**Prof. Job Kurian**
**Registrar i/c**

**Date : 31.05.2018**

**Open Tender No: IITPKD/ADMN/017/2018**          **Due Date:  21.06.2018 @ 3.00 PM**

Dear Sir/Madam,

On behalf of the **Indian Institute of Technology, Temporary campus, Palakkad, Quotations are invited for "Supply, Installation, Testing and Commissioning of wired and wireless LAN at Transit Campus, IIT Palakkad"**.

| | | |
| --- | --- | --- |
| **Pre Bid Meeting** | **06.06.2018 at 11.00 AM** | **Conference Room (Room No. 102)** |
| **Technical bid Opening** | **21.06.2018 at 3.00 PM** | **Conference Room (Room No. 102)** |

**Instructions to the Bidder**

(i)      **Preparation of Bids:** - The tenders should be submitted **under two-bid system (i.e.) Technical bid and Financial bid in separate envelopes.**  The technical bid should consist of all technical details along with commercial terms and conditions. No prices should be included in technical bid. Financial Bid should indicate item – wise prices for the items mentioned in the technical bid. The technical and the financial bids should be put in separate covers and sealed. Both sealed covers should be put into a bigger cover. **Bids must either be spiral bound / stapled together. No loose sheets will be accepted. All pages must be numbered.**

(ii)      The Quotations duly sealed and superscribed on the envelope **with the reference No. and due date, should be addressed to the undersigned so as to reach on or before the due date stipulated above.**

(iii)     **Delivery of the tender:** - The tender shall be sent to the below-mentioned address either by post or by courier so as to reach this office before the due date and time specified in the Schedule.  The offer/bid can also be dropped in the tender box on or before the due date and time specified in the schedule.  **The tender box is kept in the office of the Academic Block, IIT Palakkad, Ahalia Integrated Campus, Kozhipara, Palakkad-678 557.**

(iv)     **Opening of the tender:** - The offer/Bids will be opened by a committee duly constituted for this purpose.  The technical bids will be opened first and will be examined by a

technical committee which will decide the suitability of the bid as per our specifications and requirements.   The bidders will be invited for opening of Technical bids. **The Bidder's representative should carry authorization letter from their company empowering them to participate in the Pre-bid and tender opening meetings.** In respect of opening of financial bid, those bidders who are technically qualified only will be called.

**(v)**      **Prices:** - The price should be quoted in nett per unit (after breakup) and must include all packing and delivery charges indicated separately for each item. ***The price indicated should be CIF/CIP Kochi. The Clearance, transportation and unloading of all the equipment to IIT Palakkad is the responsibility of the bidder or its agencies. The associated cost should be quoted separately in the financial bid.*** The offer/bid should be exclusive of taxes and duties, which will be paid by the purchaser as applicable.  The price should be quoted without custom duty. T**he custom duty will be paid at concessional rate against duty exemption certificate.**

**(vi)**      **Agency Commission**: -   Agency commission, if any, will be paid to the Indian agents in Rupees on receipt of the equipment and after satisfactory installation.   Agency Commission will not be paid in foreign currency under any circumstances. The details should be explicitly shown in Tender even in the case of 'Nil' commission. The tenderer should indicate the percentage of agency commission to be paid to the Indian agent. **Terms of Delivery**: - The item should be supplied to our Institute as per Purchase order. The installation and commissioning should be completed as specified by us in the attached schedule.

**(vii)**      **Acceptance & Rejection**: IIT Palakkad reserves the full right to accept / reject any tender at **any** stage without assigning any reason.

Yours sincerely,

**Registrar, IIT Palakkad**

**Important Conditions:**

1) The due date for the submission of the tender is  **21.06.2018 at 3.00 PM**

2) The offers / bids should be submitted in two-bids systems (i.e.) Technical bid and financial bid. The Technical bid should consist of all technical details / specifications only.  The Financial bid should indicate item-wise price for each item and it should contain all Commercial Terms and Conditions including Taxes (separately), transportation, packing & forwarding charges, installation, guarantee, payment terms, pricing terms etc.

3) The bidder must quote for all items listed in all parts (Part A, Part B) of this tender document. Technical and Financial bids must be enclosed in separate envelopes superscribed clearly as "Technical Bid " and "Financial bid" and sealed. Both the sealed covers should be put in a bigger cover. Open Tender for **"Supply, Installation, Testing and Commissioning of wired and wireless LAN at Transit Campus, IIT Palakkad"** should be written on the left side of the Outer bigger cover and sealed.

4) **EMD:-** EMD should be at 2% (two percent) of the tender value quoted by the bidder. EMD should be enclosed in the financial bid.  **Enclosing the EMD in the Technical bid will automatically DISQUALIFY the tenderer**. EMD should be in the form of DD in favour of "Indian Institute of Technology Palakkad" and payable at Palakkad. The tender without EMD would be considered as UNSOLICITED and will be REJECTED. Photo/FAX copies of the Demand Draft/Banker's pay orders will not be accepted. No interest will be paid for the EMD and the EMD will be refunded to the successful bidder on receipt of Performance Security.

5) **Performance Security:-** The successful bidder will be asked to submit Performance Security for an amount of 5% of the value of the contract/supply.  The Performance Security may be furnished in the form of an Account Payee DD or FD Receipt from the commercial bank or Bank Guarantee from any nationalized bank of India.  **Only after submission of Performance Security, Purchase Order/Work Order will be released / L.C will be opened.**

6) **Performance Security in the form of Bank Guarantee:-**  Incase the successful bidder is a foreign company and  wishes to submit Performance Security in the form of Bank Guarantee, the Bank Guarantee should be routed through the Beneficiary Bank to the end user bank. Otherwise, the Indian Agent of the foreign vendor has to submit a Bank Guarantee from a Nationalized Bank of India.

7) The Bank Guarantee should remain valid for a period of sixty days beyond the date of completion of all contractual obligations of the supplier including the warranty obligations.

If an Indian agent is involved, the following documents must be enclosed:

  (a) Foreign principal's proforma invoice indicating the commission payable to the Indian Agent and nature of after-sales service to be rendered by the Indian Agent.

  (b) Copy of the agency agreement with the foreign principal and the precise relationship between them and their mutual interest in the business.

8) The offer/bids should be sent only for a system or equipment that is available in the market and supplied to a number of customers. A list of customers in India and abroad with details must accompany the quotations. Quotations for a prototype machine will not be accepted.

9) Original catalogue (not any photocopy) of the quoted model duly signed by the principals must accompany the quotation in the Technical bid. No prices should ever be included in the Technical bid.

10) Compliance or Confirmation report with reference to the specifications and other terms & conditions should also be obtained from the principal.

11) **Validity:** Validity of Quotation not less than 90 days from the due date of tender.

12) **Delivery Schedule:**- The tenderer should indicate clearly the time required for delivery of the item. In case there is any deviation in the delivery schedule, liquidated damages clause will be enforced or penalty for the delayed supply period will be levied.

13) **Risk Purchase Clause:**- In the event of failure of supply of the item/equipment within the stipulated delivery schedule, the purchaser has all the right to purchase the item/equipment from other sources on the total risk of the supplier under risk purchase clause.

14) **Payment:**- No Advance payment will be made for Indigenous purchase. 100% Payment after supply and successful installation and commissioning and certification by the end user. In case of import supplies the payment will be made only through **100% Letter of Credit i.e. (50% payment will be released against shipping documents and 50% after successful installation and meeting acceptance criteria wherever the installation is being done).**

15) **On-site Installation**: - The equipment or machinery has to be installed and commissioned by the successful bidder within one week from the date of receipt of the **item at site of IIT Palakkad.**

16) **Warranty/Guarantee**: - The offer should clearly specify the warranty or guarantee period for the machinery/equipment. Any extended warranty offered for the same has to be mentioned separately. (For more details please refer our Technical Specifications).

17) **Late offer**: - The offers received after the due date and time will not be considered. The Institute shall not be responsible for the late receipt of Tender on account of Postal, Courier or any other delay.

18) **Loading and unloading charges will be borne by the bidder/Supplier**.

19) **Acceptance and Rejection**: - IIT Palakkad has the right to accept the whole or any part of the Tender or portion of the quantity offered or reject it in full without assigning any reason.

20) **Do not quote the optional items or additional items unless otherwise mentioned in the Tender documents / Specifications.**

21) **Disputes and Jurisdiction**: - Any legal disputes arising out of any breach of contract pertaining to this tender shall be settled in the court of competent jurisdiction located within the city of Palakkad in Kerala.

22) All Amendments, time extension, clarifications etc., will be uploaded on the institute website only and will not be published in newspapers. Bidders should regularly visit the above website to keep themselves updated. No extension in the bid due date/ time shall be considered on account of delay in receipt of any document by mail.

**Acknowledgement**:- It is hereby acknowledged that the tenderer has gone through all the conditions mentioned above and agrees to abide by them.

**SIGNATURE OF TENDERER
ALONG WITH SEAL OF THE
COMPANYWITHDATE**

**Supply, Installation,Testing and Commissioning of Wired and Wireless LAN at Transit Campus of IIT Palakkad.**

**Scope of work :** The scope of work expected from the successful bidder(s) includes the supply, installation, testing and commissioning of all components listed in this tender.

| Part A | Network Infrastructure |
|--------|------------------------|
| Part B | Passive Networking Components |

**Instructions**

The bidder should quote for all items in all parts (Part A and  Part B).

IMPORTANT : Enclosing EMD or mentioning value of EMD in technical bid will lead to immediate disqualification.

IIT Palakkad reserves the right to request for a demonstration, if required, of compliance w.r.t to technical specifications. Such a demonstration will be conducted in the Temporary Campus of IIT Palakkad, Ahalia Integrated Campus, Palakkad. The expenses for this demonstration will have to borne by the bidder

The purchase committee at IIT Palakkad reserves the right to ask for any details to satisfy themselves of the proven capabilities of the bidder in meeting the specifications listed in this tender. The bidder must provide these details within two working days of receiving such a request via email. Decision regarding technical compliance of the bidder can be taken on the basis of this information.

**Overview of Items :**

| Sl No | Component | Quantity |
|---|---|---|
| | **Part A : Network Infrastructure** | |
| A1 | Campus Distribution Switches | 2 Nos |
| A2 | 48-Port Gigabit Access Switches | 2 Nos |
| A3 | 48-Port Gigabit Access Switches (PoE) | 19 Nos |
| A4 | 24-Port Gigabit Access Switches (PoE) | 26 Nos |
| A5 | 24-Port Switch | 1 No |
| A6 | 8-Port Gigabit Access Switches (PoE) | 12 Nos |
| A7 | Wired and Wireless Network Management  Software | 1  Nos |
| A8 | Wireless Access Points | 65 Nos |
| | **Part B : Passive Networking Components** | |
| B1 | 19" 42 U Rack Make:  Valrack/ Netrack /APW | 2 Nos |
| B2 | UTP CAT 6 Cables Make: Molex/Amp/Norden | 10 Boxes |
| B3 | RJ-45 patch Cord 1m Make: Molex/Amp/Norden | 300 Nos |
| B4 | RJ-45 patch Cord 2m Make: Molex/Amp/Norden | 1250 Nos |
| B5 | FDMS for 12 core x 4 fibers (48 Core ) | 2 |
| B6 | FTB for 12 core | 8 |
| B7 | Media Converter Make: MROTek/TP Link/Microtek | 7 |

**Eligibility Criteria for bidders**

Only those bidders fulfilling the following criteria should respond to  this tender.

1.  The bidder should be either an Original Equipment Manufacturer (OEM) for items A1-A8 or should be an authorized representative (provide documentary proof) of such an OEM. If the bidder is not the OEM, the bidder must be a Platinum/Gold/Silver/Premier certified partner of the OEM for items A1-A8 (certificate should be enclosed as proof). Manufacturer authentication certificate should also be attached.

2.  All the infrastructure solution components (A1 - A8)  should be from a single OEM. This OEM shall be in the Leaders Quadrant in the latest Gartner magic quadrant report for Wired and Wireless LAN Access infrastructure.

3.  The bidder should be a company registered under the Companies Act, 1956/2013 OR a Limited Liability Partnership /a registered partnership firm OR a sole-proprietorship entity. Appropriate Registration

incorporation certificate must be submitted.

4.  The bidder must have a registered office in Karnataka/Tamilnadu/Kerala. Certificate of registration for the offices to be provided.

5.  The bidder must also have a service center in Karnataka/Tamil Nadu/Kerala. Certificate of registration for the centers to be provided. Details about scope of service activities provided by the service centers must be provided. The contact details of the service engineers must be provided.

6.  The bidder must be in existence in the business of supplying Wired and Wireless LAN equipments for a minimum period of 3 previous financial years. Documentary evidence of experience must be provided.

7.  Compliance sheet for the technical specification and OEM Brochure have to be attached along with the Technical bid. Vendor has to fill the compliance sheet and mention page number or reference number in OEM brochure. Unfilled / partially filled sheets lead to disqualification.

8.  The bidder must provide detailed specification of each equipment/item. Model numbers, data sheets and brochures must be included for all equipment quoted, system and all accessories. Specifications corresponding to quoted model number must be available publicly via OEM's website for scrutiny. If not, bid can be disqualified on technical grounds.

9.  Bidder should provide performance certificate of any 3 Wired and Wireless LAN equipment installations work of at least 40 Lakhs of value which they have done in last three years.

10. **If the bidder is unable to deliver items listed in Part A within 15 days of receiving the Purchase order, then the bidder must make arrangements to provide at least 8 nos of 48-Port Gigabit Access Switches (PoE OR Non-POE) on loan-basis until delivery and commissioning of the items listed in this tender. All items listed in Part B must be delivered within 15 days of receiving the Purchase order.**

**TECHNICAL SPECIFICATIONS**

**A1. Campus  Distribution Switches   : 2Nos.**

| Sl. No. | Minimum Specifications | Compliance Yes / No | Deviation, if any | Reference/Page number in the data sheet |
|---|---|---|---|---|
| 1 | Shall be modular chassis, 19" Rack Mountable with dual, field-replaceable, hot-swappable power supplies and minimum six slots for hot-swappable 1G/10G/40G network port modules | | | |
| 2 | Shall have dual management module/supervisor slots in addition to network module slots. Shall be offered with dual, redundant management module/supervisor on Day 1. | | | |
| 3 | The switch shall support upto 144 Gigabit ports (SFP/Copper RJ-45), 48 10-GbE ports (SFP+/Copper RJ-45), 12 40-GbE ports (QSFP+) or a combination | | | |

| | | | | |
|---|---|---|---|---|
| 4 | The switch shall be populated with 24 x 1G/10-Gigabit ports (SFP+) loaded with 1G single mode Fiber Transceivers (1G Base-LX) on Day 1.  Switch Should have 24 RJ-45 auto sensing 10/100/1000 ports on Day 1. | | | |
| 5 | One RJ45 for Serial Console, one RJ45 Ethernet for Out Of Band Management and one USB for file management | | | |
| 6 | At least 4GB DRAM and minimum 12 MB Packet buffer  size/module | | | |
| 7 | Should support at least 64,000 MAC addresses | | | |
| 8 | Jumbo packet support up to 9K bytes | | | |
| 9 | Should support Dual stack , IPV4 & IPV6 features. | | | |
| 10 | Shall support Layer 3 routing features including RIP, OSPF, OSPFv3, BGP, VRRP, PIM Multicast routing, Policy based routing etc. on Day 1. If any licenses are required, it shall be included | | | |
| 12 | Shall support concurrent IEEE 802.1X, Web, and MAC authentication schemes per port with minimum 24 authentication sessions per port | | | |
| 12 | Access control lists (ACLs), MAC address based port security and lockout, DHCP protection and Dynamic ARP protection | | | |
| 13 | SNMP v2c/v3, SSHv2 Secure Shell, RADIUS/TACACS+ for switch management security, RMON/sFlow or equivalent for advanced traffic monitoring | | | |
| 14 | Software defined network (SDN) capability by supporting multiple programmatic interfaces including REST APIs and OpenFlow 1.3 | | | |
| 15 | Shall have capability to extend the control plane across two active switches forming a single virtual switching fabric. Shall support nonstop switching and nonstop routing during fail over from an active to a standby management module | | | |
| 16 | Switch should be manageable with NMS. | | | |
| 17 | IEEE 802.3az Energy-efficient Ethernet (EEE) support to reduce power consumption | | | |
| 19 | Warranty and Support | | | |
| a. | (1)Minimum 5 years (2)until product line reaches end of life , whichever among (1) or (2) is higher. Warranty with advance replacement, directly from the switch OEM | | | |
| b. | Warranty shall cover the switch and accessories like network modules and Transceiver modules | | | |
| c. | Software upgrades/updates shall be covered as part of the warranty | | | |

## A2. 48-PORT GIGABIT SWITCHES (QTY:  2 Nos.)

| Sl. No. | Minimum Specifications | Compliance Yes / No | Deviation, if any | Reference/page number in the data sheet |
|---|---|---|---|---|
| 1 | Shall be 1RU, 19" Rack Mountable (Enterprises Series) | | | |
| 2 | 48 RJ-45 auto sensing 10/100/1000 ports | | | |
| 3 | The switch shall have at least four 1G/10-Gigabit ports (SFP+) in addition to the above ports. Shall be populated with minimum one 1G Single mode Fiber Transceiver (1G Base-LX) on Day 1 | | | |
| 4 | 1 dual-personality (RJ-45 or USB micro-B) serial console port | | | |
| 5 | 1 GB SDRAM, 12 MB Packet buffer size or higher | | | |
| 6 | Should support at least 32,000 MAC addresses | | | |
| 7 | Jumbo packet support up to 9K bytes | | | |
| 8 | Shall support Layer 3 routing features including RIP, OSPF, OSPFv3, VRRP, PIM Multicast routing etc. on Day 1. If any licenses are required, it shall be included | | | |
| 9 | Shall support concurrent IEEE 802.1X, Web, and MAC authentication schemes per port with minimum 24 authentication sessions per port | | | |
| 10 | Access control lists (ACLs), MAC address based port security and lockout, DHCP protection and Dynamic ARP protection | | | |
| 12 | SNMP v2c/v3, SSHv1/SSHv2 Secure Shell, RADIUS/TACACS+ for switch management security, RMON/sFlow or equivalent for advanced traffic monitoring | | | |
| 12 | Software defined network (SDN) capability by supporting multiple programmatic interfaces including REST APIs and OpenFlow 1.3 | | | |
| 13 | Shall have stacking capability or equivalent to extend the control plane across multiple active switches forming a single virtual switching fabric. Any modules/cables required for the same shall be provided from Day 1 | | | |
| 14 | Switch should be manageable with NMS. | | | |
| 15 | IEEE 802.3az Energy-efficient Ethernet (EEE) support to reduce power consumption | | | |
| 18 | Warranty and Support | | | |
| a | (1)Minimum 5 years (2)until product line reaches end of life , whichever among (1) or (2) is higher. Warranty with advance replacement, directly from | | | |

| Sl. No. | Minimum Specifications | Compliance Yes / No | Deviation, if any | Reference/page number in the data sheet |
|---|---|---|---|---|
| | the switch OEM | | | |
| b | Warranty shall cover the switch and accessories like modules Transceiver. | | | |
| c | Software upgrades/updates shall be covered as part of the warranty | | | |

## A3. 48-PORT GIGABIT SWITCHES PoE  (QTY:  19 Nos)

| Sl. No. | Minimum Specifications | Compliance Yes / No | Deviation, if any | Reference/page number in the data sheet |
|---|---|---|---|---|
| 1 | Shall be 1RU, 19" Rack Mountable (Enterprises Series) | | | |
| 2 | 48 RJ-45 autosensing 10/100/1000 PoE/PoE+ ports | | | |
| 3 | The switch shall have at least four 1G/10-Gigabit ports (SFP+) in addition to the above ports. Shall be populated with minimum one 1G single mode Fiber Transceiver (1G Base-LX) | | | |
| 4 | 1 dual-personality (RJ-45 or USB micro-B) serial console port | | | |
| 5 | At least 1 GB SDRAM, 12 MB Packet buffer size or higher | | | |
| 6 | Should support at least 32,000 MAC addresses | | | |
| 7 | Jumbo packet support up to 9K bytes | | | |
| 8 | Shall support Layer 3 routing features including RIP, OSPF, OSPFv3, VRRP, PIM Multicast routing etc. on Day 1. If any licenses are required, it shall be included | | | |
| 9 | Shall support concurrent IEEE 802.1X, Web, and MAC authentication schemes per port with minimum 24 authentication sessions per port | | | |
| 10 | Access control lists (ACLs), MAC address based port security and lockout, DHCP protection and Dynamic ARP protection | | | |
| 12 | SNMP v2c/v3, SSHv1/SSHv2 Secure Shell, RADIUS/TACACS+ for switch management security, RMON/sFlow or equivalent for advanced traffic monitoring | | | |
| 12 | Software defined network (SDN) capability by supporting multiple programmatic interfaces including REST APIs and OpenFlow 1.3 | | | |
| 13 | Shall have stacking capability or equivalent to extend the control plane across multiple active switches forming a single virtual switching fabric. Any modules/cables required for the same shall be provided from Day 1 | | | |
| 14 | Switch should be manageable with NMS. | | | |

| Sl. No. | Minimum Specifications | Compliance Yes / No | Deviation, if any | Reference/page number in the data sheet |
|---|---|---|---|---|
| 15 | IEEE 802.3az Energy-efficient Ethernet (EEE) support to reduce power consumption | | | |
| 16 | Warranty and Support | | | |
| a | (1)Minimum 5 years (2)until product line reaches end of life , whichever among (1) or (2) is higher. Warranty with advanced replacement, directly from the switch OEM | | | |
| b | Warranty shall cover the switch and accessories like 1G Transceiver | | | |
| c | Software upgrades/updates shall be covered as part of the warranty | | | |

## A4.  24-PORT GIGABIT SWITCHES PoE (QTY:  26 Nos.)

| Sl. No. | Minimum Specifications | Compliance Yes / No | Deviation, if any | Reference/page number in the data sheet |
|---|---|---|---|---|
| 1 | Shall be 1RU, 19" Rack Mountable(Enterprises Series) | | | |
| 2 | 24 RJ-45 auto sensing 10/100/1000 PoE/PoE+ ports | | | |
| 3 | The switch shall have  at least  four 1G/10-Gigabit ports (SFP+) in addition to the above ports. Shall be populated with minimum one 1G Single mode Fiber Transceiver (1G Base-SR) | | | |
| 4 | 1 dual-personality (RJ-45 or USB micro-B) serial console port | | | |
| 5 | At least 1 GB SDRAM, 12 MB Packet buffer size or higher | | | |
| 6 | Should support at least 32,000 MAC addresses | | | |
| 7 | Jumbo packet support up to 9K bytes | | | |
| 8 | Shall support Layer 3 routing features including RIP, OSPF, OSPFv3, VRRP, PIM Multi cast routing etc. on Day 1. If any licenses are required, it shall be included | | | |
| 9 | Shall support concurrent IEEE 802.1X, Web, and MAC authentication schemes per port with minimum 24 authentication sessions per port | | | |
| 10 | Access control lists (ACLs), MAC address based port security and lockout, DHCP protection and Dynamic ARP protection | | | |
| 12 | SNMP v2c/v3, SSHv1/SSHv2 Secure Shell, RADIUS/TACACS+ for switch management security, RMON/sFlow or equivalent for advanced traffic monitoring | | | |
| 12 | Software defined network (SDN) capability by supporting multiple programmatic interfaces including REST APIs and OpenFlow 1.3 | | | |
| 13 | Shall have stacking capability or equivalent to | | | |

| Sl. No. | Minimum Specifications | Compliance Yes / No | Deviation, if any | Reference/page number in the data sheet |
|---|---|---|---|---|
| | extend the control plane across multiple active switches forming a single virtual switching fabric. Any modules/cables required for the same shall be provided from Day 1 | | | |
| 14 | Switch should be manageable with NMS. | | | |
| 15 | IEEE 802.3az Energy-efficient Ethernet (EEE) support to reduce power consumption | | | |
| 16 | Warranty and Support | | | |
| a | (1)Minimum 5 years (2)until product line reaches end of life , whichever among (1) or (2) is higher. Warranty with advance replacement, directly from the switch OEM | | | |
| b | Warranty shall cover the switch and accessories like 1G Transceiver | | | |
| c | Software upgrades/updates shall be covered as part of the warranty | | | |

### A5. 24-PORT GIGABIT Switch (QTY: 1 No.)

| Sl. No. | Minimum Specifications | Compliance Yes / No | Deviation, if any | Reference/page number in the data sheet |
|---|---|---|---|---|
| 1 | Shall be 1RU, 19" Rack Mountable (Enterprise series ) | | | |
| 2 | 24 RJ-45 auto sensing 10/100/1000 ports | | | |
| 3 | The switch shall have at least 8 1G/10-Gigabit ports (SFP or SFP+) in addition to the above ports. Shall be populated with minimum 8 1G Single mode Fiber Transceiver (1G Base-LX) | | | |
| 4 | 1 dual-personality (RJ-45 or USB micro-B) serial console port | | | |
| 5 | At least 1 GB SDRAM, 12 MB Packet buffer size or higher | | | |
| 6 | Should support at least 32,000 MAC addresses | | | |
| 7 | Jumbo packet support up to 9K bytes | | | |
| 8 | Shall support Layer 3 routing features including RIP, OSPF, OSPFv3, VRRP, PIM Multi cast routing etc. on Day 1. If any licenses are required, it shall be included | | | |
| 9 | Shall support concurrent IEEE 802.1X, Web, and MAC authentication schemes per port with minimum 24 authentication sessions per port | | | |
| 10 | Access control lists (ACLs), MAC address based port security and lockout, DHCP protection and Dynamic ARP protection | | | |
| 12 | SNMP v2c/v3, SSHv1/SSHv2 Secure Shell, RADIUS/TACACS+ for switch management security, RMON/sFlow or equivalent for advanced | | | |

13

| Sl. No. | Minimum Specifications | Compliance Yes / No | Deviation, if any | Reference/page number in the data sheet |
|---|---|---|---|---|
| | traffic monitoring | | | |
| 12 | Software defined network (SDN) capability by supporting multiple programmatic interfaces including REST APIs and OpenFlow 1.3 | | | |
| 13 | Shall have stacking capability or equivalent to extend the control plane across multiple active switches forming a single virtual switching fabric. Any modules/cables required for the same shall be provided from Day 1 | | | |
| 14 | Switch should be manageable with NMS. | | | |
| 15 | IEEE 802.3az Energy-efficient Ethernet (EEE) support to reduce power consumption | | | |
| 16 | Warranty and Support | | | |
| a | (1)Minimum 5 years (2)until product line reaches end of life , whichever among (1) or (2) is higher. Warranty with advance replacement, directly from the switch OEM | | | |
| b | Warranty shall cover the switch and accessories like 1G Transceiver | | | |
| c | Software upgrades/updates shall be covered as part of the warranty | | | |

## A6.  8-PORT GIGABIT PoE SWITCHES (QTY:  12 Nos)

| Sl. No. | Minimum Specifications | Compliance Yes / No | Deviation, if any | Reference/page number in the data sheet |
|---|---|---|---|---|
| 1 | Shall be 1RU, 19" Rack Mountable, Fanless switch | | | |
| 2 | 8 RJ-45 autosensing 10/100/1000 PoE/PoE+ ports with minimum 120 Watts for PoE | | | |
| 3 | The switch shall have at least two 1G/10-Gigabit ports (SFP+) in addition to the above ports. Shall be populated with minimum one 1G Single mode Fiber Transceiver (1G Base-LX) | | | |
| 4 | 1 dual-personality (RJ-45 or USB micro-B) serial console port | | | |
| 5 | At least 1 GB SDRAM, 12 MB Packet buffer size or higher | | | |
| 6 | Should support at least 32,000 MAC addresses | | | |
| 7 | Jumbo packet support up to 9K bytes | | | |
| 8 | Shall support Layer 3 routing features including RIP, OSPF, OSPFv3, VRRP, PIM Multicast routing etc. on Day 1. If any licenses are required, it shall be included | | | |
| 9 | Shall support concurrent IEEE 802.1X, Web, and MAC authentication schemes per port with minimum 24 authentication sessions per port | | | |

| Sl. No. | Minimum Specifications | | | |
|---|---|---|---|---|
| 10 | Access control lists (ACLs), MAC address based port security and lockout, DHCP protection and Dynamic ARP protection | | | |
| 12 | SNMP v2c/v3, SSHv1/SSHv2 Secure Shell, RADIUS/TACACS+ for switch management security, RMON/sFlow or equivalent for advanced traffic monitoring | | | |
| 12 | Software defined network (SDN) capability by supporting multiple programmatic interfaces including REST APIs and OpenFlow 1.3 | | | |
| 13 | Shall have stacking capability or equivalent to extend the control plane across multiple active switches forming a single virtual switching fabric. Any modules/cables required for the same shall be provided from Day 1 | | | |
| 14 | Switch should be manageable with NMS. | | | |
| 15 | IEEE 802.3az Energy-efficient Ethernet (EEE) support to reduce power consumption | | | |
| 16 | Warranty and Support | | | |
| a | (1)Minimum 5 years (2)until product line reaches end of life , whichever among (1) or (2) is higher. Warranty with advance replacement, directly from the switch OEM | | | |
| b | Warranty shall cover the switch and accessories like 1G Transceiver | | | |
| c | Software upgrades/updates shall be covered as part of the warranty | | | |

## A7. Wireless LAN Solution (QTY: 1 Set with  65 Access Points)

| Sl. No. | Minimum Specifications | Compliance Yes / No | Deviation, if any | Reference/page number in the data sheet |
|---|---|---|---|---|
| 1 | The proposed architecture should be based on mobility controller/virtual controller deployment | | | |
| 2 | The solution should be capable of supporting at least 128 access points (APs) on Day 1 with mobility controller/virtual controller high availability | | | |
| 3 | The solution should provide latest network authentication (WEP, WPA, WPA2) and encryption types like DES/3DES, TKIP and AES | | | |
| 4 | It should be able to detect applications for Application based QoS, Access Control per user or per SSID | | | |
| 5 | The WLAN solution should implement advanced Wireless IDS and Wireless IPS from day 1 | | | |
| 6 | Wireless IPS solution should perform spectrum | | | |

| | | Compliance Yes / No | Deviation, if any | Reference/page number in the data sheet |
|---|---|---|---|---|
| | analysis to detect and classify sources of interferences | | | |
| 7 | The WLAN should be able to detect Rogue AP and take corrective action to prevent the rogue AP. The system should detect and prevent an organization's wireless client connecting to rogue AP | | | |
| 8 | Dual Radio Access Points with MU-MIMO capability at 5 GHz and 2.4-GHz radios. At least three antennas. | | | |
| 9 | The solution shall provide adaptive Radio Management to automatically assign channel and power settings and deliver reliable, high-performance WLANs | | | |
| 10 | The Access Point shall support for at least 100 associated client devices per radio, and at least 10 BSSIDs per radio | | | |
| 11 | The Access point shall have one 10/100/1000BASE-T Ethernet network interfaces (RJ-45) supporting IEEE802.3af PoE and IEEE 802.3az Energy Efficient Ethernet (EEE) | | | |
| 12 | Shall support Cellular Coexistence capability to minimize interference from 3G/4G cellular networks, distributed antenna systems, and commercial small cell/femtocell equipment | | | |
| 13 | Switch should be manageable with NMS. | | | |
| 14 | Shall provide IP reputation and security services to identify, classify, and block malicious files, URLs and IPs, providing comprehensive protection against advanced online threats. | | | |
| 15 | Warranty and Support | | | |
| a | Wireless LAN solution shall be offered with minimum five years warranty, directly from the OEM with advance replacement | | | |

**A8. Wired and Wireless Management Solution (QTY: 1)**

| Sl. No. | Minimum Specifications | Compliance Yes / No | Deviation, if any | Reference/page number in the data sheet |
|---|---|---|---|---|
| 1 | The proposed solution shall manage the offered wired and wireless infrastructure through a centralized and intuitive user interface | | | |
| 2 | Shall provide granular visibility into devices, users and applications running on the network | | | |
| 3 | Shall provide a dedicated dashboard, real-time monitoring, proactive alert and historical reporting | | | |
| 4 | Shall provide Wireless LAN Planning and Design, Network Monitoring and Troubleshooting, Indoor location monitoring capability, Centralized Software updates, Network mapping with floor plans for easier automated site survey, Rogue detection and | | | |

| Sl. No | Minimum Specification | Compliance Yes/No | Deviation, if any | Reference/page number in data sheet |
|---|---|---|---|---|
| | containment. | | | |
| 5 | Shall generate reports on wired port utilization for capacity planning and support switch management capabilities. | | | |
| 6 | Shall support role-based access, viewing rights and administrative privileges tailored to job responsibilities | | | |
| 7 | Shall have client overview to summarize the types of clients attached to the network | | | |
| 8 | The NMS solution shall be from the same Switch/Wireless OEM for better integration | | | |
| 9 | All the Switches mentioned should be configurable with NMS. | | | |
| 10 | Shall be offered as a physical appliance or Virtual appliance supported on VMware, Microsoft Hyper-V or KVM. | | | |
| 11 | Warranty and Support | | | |
| a. | The solution shall be offered with Five Year 24x7 support directly from OEM | | | |

## PART B  TECHNICAL SPECIFICATION

**B1.  42U  Rack (Qty 2 Nos)**

| Sl. No | Minimum Specification | Compliance Yes/No | Deviation, if any | Reference/page number in data sheet |
|---|---|---|---|---|
| 1 | Racks manufactured out of steel sheet punched, formed, welded and Powder coated | | | |
| 2 | Rack should be from ISO14001, OHSAS18001 CERTIFICATE , ISO 9001 Certified Company & UL Listed | | | |
| 3 | Standard for Racks configuration will be welded frame with side panel and vented top cover | | | |
| 4 | Rack should have Front Perforated Door and Rear Dual Perforated Door with Lock & key | | | |
| 5 | Rack should have provision to mount racks on Floor | | | |
| 6 | Rack should be 42U(1U = 44.45 mm) in Height | | | |
| 7 | It should be 600mm Wide, 1000mm Deep and Overall height 2095 mm | | | |
| 8 | Rack should Conforms to DIN 41494 or Equivalent EIA /ISO / EN Standard | | | |
| 9 | Numbered U Positions | | | |
| 10 | Rack should have Adjustable mounting depth | | | |
| 11 | 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. | | | |
| 12 | Rack should have 100% assured compatibility with all equipments conforming to DIN 41494 (General industrial standard for equipments) | | | |
| 13 | Powder coated finish with seven Tanks pretreatment process meeting IS | | | |
| 14 | Rack should have Proper Grounding & Bonding | | | |
| 15 | Rack should have Fan module Mount Provision on top Cover | | | |
| 16 | Rack should have 2 Nos Power Distribution Units with 12 No 5/15 Indian Round Pin with 16A MCB X 2 circuits-PDU Rating 7.3 KVA | | | |
| 17 | Rack should have 2 No Horizontal or vertical Cable Organizer with Plastic Loops. | | | |
| 18 | Rack should have provision for cable entry Exit from Both top & Bottom. | | | |
| 19 | Rack should have 1 Packet of mounting hardware, Pack of 20. | | | |
| 20 | Rack should have 1 No Shelf for mounting NON Rack mountable Equipments | | | |

**B2. UTP Cable CAT 6 (Qty. 10 Boxes of 305 m each )**

| Sl. No | Minimum Specification | Compliance Yes/No | Deviation, if any | Reference/page number in data sheet |
|---|---|---|---|---|
| 1 | Unshielded Twisted Pair, Category 6 | | | |
| 2 | Conductors-23 AWG solid bare copper or better | | | |
| 3 | Insulation-Polyethylene | | | |
| 4 | Jacket -Flame Retardant PVC | | | |
| 5 | Pair Separator-Star Quad Separator/equivalent | | | |
| 6 | UL listed, ETL verified to TIA / EIA Cat 6 | | | |
| 7 | Packing-Box of 305 meters | | | |
| 8 | Conductor Diameter-0.54mm | | | |
| 9 | Filler-Polyethylene | | | |
| 10 | Rip Cord | | | |
| 11 | Frequency tested up to Minimum 250 MHz | | | |
| 12 | 100MHz Input Impedance (Ohms) : 100 +/-15 | | | |
| 13 | Outer Diameter- 6.20mm | | | |
| 14 | Reference Standards-UL Subject 444, EIAITIA-568 B.2.1, ISO/IEC 11801 & IEC61156·5 | | | |

**B3 &B4  Patch Cord (1m - 300Nos.   2m-1250 Nos)**

| Sl. | | Compliance | Deviation, | Reference/page |
|---|---|---|---|---|

| No | Minimum Specification | Yes/No | if any | number in data sheet |
|---|---|---|---|---|
| 1 | Unshielded Twisted Pair, Category 6,TIA/ EIA 568-8.2 | | | |
| 2 | Gauge-FCC part 68, subpart F and IEC-60603-7 compliant | | | |
| 3 | Length-To be available in standard lengths 1m and 2 mtrs | | | |
| 4 | Separator-Star Quad separator/equivalent inside the patch cord to separate all the 4 pairs | | | |
| 5 | Jacket -Should be LSOH -Low Smoke Zero Halogen Free | | | |
| 6 | Durability-1000 mating cycles | | | |
| 7 | RJ45 Plug-Polycarbonate, FCC part 68 subpart F, UL 94V-0 | | | |
| 8 | Plug Boot-PVC Strain relief boots. | | | |
| 9 | Contact Material-Phosphor bronze with 50 micro-inches gold over 100 micro inches nickel. | | | |
| 10 | Should meet or exceed TIA/EIA 568B, ISO Category 6 Performance requirements | | | |
| 11 | Patch cords should be factory assembled cords made out of stranded cable and should be 100% tested to 250 MHz | | | |
| 12 | Patch cord should provide strain and bend relief mechanism to improve the plug-to-cable retention and maximum performance by preventing pair deformation, as caused by mechanical strain. | | | |

**B5. FDMS for 48 core ( Qty. 2 Nos.)**

| Sl. No | Minimum Specification | Compliance Yes/No | Deviation, if any | Reference/page number in data sheet |
|---|---|---|---|---|
| 1 | Type -Sliding Rack mountable 19" 2U | | | |
| 2 | Accommodates-48 core fibers | | | |
| 3 | Connector-LC type | | | |
| 4 | RoHS compliant, fully loaded with single mode SC-LC adapters and pigtails. | | | |

**B6. FTB/LIU for 12 core ( Qty. 8 Nos.)**

| Sl. No | Minimum Specification | Compliance Yes/No | Deviation, if any | Reference/page number in data sheet |
|---|---|---|---|---|
| 1 | Type-Wall mountable | | | |
| 2 | Accommodates - 12 core fibers | | | |
| 3 | Connector - SC- LC type | | | |
| 4 | RoHS compliant, fully loaded with single mode SC- | | | |

| | | | | |
|---|---|---|---|---|
| | LC adapters and pigtails. | | | |

**B7. Media Converter (Qty 7 Nos)**

| Sl. No | Minimum Specification | Compliance Yes/No | Deviation, if any | Reference/page number in data sheet |
|---|---|---|---|---|
| 1 | Standards and Protocols-IEEE 802.3ab, IEEE 802.3z, IEEE 802.3x | | | |
| 2 | Basic Function-Full Duplex Flow Control (IEEE 802.3x), Extends fiber distance up to 5km; Ports - 1 x 1000M SC/LC port, 1 x 1000M RJ45 port (Auto MDI/MDIX) | | | |
| 3 | Wave Length-1310nm | | | |
| 4 | Network Media1000BASE-FX - Single-mode Fibre | | | |
| 5 | Network Media 1000BASE-T-UTP CAT6 | | | |
| 6 | LED Indicators-PWR, LINK, RX | | | |
| 7 | Power Supply - External Power Adapter | | | |
| 8 | Safety & Emission   - FCC, CE, RoHS | | | |
| 9 | Warranty 3Years Manufacturer Warranty | | | |