भारतीय विज्ञान शिक्षा एवं अनुसंधान संस्थान मोहाली

शिक्षा मंत्रालय, भारत सरकार द्वारा स्थापित

सैक्टर81 , नॉलेज सिटी, प॰ ओ॰ मनोली, एस॰ ए॰ एस॰ नगर, मोहाली, पंजाब - 140306

INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH MOHALI

(Estd. By Ministry of Education, Govt of India)

Sector-81, Knowledge city, PO-Manauli, SAS Nagar Mohali-140306, Punjab

PAN No. - AAAAI1781K   GST No. 03AAAAI1781K2ZS

● **Phone : +91-172-2240086 & 2240121** ● **Fax : +91-172-2240124, 2240266** ● **http://www.iisermohali.ac.in** ● **Email: stores@iisermohali.ac.in**

Cppp/Institute Website

IISERM (1412)20/21-Pur   Dated: 04th December 2020

NOTICE INVITING E-TENDER

Online tenders are invited on behalf of Director, IISER Mohali in **TWO BID SYSTEM** for the **Supply, installation and commissioning of Structured Wired LAN Cable Solutions for Hostel No. 5 & 7 a**s per technical specification and details given below and BOQ list from the original manufacturer/supplier at CPPP i. e. **https://eprocure.gov.in/eprocure/app**. Tender documents may please be downloaded from the E-procurement portal website **https://eprocure.gov.in/eprocure/app**& Institute website **www.iisermohali.ac.in.**

-sd-
(Mukesh Kumar)
Assistant Registrar (P&S)

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E-TENDER NOTICE

Tender Ref.- IISERM(1412)20/21-Pur	Dated :- 04th December 2020

Critical Date Sections

Sr.	Description	Date	Time
1.	Tender Publishing Date and time	04th Dec 2020	6:00pm
2.	Tender Document download start Date & Time	04th Dec 2020	6:00pm
3.	Bid Submission start Date &Time	04th Dec 2020	6:00pm
4.	Bid Submission End date and Time	29th Dec 2020	Upto 11:00am
5.	Tender opening Date and Time	30th Dec 2020	At 11:30am

Online tenders are invited on behalf of the Director, IISER Mohali in **TWO BID SYSTEM** for following item(s) from the original manufacturer/supplier at CPPP i.e. **https://eprocure.gov.in/eprocure/app**. Tender documents may please be downloaded from the E-procurement portal website **https://eprocure.gov.in/eprocure/app** & Institute website **www.iisermohali.ac.in.**Tender fee in shape of DD/Banker Cheque of Rs 590/- (Non-refundable) and EMD of Rs. 90,000/- should be submitted by DD /Banker Cheque/FDR/ Bank Guarantee in favour of the Registrar, IISER Mohali payable at Mohali or through Online mode in Institute Account (Canara Bank Saving Account Number 4790101001912 and IFSC Code CNRB0004790). However, scanned copy of the both tender fee and EMD should be upload on website along with technical bid part. The hard copy of the same in original to be send to the address mentioned below duly superscribing the supply/work name and reference/ tender ID on the envelope and same must reach before opening the bid and if not received within due date the bid will be rejected summarily. **Micro & MSME/NSIC bidders are exempted from payment of Tender Fee/EMD as per GOI notifications/GFR (2017)**

The Original EMD and Tender Fee should be sent to:

Assistant Registrar (P&S)
Indian Institute of Science Education and Research Mohali Sector-81,
Knowledge City, SAS Nagar, Mohali, Punjab, India, Pin: 140306

Non-receipt of original EMD and Tender Fee will lead to rejection of tender.

ITEM DETAILS

Sr.	Description	Qty. (in units)
1.	**Supply, installation and commissioning of Structured Wired LAN Cable Solutions for Hostel No. 5&7 [As per per attached "Bill of material and specifications]** 1) **BILL OF MATERIALS AND TECHNICAL SPECIFICATIONS: As per (ANNEXURE-I)** 2) **DIAGRAM –(ANNEXURE-II)**	**As per BoM**

(A)   IMORTANT NOTES:-

I.   The online updated Price BOQ is in INR format. If bidder want to quote other than INR please specify the quoted currency in the technical bid/part and fill the amount in same updated BOQ.

II.   Please bifurcate the price on shipping terms i.e. Ex-works -> FCA/FOB -> CIP/CIF in price BOQ and specify the same in technical bid without price.

III.   If quoted in foreign currency, kindly clearly specify the terms of delivery/country of origin/bank details with swift code/weight/size/dimension of shipment.

IV.   The Online bids should be submitted directly by the original manufacturer/supplier. If quotation is submitted/filled by any representative/agent/dealer then they must upload a authority certificate from the principal company.

V.   Kindly specify the weight of the product including weight of packing for assessment of Freight charges, if quoted in foreign currency. Also mention in Technical Bid/Compliance sheet the currency in which quoted.

VI.   Kindly do not quote end of life model. Spares should be available minimum period of 5 years for quoted models.

VII.   All MSME/NSIC/Startup Units shall be considered as per provisions/rules prescribed by Govt of India.

VIII.   Auto-extension of last date for E-Tenders has been activated by CPP Portal which has participation 2 bids or less.

B)   SUBMISSION OF TENDER

1) All bid/ tender documents are to be uploaded online at Central Public Procurement portal i.e. **https://eprocure.gov.in/eprocure/app** only and in the designated cover/ part on the website against tender ID. Tenders/ bids shall be accepted only through online mode and no manual submission of the same shall be entertained except tender fee and EMD. Late tenders will not be accepted.

2) The online bids shall be opened at the office of the Assistant Registrar (P&S), IISER Mohali, on above given date and time. If the tender opening date happens to be on a holiday or non-working day due to any other valid reason, the tender opening process will be attended on the next working day at same time and place. IISER Mohali will not be responsible for any error like missing of schedule data while downloading by the Bidder.

3) The bidder shall upload the tender documents duly filled in and stamped by the authorized signatory on each and every page. Tender not submitted/uploaded in the prescribed form and as per the tender terms and conditions shall be liable for rejection.

4) The bidder shall upload scanned copy of the PAN Card, GST number duly signed and stamped. **Also bidders applying against 'MSME/NSIC Certificate" issued by appropriate Authority, should ensure that the certificate**

attached is relevant to the area of service/supply. For example, If the tender is for "supply & installation of Desktop" *the certificate should be issued for activity/area of "Computer supply and services activities etc"* **otherwise bid will be REJECTED without notice.**

5) E-procurement system ensures locking on the scheduled date and time. The system will not accept any bid after the scheduled date and time of submission of bid.

C) <u>INSTRUCTIONS</u>

1. The Online bids should be submitted directly by the original manufacturer/supplier, If quotation is submitted/filled by any representative/agent/dealer then they must upload a authority certificate from the principal company for quoting the price otherwise such quotation will be rejected.

2. The quantity mentioned in this inquiry is and shall be deemed to be only approximate and will not in any manner be binding on the Institute. Before the deadline for submission of the online bid, IISER Mohali reserves the right to modify the tender document terms and conditions. Such amendment/modification will be notified on website against said tender ID.

3. The rates offered should be FOR Chandigarh/Mohali in case of firms situated outside Chandigarh/Mohali, and free delivery at the Institute premises in case of local firms. Supplier from outside India should mention the Ex-works/FOB/FCA/CIF/CIP price clearly. Conditional tenders will be summarily rejected.

4. In case of Ex-godown terms the amount of packaging forwarding freight etc. should clearly be indicated by percentage or lump sum amount. Institute has policy not to make any advance payments towards any purchase, Letter of credit can be opened if required.

5. THE INSTITUTE IS EXEMPTED FROM CUSTOM DUTY under notification no- TU/V/RG/-CDE(1062)/201 CUSTOM DT.30.08.2016.

6. Tax: This Institute is not exempted from the payment of GST. The current rate (i.e. percentage of GST should be clearly indicated included or excluded) wherever chargeable. Please also provide/upload the copy of PAN card, GST number duly self-attested.

7. Concessional GST is applicable for all the items purchased for Research labs vide Ministry of Finance, notification no. 45/22017 dated 14.11.2017 and 47/2017 dated 14.11.2017.

8. Bidder/s quoting in currency other than **Indian Rupee (INR)** should explicitly mention the currency in which tender quoted wherever applicable in <u>Technical Bid</u> along the tender documents.

9. The delivery period should be specifically stated. Earlier delivery will be preferred.

10. The firms are requested to provide/upload detailed description and specifications together with the detailed drawings, printed leaflets and literature of the article quoted. The name of the manufactures and country of manufacture should also invariably be stated. In the absence of these particulars, the quotation is liable for rejection.

11. Validity of offer: 90 days. The warranty period after satisfactory installation should be mentioned and firm should replace all manufacturing defect parts/ whole item under warranty without any extra cost including clearance, freight, taxes. Security deposit/ Bank Performance Guarantee @ 10 % of the value of supply order as per norms may be sought from the firms.

12. The right to reject all or any of the bid or relax any or all the above conditions without assigning any reason is reserved by the IISER Mohali. For any corrigendum and addendum please be checked the website https://eprocure.gov.in/eprocure/app and http://www.iisermohali.ac.in

13. Disputes, if any, shall be subject to jurisdiction in the court of Mohali, PUNJAB only.

–sd-
(Mukesh Kumar)
Assistant Registrar (P&S)

BILL OF MATERIAL

(A) Active Networking Components:-

S No.	Description	Qty.	Unit	Remarks
1.	**Fully Managed Distribution Switch (with 24x10G SFP+ Ports and 2x40G ports)**	2	Nos.	Shall be used as Distribution Switch in HA with dual 10G/40G up-link from Data Center and further 10G dual up-link to each Hostel at Level4.
2.	**Fully Managed Distribution Switch (with 24x1G RJ45 Ports and 2x10G SFP+ ports)**	3	Nos.	One in each Hostel at Level-4 with 10G dual up-link from Distribution in Hostel-7 caretaker room and one spare for backup use.
3.	**Fully Managed Edge Switch (with 48x1G RJ45 Ports and 2x10G SFP+ ports)**	17	Nos.	8 in each Hostel with dual Ethernet up-link from switch at Serial No. 2 and one spare for backup use

(B) Passive Networking Components:

S. No.	Description	Qty.	Unit	Remarks
1.	9U Rack with two cable manager, Fans and standard accessories.	17	Nos.	8 in each hostel and one for distribution in hostel-7
2.	Cat-6 Jack Panel, 24 port (fully loaded)	32	Nos.	Two in each Rack for every Hostel Floor
3.	Cat-6 Information Outlet with Face Plate and Gang-box	560	Nos.	280 in each hostel
4.	Cat6 Patch Chord (1 meter)	560	Nos.	280 in each hostel
5.	Cat6 Patch Chord (3 meter)	560	Nos.	280 for each hostel
6.	Cat6 Cable Box (305 meter)	100	Nos.	50 box for each Hostel
7.	PVC Conduit (40mm size)	1000	meter	For housing bulk network cables
8.	PVC Conduit (25mm size)	2000	meter	For housing individual user nodes
9.	Flexible Conduit (40mm size)	200	meter	For housing bulk network cables
10	Flexible Conduits (25mm size)	200	meter	For housing individual user node
11.	6 Core Single Mode outdoor plant fiber	250	meter	125 meter for each hostel (shall be linked to 4 spare pairs of existing ofc from BSNL end in each hostel up to main Rack on Level 4)
12.	6-core Fully loaded Single Mode, Rack-mountable, SC type LIU	2	Nos.	One in each hostel
13.	SC-LC Style LSZH Single mode 9/125 micron Duplex Patch Cord (1 meter)	4	Nos.	Two in each hostel
14	SC-LC Style LSZH Single mode 9/125 micron Duplex Patch Cord (3 meter)	6	Nos.	Use with DS Switch in Hostel7
15	SC-type single mode fiber pigtail (2 meter)	12	Nos.	Six in each hostel for linking to campus ofc
16.	SC-SC Single mode Duplex Fiber Optic Coupler	8	Nos.	Four in each hostel

(C) SERVICES:

S. No.	Description	Qty.	Unit	Remarks
1.	9U Rack (Fixing and dressing)	17	Nos.	8 in each hostel and one for distribution in Hostel-7
2.	Punching of Jack Panel, 24-Port	32	Nos.	Two in each Rack
3.	Fixing of Information Outlet with Face Plate and SMB	560	Nos.	280 in each hostel
4.	Laying of Cat6 Cable (305*100)	30500	meter	As per actual
5.	Laying of 6 Core single mode outdoor plant fiber using 25 mm surface conduit fitting.	250	meter	125 meter in each hostel (shall be linked to spare pairs of ofc from BSNL end in each hostel up to main rack on Level 4)
6.	Splicing and mounting of 6-core Fully loaded LIU	2	Nos.	One in each hostel at level4
7.	Splicing of Single Mode fiber cores	12	Nos.	6 in each hostel at ground floor

(D) UPS backup and Power Points:

S. No.	Description	Qty.	Unit	Remarks
1.	5 KVA Online UPS System (with half an hour backup) Type: Floor standing Make: APC	2	Nos.	One in each Hostel on Level 4 in Electrical Duct UPS systems should be supplied with minimum two year warranty inclusive of batteries
2.	5 Amp Power Points from UPS location to each 9U Rack with flame retardant wiring with suitable MCBs and DB. Make : having ISI mark	16	Nos.	8 in each hostel from 5KVA UPS in Electrical duct to the 9U rack on each Level.

Terms and conditions of tender:

1. **Bidder should have executed at least two orders of similar nature in the past two years in different Govt/Semi-Govt organizations. Supporting documents and satisfactory work completion certificate from the concerned customer should be submitted with the bid.**
2. Bids must be accompanied by an **Authorization Certificate** from each OEM specific to this tender both for active and passive components separately.
3. Each OEM should authorize only one bidder otherwise bids shall be rejected from such OEM. Multiple bids shall be accepted only in case of 5KVA online UPS system of make: APC .
4. The bidder should be ISO 9001: 2015 certified and have minimum annual turnover of rupees five crore.
5. **Bidder should have local presence and local engineering team in the Tricity of Chandigarh, Panchkula, Mohali so as to provide quick support for technical issues within 24 hours duration. An undertaking (in letter head duly signed & stamped) to this effect must be submitted with the bid.**
6. All Passive Components except accessories should be from the same OEM.
7. All Active Components should be from the same OEM.
8. Technical bid should accompany the part number, model number of the quoted items along with data sheets.
9. Vendor is required to install and configure all the managed switches as per our convenience and sink them with the old managed vlan segmented network of the institute.
10. Existing network setup of the institute has Brocade VDX-6470 core switch chassis that connects all buildings of the institute. Same core switch chassis will be used to connect proposed distribution switch in HA for hostel zones.
11. All the supplied Ethernet switches should be either manageable from existing brocade NMS software with us or should be discoverable through industry standard LLDP protocol from the existing management VLAN .
12. Payment of passive network services shall be done as per actual work done.
13. Around 600 meter of conduit of size 40mm is available with the institute from old solution. Same shall be used if any shortfall occurs with the actual conduit in the BoM. Required fixing accessories for this should be arranged by the bidder on same rates.

14. Required saddles, gutties and screws etc. for passive networking should be supplied with the passive material.
15. **All active components should be quoted with five years on site support and warranty. In addition to this all active components should not reach "end of sale" for at least three years after the expiration of five year warranty.**
16. Maintenance (including accidental damage) of LAN services during the warranty period shall be got done as per actual rates quoted by the bidder as for the LAN services part in the tender or as per standard market rates.
17. UPS systems should be supplied with minimum two year warranty inclusive of batteries.
18. **The rates quoted should be valid for minimum of six months from the date of release of purchase order.**
19. Proposed network diagram of hostel block is appended with the specification. Each hostel is symmetrical in design and construction. In present tender the work shall be got done for first two hostels (hostel5 & hostel7).
20. Single mode optical fiber with four number of free fiber cores is already laid from Data center in Informatics building up to Hostel7 which further connects all hostels.
21. Four number of fiber cores with SC-type connectors are available in each hostel in the care taker office on ground floor. This section shall be further extended up to the local distribution switch at level4 in each hostel using outdoor plant optical fiber cable.
22. Distribution switch set (in HA) at serial 1 in the "bill of material" table of this tender shall be utilized for connecting all future hostels using star topology.
23. It is the responsibility of the bidder to fix and repair, if any damage occurs to the institute asset during structured cabling work done by the bidder.
24. All LAN points should be properly labeled/marked both at the Rack side and at the user end. Soft copy and hard-copy of same should be provided to us.
25. **Bidder may visit the campus for site survey from 14/12/2020 to 22/12/2020 on working days (Monday to Friday from 9.00 am to 5.00 pm)**. For any queries on the above bidders are requested to correspond by *Email: stores@iisermohali.ac.in*

Technical Specifications

A) ACTIVE NETWORKING COMPONENTS:

1. Fully Managed Distribution Switch (with 24x10G SFP+ Ports and 2x40G ports)

Sl. No	Specification Required	Compliance Yes / No	Remarks
1.0	**Product details- Please specify**		
1.1	Please mention Make, Model No. and Part Code		
2.0	**Architecture & Port Density**		
2.1	Switch should offer Wire-Speed Non-Blocking Switching & Routing Performance at Layer 2 & Layer 3.		
2.2	The distribution Switch should have 24x10G SFP+ ports enabled from day one and loaded with 10x10G SFP+ Transceivers Single Mode and 2x40G ports.		
2.3	Switch should support Stacking up to 4 Switches with more than 160 Gbps stacking bandwidth per Switch. The ports used for stacking should be in addition to the ports mentioned in the above clause, 2.2.		
3.0	**Performance**		
3.1	Switching Bandwidth: Should provide Non-Blocking switch fabric capacity of 880 Gbps or more.		
3.2	Forwarding Capacity: Should provide wire-speed packet forwarding of 654 Mpps or more.		
4.0	**Layer 2 features**		
4.1	Should support 4K active VLANs		
4.2	Should support 30K MAC addresses or more.		
4.3	Should support IP multicast snooping IGMP v1, v2, v3		
4.4	Should support Jumbo Frames (up to 9K bytes)		
5.0	**Layer 3 features**		
5.1	Should support minimum 16K IPv4 routes and 8K IPv6 routes or more		
5.2	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.		
5.3	Should support OSPFv2, OSPFv3, BGP4 and BGP4+ Dynamic IPv4 & IPv6 Routing protocols and Multicast Routing Protocols from Day 1.		
6.0	**Security**		
6.1	Switch should support RADIUS, TACACS/TACACS+ and username/password for Authentication, Authorization and Accounting (AAA) with Local User Accounts and Local User Passwords.		
6.2	Should support secure communications to the management interface and system through SSL, Secure Shell (SSHv2), Secure Copy and SNMPv3		
6.3	Should support IP Source Guard, DHCP snooping, DHCPv4, DHCPv6 and Dynamic ARP Inspection.		
6.4	Should support IPv4 and IPv6 ACLs with up to 2K rules per ACL and a minimum of 8K rules per system (Standalone Switch or Stack).		
6.5	Should support Byte and packet based broadcast, multicast, and unknown-unicast limits		
6.6	Should support IPv6 Router Advertisement (RA) Guard.		
6.7	Should support Flexible Authentication with 802.1x Authentication and MAC Authentication.		
7.0	**Manageability**		
7.1	Should support manageability using Network Management Software with Web based Graphical User Interface (GUI).		
7.2	Integrated Standard based Command Line Interface (CLI), Telnet, TFTP, HTTP access to switch management/monitoring		
7.3	Should support NetFlow or sFlow or equivalent		
8.0	**Physical Attributes, Power Supply and Fans**		
8.1	Mounting Option : 19" Universal rack mount ears		
8.2	Should be configured with Dual Hot Swappable Internal AC power supplies and Fans from Day 1.		
9.0	**Mandatory Compliance :**		
9.1	All categories of Switches, Transceivers & Switch OS should be from same OEM		
10.0	**WARRANTY**		
10.1	Switch should be quoted with TAC Support and Warranty for five years with NBD Hardware Replacement.		
11.0	**Product brochure** Vendor should provide printed technical catalogs/brochures for the quoted model containing technical specifications, features.		

2. Fully Managed Distribution Switch (with 24x1G RJ45 Ports and 2x10G SFP+ Ports)

Sl. No	Specification Required	Compliance Yes / No	Remarks
1.0	**Product details- Please specify**		
1.1	Please mention Make, Model No. and Part Code		
2.0	**Architecture & Port Density**		
2.1	Switch should offer Wire-Speed Non-Blocking Switching & Routing Performance at Layer 2 & Layer 3.		
2.2	The Access Switch should have Twenty-Four (24) 1G RJ45 ports and should have two (2) 10G SFP+ ports from Day 1 and loaded with Transceivers Single Mode.		
2.3	Access Switch should support Stacking up to 4 Switches with more than 10Gbps stacking bandwidth per Switch.		
2.4	All components required for stacking should be provided along with the switch, to ensure 10 Gbps of stacking bandwidth per switch.		
3.0	**Performance**		
3.1	Switching Bandwidth: Should provide Non-Blocking switch fabric capacity of 68 Gbps or more.		
3.2	Forwarding Capacity: Should provide wire-speed packet forwarding of 50 Mpps or more.		
4.0	**Layer 2 features**		
4.1	Should support 1K VLANs with 4K VLAN IDs		
4.2	Should support 30K MAC addresses or more.		
4.3	Should support IP multicast snooping with support for IGMP v1, v2, v3 and MLD v1 & v2		
4.4	Should support Jumbo Frames (up to 9K bytes)		
5.0	**Layer 3 features**		
5.1	Should support minimum 1K IPv4 routes or more		
5.2	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.		
5.3	Should support Dynamic IPv4 & IPv6 Routing protocols and Multicast Routing Protocols from Day 1.		
6.0	**Security**		
6.1	Switch should support RADIUS, TACACS/TACACS+ and username/password for Authentication, Authorization and Accounting (AAA) with Local User Accounts and Local User Passwords.		
6.2	Should support secure communications to the management interface and system through SSL, Secure Shell (SSHv2), Secure Copy and SNMPv3		
6.3	Should support IP Source Guard, DHCP snooping, DHCPv4, DHCPv6 and Dynamic ARP Inspection.		
6.4	Should support IPv4 and IPv6 ACLs with up to 500 rules per ACL and a minimum of 1.5K rules per system (Standalone Switch or Stack) or more.		
6.5	Should support Byte and packet based broadcast, multicast, and unknown-unicast		
6.6	Should support IPv6 Router Advertisement (RA) Guard.		
6.7	Should support Flexible Authentication with 802.1x Authentication and MAC Authentication.		
7.0	**Manageability**		
7.1	Should support manageability using Network Management Software with Web based Graphical User Interface (GUI).		
7.2	Integrated Standard based Command Line Interface (CLI), Telnet, TFTP, HTTP access to switch		

Sl. No	Specification Required	Compliance Yes / No	Remarks
	management/monitoring		
7.3	Should support NetFlow or sFlow or equivalent		
8.0	**Physical Attributes**		
8.1	Mounting Option : 19" Universal rack mount ears		
9.0	**Mandatory Compliance**		
9.1	All categories of Switches, Transceivers & Switch OS should be from same OEM		
10.0	**WARRANTY**		
10.1	Switch should be quoted with TAC Support and Warranty for 5 years with NBD Hardware Replacement.		
11.0	**Product brochure** Vendor should provide printed technical catalogs/brochures for the quoted model containing technical specifications, features.		

3. **Fully Managed Edge Switch (48x1G RJ45 Ports with 2x10G SFP+ Ports)**

Sl. No	Specification Required	Compliance Yes / No	Remarks
1.0	**Product details- Please specify**		
1.1	Please mention Make, Model No. and Part Code		
2.0	**Architecture & Port Density**		
2.1	Switch should offer Wire-Speed Non-Blocking Switching & Routing Performance at Layer 2 & Layer 3.		
2.2	The Access Switch should have Forty Eight (48) 1GbE RJ45 ports and should have two (2) 10G SFP+ Slots, from Day 1 and without Fiber Transceivers		
2.3	Access Switch should support Stacking up to 4 Switches and should be configured with stacking ports from day 1.		
3.0	**Performance**		
3.1	Switching Bandwidth: Access Switch should provide Non-Blocking switch fabric capacity of 136 Gbps or more.		
3.2	Forwarding Capacity: Access Switch should provide wire-speed packet forwarding of 100 Mpps or more.		
4.0	**Layer 2 features**		
4.1	Should support 4K VLANs with 4K VLAN IDs		
4.2	Should support 10K MAC addresses or more.		
4.3	Shall support IP multicast snooping with support for IGMP v1, v2, v3 and MLD v1 & v2		
4.4	Should support Jumbo Frames (up to 9K bytes)		
5.0	**Layer 3 features**		
5.1	Should support minimum 1K IPv4 routes or more		
5.2	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.		
5.3	Should support Dynamic IPv4 & IPv6 Routing protocols (OSPFv2 and OSPFv3) and Multicast Routing Protocols from day 1.		
6.0	**Security**		
6.1	Switch should support RADIUS, TACACS/TACACS+ and username/password for Authentication, Authorization and Accounting (AAA) with Local User Accounts and Local User Passwords.		
6.2	Should support secure communications to the management interface and system through SSL, Secure Shell (SSHv2), Secure Copy and SNMPv3		
6.3	Should support IP Source Guard, DHCP snooping,		

	DHCPv4, DHCPv6 and Dynamic ARP Inspection.		
6.4	Should support IPv4 and IPv6 ACLs with a minimum of 1.5K rules per ACL or more.		
6.5	Should support Flexible Authentication with 802.1x Authentication and MAC Authentication.		
7.0	**Manageability**		
7.1	Should support manageability using Network Management Software with Web based Graphical User Interface (GUI).		
7.2	Integrated Standard based Command Line Interface (CLI), Telnet, TFTP, HTTP access to switch management/monitoring		
7.3	Should support NetFlow or sFlow or equivalent		
8.0	**Physical Attributes:**		
8.1	The Access Switch should have 19" Universal rack mount ears.		
9.0	**Mandatory Compliance :**		
9.1	All categories of Switches, Transceivers & Switch OS should be from same OEM		
10.0	**WARRANTY**		
10.1	Switch should be quoted with TAC Support and Warranty for 5 years with NBD Hardware Replacement.		
11.0	**Product brochure** Vendor should provide printed technical catalogs/brochures for the quoted model containing technical specifications, features.		

Note: - All the switches should have NDPP / NDCPP / EAL3 / Common Criteria Certified.

B) PASSIVE NETWORKING COMPONENTS:

(Item No. 1)
9U Wall Mountable Rack

9U Wall Mountable Rack	19" wall mountable standard racks with minimum 550mm depth and 9U height with front glass door, closed on all sides, lock and key, 2 cable management panels, 2 fans and 6 socket power supply strip with spike buster and with all standard accessories preferably of make : NETRACK /COMRACK/ VALRACK etc .

(Item No. 2)
Cat-6 Jack Panel, 24 port (fully loaded)

S No.	Specifications
1.	Should be made of cold rolled steel
2.	Should conform to TIA / EIA 568-C.2 Component Compliant
3.	Should terminate 24 UTP CAT 6 (4 pair) Cables
5.	Should confirm to EIA/TIA 568A wiring Pattern
6.	Should have labeling strips for identification.
7.	Should have individual bend limiting boots/caps on Information Outlets on the back.
8.	Should be RoHS compliant

(Item No. 3)
Cat-6 Information Outlet with Face Plate and Gang-box

S No.	Specifications
1.	Category 6, EIA/TIA 568-C.2
2.	Use insulation displacement connectors
3.	All information outlets for 100 W, 22-24 AWG copper
4.	Should have shutter on I/O or on Face Plate
5.	Should have Plastic Housing: Polycarbonate, UL94V-0 rated or equivalent

6.	Contact Plating: 50 µinches gold over 100 µinches nickel
7.	Operating Life: Minimum 200 Re-terminations
8.	Single Gang square plate, 86mmx86mm
9.	Should be RoHS compliant
10.	Write on labels in transparent plastic window – supplied with plate

(Item No. 4 , 5)
Cat-6 Patch Chord (1 meter and 3 meter)

S No.	Specifications
1.	Should be 4 Pairs 24 AWG copper cables.
2.	The Outer Jacket should be Low Smoke Zero Halogen.
3.	24 AWG stranded bare copper
4.	Should minimum comply with proposed ANSI/TIA/EIA-568-C.2
5.	Should be verified by ETL (ETL certificate to be enclosed with the Bid)
6.	UL listed (UL certificate to be provided along with the Bid)
7.	Should Have cross separator
8.	Should be RoHS compliant

(Item No. 6)
Cat6 Cable Box (305 meter)

S No.	Specifications
1.	Category 6 Unshielded Twisted Pair 100W cable shall be compliant with EIA/TIA 568-C.2
2.	Should be 4 pair, 23 AWG
3.	Cable should be CM rated
4.	Cable Should Have Internal cross separator
5.	Jacket: LSZH (Low smoke zero halogen)
6.	Conductor: Solid Copper
7.	All the Cat6 cabling components should be tested and verified by ETL with data transmission frequencies min 250 MHz or higher.
8.	Should have performance warranty for 20/25 years
9.	Cable roll should be of 305 meter length
10.	Should be RoHS compliant

(Item No. 7)
PVC Conduit (40mm size)

S. No.	25MM PVC Pipe (with required saddle, screws and gutties for surface wiring)
1.	PVC pipe should be of ISI standard.
2.	Fixing accessories like saddle and screws required should be supplied with the conduits

(Item No. 8)
PVC Conduit (25mm size)

S. No.	40MM PVC Pipe (with required saddle, screws and gutties for surface wiring)
1.	PVC pipe should be of ISI standard.
2.	Fixing accessories like saddle and screws required should be supplied with the conduits

(Item No. 9)
Flexible Conduit (40mm size)

S. No.	Flexible Conduit (40mm size)
1.	Flexible pipe should be of ISI standard.
2.	Fixing accessories like saddle and screws required should be supplied with the conduits

(Item No. 10)
Flexible Conduit (25mm size)

S. No.	Flexible Conduit (25mm size)
1.	Flexible pipe should be of ISI standard.
2.	Fixing accessories like saddle and screws required should be supplied with the conduits

(Item No. 11)
6-core Single mode outdoor plant Fiber

S No.	Specifications
1.	Cable should be of single mode OS2 type.
2.	Cable should be of 6 core 9/125um or equivalent
3.	Cable should be of type outdoor plant type.
4.	Cable should be Flame and weather retardant.
5.	Outer armoring should be of Corrugated Steel Tape
6.	Outer sheath should be of HDPE type
6.	Cable should be of ROHS/ELV Compliant

(Item No. 12)
6-core Fully loaded single mode, Rack-mountable, SC type LIU

S No.	Specifications
1.	Should be of 1U size and 19" rack-mountable
2.	Should be complete with of 6 core 9/125um single mode pigtails
3.	Should be complete with splicing tray and other standard accessories
4.	Should be loaded with SC-type adopter and couplers
5.	Should be of ROHS/ELV Compliant

(Item No. 13, 14)
SC-LC Style LSZH Single mode 9/125 micron Duplex Patch Cord

SNo.	Specifications	Requirement
1	Make and Type	SC to LC Duplex Fiber Optic Patch Cord Single Mode OS2 , 3 Mtr, 9/125 Micron
2	Cable Sheath	LSZH
3	Ferrule	Ceramic
4	Buffer Diameter	900 micron meter
5	ROHS	ROHS/ELV Compliant

(Item No. 15)
SC-type Single Mode fiber Pigtail (2 meter)

SNo.	Specifications	Requirement
1	Make and Type	SC type Fiber Optic Pigtail Single Mode OS2 , 2 Mtr, 9/125 Micron
2	Cable Sheath	LSZH
3	Ferrule	Ceramic
4	Buffer Diameter	900 micron meter
5	ROHS	ROHS/ELV Compliant

(Item No. 16)
SC-SC Single mode Duplex Fiber Optic Coupler

Specifications	Requirement
Characteristic Features	All SC adaptors/couplers should be duplex type with shutter/dustcover. Adapters should be snap mount for easy insertion and removal.

(D) (UPS backup)

5 KVA Online UPS System

SNo.	Specifications	Requirement
1	Make and Type	UPS should be strictly of make : APC and of Type : floor standing.
2	Battery cabinet	UPS batteries should be in sealed cabinet with proper provision for ventilation.
3.	Power Backup	UPS should give 30 minutes of power backup at its full-load capacity.

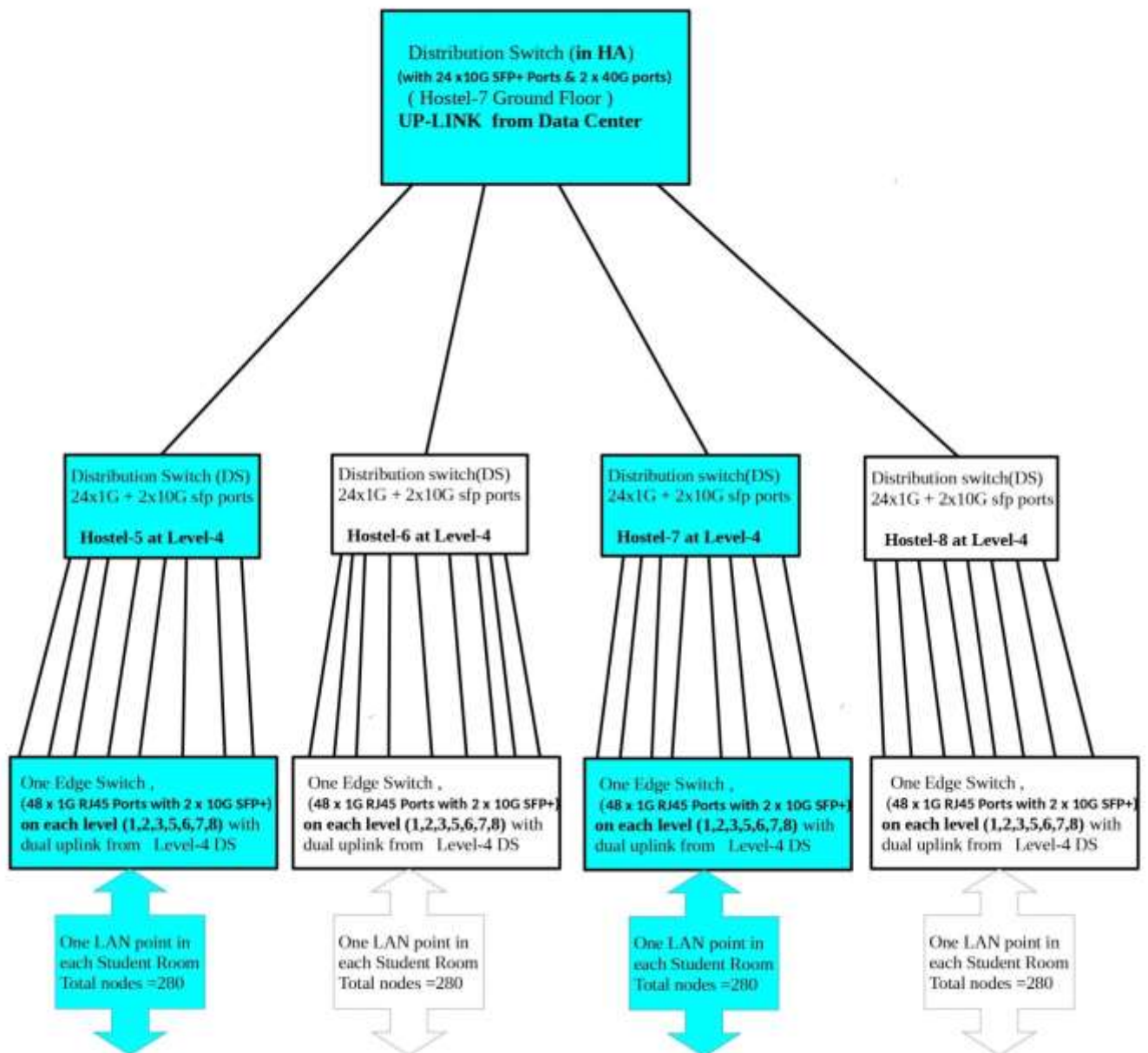| 4.	Bypass mode	UPS should have inbuilt bypass mode.
5	AC Supply	UPS should be of type single phase for 230V Indian power supply.
6.	**Warranty**	**UPS should be supplied with two years of on-site warranty inclusive of batteries**

Fig: Network Diagram for Hostel LAN Connectivity