

Kirori Mal College
University of Delhi
Delhi - 110007



**Request for Proposal (RFP) for Setting up of Campus
Network**

Tender No: 01/Campus Setup/2022 Date: 09-09-2022

Tender Fees: Rs. 5000

V. Chauhan

(Principal)

Kirori Mal College

University of Delhi

प्रो० विभा सिंह चौहान
(Prof. Vibha Singh Chauhan)
प्राचार्या / Principal

किरोरी मल कॉलेज / Kirori Mal College
दिल्ली विश्वविद्यालय / (University of Delhi)
दिल्ली-110007 / Delhi-110007

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Agam Singh

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V. Chauhan

Notice Inviting Quotation (E-Procurement Mode)

Sub: Notice Inviting Tenders for setting up of Campus Network

Kirori Mal College invites tenders from reputed Manufacturers/ Authorized Dealers /Tenderer for procurement of above mentioned item.

All interested vendors are requested to send their bid for supply of the above item as per details technical specification given and Price Bid as per BOQ. **No manual bids will be accepted. All quotation (both Technical and Financial should be submitted in the E-procurement portal).** The important information related to tender are as follows:

1. SCHEDULE

Date of Issue/Publishing	09/09/2022 (13:00 Hrs)
Document Download/Sale Start Date	09/09/2022 (13:00 Hrs)
Document Download/Sale End Date	20/09/2022 (17:00 Hrs)
Date for Pre-Bid Conference	Not Applicable
Last Date and Time for Uploading of Bids	20/09/2022 (17:00 Hrs)
Last Date and Time for receipt of queries	20/09/2022 (11:00 Hrs)
Date & Time of Opening of Technical Bids	22/09/2022 (11:00 Hrs)
Date of Opening of Commercial Bids	will be informed later
Tender Fee	Rs. 5000/- (Rupees Five Thousand Only) non-refundable, drawn in favor of "Principal, Kirori Mal College" payable at Delhi.
EMD	Rs. 1,80,000/- (Rupees One Lakh Eighty Thousand Only) drawn in favor of "Principal, Kirori Mal College" payable at Delhi. No exemption allowed in EMD.
Estimated Cost (including GST)	3700000/- (Rupees Thirty Seven Lakhs Only)
Performance Security	10%
Warranty	5 Years
No. of Covers (1/2/3/4)	02
Bid Validity days	90 days (From last date of opening of tender)
Address for Communication	Kirori Mal College, University of Delhi
Email Address	info@kmc.du.ac.in

V. Chauhan
प्रो० विभा सिंह चौहान
(Prof. Vibha Singh Chauhan) Principal
प्राचार्या/Principal Kirori Mal College
किरोरी मल कॉलेज/Kirori Mal College University of Delhi
(दिल्ली विश्वविद्यालय)/(University of Delhi)
दिल्ली-110007/Delhi-110007

8/9/22

(Prof. R. K. Pandey)

Agam Kumar
08/09/22
(Dr. Agam Kumar Jha)

1. Instructions to Bidders

Instructions for Online Bid Submission

The directive to publish the tender document on the Central Public Procurement Portal (URL:<http://eprocure.gov.in/eprocure/app>). The bidders are required to submit soft copies of their bids electronically on the CPP Portal using valid Digital Signature Certificates. Below mentioned instructions are meant to guide the bidders for registration on the CPP Portal, prepare their bids in accordance with the requirements and submitting their bids online on the CPP Portal. For more information, bidders may visit the CPP Portal <http://eprocure.gov.in/eprocure/app>.

1.1. Registration Process

- a) Bidders to enroll on the e-Procurement module of the portal <http://eprocure.gov.in/eprocure/app> by clicking on the link "Click here to Enroll".
- b) The bidders to choose a unique username and assign a password for their accounts. Bidders are advised to register their valid email address and mobile numbers as part of the registration process. These would be used for any communication from the CPP Portal.
- c) Bidders to register upon enrolment their valid Digital Signature Certificate (Class II or Class III Certificates with signing key usage) issued by any Certifying Authority recognized by CCA India with their profile.
- d) Only one valid DSC should be registered by a bidder. Please note that the bidders are responsible to ensure that they do not lend their DSCs to others which may lead to misuse. Foreign bidders are advised to refer "DSC details for Foreign Bidders" for Digital Signature requirements on the portal.
- e) Bidder then logs in to the site through the secured log-in by entering their user ID / password and the password of the DSC / eToken.

1.2. Tender Documents Search

- a) Various built in options are available in the CPP Portal to facilitate bidders to search active tenders by several parameters. These parameters include Tender ID, organization, location, date, value, etc.
- b) There is also an option of advanced search for tenders, wherein the bidders may combine a number of search parameters such as organization name, form of contract, location, date, other keywords etc. to search for a tender published on the CPP Portal.
- c) Once the bidders have selected the tenders they are interested in; they may download the required documents / tender schedules. These tenders can be moved to the respective 'My Tenders' folder. This would enable the CPP Portal to intimate the bidders through SMS / e-mail in case there is any corrigendum issued to the tender document.
- d) The bidder should make a note of the unique Tender ID assigned to each tender, in case they want to obtain any clarification / help from the Helpdesk.

1.3. Bid Preparation

- 1.3.1. Bidder should take into account any corrigendum published on the tender document before submitting their bids.
- 1.3.2. Please go through the tender advertisement and the tender document carefully to understand the documents required to be submitted as part of the bid.

- 1.3.3. Please note the number of covers in which the bid documents have to be submitted, the number of documents - including the names and content of each of the document that need to be submitted. Any deviations from these may lead to rejection of the bid.
- 1.3.4. Bidder, in advance, should get ready the bid documents to be submitted as indicated in the tender document / schedule and generally, they can be in PDF / XLS / RAR / DWF formats. Bid documents may be scanned with 100 dpi with black and white option.
- 1.3.5. To avoid the time and effort required in uploading the same set of standard documents which are required to be submitted as a part of every bid, a provision of uploading such standard Documents (e.g. PAN card copy, annual reports, auditor certificates etc.) has been provided to the bidders. Bidders can use "My Space" area available to them to upload such documents. These documents may be directly submitted from the "My Space" area while submitting a bid, and need not be uploaded again and again. This will lead to a reduction in the time required for bid submission process

1.4. Bid Submission

- 1.4.1. Bidder to log into the site well in advance for bid submission so that he/she upload the bid in time i.e. on or before the bid submission time. Bidder will be responsible for any delay due to other issues.
- 1.4.2. The bidder to digitally sign and upload the required bid documents one by one as indicated in the tender document.
- 1.4.3. Bidder to select the payment option as "offline" to pay the tender fee/ EMD wherever applicable and enter details of the instrument.
- 1.4.4. A standard BOQ format has been provided with the tender document to be filled by all the bidders. Bidders to note that they should necessarily submit their financial bids in the prescribed format and no other format is acceptable.
- 1.4.5. The server time (which is displayed on the bidders' dashboard) will be considered as the standard time for referencing the deadlines for submission of the bids by the bidders, opening of bids etc. The bidders should follow this time during bid submission.
- 1.4.6. All the documents being submitted by the bidders would be encrypted using PKI encryption techniques to ensure the secrecy of the data, which cannot be viewed by unauthorized persons until the time of bid opening.
- 1.4.7. The uploaded tender documents become readable only after the tender opening by the authorized bid openers.
- 1.4.8. Upon the successful and timely submission of bids, the portal will give a successful bid submission message & a bid summary will be displayed with the bid no. and the date & time of submission of the bid with all other relevant details.
- 1.4.9. Kindly add scanned PDF of all relevant documents in a single PDF file of compliance sheet.

2.5. ONLINE SUBMISSION:

A) Cover-1: Techno-commercial bid:

Online bids should be submitted containing scanned copy of following document in Cover1:

- i) All Documents establishing conformity to the Eligibility Criteria as mentioned at Clause 4.7 of T&C.
- ii) Scanned copy and original Tender Fee submitted through Demand Draft, drawn in favor of "**Principal, Kirori Mal College**" payable at Delhi.
- iii) Scanned copy and original of EMD submitted through Demand Draft, drawn in favor of "**Principal, Kirori Mal College**" payable at Delhi.

- iv) ECS Form.
- v) Copy of PAN.
- vii) Details of Past Experience.
- viii) Bid Performa.
- ix) Declaration regarding applicability of Start-Ups under Start-Up India Initiative alongwith copy of certificate [if applicable].
- x) GST:
 - a) Up-to-date Sales Tax clearance certificate, GST Registration number of the firm will have to accompany the quotation.
 - (b) GST Deduction at source as per Order/ notification of the Govt.
 - (c) HSN/SAC No of the items must be clearly mentioned in the quotation along with GSTNo.
- xi) PF Document

B) Cover-2: FINANCIAL BID (PRICE-BID)

The Financial Bid (Price Bid) shall be submitted in **electronic form only** in conformity with the tender specifications on the portal only by the time & date as specified. The financial cover shall contain price bid in the enclosed "Price Bid format" i.e. in BOQ format. Submission of the Financial Bid (Price Bid) by any other means shall not be accepted by the Institute in any circumstances. In case, if any cell is left blank and no rate is quoted against any of the item(s) by the Bid-der, rate of such item(s) shall be treated as "0" (Zero) and considered included in the cost of the bid and no separate claim whatsoever will be entertained on this account. Online submission of the bid will not be permitted on the portal after expiry of submission time and the Bidder shall not be permitted to submit the same by any other mode.

2.6 Assistance to Bidders

- a) Any queries relating to the tender document and the terms and conditions contained therein should be addressed to the Tender Inviting Authority for a tender or the relevant contact person indicated in the tender.
- b) Any queries relating to the process of online bid submission or queries relating to CPP Portal in general may be directed to the 24x7 CPP Portal Helpdesk. The contact number for the helpdesk is 1800 233 7315.

2.7. General Instructions to the Bidders

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

2. Invitation for Tender Offers for Setting up of Campus Network

Invites online Bids (Technical bid and Commercial bid) from eligible and experienced OEM (Original Equipment Manufacturer) OR OEM Authorized Dealer for **Setting up of Campus Network** on site comprehensive warranty from the date of receipt of the material as per terms & conditions specified in the tender document, which is available on CPP Portal <http://eprocure.gov.in/eprocure/app>

3. TECHNICAL SPECIFICATION

3.1. Access Switch 12 Ports

Sno	Access Switch - 6 Qty	Compliance (Yes/No)	Cross Reference
1	Switch should be 1RU with minimum 12 nos. 10/100/1000 Base-T ports, additional minimum 2 x1/10 G SFP+ Fiber port populated with 2*10G LR Modules. Switch should support PoE/PoE+ with power budget of at least 120 Watts		
2	Switch shall have minimum 60 Gbps of switching capacity and 90 Mbps of forwarding rate or require capacity for 12 Port 1Gig Switch.		
3	Shall have minimum 32K MAC Addresses and Support for up to 4096 VLANs.		
4	Should support IEEE Standards of Ethernet: IEEE 802.1D, 802.1s, 802.1w, 802.1x, 802.3ad		
5	Drop or rate limit based on source and destination MAC, VLAN ID or IP address, protocol, port, differentiated services code point (DSCP)/IP precedence, TCP/UDP source and destination ports, 802.1p priority, Ethernet type, Internet Control Message Protocol (ICMP) packets, IGMP packets, TCP flag		
6	Switch should functions as an IPv4 DHCP Server serving IP addresses for multiple DHCP pools/scopes , Support for DHCP options, system logs.		
7	Switch should support management features like SSHv2, SNMPv2c, SNMPv3, RADIUS and TACACS+ .		
8	Switch should have dual image support to perform software upgrades without having to take the network offline and without worrying about an outage during an upgrade.		
9	Switch should support port security, DHCP snooping or equivalent, ARP Inspection, IP Source guard, BPDU Guard, Spanning tree root guard.		
10	Switch should support localization/customization of CLI/GUI		
11	Switch should be IPv6 certified		

3.2. Wireless Solution

S.No.	Solution Architecture	Compliance (Yes/No)	Cross Reference
1	The proposed Wi-Fi controller/Management Plane should be Cloud based.		
2	The Proposed Controller/management Plane should be able to scale according to APs added to the Manager.		
3	The Proposed solution shall support single window to manage APs.		
4	All Wi-Fi, WIDS, WIPS & RRM (Radio resource management) services should be functional if the connectivity between AP and its controller/management plane goes down.		
5	The proposed Controller/Management plane should provide redundancy if the reachability to cloud provider is lost.		
6	The proposed controller/Management plane should be hosted in cloud provider data centre based in India		
7	New client on boarding in absence of connectivity between AP and controller /management plane goes down.		
8	Proposed solution should integrate with open LDAP, DNS, DHCP, etc. to run the WiFi services. It will be the responsibility of the bidder.		
9	Physical Server – workstation, CentOS. Integration is the responsibility of the bidder.		
	Management Controller		
1	The Controller/Management server must provide centralized Wi-Fi ,WIPS , WIDS in Location tracking management system		
2	The Controller/Management server should have role based admin rights to manage the server.		
3	The controller/Management server should support open API's for integration with 3rd party configuration management, inventory management, performance management, process automation, reporting, WLAN monitoring tools etc.		
4	Solution should support SNMP v1, v2c, v3		
5	The Solution should support URL redirection		

6	The solution should support following RRM Algorithms: 1. Transmit power control 2. Auto channel selection 3. Dynamic channel Selection 4. Auto Band Steering (steering clients from 2.4 GHz to 5GHz and vice versa) 5. Minimum RSSI based Association 6. Client Load balancing 7. Sticky client management 8. WMM Admission Control		
7	The solution shall support time Schedules - the solution must allow configuration of time schedules when WLAN is /isn't available (For example: SSIDs can be active from 9 am to 5 pm and then automatically disabled)		
8	The solution should maintain controller user action logs which should include all activities performed by the user like login, any configuration changes made on the system for at least 30 days.		
9	The solution should enable wireless client association analytics logs which should record client MAC address, AP connected to, data transfer, data rate, session duration, content - domain for at least 90 days		
10	The solution should support features like Broadcast and Multicast control , Multicast to Unicast conversion.		
Monitoring			
1	The controller/ Management server should enable application visibility and control. It should display list of applications with their data usage for a specific SSID. It should also support Application QOS marking		
2	The controller/ Management server should support Client Fingerprinting - The solution should detect and identify all types of Wi-Fi enabled client devices.		
3	The solution must allow automatic schedules for report generation and distribution of reports to Specific users via email		
4	The solution should provide alerts for impact on WLAN performance such as: a) High number client associations b) Low average data rate for a client c) Drop in Signal of an access point		
5	The solution shall support Location tracking of multiple clients/Rogue APs/Rogue Clients on floor Map uploaded on the controller/ Management plane.		
6	The solution should support automated root cause analysis of WiFi issues such as low RSSI, low data rate, Authentication related issue.		

7	The solution should highlight client connection failures during association, authentication and network entry. It should also identify the cause of failure.		
	Software & System Management		
1	The Controller/Management server should support manual and scheduled automatic system backup.		
2	The controller/Management server and AP should be on latest and compatible software/firmware versions.		
3	The controller/ Management server should be able to rollback all APs/group of APs to previous version if required.		
4	The Controller/ Management server Upgrade should not disrupt Wi-Fi, WIPS , WIDS and New Client on boarding services.		
5	The AP upgrade to controller version should be flexible and be scheduled on per AP group or site basis as required.		
	WIPS		
1	The solution must auto-classify APs (BSSID) precisely in different categories as managed, external , and rogue APs		
2	The solution must correctly detect all the devices connecting to the network		
3	The solution must be able to detect and automatically prevent all types of Rogue (unauthorized APs connected to the network) APs		
4	The solution must detect Honey Pot attacks. It should be able to prevent the authorized client from connecting to a honeypot AP.		
5	The WIPS solution should NOT affect the operation of an external (i.e. neighbours) or a managed access point while preventing a rogue AP on the same channel.		
6	The solution must be able to detect wireless Denial of Service (DoS) attacks		
	License, Warranty and Support		
1	The Total solution should come with all required feature licenses from Day 1		
2	The Total solution should come with the latest and updated version available at no extra cost		
3	All licences, port activations should be supplied with the devices for the mentioned features from day-1, warranty should be 5 years.		
4	All licences should be provided with the devices for the mentioned features. The licences should be perpetual in nature. Hardware warranty 5 years.		
5	The AMC Cost for next 5 years (after the warranty period) be mentioned in the Technical Document.		

3.3. Indoor Access Point

S.No.	Indoor AP – Features	Compliance (Yes/No)	Cross Reference
1	AP should support IEEE Wi-Fi 802.11ax/ac/a/n/b/g		
2	Wi-Fi AP devices and the solution must support the following protocols: IEEE 802.11a/b/g, IEEE 802.11n, IEEE 802.11ac (WAVE 2), IEEE 802.11ax, IEEE 802.11d, 802.11i, 802.11 r/k/v		
3	The AP must support the following authentication methods: WPA/WPA2-AES, PSK, authentication and AES encryption and 802.1x/EAP and unauthenticated (open) mode, Radius CoA.		
4	The AP must Support WPA3 , WPA3 Transition Mode, WPA3 SAE, OWE and OWE transition Mode		
5	Wi-Fi APs and the system should have ability to set SSIDs as bridge.		
6	Wi-Fi APs and the system should have support for 802.1Q VLANs.		
7	Supply should include ceiling/wall mountable units equal to the no. of APs quoted.		
8	APs shall be compliant with all applicable national regulations. WPC certificate need to Provide before deployment		
9	AP must support SSH for local or remote access to device through CLI.		
10	At least 8 SSIDs shall be supported in each of the 2.4GHz and 5GHz bands, with the ability to map each SSID to a separate VLAN.		
11	The SSID profiles/configurations of 2.4GHz and 5GHz radios should be independent.		
12	APs shall support Hotspot 2.0 (802.11u)		
13	The device must be capable of providing Wi-Fi access with 24/7 wireless intrusion prevention (WIPS) in a single device both operating simultaneously.		
14	The device should be remotely upgradeable from the controller, so that new features / upgrades can be added.		
15	Wi-Fi AP device should support dual stack for IPV4 and IPV6.		
16	AP should support IPSec tunnelling or equivalent to provide data encryption.		
17	AP should be able to tunnel traffic to remote location using protocols like VxLAN/EoGRE/L2TP		
18	The AP must be capable of receiving IP address via DHCP for IPv4/IPv6 and SLAAC for IPv6.		
19	AP Should support 2 Ethernet Ports with at least 1 port supporting mGig ethernet.		
20	AP must support Tri-radio (3 or more radios) configuration with 2 radios for Wi-Fi Access (2.4GHz and 5Ghz radio)and 3rd Dual band radio for scanning.		
21	AP must support minimum 4x4 antenna configuration in 5GHz and 2x2 configuration in 2.4GHz band.		
22	AP must support 6 spatial streams.		

23	AP must support for UL & DL OFDMA		
24	AP must support for UL & DL MU-MIMO		
25	AP must support BSS colouring and at least individual TWT		
26	AP must support simultaneous 802.11ax operation on both 2.4GHz and 5GHz radios.		
27	AP shall support minimum 0.6 Gbps on 2.4 GHz radio and 2.4 Gbps on 5GHz radio.		
28	AP shall support 20/40/80/160 MHz channel width in 5GHz band.		
29	AP shall support 20/40 MHz channel width in 2.4GHz band.		
30	Must support 802.11 dynamic frequency selection (DFS).		
31	Must support minimum transmit power of 23dbm on 2.4 GHz and 26 dbm on 5 GHz bands		
32	Antenna gain should be minimum 3 dBi for 2.4 GHz and 5 GHz bands.		
33	Rx sensitivity of AP shall -98dbm		
34	AP must able to handle RF interference from other WiFi and non-WiFi sources and automatically assign channel and power so as to deliver high performance and reliable communication.		
35	AP must support continuous scanning of all 2.4 GHz and 5 GHz channels to assist in RF optimization and client handling without impairing the user experience.		
36	The AP shall support humidity range 10-90%		
37	The AP shall support operating temperature of 0° C to +60° C.		
38	The AP shall Support Integrated WIPS background wireless scanning and Rogue AP prevention.		
39	The AP shall support third party analytics integration for real-time data transfer.		
40	The AP shall support integrated firewall, traffic shaping, QoS and BYOD controls per SSID.		
41	Must support POE+ i.e. 802at to power up the AP with all its features		
42	The Access points should support management via Openconfig		
43	The AP shall support wired VLAN monitoring for extended rogue AP detection.		
44	AP shall support self-healing wireless mesh networking.		
45	AP should support integration with cloud-based controller.		
46	All licences, port activations should be supplied with the devices for the mentioned features from day-1, warranty should be 5 years.		
48	All licences should be provided with the devices for the mentioned features. The licences should be perpetual in nature. Hardware warranty 5 years.		

3.4. Outdoor Access Point

S.No.	Outdoor AP – Features	Compliance (Yes/No)	Cross Reference
1	AP should support IEEE Wi-Fi 802.11ax/ac/a/n/b/g		

2	Wi-Fi AP devices and the solution must support the following protocols: IEEE 802.11a/b/g, IEEE 802.11n, IEEE 802.11ac (WAVE 2), IEEE 802.11ax, IEEE 802.11d, 802.11i, 802.11 r/k/v		
3	The AP must support the following authentication methods: WPA/WPA2-AES, PSK, authentication and AES encryption and 802.1x/EAP and unauthenticated (open) mode, Radius CoA.		
4	The AP must Support WPA3 , WPA3 Transition Mode, WPA3 SAE, OWE and OWE transition Mode		
5	Wi-Fi APs and the system should have ability to set SSIDs as bridge.		
6	Wi-Fi APs and the system should have support for 802.1Q VLANs.		
7	Supply should include ceiling/wall mountable units equal to the no. of APs quoted.		
8	APs shall be compliant with all applicable national regulations. WPC certificate need to Provide before deployment		
9	AP must support SSH for local or remote access to device through CLI.		
10	At least 8 SSIDs shall be supported in each of the 2.4GHz and 5GHz bands, with the ability to map each SSID to a separate VLAN.		
11	The SSID profiles/configurations of 2.4GHz and 5GHz radios should be independent.		
12	APs shall support Hotspot 2.0 (802.11u)		
13	The device must be capable of providing Wi-Fi access with 24/7 wireless intrusion prevention (WIPS) in a single device both operating simultaneously.		
14	The device should be remotely upgradeable from the controller, so that new features / upgrades can be added.		
15	Wi-Fi AP device should support dual stack for IPV4 and IPV6.		
16	AP should support IPSec tunnelling or equivalent to provide data plane encryption.		
17	AP should be able to tunnel traffic to remote location using protocols like VxLAN/EoGRE/L2TP		
18	The AP must be capable of receiving IP address via DHCP for IPv4/IPv6 and SLAAC for IPv6.		
19	AP Should support 2 Ethernet Ports with at least 1 port supporting mGig ethernet.		
20	AP must support Tri-radio (3 or more radios) configuration with 2 radios for Wi-Fi Access (2.4GHz and 5Ghz radio)and 3rd Dual band radio for scanning.		
21	AP must support minimum 4x4:4 antenna configuration in 5GHz and 2x2:2 configuration in 2.4GHz band.		
22	AP must support omnidirectional internal antennas		
23	AP must support 6 spatial streams.		
24	AP must support for UL & DL OFDMA		
25	AP must support for UL & DL MU-MIMO		

26	AP must support BSS colouring and at least individual TWT		
27	AP must support simultaneous 802.11ax operation on both 2.4GHz and 5GHz radios.		
28	AP shall support minimum 0.6 Gbps on 2.4 GHz radio and 2.4 Gbps on 5GHz radio.		
29	AP shall support 20/40/80/160 MHz channel width in 5GHz band.		
30	AP shall support 20/40 MHz channel width in 2.4GHz band.		
31	Must support 802.11 dynamic frequency selection (DFS).		
32	Must support minimum transmit power of 23dbm on 2.4 GHz and 26 dbm on 5 GHz bands		
33	Antenna gain should be minimum 3 dBi for 2.4 GHz and 5 GHz bands.		
34	Rx sensitivity of AP shall -98dbm		
35	AP must able to handle RF interference from other WiFi and non-WiFi sources and automatically assign channel and power so as to deliver high performance and reliable communication.		
36	AP must support continuous scanning of all 2.4 GHz and 5 GHz channels to assist in RF optimization and client handling without impairing the user experience.		
37	The AP shall support humidity rage 0-95%		
38	The AP shall support operating temperature of -20° C to +65° C.		
39	The AP shall support IP67 weatherproofing		
40	The AP shall Support Integrated WIPS background wireless scanning and Rogue AP prevention.		
41	The AP shall support third party analytics integration for real-time data transfer.		
42	The AP shall support integrated firewall, traffic shaping, QoS and BYOD controls per SSID.		
43	Must support POE+ i.e. 802at to power up the AP with all its features		
44	AP should have Integrated BLE radio.		
45	The Access points should support management via Openconfig		
46	The AP shall support wired VLAN monitoring for extended rogue AP detection.		
47	AP shall support self-healing wireless mesh networking.		
48	AP should support integration with cloud-based controller.		
49	All licences, port activations should be supplied with the devices for the mentioned features from day-1, warranty should be 5 years.		
50	All licences should be provided with the devices for the mentioned features. The licences should be perpetual in nature. Hardware warranty 5 years.		

3.5. Core Switch

Sno	24 port 1/10G SFP+ Core Switch - 1 Qty	Compliance (Yes/No)	Cross Reference
	Hardware and Architecture		
1	Device should have minimum 24 x 1/10G SFP+ ports populated with 12* 10G LR 10KM distance support, 4* 1G RJ45, 2* 1G LX SFP's & Switch should have 2* 40/100G Uplink ports		
2	Device should have non-blocking architecture with wire speed L2 and L3 forwarding		
3	Device should support forwarding rate of minimum 300 Mpps		
4	Device should support switching capacity of minimum 780 Gbps		
	L2 features		
1	Device should support 4K VLANs, 9200 Jumbo frame		
2	Device should support minimum 32K MAC address		
3	Device should support MST, per-vlan RSTP, BPDU Guard, IEEE 802.1D, Qin-Q, 802.1w, 802.1s		
4	Device should support port ACL with L2, L3 and L4 parameters		
5	Device support LLDP and LACP to bundle links and detect mis-cabling issues.		
	L3 features		
1	Device should support 150K IPv4/Pv6 LPM routes		
2	Device should support Routing Protocols: OSPFv2, OSPFv3, BGP, MP-BGP, IS-IS		
3	Device Should support Graceful restart for BGP & OSPF		
4	Device Should support Multi-hop Bidirectional Forwarding Detection		
5	Device Should support Policy Based Routing, VRRP v2 and v3, inter-VRF route leaking		
6	Device Should support BGP Monitoring Protocol		
7	Device should support open standard VXLAN+EVPN leaf-spine based SDN technology		
8	Device should support IGMP v2/v3, PIM-SSM, Anycast RP, Multicast Source Discovery Protocol.		
	High availability		
1	Shall support active-active layer2 and Layer3 redundancy with Stacking/MCLAG/Multi-chassis Link Aggregation (MLAG) or equivalent technology while keeping control plane and management plane distributed.		
2	Should have redundant hot-swappable fans and redundant host-swappable power supplies		
	security		
1	Should support Control Plane protection to protect switch from DoS attacks		
2	should support port ACL with L2, L3 and L4 parameters		
3	Device should support Role based access control to restrict admin access as per authorization		
4	Should support TACACS+ and RADIUS for authentication and accounting		
	QOS		
1	Device should support priority queuing		

2	should support Weighted Fair Queue or Weighted round robin or equivalent queuing		
3	should support ACL based classification for QoS		
4	Should support rate limiting function like policing and shaping		
	Management		
1	Should Support SSHv2, SCP, SFTP, CLI task scheduler, configuration session.		
2	should support NTP and IEEE 1588 PTP Boundary Clock		
3	should support SNMP v1/2/3 and Open Config model over gRPC /gNMI		
4	Device should support traffic visibility with sflow /netflow/IPFIX		
	Automation & Visibility		
1	device should support on board tcpdump /Wireshark to capture control plane and data plane traffic for troubleshooting.		
2	Should support installation of custom apps using RPM/SWIX expanding use cases		
3	should have programmability and automation support with on board python interpreter, bash script support and docker containers.		
	Others		
1	should be certified for NDcPP/EAL3/EAL2 common criteria		
2	The transceivers should be from same OEM of the proposed switch		
3	The offered equipment must be able to operate in operating temperature of 0°C to 60°C; Relative Humidity 5 to 90%; Operating Altitude 0-3,000m)		
4	Visibility & Automation: Should be provided along with software for unified monitoring, provisioning and telemetry solution from the same OEM. Should support telemetry with time-series database view, traffic flow analytics, PSIRT/BUG visibility, configuration compliance, endpoint tracking, POAP/ZTP, device resource utilization, auto topology view, alerts. SI will factor required VM's / Cloud Software to install the software in HA cluster, if any OEM wants to supply their Appliance they allowed to in HA Cluster or can provide solution over Cloud.		
5	All licences, port activations should be supplied with the devices for the mentioned features from day-1, warranty should be 3 years.		
6	All licences should be provided with the devices for the mentioned features. The licences should be perpetual in nature or should be provided for 5yrs on day-1 in case of subscription based licencing. Hardware warranty 36 months.		

[All Switches, SFP's, WiFi should be from One OEM, in case SI's selecting different / mixing OEM's for Active products \(switches, SFP's & WiFi\), in that case all Active OEM's should give undertaking signed by their Legal & Technical team the solution \(mentioning all OEM's name of each product\) will work without any technical glitch and all OEM will work together in resolving the issue together as College can't follow / Coordinate with SI or different OEM's for resolution of the issues.](#)

[Specs mentioned are minimum and all OEM's can quote equal or higher specification products, degrading specification are not recommended](#)

OEM Criteria for Passive Networking items.	
	OEM must provide declaration on conformity of all the passive components to the following standards:
	OEM is currently not blacklisted in any manner whatsoever by any of the State or UT and or Central Government in India on any ground including but not limited to indulgence in corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice. A declaration on letterhead must be submitted.
	Undertake that the support including spares, patches for the quoted products shall be available for 10 years.
	OEM should have valid ISO 9001 and ISO 14001 certificate on Design, development and manufacture of SW and HW solutions for communication networks.
	OEM must provide Performance warranty for next 10 years for passive components.
1 Cat 6A UTP Cable	
1.1	4 Pair Cable with integral cross -member pair separator for uniform characteristic impedance.
1.2	Category 6A Unshielded Twisted 4 Pair 100 Ω cable shall be compliant with ANSI/TIA/EIA-568-C.2; ISO/IEC 11801 Ed. 2.0; 10BASE-T, IEEE 802.3 af (PoE), 100BASE-T, IEEE 802.3at (PoE+) & 1000BASE-T
1.3	Category 6A UTP cables shall extend between the work area location and its associated telecommunications closet and consist of 4 pair. ISO/IEC 60332-1-2; IEC 60754-1 & 2; IEC 61034-2
1.4	Conductor: Solid Copper
1.5	Conductor Diameter: 0.56mm (23 AWG)
1.6	Insulator HD Polyethylene solid
1.7	Jacket: LSZH RoHS complied
1.8	Outer Diameter: 8.0 ± 0.4mm
1.9	Max Temperature: -20°C to +75°C
	Mechanical Test
1.10	Should have Pulling force of 100N.
1.11	Bend Radius: Installation: <4 X Cable Diameter,
	Electrical Test
1.12	D.C. resistance conductor : <7.4Ω /100m
1.13	Resistance Unbalance 2% Max
1.14	Mutual Capacitance : < 5.6nF/100m
1.15	Capacitance Unbalance : 160pF/100m.
1.16	Propagation Velocity : 64%
1.17	ETL 4 port channel Test report should be submitted with 800 Mhz
1.18	<i>Should be ETL Certified</i>
2 Cat 6A UTP RJ 45 Keystone Jack	
2.1	RJ45 Jack of Category 6A, for the establishing of transmission channels of class EA with up to 4 plugged connections, complies with Category 6A requirements of the standards ISO/IEC 11801:2.1 edition, EN 50173-1 (200X), ANSI/TIA/EIA 568-C.2, backwards compatible with Cat6, Cat.5e and Cat.5.
2.2	Suitable for 10GBase-T applications in acc. with IEEE 802.3an more than or equal to 800 MHz (ETL test report to be submitted)
2.3	Compatible with RJ standard plugs (RJ11, RJ12, RJ45), PCB- and toolfree based connection of installation cables AWG 24 – 22 (0.5 mm – 0.65 mm) and flexible cables AWG 26/7 – AWG 22/7.
2.4	IDC termination should feature nil crossover in acc. with EIA/TIA 568-A/B, Tin phosphor bronze contacts for complying IEC 60603-7
2.5	Housing material: Polycarbonate (UL-94-V0)

2.6	Jack Contacts: Phosphor bronze, 50 micro-inch gold plating over nickel
2.7	Insulation Resistance: $\geq 500 \text{ M}\Omega$
2.8	Dielectric Withstand Volt: 100VAC RMS 60Hz
2.9	Contact Resistance: $\leq 20 \text{ m}\Omega$
2.10	Current Rating: 1.5A at 68°F
2.11	Plug insertion Life: ≥ 750 times plug in
2.12	Contact Force: 99.2g (3.5oz) FCC Plug
2.13	Plug Retention Force: 30lb (133n/13.3Kg)
2.14	Temperature Test: -40 to 150°C (-40 to 66°C)
2.15	Keystone should feature with Tool free termination technology
2.16	Keystone Jack should be available in 8 different colour options
2.17	Material: RoHS complied
2.18	Should be ETL Certified
3	Patch Cord, STP/UTP 4P, Cat.6A, length 1.0/ 2.0 m
3.1	Standardization: Compliant with Cat.6A, Class EA requirements: ISO/IEC 11801 2.1 Edition Compliant with Cat.6A component
3.2	Cable shield: STP/UTP
3.3	Number of conductors : 8
3.4	Stranding: 7 x 0.16 mm (26 AWG)
3.5	Cable jacket characteristics: cable, metal-free
3.6	Cable overall diameter: 6.0 \pm 0.2 mm
3.7	Tube / Wire type: stranded conductor
3.8	Insulation: foam skin, polyolefin, 0.98 \pm 0.02mm OD.
3.9	Plug: Feature cable retention, with enhanced pull strength.
3.10	Cat 6A patch cord plug to have round cable holder and strain relief boot to avoid bending.
3.11	plug should have high repeatability cross talk performance
3.12	Plug design should be patented with unique feature
3.13	Should be ETL certified
4	19" 1U 24 port shielded Patch Panel
4.1	Patch panel should be modular design, populates up to 24 UTP/STP keystone-type jacks in 1U
4.2	Patch panel should be Enhanced with cable strain relief with retention tray; It should be single metal both front panel and rear tray
4.3	Material: sub-rack made of Aluminium with dimension 44.4 mm : 482.6 mm : 105 mm (h:w:d) tray
4.4	Information Outlet or connection module should comply with the specification mentioned above in 2
4.5	Panel should be supplied with earthing wire and earther lug for STP
4.6	Standard : Conforms to IEC-60603-7 (603-7) for keystone-type, Snap-on apertures
4.7	Should be RoHS complied
5	Faceplate
5.1	Should be UK style Keystone-type Faceplates are available in 1, 2 & 4 port configurations
5.2	Should be featured with shutter options, the screws not to be visible
5.3	Should support Work with both Flush and Wall mount box
5.4	Should support Operating Temperature: -10 \sim +60; Storage Temperature: -40 \sim +68; Humidity: 10% \sim 90% RH
5.5	Material: ABS, UL 94V-0; Spring: SUS304; Surface Finish: Polished

6	Cat6A Shielded Field Termination Plug
6.1	Standardization: Compliant with Cat.6A, Class EA requirements: ISO/IEC 11801 2nd Edition backward Compliant with Cat.6 component standards IEC 60603-7-4 and 60603-7-5
6.2	Cable: UTP/STP
6.3	Number of conductors : 8
6.4	Termination: IDC type Tool less
6.5	RJ45 Plug Metal covers: Zinc die-casting with nickel plated
6.6	RJ45 Plug contacts: Phosphor bronze with nickel plated
6.7	Plastic Wire Organizer: PC, Colour: White, UL 94V-0
6.8	IDC Durability: ≥ 20 Termination cycles
6.9	RJ45 Jack Durability: ≥ 750 Plug-Jack mating cycles per IEC 60603-7-81
6.10	Operating Temperature: -10 degree C to +60 degree C
6.11	Patch Cord retention strength: 7.7 Kg Max. according to IEC 60603-7-5
6.12	Rj45 Plug Insertion force: 3.1 Kg Max according to IEC 60603-7-81

4. TERMS & CONDITIONS

- 4.1. Due date:** The tender has to be submitted online on or before the due date. The offers received after the due date and time will not be considered.
- 4.2. Preparation of Bids:** The offer/bid should be submitted in two bid systems (i.e.) Technical bid and financial bid. The technical bid should consist of all technical details along with commercial terms and conditions. Financial bid should indicate item wise price for the items mentioned in the technical bid. Financial Bids to be submitted in BOQ format.
- 4.3. Tender Fee:** The Bidder should submit the Tender Fee in the form of Demand Draft in favor of **Principal, Kirori Mal College University of Delhi**, payable at Delhi, from any of the Commercial Banks **on or before the last date of Bid submission at the college reception**. The Technical Bid without Tender Fee would be considered as UNRESPONSIVE and will not be accepted.
- 4.4. EMD:** The Bidder should submit an EMD in the form of Demand Draft in favor of **Principal, Kirori Mal College University of Delhi**, payable at Delhi, from any of the Commercial Banks **on or before the last date of Bid submission at the college reception**. The Technical Bid without EMD would be considered as UNRESPONSIVE and will not be accepted. The EMD will be refunded without any interest to the unsuccessful Bidders after the award of contract. Refer to Schedule (at page 2 of this document) for its actual place of submission. **No exemption is allowed in EMD.**
- 4.5. Refund of EMD:** The EMD will be returned to unsuccessful tenderers only after the Tenders are finalized. In case of successful Tenderer, it will be retained till the successful and complete installation of the equipment.
- 4.6. Opening of the tender:** The online bid will be opened by a committee duly constituted for this purpose. Online bids (complete in all respect) received along with Demand Draft of EMD will be opened as mentioned at "Annexure: Schedule" in presence of bidder's representative if available. Only one representative will be allowed to participate in the tender opening. Bid received without EMD and Tender Fee will be rejected straight way. The technical bid will be opened online first and it will be examined by a technical committee (as per specification and requirement). The financial offer/bid will be opened only for the offer/bid which technically meets all requirements as per the specification, and will be opened subsequently for further evaluation.
- 4.7. Acceptance/ Rejection of bids:** The Institute reserves the right to reject any bid not fulfilling the eligibility criteria.

5. Eligibility Criteria:

- 5.1.1. Tenderer should have the manufacturer authorized bid specific MAF. Letter of Authorization from original equipment manufacturer (OEM) specific to the tender should be enclosed.
- 5.1.2. An undertaking from the OEM is required stating that they would facilitate the tenderer on a regular basis with technology/product updates and extend support for the warranty as well.
- 5.1.3. OEM should be Nationally/Internationally reputed Company.
- 5.1.4. Non-compliance of tender terms, non-submission of required documents, lack of clarity of the specifications, contradiction between tenderer specification and supporting documents etc. may lead to rejection of the bid.
- 5.1.5. In the tender, either the Indian agent on behalf of the Principal/OEM or Principal/OEM itself can bid but both cannot bid simultaneously for the same item/product in the same tender.
- 5.1.6. If an agent submits bid on behalf of the Principal/OEM, the same agent shall not submit a bid on behalf of another Principal/OEM in the same tender for the same item/product.
- 5.1.7. The Bidder has not been blacklisted by Central Govt. /State Govt./PSUs/Other Govt. Agency. (Bidder should submit a declaration to this effect).
- 5.1.8. The bidder should be a single legal entity / individual organization. Consortium shall not be allowed. (Undertaking signed by authorized signatory must be provided).
- 5.1.9. Average Annual Turnover of the bidder during the last three financial years (2018-2019, 2019-2020 and 2020-2021) should be more than **Rs. 3 Crores.** (CA Certificate along with Balance Sheets of last three financial years must be submitted.)
- 5.1.10. The bidder should have single work order of 25 Lakh / should have two work 12 Lakh related to Hardware/ Networking/ Software.
- 5.1.11. The bidder should have registered local own office in Delhi/NCR.
- 5.1.12. The bidder should have ISO certified (ISO 27001, ISO 9001).
- 5.1.13. BID Evaluation: Bidder has to submit Detailed Design of Solution if not submit, BID will be rejected.
- 5.1.14. The Bidder Firm should have registered in ESI PF Department.

6. Performance Security: The supplier shall require to submit the performance security in the form of irrevocable bank guarantee issued by any commercial bank for an amount which is stated at the "Schedule" of the tender document within 15 days from the date of receipt of the purchase order/LC and should be kept valid for a period of 2 months beyond the date of completion of warranty period.

7. Force Majeure: The Supplier shall not be liable for forfeiture of its performance security, liquidated damages or termination for default, if and to the extent that, its delay in performance or other failure to perform its obligations under the Contract is the result of an event of Force Majeure.

7.1.1. For purposes of this Clause, "Force Majeure" means an event beyond the control of the Supplier and not involving the Supplier's fault or negligence and not foreseeable. Such events may include, but are not limited to, acts of the Purchaser either in its sovereign or contractual capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions and freight embargoes.

7.1.2. If a Force Majeure situation arises, the Supplier shall promptly notify the Purchaser

in writing of such conditions and the cause thereof. Unless otherwise directed by the Purchaser in writing, the Supplier shall continue to perform its obligations under the Contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.

8. Risk Purchase Clause: In 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 the other source on the total risk of the supplier under risk purchase clause.

9. Delivery and Documents:

9.1. Delivery of the goods should be made within a maximum of 8-12 weeks from the date of placement of purchase order.

10. Liquidated Damages (L.D):

If a supplier fails to execute the order in time as per the terms and conditions stipulated therein, it will be open to the purchaser to recover liquidated damages for delay in delivery and installation from the supplier at the rate 0.5% of the value of the order per week subject to a maximum of 10% of the total order value. The L.D charges can be increased in case of gross violation of the Purchase Order terms as decided by the Director of the Institute.

11. Installation & Demonstration

The supplier is required to do the installation and demonstration of the equipment within two weeks of the arrival of materials at site of installation, otherwise the penalty clause will be the same as per the supply of materials.

In case of any damage to equipment and supplies during the carriage of supplies from the origin of equipment to the installation site, the supplier has to replace it with new equipment/supplies immediately at his own risk. Supplier will settle his claim with the insurance company as per his convenience.

12. Warranty

12.1.1. All licenses should be provided with the devices for the mentioned features. The licenses should be perpetual in nature or should be provided for 8 years on day-1 in case of subscription based licensing. Hardware warranty 5 years.

12.1.2. Warranty period will start after final sign-off.

12.1.3. After the warranty period is over, Annual Maintenance Contract (AMC)/Comprehensive Maintenance Contract (CMC) up to next three years should be started. The AMC (Onsite Comprehensive after the warranty period should be quoted separately) within a maximum cap of 7%.

13. Taxes

Suppliers shall be entirely responsible for all taxes, duties, road permits, etc., incurred until delivery of the contracted Goods to the Purchaser.

14. Payment:

The 100% payment will be made after the deployment and final sign-off.

15. Training of Personnel:

The supplier shall be required to undertake to provide the technical training to the personnel involved in the use of the equipment at the Institute premises, immediately after completing the installation

16. Additional T&C for Bid

1. Only the short-listed bids from the technical evaluation shall be considered for commercial comparison.
2. All Network switches and Access Points should be from same OEM.
3. The OEM and successful bidder must ensure that all the accompanying hardware and software need to be delivered to complete the integrated solution. Broad specifications for various equipment required to meet the solution requirement are defined. Only the major equipment/sub systems are listed in Specifications. All other interfaces and accessories/cables required to complete the system requirement are also to be supplied by the bidder. The intent of these specifications is to establish the functionality and system performance with quality workmanship. However, it shall be the OEM and bidder's total responsibility for the final design, engineering, procurement, manufacture, transportation, installation, testing, and commissioning of various equipment to meet and fulfil the overall system requirements/objectives specified in the tender. OEM & Bidder shall ensure proper interfacing between various sub-systems/equipment of the system. Detailed technical documents (compliance cross reference, design document, datasheets, list of accessories, certificates) and unpriced detailed BOQ of the supplying items need to be submitted at the time of bid submission. (Undertaking for the same to be provided).
4. Products quoted should be with direct OEM TAC support and BoQ being submitted shall be endorsed and certified by the OEM for functionality.
5. Product Lifecycle certificate from OEM for support of respective solution including hardware, software, availability of spares, software upgrades etc. for a period of 8 years from the last date of bid submission.
6. The OEM must provide a letter mentioning that all the products supplied are "Malicious code free" and there are no Trojans, viruses, worms, spywares, root kits or any malicious software in the provided hardware/software.
7. Country of Manufacturing shouldn't be China, Pakistan & Taiwan. No deviation should be asked on this.
8. OEM should submit certificate that are not from a country sharing land border with India as defined in order No. F/No/6/18/2019-PPD dated 23 July 2020 issued by public procurement Division, Dept. of Expenditure, Ministry of Finance, GoI and the goods offered by us comply with the provisions of said order.

17. Award of Contract

1. Kirori Mal College shall award the contract to the eligible bidder whose technical bid has been accepted and determined as the lowest evaluated commercial bid based on the Grand Total calculated of all items + taxes etc. of the Price Bids. However, college reserves the right and has sole discretion to reject the lowest evaluated bid.
2. If more than one bidder happens to quote the same lowest price, college reserves the right to decide the criteria and further process for awarding the contract, decision of college shall be final for awarding the contract.
3. Letter of authorization (MAF) in favor of the bidder with reference to the subject tender need to be submitted along with cross compliance.

4. Any deviation will result in rejection on Bid

18. Bill of Material

Bill Of Material				
Sl. No.	Particular/items	Qty.	Unit Price (All Incl)	Total Price (All Incl)
1.	12 port Switches	6		
2.	Indoor WiFi 6 Access Point with Controller / manager SW	30		
3.	Outdoor WiFi 6 Access Point with Controller / manager SW	5		
4.	Core Switch With 12port SFP or 24port Copper Including 04 SFPs	1		
5	Multitube Multimode Armoured fiber cable 6 Core with multiple tubes	1 Work		
6	Cat 6A UTP Cable with ETL verification and UL report with 800 Mhz.			
7	Cat 6A Patch Panel 24 Port loaded with ETL and UL Listed			
8	Cat 6A 1 meter Patch Cord ETL 4 Connector verified.			
9	Cat 6A 1 meter Patch Cord ETL 4 Connector verified at AP Side			
10	Cat 6A UL Listed ETL Verified Keystone with Face plate and wall mount back box			
11	Rack 6U			
12	PVC Conduit 1"			
13	Laying of Cable and Conduit			
14	Installation of Access Point and Switches, RACKs etc.			

(a) Kindly note that above bill of quantity is indicative

(b) The Purchaser reserves the right to increase or decrease the quantity to be ordered up to 25 percent at the time of placement of contract. The purchaser also reserves the right to increase the ordered quantity by up to 25% of the contracted quantity during the currency of the contract at the contracted rates. Bidders are bound to accept the orders accordingly.