits and other information, the bidders may contact Computer Centre (cc_incharge@nitm.ac.in). All correspondence must be done through email only.
- (ii) The Bidder is expected to make a site visit to the site to obtain for himself on his own responsibility all information that may be necessary for preparing the bid and entering into contract. The costs of visiting the site shall be borne by the Bidder.
- (iii) Failure to obtain the information necessary for preparing the bid and/or failure to perform activities that may be necessary for the providing services before entering into contract will in no way relieve the successful Bidder from performing any work in accordance with the Tender documents.
- (iv) It will be imperative for each Bidder to fully inform themselves of all legal conditions and factors which may have any effect on the execution of the contract as described in the bidding documents. The Purchaser shall not entertain any request for clarification from the Bidder regarding such conditions.
- (v) It is the responsibility of the Bidder that such factors have properly been investigated and considered while submitting the bid proposals and that no claim whatsoever including those for financial adjustment to the contract awarded under the bidding documents will be entertained by the Purchaser and that neither any change in the time schedule of the contract nor any financial adjustments arising thereof shall be permitted by the Purchaser on account of failure of the Bidder to appraise themselves of local laws and site conditions.

GENERAL TERMS AND CONDITIONS

01. **Rates:** Quotations have to be submitted in Indian Rupees (INR) only. If goods are to be imported, the quotations shall include all charges for customs clearance, clearing agent fees, landing port handling charges, insurance etc. and onward transportation of the goods from the port/airport of landing for door delivery up to NIT Meghalaya, the Central Instrumentation facility, Sohra (Cherrapunjee) campus.
02. NIT Meghalaya has a valid registration with the Department of Scientific and Industrial Research (DSIR), Ministry of Science & Technology, Government of India for availing Customs/Central Excise Duty exemption. NIT Meghalaya will provide all necessary certificates, authorizations and documents required for clearing the consignment and for onward transportation up to NIT Meghalaya, the Central Instrumentation facility, Sohra (Cherrapunjee) campus.
03. **All documents submitted should be digitally signed by the bidder.**
04. Bidder must unconditionally accept all terms and conditions stipulated in the tender document and all pages of the bid including all enclosures should be numbered and must be duly filled in and digitally signed by the bidder or his authorized representative.
05. The bidder must also upload a digitally signed copy of the Tender Acceptance Letter in the format given at **Annexure-V**.
06. **Validity of Quotation: Quoted rates must be valid for 180 days from the date of quotation.**
07. **Warranty:** The quoted equipment and components must be warranted for a minimum of **three (03) years from the date of successful installation and acceptance by NIT Meghalaya.**
08. **Literature :** Data Sheet of the product(s) offered in the bid, are to be uploaded along with the bid documents. Buyers can match and verify the Data Sheet with the product specifications offered. In case of any unexplained mismatch of technical parameters, the bid is liable for rejection.
 - (i) Bidder must mention make and model of each of the items proposed in the technical compliance statement.
 - (ii) Bidder should submit compliance of each items mentioned in the bid in the enclosed format of Product Specification & Compliance with respective cross-reference to the Product Datasheet.
09. Details of supply of similar items to Institutes of National Importance/universities/organizations etc. (preferably those located in the Northeastern region) must be provided along with the technical bids.
10. **Bid Security Declaration:** Scanned copy of signed Bid Security Declaration should be submitted in the prescribed format.
11. **Presentation:** Technically qualified bidders may be called upon to give full presentation of the quoted products and solutions implementation at NIT Meghalaya campus before opening of Price bid as a support of their Technical Quotations and for any clarifications.
12. **Equipment breakdown:** Any Equipment breakdown must be attended to within 72 hours during the warranty period of the equipment free of cost.
13. **Training:** Free training is to be provided to NIT Meghalaya personnel on the operation, installation, training, maintenance and troubleshooting of the supplied items.
14. The vendor should provide an on-site resident engineer for operating and maintenance of the ICT infrastructure implemented by the vendor for 3 (three) years from the date of installation. The cost of posting of manpower at site should be included in the BID.
15. **After Sales Service:** Vendor should clearly state the available nearest after sales service facilities in the Northeastern/eastern region, without which the offer will be rejected. Copy of proof of local office in the form of local GST certificate / trade license and contact details address of the local office to be enclosed in the technical BID by the vendor on their official letter head.
16. **Dealership Certificate:** The bidder/tenderer should be either a manufacturer or authorized agent of the foreign/Indian manufacturer. Dealers or Agents quoting on behalf of Manufacturer must enclose valid

dealership certificate / OEM authorization for each of the products proposed in the BID.

17. **EMD:** - Earnest Money: Refundable earnest money deposit (EMD) of ₹ **25,00,000/- (Rupees Twenty Five Lakhs)** only through demand draft drawn (of any Nationalized/Scheduled Bank) in favour of National Institute of Technology Meghalaya, payable at Shillong, will have to accompany the technical Bid. The EMD of unsuccessful bidders shall be returned without any interest after award of contract. EMD of the successful bidder will be released without interest on submission of the Performance Bank Guarantee or delivery of the ordered items, as applicable.

Firms registered under MSME will be exempted from submitting EMD. In case of firms registered under NSIC, exemption will be given to the permissible extent, as indicated in their Certificate. All vendors claiming exemption must submit copies of their valid MSME/NSIC registration Certificate (along with the Technical Bid in case of two bid system). Offers received without Earnest Money or valid Certificate shall be summarily rejected.

18. **Performance Bank Guarantee (PBG):** The successful bidder shall furnish an unconditional PBG (asper format at Annexure II) for 3% of the Purchase Order value from a Nationalized/Scheduled Bank of India, before release of the payment. Else 3% of the billed amount will be deducted as security deposit. Where the PBG is obtained by a foreign bank, it shall be endorsed by a Nationalized/Scheduled Indian bank and shall be governed by Indian Laws and be subject to the jurisdiction of courts at Shillong. The PBG shall guarantee that,
- (i) The Vendor guarantees satisfactory operation of the Equipment & components against poor workmanship, bad quality of materials used, faulty designs and poor performance.
 - (ii) The Vendor shall, at his own cost, rectify the defects/replace the items supplied, for defects identified during the period of guarantee/warranty.

The PBG shall remain valid for period of sixty days beyond the date of completion of all contractual obligations of the supplier including warranty obligations.

19. The vendor should have Income Tax account (PAN), GST Registration Certificate.

20. The item(s) will be used only for research purpose of the Institute and not for any commercial use. Hence, vendors may quote concessional rate of IGST @ 5%. Relevant documents shall be provided by the Institute.

21. Training should be provided by the bidder till the satisfaction of the users on free of cost.

22. Upon receipt of the order, the successful bidder must submit the site readiness document with the drawings for enabling NIT to get the site ready for the ICT facility to be operational and function.

23. **Delivery:**

- a. **Time Limit:** Maximum within 180 (One Hundred & Eighty) days from the date of issue of purchase order.
- b. **Safe Delivery:** All aspects of safe delivery shall be the exclusive responsibility of the vendor. At the destination site, the package will be opened only in the presence of NIT user/representative and vendor's representative. The intact condition of the package and the seal/indicators for not being tampered with, shall form the basis for certifying the receipt in good condition.
- c. **Insurance:** The supplier is to establish 'All Risk Transit Insurance' coverage till door delivery at NIT Meghalaya, SOHRA (CHERRAPUNJEE) CAMPUS.
- d. **Part Delivery:** Since the work is of turnkey nature part delivery will be accepted so as to start the work at site and complete the total project within the time frame of delivery and completion of the project.
- e. **Penalty for delay in delivery:** The date of delivery should be strictly adhered to otherwise the Director, NIT Meghalaya reserves the right not to accept delivery in part or full. The Director, NIT Meghalaya also reserves the right to impose penalty, as deemed fit, for delay in delivery of the equipment, including imposition of Liquidated Damages (LD). The decision of the Director shall be final and binding to all.

24. **Genuine Pricing:** Vendor is to ensure that quoted price for the particular item is not more than the price quoted to any other customer in India, particularly to IITs/NITs and other Government Organization.

25. **Conditional tenders not acceptable:** All the terms and conditions mentioned herein must be strictly

adhered to by all the vendors. Conditional tenders shall not be accepted on any ground and shall be rejected straightway. Conditions mentioned in the tender bids submitted by vendors will not be binding on NIT Meghalaya.

26. **Late and delayed tender:** Late and delayed tender will not be considered.
27. **Payment:** 80% payment within 30 (thirty) days from date of Successful delivery & Balance 20% after successful installation, training and acceptance. The 80% payment shall be released on confirmation of the receipt of the complete set of equipment in good condition as per the Purchase Order and after its certification by the concerned officials of the Institute.
28. Payment will be made through PFMS. Bidders are required to furnish complete and correct bank details on their letterhead along with the technical bid. A scanned copy of a cancelled cheque may also be attached for verification of IFSC code.
29. **Enquiry during the course of evaluation not allowed:** After opening the Technical Bid, no enquiry from the bidder(s) shall be entertained during the course of evaluation of the tender till final decision is conveyed to the successful bidder(s). However, the Purchase Committee or its authorized representative may make enquiries/seek clarification from the bidders. In such a case, the bidder must extend full co-operation. The bidders may also be asked to arrange demonstration of the offered items, in a short period of notice.
30. At any time prior to the date of submission of bid, NIT Meghalaya may, for any reason, either of its own or in response to a clarification from a prospective bidder, modify the bidding documents by an amendment / corrigendum. Any such amendment / corrigendum will be duly notified through the Institute's website only and CPP Portal. Prospective bidders are advised to check the Institute's website every now and then for any amendment / corrigendum. In order to provide reasonable time to take the amendment into account in preparing the bid, NIT Meghalaya shall extend the date and time for submission of bids.
31. The acceptance of the quotation will rest solely with the Director, NIT Meghalaya, who in the interest of the Institute is not bound to accept the lowest quotation and reserves the right to himself to reject or partially accept any or all the quotations received without assigning any reasons.
32. **Force Majeure:**

If the performance of the obligation of either party is rendered commercially impossible by any of the events hereafter mentioned that party shall be under no obligation to perform the agreement under order after giving notice of 15 days from the date of such an event in writing to the other party, and the events referred to are as follows:

 - (a) Any law, statute or ordinance, order action or regulations of the Government of India,
 - (b) Any kind of natural disaster, and
 - (c) Strikes, acts of the Public enemy, war, insurrections, riots, lockouts, sabotage.
33. **Termination for default:** Default is said to have occurred
 - (a) If the equipment or any of its component is found having poor workmanship, faulty designs, poor performance and bad quality of materials used.
 - (b) If the supplier fails to deliver any or all the services within the time period(s) specified in the purchase order or any extension thereof granted by NIT Meghalaya.
 - (c) If the supplier fails to perform any other obligation(s) under the contract.

Under the above circumstances NIT Meghalaya may terminate the contract / purchase order in whole or in part and forfeit the EMD/PBG as applicable. In addition to above, NIT Meghalaya may at its discretion also take the following actions: NIT Meghalaya may procure, upon such terms and in such manner, as it deems appropriate, goods similar to the undelivered items/products and the defaulting supplier shall be liable to compensate NIT Meghalaya for any extra expenditure involved towards goods and services obtained.

34. Applicable Law:

- a. The contract shall be governed by the laws and procedures established by Govt. of India and subject to exclusive jurisdiction of Competent Court and Forum in Shillong /India only.
- b. Any dispute arising out of this purchase shall be referred to the Director, NIT Meghalaya, and if either of the parties here to is dissatisfied with the decision, the dispute shall be referred to the decision of an Arbitrator, who should be acceptable to both the parties, to be appointed by the Director of the Institute. The decision of such Arbitrator shall be final and binding on both the parties.

Sd Registrar

Encl.: ANNEXURE-I, ANNEXURE-II, ANNEXURE-III, ANNEXURE-IV & ANNEXURE-V.

ANNEXURE-I
COMPLIANCE CERTIFICATE FOR NIQ TERMS
(To be enclosed in the Technical Bid)

Sl.	NIQ Terms and Conditions	Yes/No
1.	Compliance Certificates (Annexure-I) submitted with the technical bid.	
2.	GST Registration Certificate, up-to-date and valid trade license certificate, and copy of PAN card	
3.	Relevant catalogue of the items enclosed. The model no. and specifications of quoted items highlighted for easy reference.	
4.	Conditions mentioned in Bidder's Qualification Requirements (Q.R.) agreed and fulfilled.	
5.	Rate quoted as per instruction.	
6.	Bidders unconditionally accept all terms and conditions stipulated in the tender document.	
7.	All pages of the bid including all enclosures is numbered and duly filled in and sealed and signed	
8.	Tender Acceptance Letter in the format given at Annexure-II submitted.	
9.	Validity of quoted rate for 120 days agreed.	
10.	Warranty & Annual Maintenance terms and conditions agreed.	
11.	Details of supply of similar items to IITs/NITs/Central Govt. Institutions/State Govt. Institutions as required provided.	
12.	Equipment breakdown clause agreed.	
13.	Training clause agreed.	
14.	After Sales Service: address of after-sales service facilities/centers available nearest to NIT Meghalaya with proof of address and contact details,	
16.	OEM Authorization specific to this NIQ for Cabling products, Access Control & IP Surveillance, Datacenter, Networking Switches & Wireless, and IP Telephony products (in case of dealers/agents) provided.	
17.	EMD terms agreed.	
18.	"Bid Security Declaration" submitted/ Not required if EMD is submitted	
19.	PBG term agreed.	
20.	Delivery terms agreed.	
21.	Payment term agreed.	
22.	Warranty period agreed by OEM (declaration in OEM's Letterhead given)	
23.	Manufacturer certificate and required supporting documents for the OEM's Eligibility provided	
24.	Applicable law terms agreed.	
25.	All other terms and conditions mentioned in the NIQ (Technical & Financial) agreed.	

Signature with Seal:

Vendor: M/s.....

ANNEXURE-II

LIST OF ESTIMATED ITEMS

NIT Meghalaya wants to build the ICT Infrastructure for their permanent campus at Sohra, for which following items are required to be supplied, installed, tested and commissioned.

Sr #	Item Descriptions	Qty	UOM
1	Fiber-Optic Cabling components		
1.1	48-core 9/125/250 Single mode dry core, Multi-tube (8T/6F), ECSS Armor, Bend insensitive, Outside Plant Fiber Cable, HDPE Sheath	7000	Mtrs
1.2	12-core 9/125/250 Single mode dry core, Multi-tube, ECSS Armor, Bend insensitive, Outside Plant Fiber Cable, PE Sheath	5000	Mtrs
1.3	SITC of Fiber LIU, 48F 1U Drawer Shelf, factory assembled with LC SM OS2 Pigtails, Adapters, Splice trays, Fiber management rings, splice sleeves and grounding lugs	4	Nos
1.4	SITC of Fiber LIU, 12F 1U Drawer Shelf, factory assembled with LC SM OS2 Pigtails, Adapters, Splice trays, Fiber management rings, splice sleeves and grounding lugs	50	Nos
1.5	SITC of LC/UPC - LC/UPC Single mode OS2 G.657A1 Duplex Patch Cord, LSZH, UL1685, 3 Meter	200	Nos
1.6	SITC of Outdoor Fiber Optic Joint Closure , dome and base type with mechanical seals, IP68 rated outdoor, suitable for upto 48F splice.	20	Nos
2	CABLING PRODUCTS FOR DATACENTER		
	24 Cu per rack		
2.1	SITC of CAT 6A U/UTP Patch Cord, solid cordage, LSZH, 7 Feet	168	Nos
2.2	SITC of 24-port unloaded Modular Straight Jack Panel 1U, with rear cable management	7	Nos
2.3	SITC of Cat. 6A UTP Modular Jack Outlet, panel end	168	nos
2.4	SITC of 2-port British Style Shuttered faceplate, UL 94V-0 rated	24	nos
2.5	SITC of Cat 6A U/UTP 23 AWG Cable, ETL verified, LSZH 332-3 - Roll of 305 Mtrs	10	Boxes
2.6	SITC of 1U, Single-sided horizontal Cable manager, finger-duct style	5	Nos
2.07	24F SM MPO per rack		
2.08	SITC of Single mode MPO Module, 2x12F MPO rear ports to 24 LC fibres front ports (12 duplex), Method B wiring, with internal shutters	10	Nos
2.09	SITC of MPO/APC to MPO/APC, Single mode Bend Insensitive OS2 Pre-terminated Trunk Cable, 12-Fiber, LSZH jacket IEC 60332-3, UL, 10 m	5	Nos
2.10	SITC of MPO/APC to MPO/APC, Single mode Bend Insensitive OS2 Pre-terminated Trunk Cable, 12-Fiber, LSZH jacket IEC 60332-3, UL, 15 m	5	Nos
2.11	SITC of 1U sliding panel, accepts (4) MPO modules or adapter packs providing up to 48 duplex LC or 32 MPO ports, UL listed	7	Nos
2.12	SITC of LC/UPC - LC/UPC Single mode OS2 G.657A1 Duplex Patch Cord, LSZH, UL1685, 3 Meter	72	Nos
2.13	Cat 6 UTP Outdoor ECCS tape Armoured Triple Jacketed Cable, 305 mtrs	10	roll
3	EQUIPMENT RACKS FOR DIFFERENT BUILDINGS		

3.01	SITC of Equipment Rack - 15 U Wall Mount Rack (600mmD x 700mmW) DUAL SECTION : with front section - 15U x 600 mm x 600 mm and rear section - 15U x 600mm x 100 mm, lockable Glass door, side panel with hinges and slam latches and following accessories:	50	nos
3.02	SITC of Rack mount power distribution unit, 1Ph, 230V, 8A, 50/60Hz, 2U standard with 6 X Universal Pin 5A/15A, Inlet Plug type 6A/16A Universal / Round Pin, 8A Fuse - PDU Rating 1.8KVA/Side feed-1.5Mt/ Black	50	no
3.03	SITC of Fan module Mount on top Cover with 1 fan 230VAC 90 CFM	50	no
3.04	SITC of 1U Horizontal Cable Organizer with Plastic Loops	50	no
3.05	SITC of Hardware Screws for mounting equipments pack of 20 Nos.	50	packets
4	DATACENTER & NOC ROOM Preparation Requirement		
	RAISED FLOORING OF DATACENTER		
4.01	SITC of Antistatic Floor Tiles : with panels, size 600mm x 600mm shall be all Steel welded construction with an enclosed bottom pan of 49 hemispherical cones and 36 reverse cones. Panels should support : Uniformly Distributed Load (UDL) of - 3389 kg /Sqmt. Concentrated Load- 493 Kg.	650	sqft
4.02	SITC of Under structure Edge Support Rigid Grid (ESRG) System suitable for finished floor height up to 300mm.	650	sqft
4.03	SITC of Air plug of size (235 x 172mm) with brush - for cable passage at the bottom of each Rack- per piece rate	4	pcs
4.04	Vacuum Panel Lifter	2	nos
4.05	FALSE CEILING OF DATACENTER & NOC ROOM - using Fire-retardant tiles and light fixtures		
4.06	SITC of Prelude 24mm exposed tee grid system fixtures for fixing Ceiling tiles - per sqft	970	sqft
4.07	SITC of Tiles with size 600mm x 600 mm fire retardant tiles for the Ceiling	970	sqft
4.08	SITC Ceiling Mount 36 Watt LED lighting fixtures with 3100 lumens, dimension 595 mm x 595 mm for Datacenter & NOC room area	10	nos
4.09	WALL PARTITIONING AND GLASS DOOR INSIDE DATACENTER		
4.10	SITC of Wall Partition inside Datacenter using Aluminium Frame of 100 mm thickness and double layer of aluminium sheet of thickness 12 mm	286	sqft
4.11	SITC of Wall Partition inside Datacenter using Aluminium Frame of 100 mm thickness and double layer of aluminium sheet of thickness 12 mm	160	sqft
4.12	SITC of Toughened Glass Door for NOC Room size 4 feet x 8 feet, Toughened Glass thickness : 20 mm, Aluminium Frame for the door should be powder coated with thickness of aluminium frame : 100 mm to be connected with door Hinge, door closer and Mortise Lock with door handle.	1	no
4.13	FIRE-RATED STEEL DOORS FOR DATACENTER		
4.14	SITC of Entry Door to Datacenter : Steel Fire Rated Single Leaf Door Set - UIN-IS/BS-120 Min - 1,200.00X2,400.00 mm	1	no
4.15	SITC of Fire Exit Door from Datacenter Room : Steel Fire Rated Single Leaf Door Set - UIN-IS/BS-120 Min- 1480 x 2500 mm with Panic Bar	1	no

4.16	SITC of MAIN ENTRY DOOR TO DATACENTER AREA : Steel Fire Rated Single Leaf Door Set - UIN-IS/BIS-120 Min - 1480 mm x 2500 mm with Clear Fire rated Glass Vision Panel =, 6 mm for 120 Min, Schott Pyran S - 450 mm x 750 mm	1	no
5	DATACENTER INFRASTRUCTURE		
5.01	SITC of Intelligent Integrated Rack Solution including the following components :	1	set
5.02	42 U Rack, 600mm (W) X 1000 mm (D) , with integrated hot & cold aisle containment of 400 mm each , Vertical & Horizontal cable manager , blanking panels with rugged & light weight body structure with front glass door in front & rear non-perforated metal split door for effective air flow having a load bearing of 1000KG's : 04 Nos		
5.03	42 U Rack, 800mm (W) X 1000 mm (D) , with integrated hot & cold aisle containment of 400 mm each , Vertical & Horizontal cable manager , blanking panels with rugged & light weight body structure with front glass door in front & rear non-perforated metal split door for effective air flow having a load bearing of 1000KG's : 02 Nos		
5.04	20 kW Precision Air Conditioner with variable capacity digital scroll / Inverter scroll compressor with N+N redundancy (After failure of any single unit, the total cooling requirement should meet), DX based, including copper pipe with proper insulation, tray, cable between indoor and outdoor unit with complete accessories including inbuild Heater & Humidifier, plumbing work : 02 Nos		
5.05	SITC of 1 U Remote Monitoring Unit with Temp Monitoring, Humidity Monitoring, Door Switch Sensor, Water Leak Sensor, Beacon Alarm, Event Alerts, RS485 Port, Email Notification, Power Monitoring etc: 01 Set		
5.06	SITC of 9" Touch Screen Human Machine Interface to provide a Local display for Integrated Infrastructure indicating various Power, Cooling, Environmental Parameter with Real Time PUE : 01 Set		
5.07	SITC of Vertical Socket strip with 12nos of IEC C13 Sockets & 4 nos of IEC C19 Socket with 2.5 mtr power chord with 32A , Single Phase MCB. (02 nos PDU per rack) : 12 Nos		
5.08	SITC of Integrated Fire Alarm, Fire Detection & Fire Suppression system with control panel with required NOVAC 1230 gas, nozzles, gas release panel , etc. : 01 set		
5.09	SITC of Integrated VESDA system for early smoke detection : 01 set		
5.10	SITC of Integrated Ultra-sonic sound based Rodent Repellent System : 01 set		
5.11	SITC of Integrated Biometric Based Access Control system for all doors controlled through common access control panel : 01 set		
5.12	SITC of Electrical Power Distribution Panels (inside utility panel) with required internal cabling & MCCB/MCBs : 01 set		
5.13	SITC of 16-Port IP KVM switch with 18.5" LCD Console as per the mentioned technical specifications - 01 no		
5.14	SITC of 20 KW Rack tower convertible UPS system with battery bank as per specifications - 02 nos		
5.15	Battery - OEM Approved : VRLA 12 V, 42 AH x 36 nos. (or Equivalent) - External 30 min Backup on Each UPS , combined backup 60 minutes, SNMP Card, battery racks complete with connection interconnection etc as required. - 02 sets		
5.16	SITC of Low side material & DC Installation which should include the following components :		
5.17	16G Copper Piping between Indoor unit to outdoor unit -20 meter		
5.18	Condenser Cabling between Indoor to outdoor unit-20m		

5.19	Copper Pipe Insulation for Hot gas line and liquid line - 20m		
5.20	MS Stands for mounting AC outdoor units – 02 nos		
5.21	Drain Piping , 40mm dia PVC hard - 20 m		
5.22	R - 410A Refrigerant 15 – 30 kg		
5.23	Lifting, Shifting, Positioning & Installation at up to ground floor (without crane), Installation of Access Control and Fire suppression system, Installation of Rack, EMS and accessories, and PMC Charges		
5.24	Potable water pipe for Humidifier – 20 m		
5.25	3 Years on-site Warranty for Entire Integrated Datacenter Rack Solutions - by OEM		
6	UPS FOR OTHER BUILDINGS		
6.1	Supply of 10 KVA Online UPS System - 3-Phase input and single-Phase output, with in-built isolation transformer, SMF Battery for 60 mints backup , Battery Rating: 12V 65 AH x 20 nos; MS Rack & IRIT Link cables for 20 nos of SMF Batteries - 3 Years on-site warranty on UPS & Battery.	4	sets
6.2	1 KVA Online UPS: 2 U 19"" rack mountable with inbuilt SMF 2 x 9AH battery. Input voltage range 100 to 290 V AC, IGBT based, true online, dual conversion type. EPO & ECO mode facility, DG set compatibility, LCD display, programmable power management outlets, SNMP, USB, RS-232 communication, Noise level 50 dB max, EMI EN62040/2;2006, safety EN 2040-1-1;2003, performance IEC/EN 62040/3, CE BIS, ISO 140001 for the UPS.	24	nos
7	ACCESS CONTROL SYSTEMS FOR DATACENTER DOOR		
7.01	DOOR ACCESS for Datacenter Door, NOC door - 2 nos		
7.02	SITC of Card Reader with PIN (13.56MHz MI fare/DESFire)	2	nos
7.03	SITC of Exit Card Reader with PIN (13.56MHz MI fare/DESFire)	2	nos
7.04	SITC of Power Supply 12V DC , 2.5 Amp (1.5 A Load current , 1 A Battery Charging Current with UPS feature , only to be used each with DMCH01186579)	4	nos
7.05	Accessories - Cables & connectors - lot		
7.06	SITC of 600 lbs Double EM lock with LED indicator	2	nos
7.07	SITC of Power Supply -12 V, 2 amp DC for every Door Lock and Card Reader - 1 for each door	2	nos
7.08	Cabling		
7.09	SITC of 1.25 sq. mm multistranded 2-core copper wiring (lock to controller to power supply - 3 mtr) - per door	2	nos
7.10	SITC of 6-core 1.25 sq.mm multistranded copper wire cable - reader to controller - per door - 3 mtrs	2	nos
7.11	SITC of Exit Switch per door	2	nos
7.12	SITC of Access Card for IT staffs	10	nos
7.13	SOFTWARE FOR ACCESS CONTROL		
7.14	SITC of Access Control Software (32 Door Licence)	1	nos
7.15	SITC of Workstation Software Licence (Software Only)	1	nos

7.16	SITC of Server for Access Control Software : Intel Xeon Processor. 32 GB RAM/1 TB HDD / Radeon HD 7470 1 GB Graphics/ Redundant Power Supply (PSU)/ USB Mouse/Keyboard/ Windows 10 / 18.5" LED Display with 3 years Warranty.	1	no
8	IP SURVEILLANCE NETWORK		
	2 MP IR Bullet Camera with 100m IR Range		
8.01	SITC of H.265 2MP Motorized Telephoto V/F IP Bullet Camera, 7-22mm, 100m IR, Micro SD, AC24V/DC12V/PoE, IP67/IK10, Smart IVA, with Conduit Box	15	nos
8.02	5MP IR Bullet Camera with 70 m IR Range		
8.03	SITC of H.265 5MP Motorized V/F IP Bullet Camera, 2.8-12mm, 70M, Micro SD, DC12V/PoE, IP67/IK10, Smart IVA with Conduit Box	15	
8.04	4 MP PTZ Camera with 200m IR Range		
8.05	SITC of H.265 4MP 32x Network IP PTZ Camera, 1/1.8" CMOS, 200M IR, SD Card 256GB support, Smart IVA with vertical pole mount	8	nos
8.06	128 Channel NVR with VMS		
8.07	SITC of Rackmount 4U Network Video Recorder for maximum upto 128 channel, dual GB NIC, HDMI, DVI-D, VGA (2 max. simultaneous), RS-232/485 serial port, RAID 6, Win10 or Ubuntu Linux 18.04 on SSD, redundant power supplies. Rackmount Sliding Rail Kit for the Server.	1	nos
8.08	SITC of Enterprise SATA Hard Disk for storage of Video in the proposed NVR - 12TB 7200 RPM SATA 6Gb/s 256MB Cache 3.5-Inch Enterprise Hard Drive	12	nos
8.09	SITC of IP Camera license, per camera.	38	no
8.10	SITC of 65" LED Display (24x7 operation) with Wireless keyboard & Mouse	1	no
9	NETWORKING SWITCHES		
9.01	CORE SWITCH - on High Availability Mode - 2 nos		
9.02	Core Switch : Layer 3 Switch with 48-port SFP+ 1/10GE/25 GE, 8x-port QSFP28 supports native 40GE or 100GE , includes Hot-Swappable Redundant (2) AC Power Supply and fans, with 3-year support , Premium License to use advanced Layer 3 features.	2	nos
9.03	100GbE QSFP28 to QSFP28 Direct Attached , Passive Copper Cable, 1m. For connecting 2 nos of Core Switch on 100GbE Link .	2	nos
9.04	10GBASE-LR, SFPP SMF (LC) , for up to 10km over SMF, standard temperature (0°C to 70°C)	50	nos
9.05	NETWORKING SWITCHES FOR ALL BUILDINGS		
9.06	ACCESS SWITCH - TYPE-I : SITC of Layer 3 48 Port PoE Switch with 16x 100/1000/2.5G ports and 32x 10/100/1000 PoE+ ports with total Power Budget upto 1480 Watts per Switch or more, 8 x 10G SFP+ uplink-ports from day 1. Advanced L3 Support, 2 x Power Supply and Fan Units with 3 years support. AC Power Cord.	4	nos

9.07	Access Switch - TYPE- II : SITC of 48-Port Layer 3 Switch with 48x 10/100/1000 PoE+ ports, 2x 1G RJ45 uplink-ports, 2x 1G SFP and 4x 10G SFP+ uplink-ports , 740W PoE budget , with Advanced L3 features , AC Power Cord with 3 years Warranty .	34	nos
9.08	ACCESS SWITCH - TYPE-III : SITC of 24-Port Switch with 24x 10/100/1000 PoE+ ports, 2x 1G RJ45 uplink-ports, and 4 x 10G SFP+ uplink-ports , 370W PoE budget , basic L3 (static routing and RIP), AC Power Cord and with 3 years Warranty .	30	nos
9.09	1 x 10GbE Direct Attach SFP+ to SFP+ Active copper cable, 1 m	20	nos
9.10	10GBASE-LR, SFPP SMF (LC) , for up to 10km over SMF, standard temperature (0°C to 70°C)	102	nos
9.11	Network Management Solution (NMS) from the same OEM of Switching products to manage Network Switches - license per Switch	70	nos
10	WIRELESS NETWORK EQUIPMENTS FOR THE CAMPUS		
10.01	WIRELESS LAN CONTROLLER		
10.02	SITC of Wireless LAN Controller Appliance with 4x10GigE and 4 GigE ports with Redundant Power Supply and Redundant FAN , must be capable of managing up to 2000 Wireless APs and 20000 clients. 3 years Warranty .	1	nos
10.03	WIRELESS AP management license PER Access Point.	256	nos
10.04	WIRELESS ACCESS POINTS REQUIREMENT		
10.05	Indoor Wireless Access Point -Type I		
10.06	SITC of Indoor Wireless AP WiFi 6 : dual-band 802.11abgn/ac/ax Wireless Access Points, 2x2:2 streams (2.4GHz/5GHz) OFDMA, MU-MIMO, 802.3af PoE support. 1 USB 2.0 Port, Type A, one 1G RJ 45 interface Includes Mounting Bracket .	200	nos
10.07	Indoor Wireless Access Point - Type-II		
10.08	SITC of Indoor Wireless AP WiFi 6 : dual-band 802.11abgn/ac/ax Wireless Access Points, 2x2:2 streams (2.4GHz/5GHz) OFDMA, MU-MIMO, 802.3af PoE support. 1 USB 2.0 Port, Type A, two 1G RJ 45 interface Includes Mounting Bracket .	30	nos
10.09	Indoor Wireless Access Point - Type III		
10.10	SITC of Indoor Wireless AP WiFi 6 with dual-band 802.11abgn/ac/ax Wireless Access Point with Multi-Gigabit Ethernet backhaul, 4x4:4 + 2x2:2 streams , OFDMA, MU-MIMO, dual ports, PoH/uPoE/802.3af PoE support. Includes Secure Mounting Bracket.	20	nos
10.11	3 years Warranty Support for Wireless AP	250	
10.12	OUTDOOR WIRELESS AP		
10.13	SITC of Outdoor Wireless Access Point with omni directional in-built antenna, Wi-Fi 6, 802.11ax 2x2:2, dual band concurrent. One Ethernet port, PoE input. -20°C to 65°C Operating Temperature. Includes mounting bracket.	6	nos
10.14	3 year Warranty Support for Outdoor AP	6	nos
11	IP BASED TELEPHONE SYSTEM		
11.01	IP PBX Server : Server based IP-PBX running on Linux OS and expandible upto 1500 Solution users (750 per Server) at a single site, up to 256 SIP trunk channels per Primary/Secondary server with hardened Platform and latest standards, complete in all respect. The minimum required configuration are as under:	1	Nos

	a) IP PBX should support the flexible connection of Analog, Digital & IP (H.323 and SIP) Desk Phone in any combination, Mobile WLAN and Soft Phones with in one system. It should support Redundancy with dual Servers such that the system should be able to switchover to other server in case of failure of one server. b) 128 Party Audio Conference bridge from day 1 c) in-built Voice Mail System of same OEM which should support Mail Boxes for all users.		
11.02	License for IP/SIP Phones	60	Nos
11.03	IP PBX Gateway/Expansion with in-built 4-Port Analog Trunk Lines - expandable up to 16 lines	1	Nos
11.04	Digital Primary Rate Interface (PRI) Line with required license	1	Nos
11.05	UC Mobility Client Users for Laptop & Mobile Devices (Android & iOS) - User License	5	Nos
11.06	3 years Warranty Support for IP PBX Server- on-site with spare replacement if required during warranty period	2	nos
11.07	3 years Warranty Support for IP PBX Gateway - on-site with spare replacement if required during warranty period	1	Nos
11.08	IP Phone Type-I : Supply of SIP based full duplex IP Desk phone with 2.8" (diagonal) color display, 4 contextual softkey buttons and 4 administrable dual LED line/feature key buttons and 2 x Gigabit Ethernet Port (10 / 100 / 1000) line interface. Should comply with all the technical specifications as mentioned in the Specifications sheet.	40	Nos
11.09	IP Phone Type-II : Supply of SIP based full duplex IP Desk phone with 3.5" (diagonal) color display, 10 buttons with dual LEDs, 4 Context Sensitive Soft Keys and 48 administrative buttons, Supports optional Wireless Module for Wi-Fi connectivity, 2 x Gigabit, Ethernet with PoE support and option for Wi-Fi Module support. Should comply with all the technical specifications as mentioned in the Specifications sheet.	10	Nos
11.10	Operator Console : Supply of SIP based Operator Console IP Phone with Color display 3.5 inches (Diagonal), 8 Administrable Feature Keys and 4 Soft Keys and added with 24 keys Expansion Module (Should support minimum 3 x 24 keys Expandable Modules), Dual Gigabit Ethernet Ports with PoE Class 1 Support, supports optional Wi-Fi Module for wireless connectivity to the network. Should comply with all the technical specifications as mentioned in the Specifications sheet.	1	Nos
11.11	Video Phone : Supply of SIP based Video IP Phone with 8" Capacitive Touch color display with Resolution of 1280 X 800 pixel with 1X USB Type-C port and 16 GB flash memory. Should have dual Gigabit Ethernet Ports and Inbuilt Hotspot. Should comply with all the technical specifications as mentioned in the Specifications sheet.	1	Nos
12	INSTALLATION, COMMISSIONING, PROJECT MANAGEMENT & ON-SITE SUPPORT CHARGES		
12.01	Installation for Fiber-Optic Cabling -Building Connectivity in the Campus		
12.02	Laying and Pulling of 48-core OFC cable along side of the boundary wall for the backbone OFC Ring. This must include cost of trenching of 1 meter, backfilling wherever required including clamps and all required accessories to complete the work.	7000	mtrs
12.03	Laying & pulling of Fiber Cables 48 /12-core OFC (interbuilding and backbone cable to nearest building) using Steel Messenger Wire of 8 sqmm thickness & PVC Spiral Support for the OFC Cable using GI Poles of minimum 6 meter height & Outdoor Splicing Enclosure. All required clamps, cable ties & accessories to be included .	5000	mtrs

12.04	Laying & Pulling of 12-core inside building for floor to floor connectivity using the shaft available in the building. Necessary clamping should be done so that cable is not free hanging.	1000	mtrs
12.05	Supply and laying/ fixing of 40 mm dia HDPE pipe ISI marked along with all accessories like socket, bend, couplers etc. conforming to IS 14930, part II complete with fitting and cuttings, jointing, etc. direct in the ground (75 cm below ground level including excavation and refilling the trench, etc. wherever required and clamping with steel hose clamps as required to be used for laying of 48-Core OFC backbone cable through the boundary wall.	5000	mtrs
12.06	Supply and Erection of Poles : For Aerial Pulling of OFC cabled for inter-Building connectivity. Poles must have Usable height of 6 meters Min. Diameter 100 mm G.I. pole should be equipped with baseplate & required accessories for mounting on a suitable cement concrete structure to withstand the weight of Pole & the equipment to be mounted on the pole. Digging on hard rock upto the depth of 3 feet to fix the base structure of 4 feet for the Poles must be done for each poles. Should withstand at least 120 kgs of weight mounted on top of it when fixed. Effect of Wind speed of at least 60Kmph should also be considered. Certification : ISI Marked.	20	nos
12.07	SITC of Dedicated Earthing for Integrated Datacenter		
12.08	Supply & Installation of Clean Earthing system & connectivity up to integrated data centre via 1C x 50 SQMM copper flexible Cable (Green Colour) - 40 meter length Dedicated Chemical Earthing for the DC rack - digging of Earth Pit with 2.5 meter depth and 1 meter x 1 meter width on hard rocky soil behind the DC Room, using Electrode of 3 m long, each Earth Pit to be separated by 3 m from each other and back filled with Chemical Compound Mixture. Minimum Resistance of Earthing to be 3 Ohm.	2	nos
12.09	Supply Installation of Electrical DB Panel in the Battery Room installed with 125 Amp 4 Pole MCCB: Connecting the DB Panel using Single feeder of 3 Phase Supply of 40 meter of 4C X 50 SQMM copper flexible cable Up to Integrated rack system.	1	lot
12.10	Wiring for light / power plug with 3 x 4 sq. mm FRLS PVC insulated copper conductor single core cable in surface / recessed medium class PVC conduit along with 1 no. 4 sq. mm. FRLS PVC insulated copper conductor single core cable for loop earthing as required. (Point wiring for Power from Floor's Electrical DB to the Equipment Racks).	1000	Mtrs
12.11	Supply and Wiring of 3-core, 4 sqmm FRLS PVC insulated copper conductor armoured cable for inter-rack connectivity for UPS power within building	2000	mtrs
12.12	Supply and Fixing following 3 Module GI Box and Face Plate with 1 x 6/16 amp Socket and 1 x 6/16 on/off Switch (modular socket & switches) which includes wall cutting and making good the same. (at each rack Location)	60	nos
12.13	Posting of one (1) no of trained Manpower for on-site support for 3 years after completion of implementation of the project.	3	year

ANNEXURE-III

PERFORMANCE BANK GUARANTEE

To:
The Director,
National Institute of Technology Meghalaya
Bijni Complex, Laitumkhrah, Shillong-793
003Meghalaya

WHEREAS.....(Name of Supplier)

Herein after called "the Supplier" has undertaken, in pursuance of Contract No.....dated,.....2022. to supply..... (Description of Goods and Services) herein after called "theorder".

AND WHEREAS it has been stipulated by you in the said order that the Supplier shall furnish you with a Bank Guarantee by a recognized bank for the sum specified therein as security for compliance with the Supplier's performance obligations in accordance with the order.

ANDWHEREAS we have agreed to give the Supplier a Guarantee:

THEREFORE WE hereby affirm that we are Guarantors and responsible to you, on behalf of the Supplier, up to a total of (Amount of the Guarantee in Words and Figures) and we undertake to pay you, upon your first written demand declaring the Supplier to be in default under the order and without cavil or argument, any sum or sums within the limit of..... (Amount of Guarantee) as aforesaid, without your needing to prove or to show grounds or reasons for your demand or the sum specified therein.

This guarantee is valid until the.....day of.....20.....

Signature and Seal of Guarantors

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

Date.....20....

Address:.....

.....
.....

All correspondence with reference to this guarantee shall be made at the following

Address: The Director,
National Institute of Technology Meghalaya
Bijni Complex, Laitumkhrah, Shillong-793 003, Meghalaya

ANNEXURE - IV

TECHNICAL SPECIFICATIONS AND COMPLIANCE STATEMENT FOR THE LIST OF ITEMS REQUIRED BY NIT MEGHALAYA

Bidder must submit required document to support OEM Eligibility and product datasheet for each of the products proposed and mention the reference page numbers to support compliance /variance against each of the line items of technical specifications. Failure to do so will lead to rejection of the tender

NAME OF THE BIDDER				
1	OEM ELIGIBILITY CRITERIA FOR CABLING PRODUCTS (OFC & UTP):			
	Eligibility Criteria	Compliance (Yes/No)	Cross reference	
a	Passive OEM offered must be registered and operating in India for more than at-least 10 years			
b	OEM should have members participating in Telecommunications Industry Association (TIA) committee. Membership shall be available for validation at www.tiaonline.org			
c	OEM shall have RCDD certified technical staff based in India.			
d	OEM must have ISO 9001:2015 and ISO 14001 certified manufacturing unit in India, functioning for min. 5 years.			
e	The CAT6 & 6A SCS must be tested by globally accredited 3rd Party test facility to the following standards: - ANSI/TIA 568-C.2: Category 6A Channel – 4 connector 3rd Party verification for both 100m Long channel & Short Channel (15m) testing must be provided as part of the bid response. Copies of test reports should be appended to this RFP.			
f	All cabling components must be from same OEM.			
g	All offered fiber trunk cords, patch cords must be Bend insensitive with LSZH IEC 60332-3 and UL rated jacket.			
1.1	Technical Specifications for 48 Core Single Mode dry core, Multitube (8T/6F) Cable			
		Product Description	Make	Model/Part Code
	Mention Details	-	-	
	Parameter	Specification	Compliance (Yes/No)	Cross Reference
1.1.1	Cable Type	48 fiber Single Mode, Armoured, Loose-tube, Gel free cable complying to ISO/IEC 11801, ANSI/TIA 568-C.3; suitable for use in outdoor ducts and backbone cabling		
1.1.2	Fiber Type	Single Mode, 9/125/250 micron primary coated buffers, ITU T G657.A1 Bend insensitive fiber		
1.1.3	Armour	ECCS Tape Armour of min. 0.15 mm thickness		
1.1.4	Cable Construction Type	Stranded loose tube fiber, with fully dry core water blocking technology, without any thixotropic Gel substance for clean and easy installation.		

1.1.5	Fiber identification	Both fiber tubes and strands must be color coded in the sequence as per TIA 598-C standard: Blue, Orange, Green, Brown, Slate, White, Red and Black.		
1.1.6	Tube & Core Counts	There should be 8 Tubes and 6 core fibers in each tubes		
1.1.7	Attenuation	@ 1310nm <=0.34 db/Km MAX		
1.1.8		@1550nm <=0.22 db/Km MAX		
1.1.9	Chromatic dispersion	@1625nm <22ps/nm.km		
1.1.10	Loose tube material	Multi-loose tube in PBTP construction, with dry water blocking yarns. 8 color coded tubes with fibers.		
1.1.11	Loose tube diameter (Nominal)	2.5 mm +/- 0.2		
1.1.12	Jacket material	HDPE outer jacket, min. 2 mm thickness. Must be UV protected.		
1.1.13	Strength members	Peripheral: Water Swellable tape; Central: Di-electric FRP rod		
1.1.14	Tensile Strength	2700 N or better		
1.1.15	Crush Resistance	4400N/10cm or better		
1.1.16	Impact resistance	4.4 N-m		
1.1.17	Cable Diameter	15.0 + - 0.5 mm		
1.1.18	Operating Temperature	-20 Degree C to +70 Degree C		
1.1.19	Test Reports	OEM factory test reports must be provided against each drum / roll of fiber cable.		
1.2	12 Core Singlemode dry core, Multitube ECSS Armored Fiber Cable			
		Product Description	Make	Model/Part Code
1.2.1	Mention Details	-	-	
1.2.2	Parameter	Specification	Compliance (Yes/No)	Cross Reference
1.2.3	Cable Type	12 fiber Single Mode, Armoured, Loose-tube, Gel free cable complying to ANSI/ICEA S-87-640, EN187105, ROHS; suitable for use in direct burial, outdoor ducts and backbone cabling		
1.2.4	Fiber Type	Single Mode, 9/125/250 micron primary coated buffers, OS2 (ITU T G652.d) and bend insensitive (G.657A1) Fiber		
1.2.5	Armour	Corrugated Steel Tape Armour of min. 0.15 mm thickness		
1.2.6	Cable Construction Type	Telcordia GR 20 and IEC 60794-1 compliant, dry loose tube, armored cable		
1.2.7	Fiber identification	Fiber strands and loose tubes must be color coded in the sequence as per TIA 598-C standard:		
1.2.8		Blue, Orange, Green, Brown, Slate, White.		
1.2.9	Attenuation	@ 1310nm <=0.34 db/Km MAX		
1.2.10		@1550nm <=0.22 db/Km MAX		
1.2.11		@ 1380-1386nm <= 0.31db/Km		
1.2.12	Loose tube material	Multi-loose tube in PBTP construction, with dry water blocking yarns. 2 color coded tubes with fibers.		
1.2.13	Loose tube diameter (Nominal)	2.3 +/-0.2 mm		

1.2.14	Jacket material	PE / HDPE outer jacket, min. 2 mm thickness. Must be UV resistant.		
1.2.15	Strength members	Peripheral: Water Swellable tape; Dielectric FRP rod	Central:	
1.2.16	Tensile Strength	2700 N or better		
1.2.17	Crush Resistance	4400 N/10cm or better		
1.2.18	Cable diameter	11.0 - 14.0 mm		
1.2.19	Operating Temperature	-20 Degree C to +70 Degree C		
1.2.20	Min. Bend radius for bend insensitive cable	Loaded: 15 x OD; Unloaded: 10 x OD		
1.2.21	Test Reports	OEM factory test reports must be provided against each drum / roll of fiber cable.		
1.3	Fiber LIU 48F 1U Drawer type Fiber Shelf, fully loaded			
		Product Description	Make	Model/Part Code
1.3.1	Mention Details			
1.3.2	Parameter	Specification	Compliance (Yes/No)	Cross Reference
1.3.3	LIU	The fiber management shelf shall have compact design and be ideal for high density front patching applications.		
1.3.4		Should be fully loaded and factory fitted assembly with no assembling required during installation at site		
1.3.5	Capacity	1U: 12/24/48 Fiber terminations		
1.3.6	Assembly	Shall be supplied pre-installed with LC duplex adapters, Pigtailed, splice trays and fiber management rings		
1.3.7	Cable entry ports	Shall have min 4 cable entry points at rear of shelf		
1.3.8	Drawer style shelf	o Easy access to splicing tray and connectors		
1.3.9		o Should have front locking latches on both side of shelf		
1.3.10	Accessories	Fiber management guides, secure tie downs and all splicing accessories including splice sleeves, cleaning kit, cable markers and grommet.		
1.3.11		Pre loaded with labeling strips, 2 grounding lugs		
1.3.12		Sealed cable inlets for dust and rodent protection		
1.3.13	Material	Min 1.6mm CRCA Sheet steel with powder coating		
1.3.14	Fiber / buffer tube storage	Min of 320 mm depth for storage of fiber slack		
1.3.15	Pigtails pre-installed in Shelf:	LC type SM 900 micron buffered fibers		
1.4	Fiber LIU 12F 1U Drawer type Fiber Shelf, fully loaded			
		Product Description	Make	Model/Part Code
1.4.1	Mention Details			
1.4.2	Parameter	Specification	Compliance (Yes/No)	Cross Reference
1.4.3	LIU	The fiber management shelf shall have compact design and be ideal for high density front patching applications.		
1.4.4		Should be fully loaded and factory fitted assembly with no assembling required during installation at site		
1.4.5	Capacity	1U: 12/24/48 Fiber terminations		

1.4.6	Assembly	Shall be supplied pre-installed with LC duplex adapters, Pigtails, splice trays and fiber management rings		
1.4.7	Cable entry ports	Shall have min 4 cable entry points at rear of shelf		
1.4.8	Drawer style shelf	o Easy access to splicing tray and connectors		
1.4.9		o Should have front locking latches on both side of shelf		
1.4.10	Accessories	Fiber management guides, secure tie downs and all splicing accessories including splice sleeves, cleaning kit, cable markers and grommet.		
1.4.11		Pre loaded with labeling strips, 2 grounding lugs		
1.4.12		Sealed cable inlets for dust and rodent protection		
1.4.13	Material	Min 1.6mm CRCA Sheet steel with powder coating		
1.4.14	Fiber / buffer tube storage	Min of 320 mm depth for storage of fiber slack		
1.4.15	Pigtails pre-installed in Shelf:	LC type SM 900 micron buffered fibers		
1.5	LC – LC Singlemode Duplex Fiber Patch Cords, LSZH			
		Product Description	Make	Model/Part Code
1.5.1	Mention Details	-	-	
1.5.2	Parameter	Specification	Compliance (Yes/No)	Cross Reference
1.5.3		LC/UPC to LC/UPC, Singlemode OS2 G.657A1 bend insensitive Fiber 1.6mm Duplex patch cords.		
1.5.4		Low Smoke Zero Halogen (LSZH) compliant to IEC 60332-3, IEC 60754-2, IEC 61034-2, UL 1666, UL 1685		
1.5.5		Flame Test Listing: NEC OFNR-LS (ETL)		
1.5.6		Connector Optical Performance		
1.5.7		Insertion Loss, Typical: 0.3 dB		
1.5.8		Return Loss, minimum: 50.0 dB		
1.5.9		Cord shall be EN 50575 CPR certified.		
1.5.10		Patch Cord Jacket color: Yellow.		
1.6	OUTDOOR FIBER JOINT CLOSURE			
		Product Description	Make	Model/Part Code
1.6.1	Mention Details	-	-	
1.6.2	Parameter	Specification	Compliance (Yes/No)	Cross Reference
1.6.3	Type	Fiber Optic Joint closure shall be of single ended environmentally sealed enclosure for fiber management in the outside plant network		
1.6.4	Size options	Shall be available for 24 fiber / 48 fiber splice options.		
1.6.5	Sealings	Base and dome to be sealed with a clamp and O-ring system.		
1.6.6		The sealing agent must be of re-usable mechanical type. Heat shrink type is not accepted.		
1.6.7	Cable inlets	Multiple cable inlet options from upto 4 round cable ports and atleast 1 oval port shall be provided.		
1.6.8		Shall have grounding fixture for installation of armored cables.		
1.6.9	Splice trays	Splice trays to be hinged for access to any splice without disturbing other trays		

1.6.10	Cable Handling	Closure shall be compatible with most common cable types: e.g. loose tube, central core, slotted core, ribbon fiber		
1.6.11		Shall be capable of receiving cable OD of 15-19mm 2 nos and 9-12mm cables OD upto 4 nos.		
1.6.12		Shall be from the same OEM as of the fiber cables.		
1.6.13	Application	The closure shall be suitable for usage in aerial, pedestal and underground (up to 5 meters) environments.		
1.6.14		Shall be IP 68 rated for outdoor usages.		
1.6.15	Environment	Shall be UV resistant		
1.6.16		Atmospheric pressure support of upto 100 Kpa		
1.6.17		Operating Temp upto +65 Deg C		
1.6.18	Compliant	Must be ROHS / ELV compliant		
2.5	24 PORT JACK PANEL UNLOADED			
		Product Description	Make	Model/Part Code
2.5.1	Mention Details	-	-	
	Parameter	Specification	Compliance (Yes/No)	Cross Reference
2.5.2	Type	24-port, Modular, 1U, Jack Panel, unloaded		
2.5.3	Port arrangement	Configured as 6 Port Module to accept individual CAT-6 Jacks		
2.5.4	Port Identification	9mm or 12mm Labels on each of 24-ports (to be included in supply		
2.5.5	Cable support	Shall be supplied with removable rear cable support, with 4 cable bundle managers.		
2.5.6	Panel Material	Black, powder coated steel		
2.5.7	Approvals	UL listed.		
2.5.8	Termination Pattern	T568 A and B;		
2.5.9	ROHS Compliant	ROHS/ELV Compliant		
2	TECHNICAL SPECIFICATION FOR DATA CENTER CABLING			
2.1	CAT 6A U/UTP RJ45 Patch Cords, 7 ft			
		Product Description	Make	Model/Part Code
2.1.1	Mention Details	-	-	
	Parameter	Specification	Compliance (Yes/No)	Cross Reference
2.1.2	General	CAT6A U/UTP Patch Cord, shall be of 4 pair solid construction, with pair separator.		
2.1.3		Cords shall be factory terminated with 8-pin modular plugs on each end.		
2.1.4		Plugs shall be designed with an anti-snag latch to facilitate easy removal during move, add and change processes.		
2.1.5		The cordage shall be UTP components that do not include internal or external shields, screened components or drain wires.		
2.1.6		Jacket Safety	Patch Cord shall have LSZH jacket complying with the following Fire Safety standards:	

2.1.7		ISO/IEC 60332-3-22: Vertical Flame Spread		
2.1.8		ISO/IEC 60754-2: Acid Gas Emission		
2.1.9		ISO/IEC 61034-2: Smoke Density		
2.1.10	plug insertion life	Patch Cord shall have min plug insertion life of 750 cycles.		
2.1.11	Plug retention force	Min Plug retention force: 130N		
2.1.12		Shall be ETL certified.		
2.1.13	Resistance	Patch Cords shall have maximum dc Resistance:0.30 Ohm		
2.1.14	Safety voltage	Safety voltage rating: 300 V		
2.1.15	Standard	Must be compliant with the channel specifications of ANSI/TIA 568-C.2.		
2.1.16		ROHS compliant and EN 50575 compliant.		
2.2	24 Port Unloaded Modular Jack Panel			
		Product Description	Make	Model/Part Code
2.2.1	Mention Details	-	-	
	Parameter	Specification	Compliance (Yes/No)	Cross Reference
2.2.2	Type	Modular type Panel to accept upto 24 individual CAT6A jacks		
2.2.3		Panel shall be available in Straight or angled versions of 24 port (1U) or 48 port (2U)		
2.2.4		The panel shall be equipped with a removable rear mounted cable management bar and front and rear labels		
2.2.5	Material	Material shall be Powder coated steel with thermoplastic flame retardant housing		
2.2.6	UL Listed	The panel shall be UL Listed		
2.2.7	Operating Temperature	Operating Temperature Range = -10°C to 60°C		
2.2.8	Humidity	Humidity = 95% (noncondensing)		
2.2.9	Current Rating	Current Rating – 1.5 A @ 20 °C		
2.2.10	Dielectric Withstand Voltage	Dielectric Withstand Voltage, RMS – 1500 Vac @ 60 Hz		
2.2.11	Resistance	Insulation Resistance, minimum – 500 Mohm		
2.3	Category 6A U/UTP Modular Jack			
		Product Description	Make	Model/Part Code
2.3.1	Mention Details	-	-	
	Parameter	Specification	Compliance (Yes/No)	Cross Reference
2.3.2	General	The CAT6A UTP 8-pin modular (RJ-45) jacks shall have be compliant to ISO/IEC 11801 Class EA and ANSI/TIA-568.2-D Category 6A.		
2.3.3		Shall support network line speeds up to at least 10 gigabits per second		
2.3.4		Information outlet shall have IDC connector terminations on rear of base allow quick and easy installation of 22 to 24 AWG cable		
2.3.5		Each outlet shall be supplied with rear protective strain relief cap to protect against contamination and securing the termination.		
2.3.6		Electrical properties	The information outlet shall have a Current Rating of 1.5 A at 20°C	

2.3.7		Insulation Resistance, minimum: 500 Mohm		
2.3.8		Dielectric Withstand Voltage, RMS, conductive surface: 1,500 Vac @ 60 Hz		
2.3.9		Dielectric Withstand Voltage, RMS, contact-to-contact : 1,000 Vac @ 60 Hz		
2.3.10	Mechanical performance:	Material: High-impact, flame retardant, thermoplastic, UL 94V-0 rated		
2.3.11		Shall be Intertek certified for IEC 60603-7 plug performance.		
2.3.12		Plug insertion life, Min: 750 cycles		
2.3.13		Plug retention force, min: 130N		
2.3.14		Should be UL listed		
2.4	2 port Shuttered Faceplate			
		Product Description	Make	Model/Part Code
2.4.1	Mention Details	-	-	
	Parameter	Specification	Compliance (Yes/No)	Cross Reference
2.4.2	Type	Single Gang shuttered		
2.4.3	Material	ABS and UL 94 V-0 rated		
2.4.4	No. of ports	One/Two		
2.4.5	Admin label	Shall have admin label window and supplied with white label and transparent covers.		
2.4.6	ROHS Compliant	ROHS/ELV Compliant		
2.5	CAT 6A U/UTP 23 AWG Cable			
		Product Description	Make	Model/Part Code
2.5.1	Mention Details	-	-	
	Parameter	Specification	Compliance (Yes/No)	Cross Reference
2.5.2	General	CAT6A U/UTP 23 AWG Cable should meet and exceed ANSI/TIA 568.2-D Category 6A and ISO/IEC 11801 Class EA Specifications.		
2.5.3		Shall be certified for IEEE 802.3bt Type 4 requirement (4PPoE) upto 60 Deg C under 4 connector channel configuration.		
2.5.4		Cable shall be constructed with pair separator as well as individual conductor separator.		
2.5.5		The cable shall have U/UTP jacket construction, without any metallic barrier, to mitigate A-NEXT challenges in CAT6A channel.		
2.5.6		Outside diameter	The nominal Outside diameter should be within 7.0 - 7.4mm.	
2.5.7	Electrical properties	Max DC Resistance: <7.61 Ohms/100m		
2.5.8		Max. Operating voltage: 80 V		
2.5.9		Frequency: upto 550 Mhz		
2.5.10		Mutual Capacitance: 6.0 nF/100m @1kHz		
2.5.11		Operating temperature of -20 to 60 °C		
2.5.12		ROHS compliant		

2.5.13	Environmental & Safety features	The cable shall have Low-Smoke, Zero Halogen (LSZH) jacketing and must comply with the following Fire Safety standards:		
2.5.14		1) ISO/IEC 60332-3-22: Vertical Flame Spread		
2.5.15		2) ISO/IEC 60754-2: Acidity		
2.5.16		3) ISO/IEC 61034-2: Smoke Density		
2.5.17		Cable shall be compliant to EN50575 CPR Cable EuroClass and certified for Dca, s2, d2, a1 standards. Certificate should be submitted with bid.		
2.5.18	Certifications and Test Reports	Category 6A cable along with offered channel components should be certified by Intertek lab under 4 connector channel configuration to the requirement of ANSI/TIA 568-C.2 for long channel (100m) as well as short links (<15m). Test Certificates to be provided with bid.		
2.5.19		Cable shall be ETL verified as per ANSI/TIA 568.2-D and ISO/IEC 11801 for CAT6A requirements.		
2.5.20		Factory test reports for CAT6A cable must be available for verification of authenticity, at OEM website with unique print string on individual cable jacket.		
2.6	Horizontal Cable Manager 1U			
		Product Description	Make	Model/Part Code
2.6.1	Mention Details	-	-	
	Parameter	Specification	Compliance (Yes/No)	Cross Reference
2.6.2	Size	1U Finger duct style Horizontal Cable manager		
2.6.3	Material	Material: Carbon steel, Black finish.		
2.6.4	Cover	Should have front snap fit cover		
2.6.5	Duct	Shall have min 12 ducts for patch cord routing.		
2.6.6	ROHS	ROHS compliant		
2.7	Singlemode MPO Module, 2x12F MPO rear ports to 24 LC fiber front ports (12 duplex)			
		Product Description	Make	Model/Part Code
2.7.1	Mention Details	-	-	
	Parameter	Specification	Compliance (Yes/No)	Cross Reference
2.7.2	TIA/IEC Complaint	2x12F MPO rear ports – 12 duplex LC ports front – OS2 Fiber Module complaint to TIA-568.3-D and IEC 61753-1		
2.7.3	Wiring Method	All MPO modules must support ‘Method B’ wiring pattern for ease of scalability.		
2.7.4		Same cassette should be used in both end of the link, without need of flipped or straight wiring management.		
2.7.5		Each front port shall have integrated translucent shutters for easy single handed operation. VFL Test light should be visible through the shuttered ports.		
2.7.6	UL listed	The cassettes shall be UL listed.		

2.7.7		MPO connector end face shall be UPC polished.		
2.7.8	Factory Test report	Factory Test report: Shall be available publicly against unique tracking ID on MPO Module, at OEM website.		
2.8	MPO/APC to MPO/APC, Singlemode Pre-terminated Trunk cable, 12-Fiber-10m length			
		Product Description	Make	Model/Part Code
2.8.1	Mention Details	-	-	
	Parameter	Specification	Compliance (Yes/No)	Cross Reference
2.8.2		Low Loss MPO-12/APC to MPO-12/APC, Pre-terminated, LSZH, Bend Insensitive G.657A1, SM OS2 Trunk Cable		
2.8.3	Cable Standard	Cable shall comply to the standard requirements for ANSI/ICEA S-83-596, Telcordia GR-409, IEC 60794-1 and IEC 60793-2		
2.8.4	Flame rating	Flame rating shall be NEC OFNR-LS (ETL)		
2.8.5		The cable must have the flame test compliance to IEC 60332-3, IEC 60754-2, IEC 61034-2, IEC 383, UL 1666 and UL 1685		
2.8.6	Insertion Loss	Cable MPO connector shall have Max Insertion Loss of 0.7dB		
2.8.7	Return loss	Min Return loss of MPO shall be > 55dB.		
2.8.8	OD	Cable shall have OD of 5.2 – 5.8mm.		
2.8.9	Tensile strength	Tensile strength shall be upto 650N.		
2.8.10		All SM trunk cables must be constructed with peripheral aramid yarns protecting the inner fibers.		
2.8.11	Certification	Cable must be EN50575 CPR Cable EuroClass certified as per Dca, s1a, d1, a1.		
2.9	MPO/APC to MPO/APC, Singlemode Pre-terminated Trunk cable, 12-Fiber-15m length			
		Product Description	Make	Model/Part Code
2.9.1	Mention Details	-	-	
	Parameter	Specification	Compliance (Yes/No)	Cross Reference
2.9.2		Low Loss MPO-12/APC to MPO-12/APC, Pre-terminated, LSZH, Bend Insensitive G.657A1, SM OS2 Trunk Cable		
2.9.3	Cable Standard	Cable shall comply to the standard requirements for ANSI/ICEA S-83-596, Telcordia GR-409, IEC 60794-1 and IEC 60793-2		
2.9.4	Flame rating	Flame rating shall be NEC OFNR-LS (ETL)		
2.9.5		The cable must have the flame test compliance to IEC 60332-3, IEC 60754-2, IEC 61034-2, IEC 383, UL 1666 and UL 1685		
2.9.6	Insertion Loss	Cable MPO connector shall have Max Insertion Loss of 0.7dB		
2.9.7	Return loss	Min Return loss of MPO shall be > 55dB.		
2.9.8	OD	Cable shall have OD of 5.2 – 5.8mm.		
2.9.9	Tensile strength	Tensile strength shall be upto 650N.		
2.9.10		All SM trunk cables must be constructed with peripheral aramid yarns protecting the inner fibers.		

2.9.11	Certification	Cable must be EN50575 CPR Cable EuroClass certified as per Dca, s1a, d1, a1.		
2.10	MODULAR FIBER SLIDING PANEL, 1U			
		Product Description	Make	Model/Part Code
2.10.1	Mention Details	-	-	
	Parameter	Specification	Compliance (Yes/No)	Cross Reference
2.10.2	Capacity & Type	1U sliding fiber panel enclosure, accepts (4) MPO modules, for upto 48 duplex LC (96 fiber) installation		
2.10.3		Fiber shelf shall have front sliding mechanism with ease of access and manageability. Shall have integrated front patch cord management trough.		
2.10.4		Shall have min 18 inches of depth for cable / trunk cord storage.		
2.10.5	Material	Shall be powder coated steel material, UL listed.		
2.11	LC – LC Singlemode OS2, Duplex Fiber Patch Cords, LSZH - 3 meter			
		Product Description	Make	Model/Part Code
2.11.1	Mention Details	-	-	
	Parameter	Specification	Compliance (Yes/No)	Cross Reference
2.11.2	Type	LC/UPC to LC/UPC, Singlemode OS2 G.657A1 bend insensitive Fiber 1.6mm Duplex patch cords.		
2.11.3		Low Smoke Zero Halogen (LSZH) compliant to IEC 60332-3, IEC 60754-2, IEC 61034-2, UL 1666, UL 1685		
2.11.4	Flame Test	Flame Test Listing: NEC OFNR-LS (ETL)		
2.11.5	Connector Optical Performance	Insertion Loss, Typical: 0.3 dB		
2.11.6		Return Loss, minimum: 50.0 dB		
2.11.7	Certification	Cord shall be EN 50575 CPR certified.		
2.11.8	Colour	Patch Cord Jacket color: Yellow.		
2.12	CAT6 Outdoor Armored Cable Specification			
		Product Description	Make	Model/Part Code
2.12.1	Mention Details	-	-	
	Parameter	Specification	Compliance (Yes/No)	Cross Reference
2.12.2	Type	CAT6 UTP 4 pair Outdoor Armored Cable, 23 AWG solid bare copper with cross filler pair separator compliant to ANSI/TIA 568-C.2 and ISO 11801 Class E standard		
2.12.3	Application	Horizontal Cabling, Outdoor duct and buried applications.		
2.12.4		Electrical performance shall meet and exceed TIA CAT6 channel requirements upto min 70 mtr.		
2.12.5	Jacketing	Inner Jacket – PE or PVC, min thickness 0.5mm		

2.12.6		Outer jacket – LSZH, min thickness 1.2 mm		
2.12.7	Outdoor protection	ECCS tape armor, min thickness of 0.125mm		
2.12.8	Cable Jacket OD	10.0 – 12.0 mm		
2.12.9	Conductors	23 AWG solid copper conductors		
2.12.10	Packaging	305 Mtr Reel		
2.12.11	Conductor Resistance	<=9.38 Ohms / 100 Mtr		
2.12.12	Mutual Capacitance	<5.6nF/100m		
2.12.13	Temperature Range	Upto +70 Deg C		
2.12.14	Tensile rating	Upto 1000N		
2.12.15	Crush resistance	Upto 1000N		
2.12.16	Compliance	ROHS compliant.		
3.1	15U Wall Mount Double Section RACK (600mm D x 700 mm W) :			
		Product Description	Make	Model/Part Code
3.1.1	Mention Details	-	-	
	Parameter	Specification	Compliance (Yes/No)	Cross Reference
3.1.2	Material	Racks manufactured out of steel sheet punched, formed, welded and Powder coated		
3.1.3		Powder coated finish with seven Tanks pre-treatment process meeting IS		
3.1.4	ISO	Rack should be from ISO 14001 ,27000 Certified Company		
3.1.5	Side Panel & Top Cover	Standard for Racks configuration will be welded frame with Integrated side panel and vented top cover		
3.1.6	Front Door	Rack should have Front tinted Glass door		
3.1.7	Wall Mount	Rack should have provision to mount racks on Wall		
3.1.8	Dimension	Rack should be 15U(1U = 44.45 mm) in Height.		
3.1.9		It should be minimum 600MM Wide & 700MM Overall Deep i.e. 600mm Front section and 100mm Rear section		
3.1.10	Dual Section	Rack should Two Sections and front Section to be Bolted to back section and Back section Fixed to Wall		
3.1.11	Mounting flexibility	Rack should have Adjustable mounting depth,		
3.1.12		Rack 4 No Adjustable, 19” verticals with Punched 10mm Square Hole and Universal 12.7mm-15.875mm-15.875mm alternating hole pattern offers greater mounting flexibility, maximizes usable mounting space.		
3.1.13	U Position	Rack should have Numbered U positions,		
3.1.14	Industrial standard	Rack should Conform to DIN 41494 or Equivalent EIA /ISO / EN/CEA Standard		
3.1.15		Rack should have 100% assured compatibility with all equipment conforming to DIN 41494 (General industrial standard for equipment)		
3.1.16	FAN	Rack should have Fan module Mount Provision on top Cover with minimum 1 no. 90 CFM Fan		

3.1.17	Power Distribution unit	Rack should have one Server /IT Rack mount power distribution unit, 1Ph, 230V, 16A, 50/60Hz, 2U standard with 6 X Indian Round Pin 5/15A, Inlet Plug type 16A Indian Round Pin, 16A MCB - PDU Rating 3.6KVA/Side feed-1.5Mt/ Black		
3.1.18	General	Rack should have one Hoz. Cable Manager Loop 1U.		
3.1.19		Rack should have one Cantilever shelf.		
3.1.20		Rack should have provision for cable entry Exit from Both top & Bottom.		
3.1.21		Rack should have 1 Packet of mounting hardware, Pack of 20.		
4	DATACENTER & NOC ROOM Preparation - Technical Specification			
	RAISED FLOORING OF DATACENTER			
		Product Description	Make	Model/Part Code
	Mention Details	-	-	
	Parameter	Specification	Compliance (Yes/No)	Cross Reference
4.1	AntiStatic Floor Tiles	<p>Panels, size 600mm x 600mm shall be all Steel welded construction with an enclosed bottom pan of 49 hemispherical cones and 36 reverse cones. The Top plain Sheet is fuse welded to the bottom pan at 117 Locations to form a Panel of an overall thickness of 35 mm. which includes a 1.0 mm thickness Anti-static High pressure Laminate (HPL), factory Laminated on the top surface of the panel and finished on all four sides with edge protective PVC Beading. The 12.5 mm flange on the perimeter is provided with gussets at the four corners to lend additional stiffness and stability to the panels. Panels should support :</p> <p>Uniformly Distributed Load (UDL) of - 3389 kg /Sqmt with a maximum permissible deflection of not more than 1.52 mm as per definition of "Uniform load" of CISCA tested. Load shall be applied on the pneumatic bag as prescribed in CISCA. Concentrated Load- 493 Kg. with a top-surface deflection under load and a permanent set not to exceed , respectively, 2.54 & 0.25 mm (0.10 & 0.010 inch) according to CISCA A/F, Section "Concentrated Loads"</p>		
4.2	Understructure Edge Support Rigid Grid (ESRG) System	Understructure Edge Support Rigid Grid (ESRG) System suitable for finished floor height upto 300mm. Sub structure installed to support the panel shall be suitable to achieve a minimum finished floor height of 200 mm to 625 mm from the existing floor level. The Sub structure assembly shall be anchored to the floor with Adhesive for FFH upto 450 mm.		
4.3	Airplug	Airplug of size (235 x 172mm) with brush - for cable passage at the bottom of each Rack- per piece rate		
4.4	Panel Lifter	Vacuum Panel Lifter		
	FALSE CEILING OF DATACENTER			
4.5	Grid System	Prelude 24mm exposed tee grid system fixtures for fixing Steel tiles - per sqft		

4.6	Ceiling Tiles	Tiles with size 600mm x 600 mm for the Ceiling		
4.7	Ceiling Light	Ceiling Mount 36 Watt LED lighting fixtures with 3100 lumens, dimension 595 mm x 595 mm		
4.8	Aluminium Partition	Wall Partition inside Datacenter using Aluminium Frame of 100 mm thickness and double layer of aluminium sheet of thickness 12 mm		
4.9	Aluminium Partition	Wall Partition inside Datacenter using Aluminium Frame of 100 mm thickness and double layer of aluminium sheet of thickness 12 mm		
4.10	Glass Door	Toughned Glass Door for NOC Room size 4 feet x 8 feet, Toughned Glass thickness : 20 mm, Aluminium Frame for the door should be powder coated with thickness of aluminium frame : 100 mm to be connected with door Hinge, door closer and Mortise Lock with door handle.		
4.11	Entry Door to Datacenter - Steel Fire Rated Single Leaf Door Set - UIN-IS/BS-120 minute- 1,200X2,400 mm			
4.11.1		Product Description	Make	Model/Part Code
	Mention Details	-	-	
	Parameter	Specification	Compliance (Yes/No)	Cross Reference
4.11.2	Frame	Frame Set should be GI 1.60 mm, Profile - 143 mm X 57 mm, Profile Type - Normal, Miter Joint, Rebate : Double		
4.11.3	Shutter	Shutter should be GI 1.20 mm, Active Shutter Width: 1,108 mm, Door Type: Single Leaf, Infill Material: Honey Comb Craft		
4.11.4	Panel	Vision Panel Kit		
4.11.5	Hinge	Ball Bearing Butt Hinge, 4330, SS304 of Size 100X75X3mm with Screw in SSS-Guardian/Hormann		
4.11.6	Lock	Mortise Sash Lock, H11, 55mm BS, 20mm Sq. Forend, SSS -Hormann		
4.11.7		Euro Profile 5 Pin Cylinder 5701, 70mm Key X TT, NP Finish - Hormann		
4.11.8	Handle	Should be Lever Handle LT001 with Rose and Escutcheon SSS - Hormann		
4.11.9	Door Closer	Door Closer should be HDC03 EN 3 with Standard Arm Silver - Hormann		
4.11.10	Glass	Should be Clear Fire Rated Glass, 6mm, for 120min - Schott Pyran S - 200mm X 300mm		
4.11.11		Gasket, Fire Rated 4mm Thick X 13mm, Black		
4.11.12	Installation Kit	Installation Kit should include Fixing Shield & Other Misc Items		
4.12	Fire Exit Door from Datacenter Room : Steel Fire Rated Single Leaf Door Set - UIN-IS/BS-120 min - 1480 mm x 2500 mm with Panic Bar			
4.12.1		Product Description	Make	Model/Part Code
	Mention Details	-	-	
	Parameter	Specification	Compliance (Yes/No)	Cross Reference

4.12.2	Frame	Frame Set should be GI 1.60 mm, Profile - 143 mm X 57 mm, Profile Type - Normal, Miter Joint, Rebate : Double		
4.12.3	Shutter	Shutter should be GI 1.20 mm, Active Shutter Width: 1,358 mm, Door Type: Single Leaf, Infill Material: Honey Comb Craft		
4.12.4	Hinge	Ball Bearing Butt Hinge, 4330, SS304 of Size 100X75X3mm with Screw in SSS		
4.12.5	Panic Latch	Single Point Surface Panic Latch, XDB5760SV, Silver Finish		
4.12.6	External Handle	External Lever Handle, 1185, with Locking Arrangement, Silver Finish		
4.12.7	Door Closer	Door Closer Should be HDC03 EN 3 with Standard Arm Silver		
4.12.8	Installation Kit	Installation Kit should include Fixing Shield & Other Misc Items		
4.13	Main Entry Door to Datacenter : Steel Fire Rated Single Leaf Door Set - UIN-IS/BS-120 Min - 1480 mm X2500 mm			
		Product Description	Make	Model/Part Code
4.13.1	Mention Details	-	-	
	Parameter	Specification	Compliance (Yes/No)	Cross Reference
4.13.2	Frame	Frame Set should be GI 1.60 mm, Profile - 143 mm X 57 mm, Profile Type - Normal, Miter Joint, Rebate : Double		
4.13.3	Shutter	Shutter should be GI 1.20 mm, Active Shutter Width: 1,358 mm, Door Type: Single Leaf, Infill Material: Honey Comb Craft		
4.13.4	Panel	Vision Panel Kit		
4.13.5	Hinge	Ball Bearing Butt Hinge, 4330, SS304 of Size 100X75X3mm with Screw in SSS-Guardian/Hormann		
4.13.6	Lock	Mortise Sash Lock, H11, 55mm BS, 20mm Sq. Forend, SSS -Hormann		
4.13.7		Euro Profile 5 Pin Cylinder 5701, 70mm Key X TT, NP Finish - Hormann		
4.13.8	Handle	Should be Lever Handle LT001 with Rose and Escutcheon SSS - Hormann		
4.13.9	Door Closer	Surface Door Closer should be HDC 35 Slide Arm, Silver Finish - Hormann		
4.13.10	Glass	Should be Clear Fire Rated Glass, 6mm, for 120min - Schott Pyran S - 450mm X 750mm		
4.13.11		Gasket, Fire Rated 4mm Thick X 13mm, Black		
4.13.12	Installation Kit	Installation Kit should include Fixing Shield & Other Misc Items		
5	OEM ELIGIBILITY CRITERIA FOR DATACENTER SOLUTIONS/PRODUCTS			
	Eligibility Criteria		Compliance (Yes/No)	Cross Reference

	Proposals not complying with minimum eligibility criteria, as enumerated below, will be rejected and will not be considered for evaluation of technical bid. The proposal should adhere to the following minimum eligibility criteria:			
a	Cooling, UPS,PPDU, KVM and monitoring system should be from single OEM			
b	(DX) In row air conditioning unit using refrigerant R407C/R410a & inbuilt Humidifier. Test certificate shall be submitted prior to shipment			
c	The OEM must have designed and executed minimum three Data Centre projects on a turnkey basis with Tier compliance for a third party customer, adhering to Data centre standards during the last 5 years from the of bid submission date			
d	The OEM should have at least three qualified and experienced DC certified professionals like CDCP/CDCS/CDCE/ATD on their company payroll with minimum 3 years' experience in Data Centre designing and implementation			
e	OEM or Manufacturer should be ISO 9001:2015, ISO 14001:2015, ISO 27001:2013, ISO 45001:2018 & OSHAS Certified.			
f	OEM or Manufacturer of the offered goods/ equipment's should be a company registered under the companies Act since last 10 years. Valid company registration certificate should be submitted			
g	OEM of Datacenter Equipments must have their own services center at North East States. Complete postal address with contact details must be provided on request.			
h	The DatacenterOEM must have manufacturing and Engineering facility in India for cooling & UPS solutions for Data Center.			
i	The Datacenter OEM shall be present in Gartner Competitive Landscape Research Report for Edge in the Micro Modular Data Center Market as Leader in Data Center Facilities Specialist.			
5.1	TECHNICAL SPECIFICATIONS FOR DATACENTER INFRASTRUCTURE			
		Product Description	Make	Model/Part Code
5.1.1	Mention Details	-	-	
	Parameter	Specification	Compliance (Yes/No)	Cross Reference
5.1.2	Scope of Work	This specification covers intelligent integrated/inbuilt infrastructure, standalone system design, engineering, manufacture, assembly, testing at manufacturer's works, supply, delivery at site, unloading, handling, proper storage at site, erection, testing and commissioning at site of complete infrastructure for the proposed Data Centre to be installed at NIT Meghalaya, as detailed in the specification, complete with all accessories required for efficient and trouble free operations		
5.1.3	Design	Modular and scalable design for power and cooling: All the components used to design the system should be redundant and in the Events of failure the components can be maintained easily.		

5.1.4		Intelligent Integrated Infrastructure with inbuilt min 400 mm each hot and cold aisle containment of 6 racks should cater IT load up to 18 KW Both Hot & Cold aisle containment should be part of the rack frame		
5.1.5	Requirement	Intelligent Integrated Infrastructure essentially should include internal redundant or backup power supplies, environmental controls (Precision air conditioning, fire suppression, smoke detection, Water leak detection and humidity sensors), and security devices. Critical systems like UPS should have N+N redundant topology and Precision Air-conditioning systems should have N+Nredundant topology respectively. Environmental monitoring shall be done from IP based software with Graphical display or HMI.		
5.1.6		The detail specifications of the intelligent integrated/inbuilt infrastructure, standalone system shall be in adherence to standard Data Centre guidelines thus shall be composed of multiple active power and cooling distribution paths, but only one path active. Shall have redundant components		
5.1.7		The Intelligent integrated Infrastructure shall have following components:-		
5.1.8	Rack U Space	Intelligent racks should have Min 242 U(total) space available for IT equipment's and network equipment & with UPS inside the racks and battery externally placed at UPS room		
5.1.9		RACKS		
5.1.10		42 U racks of dimension 800 mm x 1000 mm, 02 numbers		
5.1.11		42 U racks of dimension 600 mm x 1000 mm, 04 numbers		
5.1.12		Each rack should be with integrated hot & cold aisle containment of minimum 300 mm each. Both Hot & Cold aisle containment should be part of the rack frame.		
5.1.13		Monitoring		
5.1.14		Each set of Integrated racks should have IP based monitoring facility of all the passive parameters inside racks with touch screen graphical display as HMI.		
5.1.15		Capable for Email Alerts		
5.1.16		Other Features		
5.1.17		The Intelligent integrated infrastructure would provide much functionality and some of the key functionalities are - Cold aisle & hot aisle contained, Fire rated cabinet, insulation, remote Management and single OEM for UPS, PAC, KVM, Environmental monitoring & PDU.		
5.1.18		Intelligent integrated infrastructure would have provision to add an extra rack in future. It should be flexible, adaptable, controllable infrastructure.		

5.1.19		Biometric access control system provided should be controlled by access control panel		
5.1.20		Cooling, UPS , PDU , KVM and monitoring system should be from single OEM		
5.1.21		Rodent Repellent System		
5.1.22		The entire intelligent infrastructure should be protected by sufficient numbers of rodent Repellent system		
5.1.23		Racks & Accessories		
5.1.24		Rack Containment Frame is 42 U, 19'' mounting type with standard Rack + Cold & Hot Aisle Containment		
5.1.25		Rack frame is, scalable and modular with safe load carrying capacity of 1000 Kg		
5.1.26		Color shade of Rack is RAL 7021		
5.1.27		Base plinth with 100 mm height		
5.1.28		Cable entry provision from top & bottom both side of rack		
5.1.29		Cut outs with rubber grommet on top and bottom cover of rack for cable entry		
5.1.30		Vertical Cable manager on both LHS & RHS on rear side		
5.1.31		Front & Rear glass door for complete 42U height visibility		
5.1.32		Thermally insulated cold aisle chamber		
5.1.33		Blanking panels to prevent air mixing		
5.1.34		Fixed Shelf to be provided		
5.1.35		Plastic Cable duct on vertical LH & RH section of racks for cable routing		
5.1.36		Front Rack doors to be provided with Biometric Access Control with 02 nos. of Electromagnetic lock per door		
5.1.37		Gas spring to be provided on front doors of racks		
5.1.38		LED light to be provided on each rack with status based coloring scheme.		
5.1.39		Power Distribution		
5.1.40		Rack PDU (Vertical) - with 16 sockets (12 IEC C13 & 4 IEC C19)-02 Nos. for each Rack with 2.5 mtr. power chord (each rack is having two PDU's).		
5.1.41		Main Electrical Panel and Cabling		
5.1.42		DB panel should be mounted on to utility rack only with all internal cabling integrated into the same. Essential MCB/MCCB should be provided with electrical system with Energy meter for monitoring the electrical parameters through centralized monitoring system. . DB panel mounted on Utility rack shall be covered with Novec 1230 Gas based fire suppression system.		
5.1.43		Fire Detection and Suppression		

5.1.44		Fire detection and suppression system : Fire detection and suppression system should be mounted in panel adjacent to Smart Racks to avoid consumption of any usable U space an In-rack built-in feature of solution. It should have Fire alarm and fire suppression unit and the fire suppression agent should be NOVEC 1230 Gas as per NFPA 2001 guidelines.		
5.1.45		VESDA system must be provided for better sensitivity		
5.1.46		Environmental Controls		
5.1.47		Each set of intelligent rack should include basic environmental controls:		
5.1.48		Smoke Detector		
5.1.49		Water Leak Detection system		
5.1.50		Temperature/ Humidity Sensor with LCD display with 06 Temp. sampling point per rack		
5.1.51		Door Sensor		
5.1.52		Alarm beacon		
5.1.53		Power monitoring & current PUE on touch screen display		
5.1.54		In-Row closed loop Air-Conditioning		
5.1.55		Data center server and network racks should be equipped with In-row Variable / digital scrollcooling units to provide closed loop precision cooling system which should be able to cool the equipment's uniformly right from 1st U to 42nd U of Rack		
5.1.56		Precision Air Conditioning System of 20 kW Capacity (N+N)		
5.1.57		Precision Air Conditioner should have following Features: <ul style="list-style-type: none"> • Cooling System should be DX (Variable) type in N+N Topology • Inbuilt Heater and Humidifier to cater IT load up to 18 kw • The compressor should achieve the capacity modulation by adjusting the vertical positioning of the orbital scroll with respect to the fixed scroll inside the compressor. By varying the time of “loaded state” and “unloaded state” of the scroll element, the required capacity should be obtained. • Outdoor Unit 		
5.1.58	Configuration	Supply, installation, testing and commissioning of DX Type Air-conditioning units designed specifically for high sensible heat ratio with variable cooling technique to match the low latent loads of systems to be installed in the integrated cabinet for effective and uniform distribution of cooling.		
5.1.59	Cooling Circuits			
5.1.60		One refrigeration circuit, incorporating a high efficiency, fully hermetic variable capacity compressor with crankcase heater, safety valve, filter drier, moisture indicating sight glass, liquid line solenoid valve and an externally equalized expansion valve.		

5.1.61		Each compressor is equipped with pre-set high and low pressure switches for protection against high condensing and low evaporating temperatures. The low pressure switch features an automatic reset (with an adjustable delay for winter start-up).		
5.1.62		<ul style="list-style-type: none"> • Compressor should be capable of modulating its capacity from 20% to 100%. The compressor should be supplied along with an external solenoid valve. When the solenoid valve in its normally closed position, the compressor should operate at full capacity & when the solenoid valve gets energized, the two scroll elements should move apart axially. During the unloaded state, the compressor motor should continue to run, but since the scrolls will be separated, there will be no compression. A capacity modulation cycle should consist of a loading and unloading state. By varying the time of “loaded state” and “unloaded state”, an average capacity should be obtained. 		
5.1.63		The unit shall be provided with additional protection against high ambient temperature. When the temperature goes over the design conditions, the unit remains in operation with partial load (20% decrease against required). If such protection is not sufficient High Pressure switch shall generate an high pressure alarm and the unit shuts down - manual reset shall be required.		
5.1.64		The moisture indicating sight glass, liquid line solenoid valve and expansion valve for each circuit are mounted in a service compartment, isolated from the air stream, to allow checking and adjustment while the unit is in operation.		
5.1.65	Fan Section	Units is offered with two plug EC Direct Drive Fan, High efficiency, external rotor electronically commutated (EC) motor with integrated electronics, True soft start characteristics (inrush current lower than operating current), Backward curve, corrosion resistant aluminum fan wheel, Maintenance free design and construction. The fan section shall be designed for higher air flow. The fan shall be protected over temperature of motor, electronics, locked rotor protection, short circuit of motor output. Fans are IP54, Protection class F.		
5.1.66	Cabinets & Fans	The unit shall be powder painted panels with ½” (or 10mm) insulation. A hinged control access panel opens to a second front panel which is a protection enclosure for high voltage components. The frame is painted with a powder coat finish to protect against corrosion. The unit is totally front and rear accessible including any component removal.		

5.1.67	Air Filtration	The filter cells are made of two deep pleated 4” filters rated MERV8 following ASHRAE 52.2 (45% by ASHRAE 52.1) or G4 following EN779, located within the cabinet, and accessible from the rear of the unit. Frame of the filter shall be made of galvanized steel.		
5.1.68		Optional filters are available: MERV11 following ASHRAE 52.2-1999 (45% by ASHRAE 52.1-1992) or F5 following EN779.		
5.1.69		Clogged filter alarm is available for standard and for optional filter. It sends a visual alarm to display.		
5.1.70	Refrigerant	All units equipped with direct expansion circuit are suitable for R410A refrigerant.		
5.1.71		Microprocessor Controller shall support following :		
5.1.72		Air conditioning models should be controlled by microprocessor based controller. It can be programmed to control the function of every device within the unit via I/O.		
5.1.73		The controller allows setting and monitoring of the room parameters. Unit utilizes multiple temperature sensors placed at the rack inlet, to ensure management and control of temperature by rack. Each unit should be connected up to 10 Sensors.		
5.1.74		The controller should allow setting and monitoring of the following space parameters:		
5.1.75		Air inlet Temperature & Air supply Temperature (remote sensors at rack inlet)		
5.1.76		Return Temperature set-point & Supply Temperature set-point		
5.1.77		Return Temperature band & Supply Temperature band		
5.1.78		Humidity (inlet), Humidity set-point & Humidity band		
5.1.79		Rack Min, Max and Average temperature		
5.1.80		The example of available warnings / alarms: o High supply temperature & Low supply temperature o High return humidity & Low return humidity o Loss of airflow o Compressor Low Pressure & Compressor High Pressure o Clogged filter o LP transducer fail o High temperature (customer input) o Unit hours exceeded o Compressor hours exceed & Humidifier hours exceed o Supply sensor failure & Network failure o Humidifier problem , Digital scroll high temperature, Smoke detected Fire alarm, Rack sensor failure,etc.		

5.1.81		<p>Following features should be incorporated in the controller:</p> <ul style="list-style-type: none"> o Status Report of the latest 400 event-messages of the unit. o Input for remote on-off and volt-free contacts for simple remote monitoring of low and high priority alarms: high/low temperature, high/low refrigerant pressure, fan/control failure, compressor/control failure and others are available o LAN management: functions provided as standard include stand-by (in case of failure of the unit in operation, the second one starts automatically), and automatic rotation. At least one unit in the LAN has to be equipped with ColdFire large display o Automatic restart is provided after a power failure. 		
5.1.82	Monitoring	<ul style="list-style-type: none"> • There should be SNMP and HTTP/Web-management capability for enhanced communications and control of HPM systems. The cards make use of an Ethernet network (10/100Mbit) to monitor and control a wide range of operating parameters, alarms and notifications thanks to a standard web browser (Internet Explorer). The card utilizes standard Ethernet cables (different cable lengths are available for your convenience on the Connectivity price list). • The unit shall also include input volt-free contacts for simple remote monitoring of low and high priority alarms: high/low temperature, high/low refrigerant pressure, fan/control failure, compressor/control failure and others are available. 		
5.1.83	Condenser	<ul style="list-style-type: none"> • The condenser should be with fan speed controller designed & set for usages of R410A refrigerant. Condenser should be worked -20 deg C to 46 deg C ambient temperature. The condenser frame shall be made up of a sturdy GI structure. The motorized fan shall be IP54, protection class F 		
5.1.84	Humidifier	<ul style="list-style-type: none"> • The unit should be fitted with an canister type steam humidifier suitable for use with water of varying degrees of hardness, provided that the water is not treated or demineralized (Conductivity range 125-500mS/cm). The humidifier is complete with a water inlet valve, water outlet valve and a maximum water level sensor, disposable cylinder, steam distributor and electronic controls. Humidifier control is of the ON-OFF type, can be also disabled by remote contact (Optional - humidifier and reheat lockout). Humidifier is removable from the rear of the cabinet. 		
5.1.85		Safety and Security Systems		
5.1.86		Biometric Based Access Control		

5.1.87		<p>The IP based Access Control System shall be used to serve the objective of allowing access to authorized personnel only. The system deployed will be based on Biometric Technology. The front rack doors will be provided with magnetic locks, and will operate on fail-safe principle through one common Biometric access control system. Rear doors will be operated through mechanical lock & key mechanism.</p> <p>The system would be designed and implemented to provide following functionality:</p> <ul style="list-style-type: none"> • Configurable system for user defined access • Built-in Real Time Clock (RTC), calendar; complete Database stored locally and shall be capable of operating offline on standalone mode • Record, report and archive each and every activity (permission granted and / or rejected) with log formats • Fail safe operation in case of no-power condition and abnormal condition such as fire, theft, intrusion, loss of access control, etc. • At the biometric reader, user presents the finger to the biometric reader which is unique to each employee. The pattern is read and compared with stored data to grant / deny access. <p>Rack based Biometric access control system provided should be controlled by common access control panel with control for both front as well as rear doors. IP based Access control with user exclusive authentication</p>		
5.1.88		Fire Alarm and Fire Suppression System		
5.1.89		<p>The integrated infrastructure solution should be designed as a complete stand-alone unit with security, fire detection and fire suppression systems. Each of the systems is inter-operable and inter connected.</p> <p>Environmentally friendly NOVEC 1230 agent is used to ensure that no harm to human beings and environment is caused.</p> <p>Following systems should be installed.</p> <ul style="list-style-type: none"> • NOVEC 1230 Clean Agent for fire suppression system • Fire detection and alarm systems, with detectors and panel. • Access control system. • Protected area: The entire enclosed volume of the Intelligent Rack containment is protected with fire detection and fire suppression system. The doors are secured by Access Control system. • The NOVEC 1230 system is designed and installed as per NFPA 2001-2012 Edition. SMPV, Petroleum and Safety Explosives Organization (PESO) approved cylinder filled with NOVEC 1230 is installed in specially designed Modular rack. • VESDA system 		
5.1.90		Monitoring		

5.1.91		Supply and installation rack mountable monitoring system with Sensors & notification system. The system shall continuously collects critical information from network connected devices such as UPS system, Cooling Units , temperature & humidity sensors, Door sensors, Water Leak sensor and other dry contact monitoring. Beacon & Buzzer-Sound and Flash Led Alarm. Based on pre-set parameters, automated email alerts are sent to the intended recipients Intelligent Rack environment remote monitoring Modbus 485 Communications SNMP Communication Single window for monitoring all sensors Data and logs of historical information of alarms and notification Temperature & Humidity Sensor, with LCD display and RJ45 connector Door opening sensor with RJ 45 connector Water leak detection sensor with RJ45 connector Smoke detection sensor with RJ45 connector Alarm device with LED flash and sound option		
5.1.92		HMI – Smart Racks Graphical Interface		
5.1.93		Smart Racks should have functionality to graphically monitor the passive infrastructure ---- 1) 9-inch widescreen HMI display with a very user-friendly interface 2) It should be menu driven system, Thermal management, Power supply environmental quantities, alarms, logs, and provided a total of menu items, breakdown of the sub-menu item the next menu level, 3) First authorization on LCD, is only authorized once, authorized system will automatically skip the authorization page while booting 4) System Configuration page includes integrated cabinet configuration 5) Home page presents system function information (Such as Date & Time ex.), system performance parameters and critical system parameters		
5.1.94		Electrical Distribution board within Utility Cabinet to have fire detection & Novec Based Fire Suppression system		
5.1.95				
5.1.96	20 KVA UPS - Technical Specifications			
5.1.97		Product Description	Make	Model/Part Code
5.1.98	Mention Details	-	-	
5.1.99	Parameter	Specification	Compliance (Yes/No)	Cross Reference

5.1.100		Supply, install, test and commissioning of true online, double conversion, high efficiency, and high power factor Uninterruptible Power Systems (UPS) rated at 2 x 20 KVA with battery backup support for combined 60 minutes minimum 18144 VAH on each UPS on full load. UPS shall be rack / tower convertible & The backup batteries should be supplied with the necessary arrangements to mount outside the cabinet at UPS room.		
5.1.101		Scope of work for UPS		
5.1.102		The scope shall include design, supply, installation, testing and commissioning of the complete UPS system and related accessories including:		
5.1.103		All Server racks will get power feed from two independent 20 KVA UPS systems to ensure redundancy.		
5.1.104		All systems should be tested in factory as per the manufactures recommended procedure for all operating parameters and the test results should be provided during the installation.		
5.1.105				
5.1.106		Specification / features of the Each UPS system are as follows:		
5.1.107		<ul style="list-style-type: none"> • Widest input range. - • Double conversion and IGBT technology. - • Full IGBT Rectifier / Battery charger - • IGBT based Inverter - • Batteries to support combined 120minutes full load backup. Power distribution panels • Facility for remote viewing • Easy to expand in a cost effective way 		
5.1.108		UPS other technical specification		
5.1.109	General			
5.1.110	Capacity	20 kVA.		
5.1.111	Input Parameters			
5.1.112	Rectifier Type	IGBT Rectifier		
5.1.113	Rated Voltage	400 Vac Three Phase Four Wire		
5.1.114	Input Voltage Range	Single Phase 100Vac-288Vac		
5.1.115	Input Freq Range	40 Hz-70Hz		
5.1.116	Input Power Factor	>=0.99 for Single Phase/0.95 for Three Phase		
5.1.117	THDi	<5%		
5.1.118	Battery			
5.1.119	Battery Type	Lead Acid Maintenance Free		
5.1.120	Charging Capability.	13A		
5.1.121	No of Battery	24*,32,40		
5.1.122	Output Parameters			
5.1.123	Rated Power	20kVA/20kW		

5.1.124	Rated Voltage	Three Phase 380/400/415 Vac and Single Phase 230/220 Vac.		
5.1.125	Output PF	Unity		
5.1.126	Voltage Stability	1%		
5.1.127	Output Frequency	50 Hz/ 60 Hz		
5.1.128	Frequency Precision	0.25%		
5.1.129	Output Voltage THD	<2% for Linear Load and <5% for Non Linear Load		
5.1.130	Load Crest Factor	3:1 Comply with IEC 62040-3		
5.1.131	Step Load Performance	100%		
5.1.132	Output Mode	Terminal Strip		
5.1.133	Programmable outlets			
5.1.134	Overload Performance (% of Rated Load)	105%-125% 5 Mins, 125%-150% 1Min, 500ms for >150%		
5.1.135		System parameters and Standards		
5.1.136	Conversion Type	Online Double Conversion		
5.1.137	Parallel Mode	3+1		
5.1.138	Installation Mode	Rack/Tower Convertible		
5.1.139	System Efficiency	96%		
5.1.140	Switching Time	0 msec		
5.1.141	Noise	>58dB		
5.1.142	LCD Display	Graphical gravity sense display		
5.1.143	Safety	<u>IEC/EN62040-1-1</u>		
5.1.144	Electromagnetic Compatibility	IEC/EN62040-2, IEC/EN61000-3-11, IEC/EN61000-3-12, YD/T1095-2008		
5.1.145	Surge Protection	IEC/EN62040-2, meeting IEC/EN61000-4-5		
5.1.146	Certifications			
5.1.147	Energy star	As per UL approved		
5.1.148	EMI/EMC	CE certified as per IES/EN 62040 standard		
5.1.149	ROHS	Yes		
5.1.150	ProtectionLevel	IP20		
5.1.151	Interface Type	USB/Intelligent Slot (Dry Contact Card/SIC Card/Modbus Card/RS485 Card)		
5.1.152	SNMP card	Integrated in UPS		
5.1.153	Management Software	Site Monitor		
5.1.154	Environmental Parameters			
5.1.155	operating Temp	0-50 Degree Celsius**		
5.1.156	Relative Humidity	0-95% Without Condensation		
5.1.157	Max Altitude	<3000 meters		
5.1.158	Protection	IP20		

5.1.159	MONITORING SOFTWARE	SNMP, Dry contact card, site monitoring / shutdown for multiple servers		
5.1.160	16 Port IP KVM Switch and 18.5' LCD Monitor -Technical Specifications			
5.1.161		Product Description	Make	Model/Part Code
5.1.162	Mention Details	-	-	
5.1.163	Parameter	Specification	Compliance (Yes/No)	Cross Reference
5.1.164		Proposed 18.5" LCD console tray and 16 port IP KVM switch should be built in design and should occupy 1U space in 19" standard rack.		
5.1.165		It should have cable management arm(CMA) and the <8/16> port KVM switch built in at the rear side of the LCD console tray to save the U space in Rack.		
5.1.166		KVM switch should not have push button since it is not operable from front side in rack.		
5.1.167		Both LCD console tray and the built-in KVM switch should have separate power supply.		
5.1.168		16 number of KVM cables with VGA, USB connectors must have LEDs to indicate Power status.		
5.1.169		Built-in KVM switch should have 16 RJ45 port to connect KVM cable/dongle with CAT cable extension at least upto 30Mt		
5.1.170		Supplied KVM cables should support Virtual media to map USB media devices to target servers remotely over TCP/IP.		
5.1.171		Built it KVM switch should have encryptions including 128-bit SSL, AES, DES and 3DES and they can be selected for keyboard, mouse and video signals and virtual media sessions.		
5.1.172		LCD display should support brightness 250 cd /m2, contract ratio 1000:1 and 16.7million colours		
5.1.173		LCD console tray and built in KVM switch should support max resolution 1600 x 1200 at 60 Hz.		
5.1.174		LCD console tray should have 103 key keypad with numpad and touchpad.		
5.1.175		It should have two independent USB 2.0 compliant pass through ports at front side.		
5.1.176		LCD console tray should be global certified by agencies UL, CE, CCC, BSMI, C-Tick, EAC, VCCI, KCC, FCC Class A		
6.1	TECHNICAL SPECIFICATIONS FOR 10 KVA Online UPS			
		Product Description	Make	Model/Part Code
6.1.1	Mention Details	-	-	

	Parameter	Specification	Compliance (Yes/No)	Cross Reference
6.1.2	Capacity	10 kVA.		
6.1.3	Input Parameters			
6.1.4	Rectifier Type	IGBT Rectifier		
6.1.5	Rated Voltage	400VAC 3-phase,4-wire		
6.1.6	Input Voltage Range	Three phase 175VAC -498VAC		
6.1.7	Input Freq Range	40 Hz-70Hz		
6.1.8	Input Power Factor	>=0.99 for Single Phase/0.95 for Three Phase		
6.1.9	THDi	<5%		
6.1.10	Battery			
6.1.11	Battery Type	Lead Acid Maintenace Free		
6.1.12	Charging Capability.	8A		
6.1.13	Back Up time	60 Minutes		
6.1.14	VAH required	15600		
6.1.15	No of Battery	12*,16, 20		
6.1.16	Output Parameters			
6.1.17	Rated Power	10kVA/10kW		
6.1.18	Rated Voltage	Single Phase 230/220 Vac.		
6.1.19	Output PF	Unity		
6.1.20	Voltage Stability	2%		
6.1.21	Output Frequency	50 Hz/ 60 Hz		
6.1.22	Frequency Precision	0.25%		
6.1.23	Output Voltage THD	<2% for Linear Load and <5% for Non Linear Load		
6.1.24	Load Crest Factor	3:1 Comply with IEC 62040-3		
6.1.25	Step Load Performance	100%		
6.1.26	Output Mode	Terminal Strip		
6.1.27	Programmable outlets	No		
6.1.28	Overload Performance (% of Rated Load)	At 25°C: 105% ~ 125%- 5min; 125% ~ 150%-1min; 150%- more than 200ms		
6.1.29	Isolation Trasnformer	Inbulit at the output Side		
6.1.30	System parameters and Standards			
6.1.31	Conversion Type	Online Double Conversion		
6.1.32	Parallel Mode	3+1		
6.1.33	Installation Mode	Tower Mount		
6.1.34	System Efficiency	>91%		
6.1.35	Switching Time	0 msec		
6.1.36	Noise	<65dBA		
6.1.37	LCD Display	Graphical gravity sense display		
6.1.38	Certifications			
6.1.39	Safety(CE)	IEC/EN62040-1-1(Module level)		

6.1.40	Electromagnetic Compatibility(CE)	IEC/EN62040-2, IEC/EN61000-3-11, IEC/EN61000-3-12, YD/T1095-2008 (Module level)		
6.1.41	Surge Protection	IEC/EN62040-2, meeting IEC/EN61000-4-5 (Module level)		
6.1.42	Energy star	As per UL approved(Module level)		
6.1.43	ROHS	Yes (Module level)		
6.1.44	ProtectionLevel	IP20		
6.1.45	Dimension (mm)	W*D*H (mm): 550 X 620 X 700		
6.1.46	Net Weight (kg)	138		
6.1.47	Communication and Management			
6.1.48	Interface Type	USB/Intelligent Slot (Dry Contact Card/SIC Card/Modbus Card/RS485 Card)		
6.1.49	SNMP card	Integrated in UPS		
6.1.50	Management Software	Site Monitor		
6.1.51	Environmental Parameters			
6.1.52	operating Temp	0-50 Degree Celsius**		
6.1.53	Relative Humidity	5%RH ~ 95%RH, non-condensing		
6.1.54	Max Altitude	<3000 meters		
6.2	TECHNICAL SPECIFICATIONS FOR 1 KVA Online UPS			
		Product Description	Make	Model/Part Code
6.2.1	Mention Details	-	-	
	Parameter	Specification	Compliance (Yes/No)	Cross Reference
6.2.2	Capacity	1 kVA.		
6.2.3	Input Parameters			
6.2.4	Rectifier Type	IGBT Rectifier		
6.2.5	Rated Voltage	208/220/230/240 Vac 1 phase		
6.2.6	Input Voltage Range	170Vac / 150Vac/ 130Vac / 100Vac +/-5%, (based on load percentage 100%-80% / 80% -70% / 70-60% / 60% -0)		
6.2.7	Input Freq Range	40 Hz-70Hz		
6.2.8	Input Power Factor	>=0.99 for Single Phase		
6.2.9	THDi	<5%		
6.2.10	Battery			
6.2.11	Battery Type	Lead Acid Maintenace Free		
6.2.12	Charging Capability.	8A		
6.2.13	No of Battery	12V/ 9 AH, 2 nos		
6.2.14	Output Parameters			

6.2.15	Rated Power	1kVA/0.8kW		
6.2.16	Rated Voltage	Single Phase 230/220 Vac.		
6.2.17	Output PF	0.8		
6.2.18	Voltage Stability	1%		
6.2.19	Output Frequency	50 Hz/ 60 Hz		
6.2.20	Frequency Precision	0.25%		
6.2.21	Output Voltage THD	<3% for Linear Load and <6% for Non Linear Load		
6.2.22	Load Crest Factor	3:1 Comply with IEC 62040-3		
6.2.23	Step Load Performance	100%		
6.2.24	Output Mode	Output receptacles		
6.2.25	Programmable outlets	Yes		
6.2.26	Overload Performance (% of Rated Load)	105% to 125% - 5min to bypass, 125% to 150% - 1min to bypass 150% to 200% - 10sec to bypass, >200% up - 250msec to bypass		
6.2.27	System parameters and Standards			
6.2.28	Conversion Type	Online Double Conversion		
6.2.29	Parallel Mode	NA		
6.2.30	Installation Mode	Rack Mount		
6.2.31	System Efficiency	86.0%		
6.2.32	Switching Time	0 msec		
6.2.33	Noise	<50dBA		
6.2.34	LCD Display	Graphical gravity sense display		
6.2.35	Certifications			
6.2.36	Safety(CE)	EN 62040-1-1 : 2003 : Safty		
6.2.37	Electromagnetic Compatibility(CE)	EN62040-2 -2006 :EMC		
6.2.38	Surge Protection	IEC/EN62040-2, meeting IEC/EN61000-4-5		
6.2.39	Energy star	As per UL approved		
6.2.40	ROHS	Yes		
6.2.41	ProtectionLevel	IP20		
6.2.42	Dimension (mm)	D x W x H (mm): 380x438x88(2U)		
6.2.43	Net Weight (kg)	12.9		
6.2.44	Communication and Management			
6.2.45	Interface Type	SNMP, Relay Card & Modbus Card, ViewPower Pro Software (there is only one communication slot)		
6.2.46	SNMP card	Power management from SNMP manager and web browser		
6.2.47	Management Software	Site Monitor		

6.2.48	Environmental Parameters			
6.2.49	operating Temp	0-40 Degree Celsius**		
6.2.50	Relative Humidity	20%RH ~ 95%RH, non-condensing		
6.2.51	Max Altitude	<1000 meters		
7	IP Based Access Control Systems - Technical Specification			
7.1	Entry Card Reader Specification			
		Product Description	Make	Model/Part Code
7.1.1	Mention Details	-	-	
	Parameter	Specification	Compliance (Yes/No)	Cross Reference
7.1.2	Basic	The Reader is fully integrated combined IP card reader and controller and having Using a powerful 32-bit processor,		
7.1.3	Offline Operation	A full offline database is downloaded to the reader from the host server with subsequent changes to cardholder data automatically sent as updates.Reader Shall have facility to ensures the reader has up-to-date card information when operating in offline mode.		
7.1.4	Inputs	Four analog inputs —voltage supplied, four state (tamper detect)		
7.1.5	Outputs	Two relays fitted —Changeover volt free contacts		
7.1.6	To Exit Reader	RS-485		
7.1.7	Interfaces	Single Wiegand interfaces with a maximum cable length of 50M		
7.1.8	Memory	32 MB SDRAM Data: 2 Gb flash		
7.1.9	Keypad	12 key, standard layout, (10 numeric keys, 2 function keys), capacitive, light touch		
7.1.10	Cardholders Database Size in Off-line Mode	2,50,000		
7.1.11	Alarms & Transactions Database Size in Off-line Mode	50,000		
7.1.12	Ethernet Connection	RJ45,10/100 Base-T TCP/IP using CAT5/CAT6 shielded cable		
7.1.13	LCD Indicators	2.4” diagonal, 240 x RGB x 320 TFT full view, Brightness: 400 cd/m2 dimmable,Contrast ratio 400:1		
7.1.14	LED Indicator	High intensity multi-coloured Lightbar		
7.1.15	Voltage	9-28 VDC		
7.1.16	Current Consumption (Watts)	2.4W Typical – 4.8W Peak		
7.1.17	Temperature	-20° to +60° C		
7.1.18	IP Rating	IP65		
7.1.19	Exit reader options	Exit Reader, push button, Wiegand or OSDP v2 Exit read head for IN/OUT control		
7.1.20	Card Reading Technology	support 13.56MHz Mifare/DESFire		

7.1.21	Remote Programming	Support		
7.1.22	The multi-coloured LCD status of the terminal changes colour and the response screen displays.	Support with Access is granted (Green),Expiring Card(Green and message),Expired card (RED),Access not Granted due to not in system or not registered (RED),Lost or Stolen card (RED).Wrong time (Amber),Wrong zone(Amber).		
7.1.23	Network Status	The network status is continuously displayed on the home screen of the reader		
7.1.24	Certifications	FCC Part 15, CE		
7.2	Exit Reader Specification			
		Product Description	Make	Model/Part Code
7.2.1	Mention Details	-	-	
	Parameter	Specification	Compliance (Yes/No)	Cross Reference
7.2.2	Basic	Redaer Shall have Contactless card presentation with the option to enable (PIN) for two stage authentication also having Using a powerful 32-bit processor.		
7.2.3	Offline Operation	The Exit Reader shall have full offline card verification and decision making at the point of entry, even when host communication is not available.		
7.2.4	Inputs	Four analog inputs —voltage supplied, four state (tamper detect)		
7.2.5	Outputs	Two relays fitted —Changeover volt free contacts		
7.2.6	To master Reader	The Exit Reader shal have an onboard RS485 connection allowing it to communicate directly with the master reader.		
7.2.7	Interfaces	Single Wiegand interfaces with a maximum cable length of 50M		
7.2.8	Keypad	12 key, standard layout, (10 numeric keys, 2 function keys), capacitive, soft-touch		
7.2.9	LCD Indicators	2.4 inch diagonal, 240 x RGB x 320 TFT full view,		
7.2.10	LED Indicator	High intensity multi-coloured Lightbar		
7.2.11	Voltage	9-28 VDC		
7.2.12	Current Consumption (Watts)	2.4W Typical – 4.8W Peak		
7.2.13	Temperature	-20° to +60° C		
7.2.14	IP Rating	IP65		
7.2.15	Card Reading Technology	support 13.56MHz Mifare/DESFire		
7.2.16	Remote Programming	Support		
7.2.17	The multi-coloured LCD status of the terminal changes colour and the response screen displays.	Support with Access is granted (Green),Expiring Card(Green and message),Expired card (RED),Access not Granted due to not in system or not registered (RED),Lost or Stolen card (RED).Wrong time (Amber),Wrong zone(Amber).		

7.2.18	Network Status	The network status is continuously displayed on the home screen of the reader		
7.2.19	Certifications	FCC Part 15, CE		
7.3		Power Supply 12V DC , 2.5 Amp (1.5 A Load current , 1 A Battery Charging Current with UPS feature.		
7.4		600 lbs Double EM lock with LED indicator		
7.5		Power Supply -12 V, 2 amp DC for every Door Lock and Card Reader		
7.6		1.25 sq mm multistranded 2-core copper wiring (lock to controller to power supply)		
7.7		6-core 1.25 sqmm multistranded copper wire cable - reader to controller		
7.8		Exit Switch per door - Push button Type		
7.9		Access Card for IT staffs - must be capable of integrated with the Access control software and work with the reade		
7.10	Access Control Software			
		Product Description	Make	Model/Part Code
7.10.1	Mention Details	-	-	
	Parameter	Specification	Compliance (Yes/No)	Cross Reference
7.10.2	Virtualisation	SMS/ACS system server must be supported within a managed virtual application manager environment .		
7.10.3	Card Holder	Support for up to 10,000 cardholders		
7.10.4	Door Support	Supports up to 128 doors		
7.10.5	Workstaion	System shall have one workstation license		
7.10.6	Installtion	Installation procedure automatically configures and installs the VirtualBox environment along with the ACS Software		
7.10.7	WEB Dash Board	A web dashboard shall be provided showing an instant system status overview. The dash board will show the following data in graphical format.		
7.10.8		a) Parked cards		
7.10.9		b) Invalid swipe analysis		
7.10.10		c) Top current alarms		
7.10.11		d) System and capacity & software licensing information		
7.10.12		e) Muster zone swipes		
7.10.13		f) Alarm acknowledgment analysis		
7.10.14		g) Locked out workstation user accounts		
7.10.15		h) Users currently logged on		
7.10.16		i) System Time and Date		
7.10.17	j) Last backup status and Backup history report			

7.10.18		Reports shall be accessible via workstation application tools and/or web browser clients.		
7.10.19		The operator shall determine report parameters based on simple pick lists available for each individual report menu. Systems requiring the user to type complicated search strings will not be acceptable.		
7.10.20	Reporting	Standard system reports shall include• Access Level changes• Alarm Reports• Transaction Reports• First & Last transaction report• Guard Tour• Device Reports• Device Access Report• Device configuration reports• Personnel Reports• Card parking Reports• Absentee Report		
7.10.21	Card management or pass production system (CMS)	This section encompasses the management of the card and the cardholder information for personnel and other cardholder types. The specification required in this section relates to the data that is stored and managed for the all cardholders, the information that is printed and stored electronically and the ability to interact with other personnel or data sources for the transfer of this information both in and out of the system.		
7.10.22		The system shall provide a personnel database that shall reside in the system server.		
7.10.23		The personnel database can be updated via both dedicated workstation application and web browser interface		

7.10.24		<p>The system shall include an application to enable the system administrator or HR Supervisors to allow or disallow workstation operators from accessing certain system applications. The following features will also be provided:-</p> <p>a) Workstation user option configuration will provide at least five authorisation levels.</p> <p>b) In addition to Authorisation Levels, application checkpoints and field checkpoints will provide the system administrator a great level of flexibility when configuring workstation operator permissions. Systems with a factory set (or non-user configurable) system login permissions will not be considered.</p> <p>c) Application user checkpoints must include:</p> <ul style="list-style-type: none"> • Read Only permission • Add, Edit or Delete permissions <p>d) Application field checkpoints must restrict individual field data access within an application</p> <ul style="list-style-type: none"> • Hide • Display • Edit <p>e) Company restriction shall be supported, thus details on Personnel belonging to one or more Companies in the system can be hidden from the operator.</p>		
7.10.25	Card Formats	The system shall provide a means of creating different card formats for various categories of card holder. A card format will determine pass properties including, but not limited to, the layout of the printed pass, its default expiry period, its default Access Level and permitted Access Levels and its default Time zone.		
7.10.26	Authorisers	A integral method to trace or authorise an access request shall be provided. The system shall be capable of enforcing an operator to select from a list of pre-registered Company authorisers when updating a card holder's access permissions. Each Company entered into the system can have a number of authorisers.		
7.10.27	backup functionality	Shall support		
7.12	Server for Access Control Software			
		Product Description	Make	Model/Part Code
7.12.1	Mention Details	-	-	
	Parameter	Specification	Compliance (Yes/No)	Cross Reference
7.12.2	Processor	Intel® Xeon processor		
7.12.3	Memory	16 GB or better		
7.12.4	HDD Drive	1TB		
7.12.5	Optical Drive Type	Bidder Should be Mentioned		
7.12.6	Network Capacity	Bidder Should be Mentioned		
7.12.7	Graphics	Radeon HD 7470 1GB Graphics		
7.12.8	Power Supply	Redundant power supply (2 PSU)		
7.12.9	Accessories	USB Mouse and Keyboard		
7.12.10	Operating System	Windows 7/10 (32 bit & 64bit)		

7.12.11	Virtualisation	Virtualised ACS software as Software-only installation kit or supplied preinstalled on Windows-based PC hardware		
8	<u>OEM ELIGIBILITY CRITERIA FOR IP SURVEILLANCE CAMERA, VMS & NVR :</u>			
	Eligibility Criteria		Compliance (Yes/No)	Cross Reference
a	The OEM of CCTV, NVR-VMS & Access Control should be the same for smooth integration of overall solution			
b	The OEM for IP Cameras & VMS should have a registered entity and direct presence in India for more than 10 years as on bid submission date and should be present globally in the same line of manufacturing for at least 15 years. Camera, NVR OEM should submit a declaration letter along with letter of incorporation confirming the same.			
c	The OEM for IP Cameras & VMS must have a self owned (not as joint venture, partnership firms or through any other association) service/support and RMA centre in India which is operational for at least last 7 years where at least 10 number of Level 2 & Level 3 service engineers are present. It should also have a self owned toll free number along with ticketing website for logging calls and obtaining service docket/ticket.			
d	OEM (Including parent company, group company, subsidiary, joint venture or sister concern of any type) should have never been black listed / banned /removed from any govt. /PSU / Consulates in India or abroad. Declaration to be submitted duly signed by the country Head/Director/CEO of OEM.			
e	The MAC address of the IP Cameras must be registered in the name of OEM supplying the Cameras. Declaration to be submitted with bid duly signed by the country Head/Director/CEO of OEM.			
f	Camera OEM must - have ONVIF's Technical Steering Committee's 'Full' Membership level & not had been suspended and restricted by ONVIF - Temporarily / Permanently, ever. Undertaking by the OEM on the Letter head Membership level will be verified from ONVIF portal			
8.1	2MP IR Bullet Camera with 100 Mtr IR Range			
		Product Description	Make	Model/Part Code
8.1.1	Mention Details	-	-	
	Parameter	Specification	Compliance (Yes/No)	Cross Reference
8.1.2	Image Sensor	1/2.8" Progressive Scan CMOS or better		
8.1.3	Effective Pixels	1920 × 1080 or better		
8.1.4	Video Compression	H.265 / H.264 / MJPEG		
8.1.5	IR Distance	Up to 100m		
8.1.6	Min. Illumination	0.005 Lux @ F1.2, AGC ON; 0.008 Lux @ F1.6, AGC ON; 0 lux with IR		
8.1.7	Shutter Speed	1 s to 1/100,000 s		
8.1.8	S/N Ratio	≥52 dB		

8.1.9	Angle Adjustment	Any Angle		
8.1.10	Focal Length	7 - 22 mm @F1.4, motorized varifocal zoom lens, auto focus		
8.1.11	Iris Type	DC-Iris		
8.1.12	Field of View	(V): 25.2°~9.9° (H): 43.4°~ 17.6°		
8.1.13	Lens Mount	Ø 14		
8.1.14	H.264 Compression Standard	Base Line / Main Profile / High Profile		
8.1.15	H.265 Compression Standard	Main Profile @ Leve4.1 High Tier		
8.1.16	Resolution	1080P (1920 x 1080), 720P (1280 x 720), D1, CIF, 480 x 240		
8.1.17	Max. Frame Rate	30fps @ all resolution		
8.1.18	Video Bit Rate	64 Kbps - 6 Mbps		
8.1.19	Multiple Streaming	Triple streams		
8.1.20	Main Stream	60Hz: 1080P / 720P / D1 / CIF / 480×240 (1-30fps) 50Hz: 1080P / 720P / D1 / CIF / 480×240 (1-25fps)		
8.1.21	Sub Stream	60Hz:720P/D1/CIF /480×240 (1~30fps) 50Hz:720P/D1/CIF/480×240 (1~25fps)		
8.1.22	Third Stream	60Hz:D1/CIF /480×240 (1~30fps) 50Hz:D1/CIF/480×240 (1~25fps)		
8.1.23	Smart Codec	ROI, 3 zones		
8.1.24	Quality Control	Five levels under VBR; Freely adjustable under CBR		
8.1.25	Image Setting	white balance, video rotation, Scheduled profile settings, AGC, time stamp, text overlay, , flip & mirror, ROI, Saturation, Brightness, Chroma, Contrast, Wide Dynamic, Sharpen		
8.1.26	Audio Communication	Bi-directional audio (2-way)		
8.1.27	Audio Compression Format	G711ulaw / G711alaw		
8.1.28	Audio Bit Rate	128 Kbps		
8.1.29	Day & Night	IR cut filter with auto switch		
8.1.30	Wide Dynamic Range	True WDR, 120dB		
8.1.31	Digital Zoom	Yes		
8.1.32	Image Features	Defog, BLC, HLC, 2D/3D DNR		
8.1.33	Corridor Pattern	Yes		
8.1.34	Video Privacy	4 zones video mask		
8.1.35	Intelligent Video Analytics	Perimeter Protection: Line crossing, region Entering/Exiting/ Intrusion (human/motor vehicle/ non-motor vehicle classification) Target Counting: Line crossing human/ motor vehicle/non-motor vehicle counting. Face detection and face capture Exception Detection: Scene change, video blur and video color cast detection		
8.1.36	Alarm Triggers	Motion detection, Intelligent video analytics, Network disconnect, video tampering, IP address conflict, illegal login, HDD full, HDD error, Alarm input, Alarm output		

8.1.37	Edge Storage	Built-in micro SD card slot, up to 128GB		
8.1.38	Onboard Storage	Built-in micro SD/SDHC/SDXC slot		
8.1.39	Backfilling	Supported		
8.1.40	Network Protocol	TCP/IP, UDP, DHCP, NTP, RTSP, PPPoE, RTCP, IGMP, 802.1X, QoS, IPv4, IPv6, Bonjour, ARP, SMTP, FTP, SNMP, UPnP, Unicast, Multicast, ICMP, HTTP, HTTPS, DNS, DDNS, RTP		
8.1.41	Security Parameters	HTTPS / IP Filter / IEEE 802.1X / Blacklist & whitelist / account security / telnet access control / serial password		
8.1.42	Online Connection	Support simultaneous monitoring for up to 10 users; Support multi-stream real time transmission		
8.1.43	Remote Monitoring	Webviewer browsing		
8.1.44	Onvif	ONVIF Profile (S, G & T)		
8.1.45	Network	1 RJ45 10M/100M self-adaptive ethernet port		
8.1.46	Audio	Line IN × 1, Line OUT × 1		
8.1.47	Video Output	CVBS video output (BNC × 1)		
8.1.48	Alarm	Alarm IN x 1, Alarm OUT x 1		
8.1.49	Hardware Reset	Yes		
8.1.50	Operating Temperature	-30°C to 60°C		
8.1.51	Operating Humidity	95% or less (non-condensing)		
8.1.52	Ingress Protection	IP67		
8.1.53	Vandal Resistance	IK10		
8.1.54	Power Supply	AC24V / DC12V / PoE		
8.1.55	Power Consumption	< 12W		
8.1.56	Certificates	CE, FCC, UL, BIS, RoHS		
8.2	SMP IR Bullet with 70 Mtr IR Range			
		Product Description	Make	Model/Part Code
8.2.1	Mention Details	-	-	
	Parameter	Specification	Compliance (Yes/No)	Cross Reference
8.2.2	Image Sensor	1/2.7" Progressive Scan CMOS or better		
8.2.3	Effective Pixels	2592 × 1944 or better		
8.2.4	Wide Dynamic Range	True WDR, 120dB		
8.2.5	IR Distance	Up to 70m		
8.2.6	Min. Illumination	0.008 Lux @ F1.2, AGC ON; 0.01 Lux @ F1.6, AGC ON; 0 lux with IR		
8.2.7	Shutter Speed	1 s to 1/100,000 s		
8.2.8	S/N Ratio	≥52 dB		
8.2.9	Angle Adjustment	Any angle		
8.2.10	Focal Length	2.8 - 12 mm, motorized varifocal zoom lens, auto focus		
8.2.11	Iris Type	DC-Iris		
8.2.12	Field of View	92.7° / 76.4°		
8.2.13	Lens Mount	Ø 14		
8.2.14	Video Compression	H.265 / H.264 / MJPEG		

8.2.15	H.264 Compression Standard	Base Line / Main Profile / High Profile		
8.2.16	H.265 Compression Standard	Main Profile @ Leve4.1 High Tier		
8.2.17	Resolution	5MP(2592×1944), 4MP(2560×1440), 3MP(2304×1296), 1080P(1920×1080), 720P (1280×720), D1, CIF, 480×240		
8.2.18	Max. Frame Rate	30fps @ all resolution, 60fps @ 1080P		
8.2.19	Video Bit Rate	128 Kbps - 10 Mbps		
8.2.20	Multiple Streaming	Triple Streams		
8.2.21	Main Stream	60Hz: 5MP(1-30fps) / 4MP(1-30fps) / 2K(1-30fps) / 3MP(1-30fps) / 1080P(1-60fps) / 720P(1-30fps) 50Hz: 5MP(1-25fps) / 4MP(1-25fps) / 2K(1-25fps) / 3MP(1-25fps) / 1080P(1-50fps) / 720P(1-25fps)		
8.2.22	Sub Stream	60Hz:720P/D1/CIF /480×240 (1-30fps) 50Hz:720P/D1/CIF/480×240 (1-25fps)		
8.2.23	Third Stream	60Hz : D1 (1-30fps) / 480x240 (1-30fps) / CIF (1-30fps) 50Hz : D1 (1-25fps) / 480x240 (1-25fps) / CIF (1-25fps)		
8.2.24	Smart Codec	ROI, 3 zones		
8.2.25	Quality Control	Five levels under VBR; Freely adjustable under CBR		
8.2.26	Image Setting	time stamp, text overlay, flip & mirror, ROI, Saturation, Brightness, Chroma, Contrast, Wide Dynamic, Sharpen, white balance, video rotation, Scheduled profile settings, AGC etc.		
8.2.27	Audio Communication	Bi-directional audio (2-way)		
8.2.28	Audio Compression Format	G711ulaw / G711alaw		
8.2.29	Audio Bit Rate	128kbps		
8.2.30	Day & Night	IR cut filter with auto switch		
8.2.31	Digital Zoom	Yes		
8.2.32	Image Features	Defog, BLC, HLC, 2D/3D DNR		
8.2.33	Corridor Pattern	Yes		
8.2.34	Video Privacy	4 zones video mask		
8.2.35	Intelligent Video Analytics	Face detection and face capture Target Counting in Line crossing human/ motor vehicle/non-motor vehicle counting Exception Detection in Scene change, video blur and video color cast detection Perimeter Protection: Line crossing, region Entering/Exiting/ Intrusion (human/motor vehicle/ non-motor vehicle classification)		
8.2.36	Alarm Triggers	Motion detection, Intelligent video analytics, Network disconnect, video tampering, IP address conflict, illegal login, HDD full, HDD error, Alarm input, Alarm output		
8.2.37	Edge Storage	Built-in micro SD card slot, up to 128GB		
8.2.38	Backfilling	Supported		
8.2.39	Network Protocol	TCP/IP, UDP, DHCP, NTP, RTSP, PPPoE, SMTP, FTP, SNMP, UPnP, Unicast, Multicast, RTCP, IGMP, 802.1X, QoS, IPv4, IPv6, Bonjour, ARP, ICMP, HTTP, HTTPS, DNS, DDNS, RTP		

8.2.40	Security Parameters	HTTPS / IP Filter / IEEE 802.1X / Blacklist & whitelist / account security / telnet access control / serial password		
8.2.41	Online Connection	Support simultaneous monitoring for up to 10 users; Support multi-stream real time transmission		
8.2.42	Remote Monitoring	Webviewer browsing		
8.2.43	Onvif	ONVIF Profile (S, G & T)		
8.2.44	Network	1 RJ45 10M/100M self-adaptive ethernet port		
8.2.45	Audio	Line IN × 1, Line OUT × 1		
8.2.46	Video Output	CVBS video output (BNC × 1)		
8.2.47	Onboard Storage	Built-in micro SD/SDHC/SDXC slot		
8.2.48	Alarm	Alarm IN x 1, Alarm OUT x 1		
8.2.49	Hardware Reset	Yes		
8.2.50	Operating Temperature	- 30 °C to 60 °C		
8.2.51	Operating Humidity	95% or less (non-condensing)		
8.2.52	Ingress Protection	IP67		
8.2.53	Vandal Resistance	IK10		
8.2.54	Power Supply	DC12V / PoE		
8.2.55	Power Consumption	< 12W		
8.2.56	Certificates	CE, FCC, RoHS, UL, BIS		
8.3	4MP PTZ Camera with 200Mtr IR Range			
		Product Description	Make	Model/Part Code
8.3.1	Mention Details	-	-	
	Parameter	Specification	Compliance (Yes/No)	Cross Reference
8.3.2	Image Sensor	1/1.8" Progressive Scan CMOS or better		
8.3.3	Video Compression	H.265+/H.265/H.264+/H.264/MJPEG		
8.3.4	Max. Resolution	2560×1440 or better		
8.3.5	Shutter Speed	1/1s to 1/30000s		
8.3.6	Focal Length	5.9 mm to 188.8 mm,32x optical		
8.3.7	Aperture	F1.5		
8.3.8	Min. Illumination	Color: 0.005 Lux @ (F1.5, AGC ON) B/W: 0.001 Lux @ (F1.5, AGC ON)0 Lux with IR		
8.3.9	Field of View	(V) FOV: 29.4° to 1.5° (wide-tele);(H) FOV: 50.8° to 2.6° (wide-tele);		
8.3.10	Focus	Rapid focus,Auto, semi-auto, manual		
8.3.11	Zoom Speed	approx. 4.8 s		
8.3.12	Digital Zoom	16x		
8.3.13	Day & Night	IR cut filter		
8.3.14	SNR	>52 dB		
8.3.15	Movement Range (Pan)	360°		
8.3.16	Movement Range (Tilt)	-15° to 90° (auto flip)		
8.3.17	Presets	300		
8.3.18	Pan Speed	Configurable, from 0.1°/s to 180°/s ,Preset speed: 240°/s		

8.3.19	Tilt Speed	Configurable, from 0.1°/s to 120°/s, Preset speed: 200°/s		
8.3.20	Pattern Scan	4 pattern scans, record time over 10 minutes for each scan		
8.3.21	Proportional Pan	Support		
8.3.22	Patrol Scan	8 patrols, up to 32 presets for each patrol		
8.3.23	WDR	120dB		
8.3.24	IR Distance	200m		
8.3.25	IR Control	IR brightness and angle are intelligently adjustable according to the scenes		
8.3.26	Scheduled Task	preset, pattern scan, patrol scan, auto scan, tilt scan, random scan, frame scan, dome reboot, panorama scan, dome adjust, aux output		
8.3.27	Power-off Memory	Support		
8.3.28	Preset Freezing	Support		
8.3.29	Park Action	Panorama scan, Preset, Random scan, Pattern scan, patrol scan, auto scan, tilt scan, , frame scan,		
8.3.30	PTZ Status Display	Support		
8.3.31	Main Stream	50 Hz: 25 fps (2560×1440, 1920×1080, 1280×960, 1280×720) 60 Hz: 30 fps (2560×1440, 1920 1080, 1280×960, 1280×720)		
8.3.32	Sub-Stream	50Hz: 25fps (704 × 576, 640 × 480, 352 × 288) 60Hz: 30fps (704 × 480, 640 × 480, 352 × 240)		
8.3.33	Third Stream	50 Hz: 25 fps (1920×1080, 1280×960, 1280×720, 704×576, 640×480, 352×288); 60 Hz: 30 fps (1920×1080, 1280×960, 1280×720, 704×480, 640×480, 352×240)		
8.3.34	Smooth Streaming	Support		
8.3.35	Privacy Mask	24 programmable polygon privacy masks, mask color or mosaic configurable		
8.3.36	H.265 Type	main profile		
8.3.37	H.264 Type	baseline profile, main profile, high profile		
8.3.38	Image Enhancement	BLC, HLC, 3D DNR		
8.3.39	SVC	H.264 and H.265 encoding		
8.3.40	Region of Interest	8 fixed regions for each stream		
8.3.41	Auto-Tracking	Support		
8.3.42	Audio Compression	G.711alaw, G.711ulaw, G.722.1, G.726, MP2L2, AAC, PCM		
8.3.43	Basic Event	Motion Detection, Video Tampering, Alarm Input, Alarm Output, Exception		
8.3.44	Alarm Linkage	Upload to FTP/NAS/memory card, notify surveillance center, send email, trigger alarm output, trigger recording, audible warning, white light flashing, and PTZ actions (such as preset, patrol scan, pattern scan)		
8.3.45	Smart Event	Line Crossing Detection, Audio Exception Detection, Intrusion Detection, Region Entrance Detection, Region Exiting Detection, Face Detection		
8.3.46	Network Storage	NAS (NFS, SMB/ CIFS)		
8.3.47	User/Host	32		
8.3.48	Protocols	IPv4/IPv6, HTTP, HTTPS, 802.1x, QoS, FTP, SMTP, UPnP, SNMP, DNS, DDNS, NTP, RTSP, RTCP, RTP, TCP/IP, UDP, IGMP, ICMP, DHCP, PPPoE, Bonjour		

8.3.49	Simultaneous Live View	20		
8.3.50	Web Browser	IE11, Chrome 57+, Firefox 52+, Safari 11+		
8.3.51	Communication Interface	1 RJ45 10 M/100 M Ethernet, Hi-PoE		
8.3.52	Audio Input/Output	1 audio input ,1 audio output		
8.3.53	Alarm Input/Output	2 inputs, 1 output		
8.3.54	ONVIF	Profile S, Profile G & Profile T		
8.3.55	On-board Storage	Built-in memory card slot, support microSD/SDHC/SDXC card, up to 256 GB		
8.3.56	Protection	IP67, IK10 (excluding glass window), TVS 6000V lightning surge protection, protection and voltage transient protection		
8.3.57	Cyber Security	Password protection, complicated password, HTTPS encryption, 802.1X authentication (EAP-TLS, EAPLEAP, EAP-MD5), watermark, IP address filter, basic and digest authentication for HTTP/HTTPS, RTP/ RTSP over HTTPS, control timeout settings, security audit log, TLS 1.2, TLS 1.3, host authentication (MAC address)		
8.3.58	Certification	CE, FCC, UL, BIS		
8.3.59	Power	24 VAC, Hi-PoE		
8.3.60	Operating Conditions	-30°C to 65°C		
8.4	128 Channel NVR (NVR & VMS must be from same OEM of IP Surveillance Camera)			
		Product Description	Make	Model/Part Code
8.4.1	Mention Details	-	-	
	Parameter	Specification	Compliance (Yes/No)	Cross Reference
8.4.2	Main Processor	Intel Xeon E3 or better		
8.4.3	Operating System	Windows and Linux support		
8.4.4	Operating System Redundancy	Should have O/S redundancy.		
8.4.5	IP Camera Input	64 CH, should be expandable up to 128 CH		
8.4.6	RAID capacity	RAID6		
8.4.7	Display Interface	1 HDMI, 1 VGA		
8.4.8	Incoming and outgoing Bandwidth	Minimum 1100 mbps		
8.4.9	Video compression	MJPEG, MPEG-4, H.264, H.265		
8.4.10	Network	4 x 1 Gbps		
8.4.11	USB 3.0 ports	6		
8.4.12	HDD Bay	20 or better		
8.4.13	Power Supply	Dual redundant Hot Swap		
8.4.14	Onvif Support	Onvif Conformant		

8.4.15	Operating system drive	128 GB SSD or better		
8.4.16	RAM	16 GB or better		
8.4.17	Mounting	Rack Mounted		
8.4.18	Input Voltage	120/240 VAC		
8.4.19	Certification	CE, FCC, BIS		
8.5	Video Management Software in-built in the NVR			
		Product Description	Make	Model/Part Code
8.5.1	Mention Details	-	-	
	Parameter	Specification	Compliance (Yes/No)	Cross Reference
8.5.2	General Functionality	The Video Management System (VMS) software shall be used to view live and recorded video from capture cards and IP devices connected to local and wide area networks. The VMS software shall have a client/server-based architecture that can be configured as a standalone VMS system with the client software running on the server hardware and/or the client running on any network-connected TCP/IP workstation. Multiple client workstations shall be capable of simultaneously viewing live and/or recorded video from one or more servers. Multiple servers shall also be able to simultaneously provide live and/or recorded video to one or more workstations.		
8.5.3		The Video Management System (VMS) shall be a software package for comprehensive management of live and recorded video, and associated audio and data.		
8.5.4		The VMS shall possess the following general characteristics		
8.5.5		The VMS supports interactive and multi-level mapping		
8.5.6		The VMS shall be supplied with minimum 200 nos of thick clients and 15 mobile clients		
8.5.7		The single-screen administration across multiple servers and systems, including:		
8.5.8		It shall support global configuration and monitoring of camera, encoder, and storage settings across the enterprise		
8.5.9		It supports simultaneous administration of all users on multiple servers		
8.5.10		It supports e-mail		
8.5.11		The VMS shall automatically identify and assign IP address to compatible IP cameras and encoders with status display		
8.5.12		Suspect Tracking : Configure camera links between cameras to follow a suspect between different camera scenes		

8.5.13		The client software allow remote access to live and recorded video, including access from mobile devices and support simultaneous access to video from multiple servers		
8.5.14		The VMS should support 2-way audio communication between server, client, and camera		
8.5.15	Architecture	The VMS shall have a client/server-based architecture that can be configured as a standalone VMS with the client software running with equal functionality on the server hardware and/or the client running on any network-connected TCP/IP workstation.		
8.5.16		It supports configuration of user authentication using LDAP/Active Directory features of the network		
8.5.17		The VMS shall record and retrieve video, audio and alarm data and provide it to the VMS clients upon request.		
8.5.18	Client Characteristics	The Client Characteristics will be as per following:		
8.5.19		The Client Software View live video and audio, recorded video and audio and be able to configure the complete system all from a single application.		
8.5.20		The Client Software will have full compatibility with all available features of the VMS server software		
8.5.21		The Client Software shall have Add and remove features based on the permissions of the user and the licensed functionality		
8.5.22	Web Client	The Web Client will have following features:		
8.5.23		The Web Client can view Live and Recorded Video		
8.5.24		The Web Client can control Pan-Tilt-Zoom movement for PTZ Cameras		
8.5.25		It can activate triggers		
8.5.26		It can get connected with multiple VMS Servers simultaneously		
8.5.27	Mobile Client	The Mobile Client will have following characteristics:		
8.5.28		The mobile application shall support Apple IOS, Google Android, and Microsoft Windows Mobile operating systems.		
8.5.29		It can remotely view Live and Recorded Video from any Video Server		
8.5.30		It can Control PTZ movement and the monitoring and activation of alarms and events from the mobile device.		
8.5.31		It can monitor events configured by the Client		
8.5.32		The web service supporting the mobile application shall size the video stream to accommodate both low bandwidth and high bandwidth networks.		

8.5.33		The VMS software shall allow the user to have any combination of VMS client applications running on any of the supported operating systems and be able to connect to any of the VMS servers running on any of the supported operating systems. Hence, Multiple client workstations shall be capable of simultaneously viewing live and/or recorded video from one or more servers.		
8.5.34		The VMS software shall have the capability to run multiple client applications simultaneously on one workstation with multiple monitors and at least 10 monitors shall be configurable on a single workstation with one (1) client application running on each monitor.		
8.5.35		The VMS server software shall have the ability to be installed on an IP edge device—such as an IP camera or encoder that allows for 3rd party applications—allowing the device to serve as both a server and IP video recording device.		
8.5.36	Video Streaming	Video formats supported: MJPEG, MPEG-4, H.264, H.265		
8.5.37		Each video stream shall have the ability to be recorded, viewed live, saved to views, exported, and available in search and playback.		
8.5.38		Streams shall be individually configurable for recording schedules and storage rules		
8.5.39		Multi streaming – The VMS shall allow the setting of multiple, independent video streams from the IP camera, each configurable for frame rate, resolution and quality level.		
8.5.40	Recording	The Recording should be continuous, uninterrupted and unattended recording of all video and audio transmitted to the VMS, including during times of administration and configuration of any feature		
8.5.41		The system shall record video based on metadata generated by an edge network device and included in the video stream sent to the VMS server		
8.5.42		The system shall allow to configure each video input’s recording time on an hourly basis, to further allow the user to schedule when to record on motion, when to record on event and when to not record		
8.5.43		The video file shall contain the data of the video, audio, and associated metadata.		
8.5.44		The index file shall contain the index of the metadata from the network device. When the VMS searches for video, it shall retrieve and display the information in the index files.		
8.5.45		A bookmarking feature shall allow the tagging, naming, and retention of video clips. The VMS shall provide the capability to organize related bookmarks into cases.		
8.5.46		The VMS shall support a graphical representation of drive status for associated RAID-based storage.		

8.5.47		The VMS shall support local HDD disk storage, iSCSI extended storage whereby a remote storage unit can appear as a local drive.		
8.5.48		The VMS shall support configurable rules that will automatically delete video for a camera after a specified amount of time. The VMS also shall support configurable rules that will delete newer video on other cameras to preserve older video from cameras with rule specified.		
8.5.49	Video Archiving	The VMS shall provide for the archival of video, audio, and data files, as determined by rules, events, or manual selection. Each archive target has its own set of rules for what cameras and video are archived and when.		
8.5.50		The VMS shall support CIFS and NFS network shares for archive target locations. It shall be able to archive video to multiple locations and base the archive on camera, event type, or an archive schedule.		
8.5.51		VMS shall be able to archive continuously or on a scheduled basis like weekly schedule and multiple schedules may be combined to derive specific schedule.		
8.5.52	Events	The VMS should support following Events		
8.5.53		Video motion, operating on the encoded video		
8.5.54		Video loss of analog video signals		
8.5.55		Device, Server and System Health		
8.5.56		IP camera connection		
8.5.57	Analytics Rule	The VMS should support actions on events like Record Video, Output Trigger, Send an E-mail supporting SSL and TLS protocols for encrypted communications		
8.5.58		The VMS shall call a PTZ Camera Preset as action on events		
8.5.59		The VMS client shall be configurable to automatically switch views on any event within the event monitoring function.		
8.5.60	Search and Playback	The VMS can search and play back recorded video, audio and events from VMS servers		
8.5.61		The VMS shall search and play back video from multiple cameras simultaneously in a synchronized multi-camera layout along with search recorded video based on time, date, video source and image region, with results displayed as both a clickable timeline		
8.5.62		The VMS shall perform a visual thumbnail search, selecting one image per camera per set time period and can play video from selected image along with zoom in to a time range around selected image		
8.5.63		The Archived video shall be seamlessly searched during any video search, eliminating the need for a user to separately search the archive location.		

8.5.64	Video Information Display	The VMS shall have a live display mode, wherein a user shall be able to view live video, live audio and alarm information.		
8.5.65		The VMS client shall be able to use OpenGL and Direct 3D to decompress and render video.		
8.5.66		The VMS shall allow viewing of cameras in logical groups and preset views.		
8.5.67		The VMS shall be able to automatically cycle through two or more saved views to create a video tour, with a configurable dwell time for each view.		
8.5.68		The VMS shall support the use of a panoramic lens on an analog or IP camera. The VMS client shall de-warp the image on both live and recorded video.		
8.5.69		The VMS shall support overlay controls shall appear when hovering over a camera in live view :		
8.5.70		Appearance: text color, font, style, transparency, location		
8.5.71		Control Types: audio inputs and outputs, alarm outputs, input events, soft triggers, serial data, manual record		
8.5.72		The VMS shall be able to display the following additional system information:		
8.5.73		a) users currently logged in to the system		
8.5.74		b) plug-in file version information number and status		
8.5.75		c) system log containing a detailed history of system processes		
8.5.76		The VMS shall support display of notifications to the user for common setup tasks that should be performed, including:		
8.5.77		a) Configuring motion on all cameras		
8.5.78		b) Changing the default password		
8.5.79		c) Configuring email notifications		
8.5.80		d) Configuring of multi streaming		
8.5.81	e) Time delta between server and camera			
8.5.82	Mapping	The VMS shall have a map capability, accessible to users with the appropriate permission levels.		
8.5.83		The map displayed video sources and their status and also the field of view for cameras on the map using an adjustable FOV visualization triangle		
8.5.84		The VMS can place, view and activate soft triggers from the MAP		
8.5.85		The VMS shall support nested or embedded maps		
8.5.86	Export	Export file formats supported: .exe, .avi, .ps, .mov , Native file format.		
8.5.87		The VMS software shall have the capability to export video, maps, POS data and audio files, without overwriting previous exports.		
8.5.88		The VMS standalone player shall be able to authenticate that the video has not been tampered with using a keyed Hash Message Authentication Code (HMAC).		

8.5.89	Administration & Configuration	The VMS system can allow for a user's permissions to be configured across multiple servers from a single screen		
8.5.90		The VMS system can authenticate the User's Permission by Active Directory or LDAP		
8.5.91		The VMS system shall record an audit trail of when users log in that shows what changes they have made, what video they have viewed and what they have exported		
8.5.92		The VMS software shall provide a configuration option to require 2 users enter unique passwords to authorize tasks involving the viewing of video.		
8.5.93	Reporting	The VMS provides color coded status of servers, cameras, and unacknowledged events in the following categories in list or chart format:		
8.5.94		Critical as 1) server or camera device not detected and 2) event occurring and unacknowledged		
8.5.95		Normal as 1) Server or camera connected and operating and 2) Event acknowledged and closed		
8.5.96		This shall allow operations managers and system integrator to build customized video surveillance networks that meet their exact requirements. Software suite shall be a scalable and flexible video management system that could be easily managed and monitored. Scalable system shall permit retrieval of live or recorded video anywhere, anytime on a variety of clients via a web browser interface.		
8.5.97		The VMS shall be capable of being deployed in a virtualized environment without loss of any functionality.		
8.5.98	PAN, TILT & ZOOM	The VMS shall allow control of PTZ cameras to authorized users and be used to maneuver and zoom a PTZ camera at adjustable speed.		
8.5.99		The VMS shall allow following methods of controlling a PTZ camera to be available:		
8.5.100		PTZ graphics control windows		
8.5.101		live graphic overlay PTZ control icons		
8.5.102		keyboard control (up, down, left, right arrows; page up, page down for zoom)		
8.5.103		PTZ presets		
8.5.104		digital PTZ		
8.5.105		USB joystick		
8.5.106	Failover	The VMS Server shall support N:1 or N:N failover architecture		
8.5.107		The VMS shall support automatic failover for recording		
8.5.108		The VMS shall support manual failover for maintenance purpose		

8.5.109		This shall allow operations managers and system integrator to build customized video surveillance networks that meet their exact requirements. Software suite shall be a scalable and flexible video management system that could be easily managed and monitored. Scalable system shall permit retrieval of live or recorded video anywhere, anytime on a variety of clients via a web browser interface.		
8.5.110		The VMS shall be enabled for integration with any external Video Analytics Systems.		
8.5.111		The VMS shall be capable of being deployed in a virtualized environment without loss of any functionality.		
8.5.112		All CCTV camera video signal inputs to the system shall be provided to command control Center, and the transmission medium used shall best suit the relative camera deployments and access to the CCTV Network.		
9	OEM ELIGIBILITY CRITERIA FOR FOR NETWORKING SWITCHES AND WIRELESS PRODUCTS			
	Eligibility Criteria		Compliance (Yes/No)	Cross Reference
a	OEM should have a 24 x 7, Support Center based in India (Details of Support center to be provided by the OEM)			
b	OEM should have local Spare Depot and RMA Facility in India (OEM to provide list of RMA Depots in India)			
c	NBD Shipment & Replacement of Critical Core Network Devices to be facilitated by the OEM			
d	The OEM should be TL9000 certified.			
e	The Quoted Products should be EAL/NDcPP certified			
f	The OEM should have presence in India for more than Ten Years			
g	The Quoted Products, which are part of the solution, namely – Network Switches, Transceivers, Wi-Fi Controllers, Wi-Fi Access Points should be from the same OEM.			
h	The Solution should have a Common Web Based EMS for Wi-Fi and LAN Switching			
i	All quoted components should Not be announced End of Sale at the time of Bid submission			
j	The OEM should provide Three (3) year support and replacement warranty of the product; a certificate should be provided on the OEM's letter head.			
9.1	CORE SWITCHES - Technical Specification			
		Product Description	Make	Model/Part Code
9.1.1	Mention Details	-	-	
	Parameter	Specification	Compliance (Yes/No)	Cross Reference
9.1.2	Architecture & Port Density	The Core Switch should have 48 x 1G/10G/25G SFP+ Ports and 8 x 40G/100G QSFP+ Port from Day 1.		

9.1.3		A. Populated with 24 qty 10G Base-LR-S Module Single Mode SFP+ distance supported up to 10Kms per switch.		
9.1.4		B. Populated with 10 qty 10G Base-T (RJ-45) Module per switch.		
9.1.5		The Core Switch should be configured with 200Gbps or more Interswitch bandwidth between Core Switches.		
9.1.6		The Core Switch should support Virtual Switching System (VSS) or Virtual Chassis (VC) or equivalent Switch Clustering/Stacking feature up to 8 Switches or more, where the Switch Clustering feature should combine multiple switches into a single network element.		
9.1.7	Performance	Switching Bandwidth: The Switch should provide Switch Fabric Bandwidth Capacity of 4 Tbps or more.		
9.1.8		Forwarding Capacity: The Switch should provide Packet Forwarding Capacity of 2Bpps or more.		
9.1.9	Layer 2 features: it shall support from day 1	4000 or more active VLANs		
9.1.10		90000 MAC addresses or more		
9.1.11		IP multicast snooping IGMP v1, v2, v3		
9.1.12		Jumbo Frames (up to 9216 bytes)		
9.1.13	Layer 3 features: it shall support from day 1	Up to 100K combined routes or more		
9.1.14		Basic IPv4 and IPv6 Static Routing, ECMP, Host Routes, Virtual Interfaces, Routed Interfaces, Route Only and Routing between directly connected subnets from Day 1		
9.1.15		IPv4 & IPv6 Routing protocols & multicast routing available from day 1. such as		
9.1.16		RIP v1 or v2, RIPng, OSPFv2, OSPFv3, BGP4, BGP4+, Multi-VRF, VRRP for both IPV4 and IPV6 protocol, VRRPv2 & VRRPv3		
9.1.17		PIM-SSM, PIM Sparse, PIM Dense, PIM Anycast RP, and PIM passive IPv4 multicast routing.		
9.1.18		PIM-SSM, PIM Sparse, PIM Anycast RP, MSDP and PIM6-SM Snooping IPv6 multicast routing		
9.1.19	Security features	RADIUS, TACACS/TACACS+ and username/password for Authentication, Authorization and Accounting (AAA) with Local User Accounts and Local User Passwords		
9.1.20		secure communications to the management interface and system through SSL, Secure Shell (SSHv2), Secure Copy and SNMPv3		
9.1.21		IP Source Guard, DHCP snooping, DHCPv4, DHCPv6 and Dynamic ARP Inspection		
9.1.22		IPv4 and IPv6 ACLs: with up to 8000 rules / ACL per system		
9.1.23		Flexible Authentication with 802.1x Authentication and MAC Authentication		
9.1.24	Manageability	It should be manageable using Network Management Software with Web based Graphical User Interface (GUI)		
9.1.25		It should support Integrated Standard based Command Line Interface (CLI), Telnet, TFTP, HTTP access to switch for management/monitoring		

9.1.26		It should also support NetFlow or sFlow or equivalent		
9.1.27	Physical Attributes, Memory, Power Supply and Fans	The Switch should be provided with 19" Universal 4 post rack mount kit		
9.1.28		The Switch should have minimum 32MB Buffers, 4GB Main Memory and 32GB Flash Memory or More		
9.1.29		The Switch should be configured with hot swappable, redundant load sharing AC power supplies to provide 1:1 or N+1 power supply redundancy or better		
9.1.30		The Switch should be configured with hot swappable, redundant fans to provide 1:1 or N+1 fan redundancy or better		
9.1.31	Mandatory Compliance:	All categories of Switches, Transceivers & Switch OS should be from same OEM.		
9.1.32		Switch OS should be listed in the IPv6 Ready Logo Program Approved List. Switch should be ROHS complaint and Common Criteria / NDPP / NDcPP certified at the time of bidding.		
9.1.33	Warranty	The Switching System shall be quoted with 3 years OEM Hardware warranty along with OEM web based / telephonic technical Support. The same should be verifiable on OEMs website. All the Switches Core, Distribution and Access series Switches OS should have same OS family.		
9.1.34	Product brochure	Vendor should provide printed technical catalogues/brochures for the quoted model containing technical specifications, features.		
9.2	<u>Access Switch :Type-I : 48-Port PoE Layer 3 Switch with 8 x 10G SFP+, 1480 Watts Power Budget, RPS</u>		-	-
		Product Description	Make	Model/Part Code
9.2.1	Mention Details	-	-	
	Parameter	Specification	Compliance (Yes/No)	Cross Reference
9.2.2	Architecture & Port Density	The Switch should be configured with 16 x 100M/1G/2.5G 90W (802.3bt) PoE RJ45 ports, 32 x 10M/100M/1G 30W (802.3at) PoE RJ45 ports, 4 x 1G/10G SFP+ Slots and Stacking Hardware from Day 1. Populated with Minimum Two(2) Single Mode 10G SFP+(LR-S) distance supported up to 10Kms		
9.2.3		The Switch should support Virtual Switching System (VSS) or Virtual Chassis (VC) or equivalent Switch Clustering/Stacking feature, where the Switch Clustering feature should combine multiple switches into a single network element.		
9.2.4		All components required for stacking should be provided along with the switch, to ensure 40Gbps of stacking bandwidth per switch and Minimum 8 Members Switch in single Stack.		
9.2.5	Performance	Switching Bandwidth: The Switch should provide Switch Fabric Bandwidth Capacity of 304 Gbps or more.		

9.2.6		Forwarding Capacity: The Switch should provide Packet Forwarding Capacity of 226 Mpps or more.		
9.2.7	Layer 2 features : it shall support from day 1	Should support up to 16K MAC addresses or more and 4K Active VLANs.		
9.2.8		Should support Jumbo Frames (up to 9K bytes).		
9.2.9		Should support the following Layer 2 Switching Features. Remote Fault Notification (RFN) Link Fault Signaling (LFS) Uni-Directional Link Detection (UDLD) on Tagged and Untagged Ports		
9.2.10		Should support IP multicast snooping IGMP v1, v2, v3		
9.2.11		Should support Link Aggregation Groups (LAG), with the following features. Static LAG 802.3ad, Link Aggregation Control Protocol (Dynamic LAG), Dynamic insertion and removal of ports, Support for LAG between different default port speeds, PVLANS with dual mode support PVLAN with LAG		
9.2.12	Layer 3 features: it shall support from day 1	Should support up to 1K IPv4 routes or more.		
9.2.13		Should support the following Basic IPv4 and IPv6 Layer 3 Routing features. IPv4 and IPv6 Static Routes, RIP v1/v2, RIPng, ECMP, Port-based Access Control Lists Layer 3/Layer 4 ACLs, IP Routing in Directly Connected subnet.		
9.2.14		Should support the following Advanced IPv4 and IPv6 Layer 3 Routing features. IPv4 and IPv6 Dynamic Routes, OSPF v2, OSPF v3 (IPv6), PIM-SM, PIM-SSM, PIM-DM, PIM passive (IPv4/IPv6 multicast routing functionality), Policy Based Routing (PBR), VRRP v2/v3, Non-Stop Routing (NSR),		
9.2.15	Security features	RADIUS, TACACS/TACACS+ and username/password for Authentication, Authorization and Accounting (AAA) with Local User Accounts and Local User Passwords		
9.2.16		secure communications to the management interface and system through SSL, Secure Shell (SSHv2), Secure Copy and SNMPv3		
9.2.17		IP Source Guard, DHCP snooping, DHCPv4, DHCPv6 and Dynamic ARP Inspection		
9.2.18		IPv4 and IPv6 ACLs: 2K Rules per ACL and a minimum of 8K Rules per System.		
9.2.19		Flexible Authentication with 802.1x Authentication and MAC Authentication		
9.2.20	Manageability	It should be manageable using Network Management Software with Web based Graphical User Interface (GUI)		

9.2.21		It should support Integrated Standard based Command Line Interface (CLI), Telnet, TFTP, HTTP access to switch for management/monitoring		
9.2.22		It should also support NetFlow or sFlow or equivalent		
9.2.23		Should support Integrated Standard based Command Line Interface (CLI), Telnet, TFTP, HTTP access to switch management/monitoring.		
9.2.24	Physical Attributes, Memory, Power Supply and Fans	The Switch should have minimum 4MB Packet Buffer, 1GB Main Memory and 2GB Flash Memory.		
9.2.25		The Switch should have a PoE Power Budget of 1480W.		
9.2.26		The Switch should be configured with hot swappable, redundant load sharing AC power supplies to provide 1:1 or N+1 power supply redundancy or better.		
9.2.27		The Switch should be configured with hot swappable, redundant Fans to provide 1:1 or N+1 fan redundancy or better.		
9.2.28	Mandatory Compliance :	All categories of Switches, Transceivers & Switch OS should be from same OEM		
9.2.29		The Switch OS should be EAL/NDPP Certified. The Latest Updated Maintenance Common Criteria Report (Evaluation and Validation) should be submitted.		
9.2.30	Warranty	The Switching System shall be quoted with 3 years OEM Hardware warranty along with OEM web based / telephonic technical Support. The same should be verifiable on OEMs website. All the Switches Core, Distribution and Access series Switches OS should have same OS family.		
9.2.31	<u>Product brochure</u>	Vendor should provide printed technical catalogues/brochures for the quoted model containing technical specifications, features.		
9.3	<u>Access Switch- Type-II : 48-Port PoE+ Switch, 740W PoE budget, Layer 3 Switch</u>		-	-
		Product Description	Make	Model/Part Code
9.3.1	Mention Details	-	-	
	Parameter	Specification	Compliance (Yes/No)	Cross Reference
9.3.2	Architecture & Port Density	Switch should offer Wire-Speed Non-Blocking Switching & Routing Performance at Layer 2 & Layer 3.		
9.3.3		Switch should have forty-eight (48) 1GbE PoE+ RJ45 ports and Four (4) 1G/10G SFP/SFP+ Ports. Populated with Minimum Two (2) Single Mode 10G SFP+(LR-S) distance supported up to 10Kms.		
9.3.4		Access Switch should support Stacking up to 8 Switches with more than 40 Gbps stacking bandwidth per Switch.		

9.3.5	Performance	Switching Bandwidth: Should provide Non-Blocking switch fabric capacity of 176 Gbps or more		
9.3.6		Forwarding Capacity: Should provide wire-speed packet forwarding of 132 Mpps or more.		
9.3.7	Layer features 2	Switch should support 4K Active VLANs		
9.3.8		Switch should support 16K MAC addresses or more.		
9.3.9		Switch should support IP multicast snooping with support for IGMP v1, v2, v3 and MLD v1 & v2		
9.3.10		Switch should support Jumbo Frames (up to 9K bytes)		
9.3.11	Layer features 3	Switch should support minimum 1K IPv4 Routes or more		
9.3.12		Switch should support Basic IPv4 and IPv6 Static Routing, ECMP, Host Routes, Virtual Interfaces, Routed Interfaces, Route Only and Routing between directly connected subnets from Day 1.		
9.3.13		Switch should support Dynamic IPv4 & IPv6 Routing protocols (OSPFv2 and OSPFv3) and Layer 3 Multicast Routing Protocols from Day 1.		
9.3.14	Security	Switch should support RADIUS, TACACS/TACACS+ and username/password for Authentication, Authorization and Accounting (AAA) with Local User Accounts and Local User Passwords.		
9.3.15		Switch should support secure communications to the management interface and system through SSL, Secure Shell (SSHv2), Secure Copy and SNMPv3		
9.3.16		Switch should support IP Source Guard, DHCP snooping, DHCPv4, DHCPv6 and Dynamic ARP Inspection.		
9.3.17		Switch should support IPv4 and IPv6 ACLs with up to 1K rules per ACL and a minimum of 4K rules per system (Standalone Switch or Stack).		
9.3.18		Switch should support Byte and packet based broadcast, multicast, and unknown-unicast limits with suppression port dampening.		
9.3.19		Switch should support IPv6 Router Advertisement (RA) Guard.		
9.3.20		Switch should support Flexible Authentication with 802.1x Authentication and MAC Authentication.		
9.3.21	Manageability	Switch should support manageability using Network Management Software with Web based Graphical User Interface (GUI).		
9.3.22		Switch should provide Integrated Standard based Command Line Interface (CLI), Telnet, TFTP, HTTP access to switch management/monitoring		
9.3.23		Switch should support NetFlow or sFlow or equivalent		
9.3.24	Physical Attributes & PoE Power Budget	Mounting Option: 19" Universal rack mount ears		
9.3.25		PoE Power Budget: The Switch should provide a minimum of 740 watts of PoE+ power.		
9.3.26	Mandatory Compliance :	All categories of Switches, Transceivers & Switch OS should be from same OEM		

9.3.27	Warranty	Switch should be quoted with TAC Support and Warranty for 3 years Hardware Replacement		
9.3.28	Product brochure	Product brochure vendor should provide printed technical catalogs/brochures for the quoted model containing technical specifications, features		
9.4	<u>Access Switch Type-III : 24-Port PoE+, 370W PoE budget</u>		-	-
		Product Description	Make	Model/Part Code
9.4.1	Mention Details	-	-	
	Parameter	Specification	Compliance (Yes/No)	Cross Reference
9.4.2	<u>Architecture & Port Density</u>	The Switch should have minimum Twenty four (24) 10/100/1000Mbps RJ45 PoE/POE+ ports and should have Four (4) 1G/10G SFP+ Slots, from Day 1. Populated with Minimum Two (2) Single Mode 10G SFP+(LR-S) distance supported up to 10Kms.		
9.4.3		The Switch should have Stacking up to 8 Switches with more than 40Gbps stacking bandwidth per Switch.		
9.4.4		All components required for stacking should be provided along with the switch, to ensure 40Gbps of stacking bandwidth per switch.		
9.4.5	<u>Performance</u>	Switching Bandwidth: The Switch should provide Switch Fabric Bandwidth Capacity of 128 Gbps or more.		
9.4.6		Forwarding Capacity: The Switch should provide Packet Forwarding Capacity of 95 Mpps or more.		
9.4.7	<u>Layer 2 features</u>	Should support 4K active VLANs		
9.4.8		Should support 16K MAC addresses or more.		
9.4.9		Should support IP multicast snooping IGMP v1, v2, v3		
9.4.10		Should support Jumbo Frames (up to 9K bytes)		
9.4.11	<u>Layer 3 features</u>	Should support minimum 1K IPv4 routes and 1K IPv6 route or more		
9.4.12		Should support Basic IPv4 and IPv6 Static Routing, ECMP, VRRP, VRRP for IPv4 and IPv6 protocol, Host Routes, Virtual Interfaces, Routed Interfaces and Multicast Routing Protocols from day 1.		
9.4.13		Should support Dynamic IPv4 & IPv6 Routing protocols (OSPFv2 and OSPFv3) and Multicast Routing Protocols from Day 1.		
9.4.14	<u>Security</u>	Should support RADIUS, TACACS/TACACS+ and username/password for Authentication, Authorization and Accounting (AAA) with Local User Accounts and Local User Passwords.		
9.4.15		Should support secure communications to the management interface and system through SSL, Secure Shell (SSHv2), Secure Copy and SNMPv3		
9.4.16		Should support IP Source Guard, DHCP snooping, DHCPv4, DHCPv6 and Dynamic ARP Inspection.		
9.4.17		Should support IPv4 and IPv6 ACLs with up to 1K rules per ACL and a minimum of 2K rules per system.		

9.4.18		Should support Flexible Authentication with 802.1x Authentication and MAC Authentication.		
9.4.19	<u>Manageability</u>	Should support manageability using Network Management Software with Web based Graphical User Interface (GUI).		
9.4.20		Should support Integrated Standard based Command Line Interface (CLI), Telnet, TFTP, HTTP access to switch management/monitoring.		
9.4.21		Should support NetFlow or sFlow or equivalent.		
9.4.22	<u>Physical Attributes, Memory, Power Supply and Fans</u>	The Switch should be provided with 19" Universal 2 post rack mount kit.		
9.4.23		The Switch should have minimum 1GB of Main Memory and minimum 2GB Flash Memory.		
9.4.24		The Switch Should have Minimum PoE Budget of 370 Watt.		
9.4.25	<u>Mandatory Compliance:</u>	All categories of Switches, Transceivers & Switch OS should be from same OEM. Switch OS should be listed in the IPv6 Ready Logo Program Approved List. Switch should be ROHS complaint and Common Criteria / NDPP / NDcPP certified at the time of bidding.		
9.4.26	Warranty	The Switching System shall be quoted with 3 years OEM ONSITE Hardware warranty along with OEM web based / telephonic technical Support. The same should be verifiable on OEMs website. All the Switches Core, Distribution and Access series Switches OS should have same OS family.		
9.4.27	Product brochure	Vendor should provide printed technical catalogues/brochures for the quoted model containing technical specifications, features.		
9.5	TRANSCEIVER MODULES - 10GB LR			
		Product Description	Make	Model/Part Code
9.5.1	Mention Details			
	Parameter	Specification	Compliance (Yes/No)	Cross Reference
9.5.2		10,000Base-LR Fiber SFP+ with Digital Optical Monitoring		
9.5.3		LC duplex connector		
9.5.4		1310 nm, for distances up to 10 km		
9.5.5		Single Mode Fiber		
9.5.6		ROHS Compliant		
9.5.7		Compliant with SFP Transceiver MSA specification		
9.5.8		Compliant with Specifications for IEEE 802.3ae/10 Gigabit Ethernet		
9.5.9		Compliant with Industry Standard RFT Electrical Connector and Cage		

9.5.10		Laser Class 1 Product which comply with the requirements of IEC FDA 21CFR, 1040.10, Class 1 and CSA 60950-1-03/ UL 60950-1		
9.6		Network Management Solution proposed should be able to manage the wired and wireless network from single Dashboard		
10.1	Wireless LAN Controller with 4 x 10G SFP+ ports with Redundant Power Supply and Redundant FAN			
		Product Description	Make	Model/Part Code
10.1.1	Mention Details	-	-	
	Parameter	Specification	Compliance (Yes/No)	Cross Reference
10.1.2	Essential Features	The WLC Management can be in physical appliance/virtual appliance or Cloud based management platform.		
10.1.3		WLC should have Easy Setup through UPnP Network Discovery and Installation Wizard.		
10.1.4		Controller should support 400 AP from day one and should be scalable up to 6000 APs in single hardware/in clustered configuration. OEM/Bidder should provide hardware controller only. Virtual or Cloud controller should not be taken in to consideration as per the project guideline.		
10.1.5		Each Controller should have capacity to handle minimum 20,000 or more Concurrent devices.		
10.1.6		each controller should support integrated user authentication capability of minimum 20,000 users without the need for any external database servers (AD/LDAP).		
10.1.7		Redundancy Features: WLC Must support Active: Active with N+1 redundancy. The proposed WLC must have Redundant Power Supply from day 1.		
10.1.8		Controller should support minimum 1000 WLAN's.		
10.1.9		Controller should provide air-time fairness between these different speed clients – slower clients should not be starved by the faster clients and faster clients should not adversely affected by slower clients.		
10.1.10		Ability to map SSID to VLAN and dynamic VLAN support for same SSID.		
10.1.11		support automatic channel selection for interference avoidance.		
10.1.12		The WLAN solution should support client troubleshooting feature that allows an administrator to focus on a specific client device and its connectivity status. The tool should track the step-by-step progress of the client's connection, through 802.11 stages, RADIUS, EAP authentication, captive portal redirects, encryption key setup, DHCP, roaming, and more (depending on WLAN type).		
10.1.13		The WLAN solution should support in built spectrum analysis feature.		

10.1.14		The controller should support the ability to create different zones in which AP can be grouped logically or physically based on location eg different buildings in a campus can be configured as different zones so that each zone will have different configuration and policies.		
10.1.15		External Captive Portal Integration - Web-services based API for external web-portals to integrate with the controller		
10.1.16		should have the capability to limit/prevent clients from using static IP addresses thereby enhancing network efficiency and preventing network conflicts.		
10.1.17		WLC should support Hotspot 2.0 (passpoint).		
10.1.18	Auto Deployment of AP's at different locations	Access points can discover controllers on the same L2 domain without requiring any configuration on the access point.		
10.1.19		Access points can discover controllers across Layer-3 network through DHCP or DNS option		
10.1.20	Security & Monitoring	Controller should support following for security & Authentication:		
10.1.21		WIRELESS SECURITY & Authentication: Open, 802.1x/EAP, PSK, WISPr, WPA, WPA2-AES, WPA-TKIP, WEP,EAP-SIM, EAP-AKA over WLAN for 802.1x, Authentication through external Radius /Directory services.		
10.1.22		WLC should support WIDS/WIPS for security including Rogue AP detection and prevention, Evil-twin/AP spoofing detection and Ad-Hoc detection.		
10.1.23		WLC Should support L2 Client Isolation so User cannot access each other's devices. Isolation should have option to apply on AP or SSID's.		
10.1.24		Support for Walled garden "Walled Garden" functionality to allow restricted access to select destinations by unauthorized wireless users.		
10.1.25		The proposed architecture should be based on controller based Architecture with thick AP deployment. While Encryption / decryption of 802.11 packets should be able to perform at the AP.		
10.1.26		WLC should support OS/Device finger printing, Bandwidth rate limit, VLAN mapping.		
10.1.27		WLC should support Mesh.		
10.1.28		WLC should be able to present a customizable dashboard with information on the status of the WLAN network.		
10.1.29		WLC should be able to raise critical alarms by sending an email. The email client on the controller should support SMTP outbound authentication and TLS encryption.		
10.1.30		WLC or integrated solution should provide customized reporting with minimum 15 days of historical WLAN information.		
10.1.31		Filtering of Alarms and event Log based on APs, SSID or Zones		
10.1.32		Syslog support towards external syslog server		
10.1.33	QoS features	per SSID or dynamic Per user bandwidth Rate Limiting		

10.1.34		Self-healing (on detection of RF interference or loss of RF coverage) and vendor should provide their Interference mitigation techniques.		
10.1.35		System must support Band Steering where 5 Ghz clients are forced to connect over 5Ghz Radio to provide better load balancing among 2.4Ghz and 5Ghz Radios.		
10.1.36		WLC shall support Quality of Service features like 802.11e based QoS enhancements, WMM or equivalent and U-APSD to provide best performance on Video applications.		
10.1.37	Client/Guest Management	WLC should provide a Guest Login portal in order to authenticate users that are not part of the organization.		
10.1.38		WLC should be able to provide a web-based application that allows non-technical staff to create Guest accounts with validity for fixed duration like hours or days.		
10.1.39		Social Login Support: OAuth 2.0 WLAN allows end-user to access the Internet if its authentication by the OAuth 2.0 provider (Facebook, Google, LinkedIn, Microsoft		
10.1.40	Other Requirements	Controller should be FCC certified. Should comply to certifications EN55022, EN61000, EN60950, LVD.		
10.2	<u>INDOOR ACCESS POINT- TYPE-I</u>		-	-
		Product Description	Make	Model/Part Code
10.2.1	Mention Details	-	-	
	Parameter	Specification	Compliance (Yes/No)	Cross Reference
10.2.2		The APs should support the IEEE 802/11a/b/g/n/ac/ax with dual radio capabilities conforming to Wi-Fi 6 standard.		
10.2.3		The AP should support 2x2:2 MIMO on both the bands. It should support minimum 1200 Mbps data rates on 5 GHz and minimum 570 Mbps data rates on 2.4GHz.		
10.2.4		The AP shall have one 1Gbps Ethernet port. Additionally, it should have an USB port for hosting Internet-of-Things (IoT) devices such as Bluetooth Low Energy (BLE) smart beacons.		
10.2.5		The access points should manage as standalone, Hardware/virtual controller/Controller less and Cloud based.		
10.2.6		The access point should be able to operate in full MIMO mode and the necessary power POE/POE+ should be provided.		
10.2.7		Security mechanisms should be in place to protect the communication between the Access Point controller and the Access Points.		
10.2.8		The AP should have an option to be powered up through DC power in addition to POE.		
10.2.9		The AP should have a receive sensitivity of -96dBm.		
10.2.10		The AP should provide an antenna gain of minimum 3dBi on both the bands.		
10.2.11		The AP should support 20, 40,80 MHz channelization.		
10.2.12		The access point should be able to detect clients that have dual band capability and automatically steer those clients to use the 5GHz band instead of the 2.4GHz band.		

10.2.13		The AP should provide minimum Tx Power of 22dBm on both the bands		
10.2.14		The access point should support 802.1q VLAN tagging		
10.2.15		The access point should support WPA-PSK, WPA-TKIP, WPA2 AES, WPA3, 802.11i security.		
10.2.16		The Access Point should provide for concurrent support for high definition IP Video, Voice and Data application without needing any configuration change. This feature should be demonstrable.		
10.2.17		The Access Point should support WMM, Power Save, Tx Beamforming, LDPC, STBC,		
10.2.18		802.11r/k/v.		
10.2.19		The AP should have the capability to support minimum 15 BSSID		
10.2.20		Should support 250 or more clients per AP.		
10.2.21		Should support IPv6 dual stack from day one		
10.2.22		The Access Point should support mesh configuration either directly or through the controller.		
10.2.23		The Access Point should support rate limiting, application recognition and control, Access Control lists and device fingerprinting.		
10.2.24		Operating Temperature: 0°C to 40°C. Operating Humidity: up to 95% non-condensing.		
10.2.25		Should be plenum rated and comply to RoHS		
10.2.26		Should be WI-FI certified and WPC approved.		
10.2.27		Mechanism for physical device locking using padlock /Kensington lock / equivalent		
10.2.28		Should have OEM TAC support and hardware replacement warranty for 3 Years.		
10.3	<u>INDOOR WIRELESS ACCESS POINT TYPE - II</u>			
		Product Description	Make	Model/Part Code
10.3.1	Mention Details	-	-	
	Parameter	Specification	Compliance (Yes/No)	Cross Reference
10.3.2		The APs should support the IEEE 802/11a/b/g/n/ac/ax with dual radio capabilities conforming to Wi-Fi 6 standard.		
10.3.3		The AP should support 2x2:2 MIMO on both the bands. It should support minimum 1200 Mbps data rates on 5 GHz and minimum 570 Mbps data rates on 2.4GHz.		
10.3.4		The AP shall have two 1Gbps Ethernet port. Additionally, it should have built-in IoT radios with onboard BLE and Zigbee capabilities.		
10.3.5		The access points should manage as standalone, Hardware/virtual controller/Controller less and Cloud based.		
10.3.6		The access point should be able to operate in full MIMO mode and the necessary power POE/POE+ should be provided.		
10.3.7		Security mechanisms should be in place to protect the communication between the Access Point controller and the Access Points.		

10.3.8		The AP should have an option to be powered up through DC power in addition to POE.		
10.3.9		The AP should have a receive sensitivity of -96dBm.		
10.3.10		The AP should provide an antenna gain of minimum 3dBi on both the bands.		
10.3.11		The AP should support 20, 40,80 MHz channelization.		
10.3.12		The access point should be able to detect clients that have dual band capability and automatically steer those clients to use the 5GHz band instead of the 2.4GHz band.		
10.3.13		The AP should provide minimum Tx Power of 22dBm on both the bands		
10.3.14		The access point should support 802.1q VLAN tagging		
10.3.15		The access point should support WPA-PSK, WPA-TKIP, WPA2 AES, WPA3, 802.11i security.		
10.3.16		The Access Point should provide for concurrent support for high definition IP Video, Voice and Data application without needing any configuration change. This feature should be demonstrable.		
10.3.17		The Access Point should support WMM, Power Save, Tx Beamforming, LDPC, STBC,		
10.3.18		802.11r/k/v.		
10.3.19		The AP should have the capability to support minimum 15 BSSID		
10.3.20		Should support 500 or more clients per AP.		
10.3.21		Should support IPv6 dual stack from day one		
10.3.22		The Access Point should support mesh configuration either directly or through the controller.		
10.3.23		The Access Point should support rate limiting, application recognition and control, Access Control lists and device fingerprinting.		
10.3.24		Operating Temperature: 0°C to 40°C. Operating Humidity: up to 95% non-condensing.		
10.3.25		Should be plenum rated and comply to RoHS		
10.3.26		Should be WI-FI certified and WPC approved.		
10.3.27		Mechanism for physical device locking using padlock /Kensington lock / equivalent		
10.3.28		Should have OEM TAC support and hardware replacement warranty for 3 Years.		
10.4	<u>WIRELESS ACCESS POINT - TYPE - III</u>		-	-
		Product Description	Make	Model/Part Code
10.4.1	Mention Details	-	-	
	Parameter	Specification	Compliance (Yes/No)	Cross Reference
10.4.2		The APs should support the IEEE 802/11a/b/g/n/ac/ax with dual radio capabilities conforming to Wi-Fi 6 standard.		
10.4.3		The AP should support 4x4:4 MIMO on 5 GHz and 2x2:2 on 2.4 GHz bands. It should support minimum 2400 Mbps data rates on 5 GHz and minimum 570 Mbps data rates on 2.4GHz.		

10.4.4	The AP shall have One 2.5Gbps Ethernet port and one 1Gbps Ethernet port. Additionally it should have an USB port for hosting Internet-of-Things (IoT) devices such as Bluetooth Low Energy (BLE) smart beacons.		
10.4.5	The access points should manage as standalone, Hardware/virtual controller/Controller less and Cloud based.		
10.4.6	The access point should be able to operate in full MIMO mode and the necessary power POE/POE+ should be provided.		
10.4.7	Security mechanisms should be in place to protect the communication between the Access Point controller and the Access Points.		
10.4.8	The AP should have an option to be powered up through DC power in addition to POE.		
10.4.9	The AP should have a receive sensitivity of -96dBm.		
10.4.10	The AP should provide an antenna gain of minimum 3dBi on both the bands.		
10.4.11	The AP should support 20, 40, 80, 160 MHz channelization.		
10.4.12	The access point should be able to detect clients that have dual band capability and automatically steer those client to use the 5GHz band instead of the 2.4GHz band.		
10.4.13	The AP should provide minimum Tx Power of 23dBm on both the bands		
10.4.14	The access point should support 802.1q VLAN tagging		
10.4.15	The access point should support WPA-PSK, WPA-TKIP, WPA2 AES, WPA3, 802.11i security.		
10.4.16	The Access Point should provide for concurrent support for high definition IP Video, Voice and Data application without needing any configuration change. This feature should be demonstrable.		
10.4.17	The Access Point should support WMM, Power Save, Tx Beamforming, LDPC, STBC,		
10.4.18	802.11r/k/v.		
10.4.19	Should support 500 or more clients per AP.		
10.4.20	Should support IPv6 dual stack from day one		
10.4.21	The Access Point should support mesh configuration either directly or through the controller.		
10.4.22	The Access Point should support rate limiting, application recognition and control, Access Control lists and device fingerprinting.		
10.4.23	Operating Temperature: 0 °C to +40 °C (+32 °F to +104 °F). Operating Humidity: up to 95% non-condensing.		
10.4.24	Should be plenum rated and comply to RoHS		
10.4.25	Should be WiFi certified and WPC approved.		
10.4.26	Mechanism for physical device locking using padlock /Kensington lock / equivalent		
10.4.27	Should have OEM TAC support and hardware replacement warranty for 3 Years.		
10.5	<u>OUTDOOR WIRELESS ACCESS POINT</u>	-	-

		Product Description	Make	Model/Part Code
10.5.1	Mention Details	-	-	
	Parameter	Specification	Compliance (Yes/No)	Cross Reference
10.5.2		The APs should support IEEE 802/11a/b/g/n/ac/ax standards with Dual Band Concurrent 2x2:2 streams (2.4GHz) + 2x2:2 streams (5GHz)		
10.5.3		The proposed access point should be 802.11ax (Wi-Fi 6) and Operate in dual band radio.		
10.5.4		The AP Should supports on both bands for the capacity of 2.4GHz 802.11b/g/n/ac/ax 574 Mbps and 5 GHz 802.11b/g/n/ac/ax 1200 Mbps		
10.5.5		The AP shall have 1 ports, auto MDX, auto-sensing 10/100/1000 Mbps, RJ-45 port and 1 USB 2.0 port		
10.5.6		The access points should manage as standalone, Hardware/virtual controller/Controller less and Cloud based.		
10.5.7		The Outdoor AP should support 40 MHz channelization on 2.4GHz and 20/40/80 MHz channelization on 5 GHz. It should also support MU-MIMO.		
10.5.8		The access point should be able to operate in full MIMO mode with 802.3af/at POE.		
10.5.9		Security mechanisms should be in place to protect the communication between the Access Point controller and the Access Points.		
10.5.10		Since most radio interference come from the WLAN network itself the vendor should specify what mechanisms such as beam steering/ adaptive antenna technology/ beamforming are available in combination to focus the energy on the destination STA and minimize radio interference with the surrounding of the AP. The vendor should specify if the activation of such feature is still compatible with 802.11n spatial multiplexing.		
10.5.11		Since the WLAN network will be using an unlicensed band, the solution should have mechanisms that reduce the impact of interference generated by other radio equipment operating in the same band. Please Describe techniques supported.		
10.5.12		The access point should be able to detect clients that have dual band capability and automatically steer those clients to use the 5GHz band instead of the 2.4GHz band.		
10.5.13		The antennas to be dual polarised and should be integrated inside the access point enclosure to minimize damage and create a low-profile unit that does not stand out visually. The antennas could be omnidirectional or directional as per the requirement or site survey done by the vendor.		
10.5.14		The access point should support 802.1q VLAN tagging		
10.5.15		The access point should support WPA2/3 enterprise authentication. AP should support Authentication via 802.1X and Active Directory.		

10.5.16		Implement Wi-Fi alliance standards WMM, 802.11d, 802.11h and 802.11e		
10.5.17		The Access Point should provide for concurrent support for high definition IP Video, Voice and Data application without needing any configuration change. This feature should be demonstrable.		
10.5.18		Channel selection based on measuring throughput capacity in real time and switching to another channel should the capacity fall below the statistical average of all channels without using background scanning as a method.		
10.5.19		Should support Transmit power tuning in 1dB increments in order to reduce interference and RF hazards		
10.5.20		Device antenna gain (integrated) must be at least 3dBi.		
10.5.21		Up to 161BSSIDs on 2.4G radio and 5G radio for multiple differentiated user services (e.g. voice).		
10.5.22		Should support 500 or more clients per AP and SSID up to 31 per AP		
10.5.23		Should support IPv6 from day one		
10.5.24		For troubleshooting purposes, the administrator should have the ability to remotely capture 802.11 and / or 802.3 frames from an access point without disrupting client access.		
10.5.25		Operating Temperature		
10.5.26		-20°C to 65°C		
10.5.27		. Operating Humidity: up to 95% non-condensing.		
10.5.28		The Outdoor AP should be IP67 rated & Wind Survivability Up to 266km/h (165 mph)		
10.5.29		Should be WiFi certified and WPC approved; ETA certificate to be enclosed		
10.5.30		Mechanism for physical device locking using padlock /Kensington lock / equivalent		
10.5.31		Should have OEM TAC support and hardware replacement warranty for 3 Years.		
11	IP-PBX SERVER			
		Product Description	Make	Model/Part Code
11.1	Mention Details	-	-	
	Parameter	Specification	Compliance (Yes/No)	Cross Reference
11.1.1	System Features	The offered system should be the latest model of the vendor being supplied worldwide. Old models / releases will not be accepted.		
11.1.2		The system should be based on server-gateway architecture running on Linux OS supporting IP, Analog and Digital Extensions.		

11.1.3		The servers should be of industry standard makes like DELL/HP/IBM only. The proposed platform should be expandible upto 1500 Solution users at a single site in any mix of IP (H.323 and SIP) , Analog and Digital extenstions.		
11.1.4		The system should be capable of deployment on virtualized platforms like VMWare/Xen etc.		
11.1.5		System should provide call control, mobility, IM and presence, and Messaging, centralized licensing in a single server.		
11.1.6		System should have secondary/redundant server for additional capacity and resiliency.		
11.1.7		System should have fax on demand; if required it may be provisioned through third party Fax application.		
11.1.8		The system should support standards-based multi-site networking, using QSIG, H.323 trunks or advanced networking, to interoperate with other PABX's, allowing feature transparency.		
11.1.9		System should be able to provide backup/redundancy options in case of failure of one server.		
11.1.10		The system should support at least 30 remote sites on the same platform through distributed gateways.		
11.1.11		System should be able to provide centralized voicemail with the option of Distributed centralized voicemail in case of connectivity failure.		
11.1.12		The offered system should have a valid TEC approval. TEC approved certificate copies for ISDN connectivity should be enclosed along with the offer.		
11.1.13		The system should support BRI/ PRI/ T1/ E1/ E1R2/ Analog Trunks.		
11.1.14		The system should have in-bulit 2 port auto-sensing 10/100/1000 Mbps LAN Switch (Layer 3)		
11.1.15		The system should support X.21/V.35 WAN Interface.		
11.1.16		The system should support internal MOH (Music on Hold), which should be uploaded using the .Wav file and should have an audio input port for external MOH connectivity.		
11.1.17		The system should have relays for door entry systems.		
11.1.18		System should support standards-based CTI integration with 3rd party applications		
11.1.19		The system should be 19" rack mountable.		
11.1.20		OEM Should have R&D center in India from last five years and should have office in Eastern Part of India		
11.1.21		Manufacturer should be listed in Gartner's Magic Leaders Quadrant atleast 3 times in last 5 years.		

11.1.22	Telephony Features	Besides the normal Telephony features, the system should support the following features.		
11.1.23		Absent Text		
11.1.24		Call Coverage		
11.1.25		Call Forwarding		
11.1.26		Call Hold		
11.1.27		Call Intrude		
11.1.28		Call Park		
11.1.29		Call Pickup		
11.1.30		Ring Back When Free		
11.1.31		Suspend Call Waiting		
11.1.32		Reclaim Call		
11.1.33		Distinctive and Personalized Ringing		
11.1.34		Toggle Calls		
11.1.35		Account Codes		
11.1.36		Call Barring		
11.1.37		Authorization codes		
11.1.38		Bridged Appearance		
11.1.39		Mobile Twinning		
11.1.40		Flexible numbering Schemes		
11.1.41		Queuing		
11.1.42		Call Detail Recording		
11.1.43		SMDR		
11.1.44	Data Communication Features	INTERNET ACCESS: Firewall protected, leased line or dial-up connectivity via PRI, T1 or WAN port		
11.1.45		System should have in built-in DHCP Server, which should be able to given IP Addresses to the endpoints.		
11.1.46		System should have a Built-in Firewall functionality		
11.1.47		System should support built-in IPSEC based VPN connectivity		
11.1.48		System should support built-in Remote access server (RAS) functionality.		
11.1.49		System should have built-in LAN and WAN ports		
11.1.50		System should have a built-in Internet Access Router		
11.1.51		System should have Integral Static or Dynamic (RIP I/II) routing for both Internet and Branch-to-Branch solutions		
11.1.52		System should support Frame Relay WAN protocol		
11.1.53		System should support Diffserv for QoS (Quality of service) for the voice packets traveling over data networks		
11.1.54		System should support ISDN backup feature in case the FR network is not available		
11.1.55		System should support NAT		
11.1.56		System should support LDAP (Local Directory Access Protocol)		
11.1.57		System should support the following protocols: PPP, ML-PPP, CHAP, PAP, ARP, BACP		
11.1.58	Terminal Support	System should support the following type of terminals		

11.1.59		Analog Phones		
11.1.60		Digital Phones		
11.1.61		IP Hardphones		
11.1.62		IP Softphones		
11.1.63		Wireless IP Phones		
11.1.64		3rd party SIP telephones		
11.1.65		DECT Phones		
11.1.66		ISDN Extensions		
11.1.67	Extensions and Trunks	System should be able to support up-to 1500 extensions in any combination of Analog, Digital & IP in future.		
11.1.68		System should support up to 16 analog trunks or 8 PRI trunks (240 E1 Channels) on each gateways		
11.1.69		System should have 256 SIP trunk channels per Primary/Secondary server with hardened Platform and latest standards		
11.1.70		System should have built-in H.323 gateway and gatekeeper functionality without the need to put any additional hardware		
11.1.71		System should support SIP trunking to Internet Telephony Service Providers, allowing non-SIP phones to make SIP calls		
11.1.72		System should support following types of trunks		
11.1.73		T1/ E1/ E1R2		
11.1.74		Analog Trunks		
11.1.75		PRI		
11.1.76		BRI		
11.1.77	Smartphone & Tablet Capabilities	The proposed hybrid-IP telephone system should have the ability to be used/accessed from a smartphone and/or a tablet device		
11.1.78		The Softphone should provide full call control from an iPhone or Android powered smartphone.		
11.1.79		Make and receive phone calls and instant messages, host and attend audio conferences.		
11.1.80		See employee availability via presence, and use Geo-tracking to determine the location in the field.		
11.1.81		All of this is done using the corporate directory, so there are no personal cell phone numbers will be involved.		
11.1.82		The Softphone application should be downloadable from Google Playstore or Apple iTunes without any additional cost for any number of device.		
11.1.83	Presence/IM/th in-client Application	System should have simplified call control features like tap to call, tap to conference etc through mobility application on laptop/desktop and smartphones.		
11.1.84		Visual voice mail, IM, presence		
11.1.85		Central directory access		
11.1.86		Support for Android and iOS on smartphones or tablets and window platform and iOS platform on Laptop/desktop.		
11.1.87	Video Capability	System should have IP Soft-phone capability with video support		

11.1.88		System should be able to connect ITU standard board-room VC units as extensions for seamless voice and video integration.		
11.1.89	Voicemail Features	Voice Mail System of same OEM which should support Mail Boxes for all users.		
11.1.90		Voice mail system storage should be dependent on the server storage capacity.		
11.1.91		Voicemail to email option should be available		
11.1.92		System should support unified messaging with Microsoft Exchange or any IMAP compliant email application.		
11.1.93		System should support voicemail access through web-browser		
11.1.94		External Fax server integration should be available.		
11.1.95		Should support text-to-Speech functionality		
11.1.96		Should support Dial-by-Name functionality		
11.1.97		Should support Auto Attendant		
11.1.98		IVR functionality should be available		
11.1.99		External Database Integration should be available during IVR call flows		
11.1.100	Conferencing Features	128 Party Audio Conference bridge from day 1 (should support upto 256 party Audio Conference bridge).		
11.1.101		Multiple conferences with variable number of users should be possible within each of the 2 conferencing banks.		
11.1.102		System should be able to generate detailed reports about the conference		
11.1.103		System should be able to send emails to all the participants giving them the conferencing details		
11.1.104	Call Recording	System should have in-built capability to automatically as well as manually record and store calls into any voicemail box or a central database, for later retrieval, sorting, searching through a web-based browser interface		
11.1.105		Recordings should be able to be made on the basis of:		
11.1.106		User ID		
11.1.107		Account code		
11.1.108		Hunt Group		
11.1.109		Caller ID		
11.1.110		Incoming call route		
11.1.111		Time profiles		
11.1.112		System should support automatic deletion of oldest recordings, if needed		
11.1.113		System should provide optional archival of recordings by automatically writing them to a DVD +RW drive		
11.1.114		System should support G.726 16kbps ADPCM standard for compressing and storing recordings, providing the best compromise between CPU loading and storage space		

11.1.115	Mobility Support	System should support Mobile Twinning, enabling an extension and an internal/ external number to operate together as a single telephone. It should be possible to set external mobile devices as twinning targets, even if the primary extension is logged out/ unplugged.		
11.1.116		System should be able to provide 'work from home' features like telecommuting and VPN hard phones.		
11.1.117	Wireless Support	System should support wireless IP Phones which will work through the Access Points which are being used for Wireless Data network supporting 802.11a/b/g protocol.		
11.1.118		System should support IP DECT, wherein the system and the Base Station are connected over the IP Network		
11.1.119	Computer Telephony Integration	CTI capability should be in-built in the platform		
11.1.120		System should support CTI using open standards over LAN		
11.1.121		System should be able to provide 1st party CTI as well as 3rd party CTI control to external applications.		
11.1.122	SMDR	System should be able to print the SMDR in readable format without the need to have external software.		
11.1.123		The SMDR should be stored in the excel format.		
11.1.124		Separate excel files for each day should be available		
11.1.125		SMDR should be able to be sent over LAN to a specified IP address and port number.		
11.1.126	Management utilities	System should be able to be configured and administered using a GUI based application		
11.1.127		System should support SNMP based network management		
11.1.128		In case SNMP management is not available, system should be capable of sending event notifications to up-to 3 email addresses, each with a different set of alarms		
11.2	IP PHONE TYPE-I			
		Product Description	Make	Model/Part Code
11.2.1	Mention Details	-	-	
	Parameter	Specification	Compliance (Yes/No)	Cross Reference
11.2.2		SIP Based Full duplex speaker phone with colour display –320x240 Pixel density, 2.8 inches - Diagonal		
11.2.3		It should be POE Class-1 device		
11.2.4		4 contextual softkey buttons and 4 administrable dual LED line/feature key buttons		
11.2.5		Should have Dual Gigabit Ethernet (10/100/1000) line interface		
11.2.6		Audio codecs like G.711, G.722, G.726, G.729A/B and Opus should be supported.		

11.2.7		Should have feature buttons: Headset, Phone, Call Log, Contacts, Voicemail Message		
11.3	IP PHONE TYPE-II			
		Product Description	Make	Model/Part Code
11.3.1	Mention Details	-	-	
	Parameter	Specification	Compliance (Yes/No)	Cross Reference
11.3.2		SIP based full duplex IP Deskphone with Diagonal width: 3.5” (diagonal) and 320 x 240 pixel color display		
11.3.3		The phone should have Secondary color display with 160 x 240 pixel— 10 buttons with dual LEDs		
11.3.4		It should have hard buttons for phone, messages, contacts, history, home, navigation cluster, headset, speaker, volume, mute		
11.3.5		It should have 4 soft key and 48 administrative Buttons		
11.3.6		It Should have LEDs for speaker, mute, headset, message, history		
11.3.7		It Should have Dual Gigabit Ethernet Port (10/100/1000) with PoE Support.		
11.3.8		It should be POE Class-1 device		
11.3.9		Should have optional Wi-Fi Module		
11.3.10		It should support audio codecs such as Codec support G.711, G.726A, G.729, G.729A /B, G.722, Opus.		
11.4	OPERATOR CONSOLE			
		Product Description	Make	Model/Part Code
11.4.1	Mention Details	-	-	
	Parameter	Specification	Compliance (Yes/No)	Cross Reference
11.4.2		It Should be SIP based Operator Console IP Phone.		
11.4.3		It Should have Full duplex speaker phone, minimum 3.5 inch (diagonal) colour display – 320 x 240 pixels		
11.4.4		The IP Phone should have option to connect wireless Module Wi-Fi connectivity and/or Bluetooth wireless headset		
11.4.5		Should have 8 Administrable feature key buttons with dual LEDs (red, green) and 4 softkeys		
11.4.6		It Should have Dual Gigabit Ethernet Port (10/100/1000) with PoE Class - 1 Support.		
11.4.7		Audio codecs like G.711, G.722, G.726, G.729A/B and Opus should be supported.		
11.4.8		It Should have hard buttons for phone, messages, contacts, history, home, navigation cluster, headset, speaker, volume, mute.		
11.4.9		It Should have LEDs for speaker, mute, headset, message, and history.		

11.4.10		Should support three 24-Keys Expansion Module		
11.5	VIDEO IP PHONE			
		Product Description	Make	Model/Part Code
11.5.1	Mention Details	-	-	
	Parameter	Specification	Compliance (Yes/No)	Cross Reference
11.5.2		The Video Deskphone platform should be Android 8 Oreo or recent and end users can install third party applications on Google Play store seamlessly.		
11.5.3		It should have 8" Capacitive Touch color display with Resolution of 1280 X 800 pixel		
11.5.4		Wideband audio available on all transducers, handset, headset, and handsfree		
11.5.5		No mechanical or hard button dial-pad		
11.5.6		1X 3.5 mm audio jack socket and 1X RJ9 analog headset port		
11.5.7		1X USB Type-C port		
11.5.8		Should support cable free Handset cradle		
11.5.9		16 GB flash memory		
11.5.10		Integrated Bluetooth for pairing accessories, cordless handset and wireless headsets		
11.5.11		Wi-Fi 802.11a/b/g/n/ac		
11.5.12		The should have hotspot feature inbuilt		
11.5.13		Power over Ethernet IEEE 802.3af (Class 3) or 802.3at (Class 4)		
11.5.14		Audio codecs like G.711, G.722, G.726, G.729 and Opus should be supported.		
		Signature with seal		
		Bidder's Name :		

ANNEXURE-V

TENDER ACCEPTANCE LETTER
(To be given on Company Letter Head)

Ref. No.

Date:

To,

The Registrar
National Institute of Technology Meghalaya
Bijni Complex, Laitumkrah
Shillong 793003, Meghalaya

Sub: Acceptance of Terms & Conditions of Tender.
Tender Reference No.: NITMGH/..... dated2021

Name of Tender:-

Sir,

1. I / We have downloaded / obtained the tender document(s) for the above-mentioned Tender from the website of NIT Meghalaya, Shillong as per your advertisement, given in the CPP Portal and the above mentioned website.
2. I / We hereby certify that I / we have read the entire terms and conditions of the tender documents from Page No.....to (including all annexure(s), schedule(s),etc.),which form part of the contract agreement and I / we shall abide hereby by the terms / conditions / clauses contained therein.
3. The corrigendum(s), if any, issued from time to time by NIT Meghalaya, Shillong, have also been taken into consideration, while submitting this acceptance letter.
4. I / We hereby unconditionally accept the tender conditions of above-mentioned tender document(s) /corrigendum(s)in its totality/ entirety.
5. I/WedoherebydeclarethatourFirmhasnotbeenblacklisted/debarredbyanyGovt.Department/Publicsectorundertaking.
6. I / We certify that all information furnished by our Firm is true & correct and in the event that the information is found to be incorrect/untrue or found violated, then NIT Meghalaya, Shillong shall without giving any notice or reason therefore or summarily reject the bid or terminate the contract, without prejudice to any other rights or remedy including the forfeiture of the full said earnest money deposit absolutely.

Yours Faithfully,

(Signature of the Bidder, with Official Seal)
