KANNUR UNIVERSITY
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PMU-B/BI/20305/2025 14.10.2025

NOTICE INVITING E-TENDER

Tender Document for Supply, Installation, Testing, and Commissioning of Network Protection and Access Management lab at Department of IT, Mangattuparamba Campus, Kannur University

The Registrar, Kannur University invites e-tender(s) in **Two Bid System (Two cover)** for the **Supply, Installation, Testing, and Commissioning of Network Protection and Access Management lab at Department of IT, Mangattuparamba Campus, Kannur University** (under PM USHA Scheme), from **original equipment mnanufacturers (OEMs) or authorized distributors/dealers** as per the technical specifications and schedule given below. The rate quoted should be inclusive of all taxes, installation charges and other charges. **The Registrar, Kannur University reserves the right to accept or reject the tenders without assigning any reason thereof**. The list of equipment/accessories proposed to be purchased, including its quantity and specifications are furnished in the schedule of items given below. Since this is an e-tender, only those bidders who have enrolled in the **http://etenders.kerala.gov.in** portal with their own Digital Signature Certificate (DSC) can participate in the tender. E-Tender document and other details can be obtained from the above e-portal.

For further details, logon to http://etenders.kerala.gov.in

Tender Schedule

Name of the work	Supply, Installation, Testing, and Commissioning of Network Protection and Access Management lab at Department of IT, Mangattuparamba Campus, Kannur University
Tender Notice No.	PMU-B/BI/20305/2025
Tender ID	2025_KnrU_809104_1

Last date and time for receipt of Tender	04-11-2025, 04:00 PM
Date and time of opening of Tender	06-11-2025, 11:00 AM
EMD	Rs: 38,070/-
Security Deposit	5% of the contract value
Tender Fee	Rs. 5,800 + 1,044 (GST-18%) (Firm should remit GST amount of ₹1,044/- directly to the GST department and upload receipt in the e-Procurement portal)
Place of supply and installation	Department of IT, Mangattuparamba Campus, Kannur University
Period of completion	90 Days From the date of Receipt of Purchase Order

Instruction to Bidders

At any time prior to the deadline for submission of bids, Registrar, Kannur University, Kerala may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective Tenderer, modify the Tender document by amendment and will be published as corrigendum in the website. The deadline for submission of bids may also be extended at the discretion of Kannur University, Kerala.

Tendering Process

The tender will be published in the form of e-tender and will be available on the e-tender site of Govt. of Kerala. All the rules and regulations of the e-tendering will be applicable to this tender also. The tender will be invited in the two cover format. i.e. (i) Technical Bid and (ii) Financial Bid. The financial bid of a bidder will be considered if and only if the bidder qualifies in the technical bid evaluation.

Specifications

1.Core L3 Switch (1 No)
Physical Specification:
The LAN switch shall be rack mountable with 24× 25G SFP28 ports with 4× 100G

QSFP28 slots
The LAN Switch should have 2 x USB 3.0 Ports, 1 x RJ 45 Ports MGMT Port , 1x RJ45 Console Port and 1 x USB Type C Port
General Specification:
The LAN switch shall be available with minimum 2000 Gbps switching capacity.
The LAN switch shall have minimum packet forwarding rate of 810 Mpps million packets per second at 64 byte packet length.
The LAN switch shall support minimum 128K MAC addresses.
The LAN Switch must Support Stacking up to 12 Units and upto 800 Gbps Bandwidth on Stacking
There shall be 2048 IGMP groups.
The switch shall be able to work on both IPv4 and IPv6 (dual stack) from day one.
The LAN Switch should shoud support Layer 3 Features like RIP , OSPF v2/v3 , VRRP v2/v3 and ECMP, BGP , ISIS
All ports in the switch shall operate at wire-speed / line-rate.
The switch shall be capable of working with AC Power Supply with a voltage varying from 170-240Volts at 50 +/-2 Hz with RPS Support
The switch shall support 19 inch rack mounting.
Layer - 2 Features:
The LAN switch shall support IEEE 802.1Q VLAN encapsulation. Maximum 4K VLAN Groups.
It shall support for Automatic Negotiation of Trunking Protocol, to help minimize the configuration & errors.
It shall support 802.1d, 802.1p, 802.1Q, 802.1s, 802.1w, 802.1x, 802.1ab,802.3ad.
It shall support 2,048 IPv4, 1,024 IPv6 Routing Entries, with 256 IP Interfaces
It shall support spanning-tree root guard or any other industry standard protocol to prevent other edge switches becoming the root bridge.
It shall support IGMP snooping v1, v2 and v3.
It shall support Link Aggregation Protocol (LACP).
It shall Support ERPS , STP,MSTP,RSTP, PIM-DM (IPv4)
It shall Support 802.3ah Ethernet Link OAM for Detection of Unidirectional links and to disable them to avoid problems such as spanning tree loops and shloud support for L2PT,DLDP
It shall be able to discover the neighboring device of the same vendor giving the

details about the platform, IP Address, Link connected through etc, thus helping in troubleshooting connectivity problems.
It shall support for Switch port auto recovery (err disable) to automatically re-enable a link that is disabled because of a network error.
It shall support Multicast VLAN registration.
It shall support LLDP / LLDP-MED including client location information. It shall exchange link and device information in multi vendor networks.
It shall support configuration rollback to replace current configuration with any saved configuration file.
It shall support configurable maximum transmission unit (MTU) of up to 9000 bytes, with a maximum Ethernet frame size of 9018 bytes (Jumbo frames) for bridging on Gigabit Ethernet ports.
QoS Features:
The LAN switch shall have per-port broadcast, multicast, and unicast storm control.
It shall have standard 802.1p CoS and DSCP classification using marking and reclassification on a per-packet basis by source and destination IP address, source and destination MAC address, or Layer 4 TCP or UDP port number.
There shall be eight egress queues per port to enable differentiated management of up to eight traffic types.
There shall be weighted round robbin (WRR) or any other industry standard protocol to provide congestion avoidance.
There shall be strict priority queuing mechanisms.
Granular Rate Limiting functions to guarantee bandwidth in increments shall be as low as 64 Kbps.
Rate limiting support based on source and destination IP address, source and destination MAC address, Layer 4 TCP and UDP information, or any combination of these fields, using QoS ACLs (IP ACLs (IPv4 and IPv6) or MAC ACLs), class maps, and policy maps shall be available. ACL should be based on user defined packet content (Max. 6bytes length user defined).
There shall be support for Asynchronous data flows upstream and downstream from the end station or on the uplink using ingress policing and egress shaping.
There shall be support for Automatic Quality of Service for easy configuration of QoS features for critical applications.
Network Security Features:

The LAN switch shall support IEEE 802.1x to allow dynamic, port-based security, providing user authentication.
The LAN switch shall support for Admission Control features to improve the network's ability to automatically identify, prevent, and respond to security threats and also to enable the switches to collaborate with third-party solutions for security-policy compliance and enforcement before a host is permitted to access the network.
It shall support port-based ACLs (PACLs) for Layer 2 interfaces to allow application of security policies on individual switch ports. It shall also support VLAN based filters.
It shall support unicast MAC filtering to prevent the forwarding of any type of packet with a matching MAC address. It shall support Unicast and Multicast MAC addresses and associated VLANs.
It shall support unknown unicast and multicast port blocking to allow tight control by filtering packets that the switch has not already learned how to forward.
It shall support IGMP filtering which shall provide multicast authentication by filtering out no subscribers and limits the number of concurrent multicast streams available per port.
It shall support for SSHv2, SNMPv3 to provide network security by encrypting administrator traffic during Telnet and SNMP sessions.
The switch shall support 2 session of Port Mirroring based on port basis / VLAN basis to support intrusion prevention system deployment in different VLANs. It shall support bidirectional data on mirror port which allows IDS to take action when an intruder is detected.
It shall support RADIUS authentication to enable centralized control of the switch and restrict unauthorized users from altering the configuration.
It shall support MAC address notification to allow administrators to be notified of users added to or removed from the network / It shall support SNMP Trap for new MAC notification.
It shall support DHCP snooping to allow administrators to ensure consistent mapping of IP to MAC addresses. This can be used to prevent attacks that attempt to poison the DHCP binding database, and to rate limit the amount of DHCP traffic that enters a switch port.
It shall support DHCP Interface Tracker (Option 82) to augment a host IP

address request with the switch port ID.
It shall support port security to secure the access to an access or trunk port based on MAC address. After a specific timeframe, the aging feature should remove the MAC address from the switch to allow another device to connect to the same port.
It shall support multilevel security on console access to prevent unauthorized users from altering the switch configuration.
It shall support BPDU Guard feature, to shut down Spanning Tree Protocol Port Fast-enabled interfaces when BPDUs are received to avoid accidental topology loops.
It shall support Spanning-Tree Root Guard (STRG) to prevent edge devices not in the network administrator's control from becoming Spanning Tree Protocol root nodes.
It shall support for up to 2K access control entries (ACEs).
Management:
The LAN switch shall have CLI support to provide a common user interface and command set with all routers and switches of the same vendor.
It shall have Remote Monitoring (RMON v1 and v2) software agent to support for enhanced traffic management, monitoring, and analysis.
It shall have support for RMON groups through the use of a mirrored port, which permits traffic monitoring of a single port, a group of ports, or the entire switch from a single network analyzer or RMON probe.
It shall have layer 2 trace route to ease troubleshooting by identifying the physical path that a packet takes from source to destination or it shall support OAM 802.3ah.
It shall support Trivial File Transfer Protocol (TFTP) and File Transfer Protocol (FTP) to reduce the cost of administering software upgrades by downloading from a centralized location.
It shall support Simple Network Time Protocol/Network Timing Protocol (SNTP/NTP) to provide an accurate and consistent timestamp to all intranet switches.
It shall support RMON v1 and v2 standards.
It shall support SNMPv1, SNMPv2, and SNMPv3 and Telnet interface to deliver comprehensive in-band management, and a CLI-based management console to provide detailed out-of-band management.

It shall support IPV6 management. ACL and QoS and IPv6 Neighbor Discovery.
Device OEM must have opreation and and their establishment for more than 10 Years
Device OEM must be must be ISO 9001 & 14001 and 27001 Certified at the time of bidding
Device OEM must be Gartner Magic Quadrant for Enterprise Wired and Wireless LAN Infrastructure in Last 4 Quarter
2. Switch - L2 (2 Nos)
Physical Specification:
The LAN switch shall be rack mountable with 24 Nos. 10/100/1000 Base-T ports with 4 Nos. SFP+ Ports
General Specification:
The LAN switch shall be available with minimum 128 Gbps Gbps Switching Fabric.
The LAN switch shall have minimum packet forwarding rate of 95.23 Mpps million packets per second at 64 byte packet length.
The LAN switch shall support minimum 16K MAC addresses.
There shall be 512 IGMP groups.
The switch shall be able to work on both IPv4 and IPv6 (dual stack) from day one.
All ports in the switch shall operate at wire-speed / line-rate.
The switch shall be capable of working with AC Power Supply with a voltage varying from 170-240Volts at 50 +/-2 Hz.
The switch shall support 19 inch rack mounting.
Layer - 2 Features:
The LAN switch shall support IEEE 802.1Q VLAN encapsulation. Maximum 4K VLAN Groups.
It shall support for Automatic Negotiation of Trunking Protocol, to help minimize the configuration & errors.
It shall support 802.1d, 802.1p, 802.1Q, 802.1s, 802.1w, 802.1x, 802.1ab,802.3ad.
It shall support spanning-tree root guard or any other industry standard protocol to prevent other edge switches becoming the root bridge.
It shall support IGMP snooping v1, v2 and v3.
It shall support Link Aggregation Protocol (LACP).
It shall Support 802.3ah Ethernet Link OAM for Detection of Unidirectional links and to

disable them to avoid problems such as spanning tree loops
It shall be able to discover the neighboring device of the same vendor giving the details about the platform, IP Address, Link connected through etc, thus helping in troubleshooting connectivity problems.
It shall support for Switch port auto recovery (err disable) to automatically re-enable a link that is disabled because of a network error.
It shall support Multicast VLAN registration.
It shall support LLDP / LLDP-MED including client location information. It shall exchange link and device information in multi vendor networks.
It shall support configuration rollback to replace current configuration with any saved configuration file.
It shall support configurable maximum transmission unit (MTU) of up to 9000 bytes, with a maximum Ethernet frame size of 9018 bytes (Jumbo frames) for bridging on Gigabit Ethernet ports.
It shall support auto sensing speed on 10/100/1000 ports, auto negotiating half/full-duplex on all ports and Auto-MDIX.
QoS Features:
The LAN switch shall have per-port broadcast, multicast, and unicast storm control.
It shall have standard 802.1p CoS and DSCP classification using marking and reclassification on a per-packet basis by source and destination IP address, source and destination MAC address, or Layer 4 TCP or UDP port number.
There shall be eight egress queues per port to enable differentiated management of up to eight traffic types.
There shall be weighted round robbin (WRR) or any other industry standard protocol to provide congestion avoidance.
There shall be strict priority queuing mechanisms.
Granular Rate Limiting functions to guarantee bandwidth in increments shall be as low as 64 Kbps.
Rate limiting support based on source and destination IP address, source and destination MAC address, Layer 4 TCP and UDP information, or any combination of these fields, using QoS ACLs (IP ACLs (IPv4 and IPv6) or MAC ACLs), class maps, and policy maps shall be available. ACL should be based on user defined packet content (Max. 6bytes length user defined).

There shall be support for Asynchronous data flows upstream and downstream from the end station or on the uplink using ingress policing and egress shaping.
There shall be support for Automatic Quality of Service for easy configuration of QoS features for critical applications.
Network Security Features:
The LAN switch shall support IEEE 802.1x to allow dynamic, port-based security, providing user authentication.
The LAN switch shall support for Admission Control features to improve the network's ability to automatically identify, prevent, and respond to security threats and also to enable the switches to collaborate with third-party solutions for security-policy compliance and enforcement before a host is permitted to access the network.
It shall support port-based ACLs (PACLs) for Layer 2 interfaces to allow application of security policies on individual switch ports. It shall also support VLAN based filters.
It shall support unicast MAC filtering to prevent the forwarding of any type of packet with a matching MAC address. It shall support Unicast and Multicast MAC addresses and associated VLANs.
It shall support unknown unicast and multicast port blocking to allow tight control by filtering packets that the switch has not already learned how to forward.
It shall support IGMP filtering which shall provide multicast authentication by filtering out no subscribers and limits the number of concurrent multicast streams available per port.
It shall support for SSHv2, SNMPv3 to provide network security by encrypting administrator traffic during Telnet and SNMP sessions.
The switch shall support 2 session of Port Mirroring based on port basis / VLAN basis to support intrusion prevention system deployment in different VLANs. It shall support bidirectional data on mirror port which allows IDS to take action when an intruder is detected.
It shall support RADIUS authentication to enable centralized control of the switch and restrict unauthorized users from altering the configuration.
It shall support MAC address notification to allow administrators to be notified of users added to or removed from the network / It shall support SNMP Trap for new MAC notification.

It shall support DHCP snooping to allow administrators to ensure consistent mapping of IP to MAC addresses. This can be used to prevent attacks that attempt to poison the DHCP binding database, and to rate limit the amount of DHCP traffic that enters a switch port.
It shall support DHCP Interface Tracker (Option 82) to augment a host IP address request with the switch port ID.
It shall support port security to secure the access to an access or trunk port based on MAC address. After a specific timeframe, the aging feature should remove the MAC address from the switch to allow another device to connect to the same port.
It shall support multilevel security on console access to prevent unauthorized users from altering the switch configuration.
It shall support BPDU Guard feature, to shut down Spanning Tree Protocol Port Fast-enabled interfaces when BPDUs are received to avoid accidental topology loops.
It shall support Spanning-Tree Root Guard (STRG) to prevent edge devices not in the network administrator's control from becoming Spanning Tree Protocol root nodes.
It shall support for up to 512 access control entries (ACEs).
Management:
The LAN switch shall have CLI support to provide a common user interface and command set with all routers and switches of the same vendor.
It shall have Remote Monitoring (RMON v1 and v2) software agent to support for enhanced traffic management, monitoring, and analysis.
It shall have support for RMON groups through the use of a mirrored port, which permits traffic monitoring of a single port, a group of ports, or the entire switch from a single network analyzer or RMON probe.
It shall have layer 2 trace route to ease troubleshooting by identifying the physical path that a packet takes from source to destination or it shall support OAM 802.3ah.
It shall support Trivial File Transfer Protocol (TFTP) and File Transfer Protocol (FTP) to reduce the cost of administering software upgrades by downloading from a centralized location.
It shall support Simple Network Time Protocol/Network Timing Protocol (SNTP/NTP) to provide an accurate and consistent timestamp to all intranet switches.

It shall support RMON v1 and v2 standards.
It shall support SNMPv1, SNMPv2, and SNMPv3 and Telnet interface to deliver comprehensive in-band management, and a CLI-based management console to provide detailed out-of-band management.
It shall support IPV6 management. ACL and QoS and IPv6 Neighbor Discovery.
It Shall Support SDN Platform and have Provision to be Work Standalone or Controller Based and support Zero-Touch Provisioning (ZTP
Device OEM must be must be ISO 9001 & 14001 Certified at the time of bidding
Device OEM must be Gartner Magic Quadrant for Enterprise Wired and Wireless LAN Infrastructure in Last 4 Quarter
3. Unmanaged Switch (3Nos)
Physical Specification:
The LAN switch shall be rack mountable with 24 Nos. 10/100/1000 Base-T ports with 4 Nos. SFP Ports
General Specification:
The LAN switch shall be available with minimum 56 Gbps Switching Fabric.
The LAN switch shall have minimum packet forwarding rate of 41.66 million packets per second at 64 byte packet length.
The LAN switch shall support minimum 16K MAC addresses.
The LAN Switch must support Packet Buffer Memory 12 Mbit
There shall be 512 IGMP groups.
The switch shall be able to work on both IPv4 and IPv6 (dual stack) from day one.
All ports in the switch shall operate at wire-speed / line-rate.
The switch shall be capable of working with AC Power Supply with a voltage varying from 170-240Volts at 50 +/-2 Hz.
The switch shall support 19 inch rack mounting.
Layer - 2 Features:
The LAN switch shall support IEEE 802.1Q VLAN encapsulation. Maximum 4K VLAN Groups.
It shall support 802.1d, 802.1p, 802.1Q, 802.1s, 802.1w, 802.1x, 802.1ab,802.3ad.
It shall support spanning-tree root guard or any other industry standard protocol to

prevent other edge switches becoming the root bridge.
It shall support IGMP snooping v1, v2 and v3.
It shall support Link Aggregation Protocol (LACP).
It shall Support 802.3ah Ethernet Link OAM for Detection of Unidirectional links and to disable them to avoid problems such as spanning tree loops and support Unidirectional Link Detection (UDLD) or equivalent.
It shall be able to discover the neighboring device of the same vendor giving the details about the platform, IP Address, Link connected through etc, thus helping in troubleshooting connectivity problems.
It shall support for Switch port auto recovery (err disable) to automatically re-enable a link that is disabled because of a network error.
It shall support Multicast VLAN registration.
It shall support LLDP / LLDP-MED including client location information. It shall exchange link and device information in multi vendor networks.
It shall support configuration rollback to replace current configuration with any saved configuration file.
It shall support configurable maximum transmission unit (MTU) of up to 9000 bytes, with a maximum Ethernet frame size of 9018 bytes (Jumbo frames) for bridging on Gigabit Ethernet ports.
It shall support auto sensing speed on 10/100/1000 ports, auto negotiating half/full-duplex on all ports and Auto-MDIX.
QoS Features:
The LAN switch shall have per-port broadcast, multicast, and unicast storm control.
It shall have standard 802.1p CoS and DSCP classification using marking and reclassification on a per-packet basis by source and destination IP address, source and destination MAC address, or Layer 4 TCP or UDP port number.
There shall be eight egress queues per port to enable differentiated management of up to eight traffic types.
There shall be weighted round robbin (WRR) or any other industry standard protocol to provide congestion avoidance.
There shall be strict priority queuing mechanisms.
Granular Rate Limiting functions to guarantee bandwidth in increments shall be as low as 64 Kbps.
Rate limiting support based on source and destination IP address, source and

destination MAC address, Layer 4 TCP and UDP information, or any combination of these fields, using QoS ACLs (IP ACLs (IPv4 and IPv6) or MAC ACLs), class maps, and policy maps shall be available. ACL should be based on user defined packet content (Max. 6bytes length user defined).
There shall be support for Asynchronous data flows upstream and downstream from the end station or on the uplink using ingress policing and egress shaping.
There shall be support for Automatic Quality of Service for easy configuration of QoS features for critical applications.
Network Security Features:
The LAN switch shall support IEEE 802.1x to allow dynamic, port-based security, providing user authentication.
The LAN switch shall support for Admission Control features to improve the network's ability to automatically identify, prevent, and respond to security threats and also to enable the switches to collaborate with third-party solutions for security-policy compliance and enforcement before a host is permitted to access the network.
It shall support port-based ACLs (PACLs) for Layer 2 interfaces to allow application of security policies on individual switch ports. It shall also support VLAN based filters.
It shall support unicast MAC filtering to prevent the forwarding of any type of packet with a matching MAC address. It shall support Unicast and Multicast MAC addresses and associated VLANs.
It shall support unknown unicast and multicast port blocking to allow tight control by filtering packets that the switch has not already learned how to forward.
It shall support IGMP filtering which shall provide multicast authentication by filtering out no subscribers and limits the number of concurrent multicast streams available per port.
It shall support for SSHv2, SNMPv3 to provide network security by encrypting administrator traffic during Telnet and SNMP sessions.
The switch shall support 2 session of Port Mirroring based on port basis / VLAN basis to support intrusion prevention system deployment in different VLANs. It shall support bidirectional data on mirror port which allows IDS to take action when an intruder is detected.
It shall support RADIUS authentication to enable centralized control of the switch and

restrict unauthorized users from altering the configuration.
It shall support MAC address notification to allow administrators to be notified of users added to or removed from the network / It shall support SNMP Trap for new MAC notification.
It shall support DHCP snooping to allow administrators to ensure consistent mapping of IP to MAC addresses. This can be used to prevent attacks that attempt to poison the DHCP binding database, and to rate limit the amount of DHCP traffic that enters a switch port.
It shall support DHCP Interface Tracker (Option 82) to augment a host IP address request with the switch port ID.
It shall support port security to secure the access to an access or trunk port based on MAC address. After a specific timeframe, the aging feature should remove the MAC address from the switch to allow another device to connect to the same port.
It shall support multilevel security on console access to prevent unauthorized users from altering the switch configuration.
It shall support BPDU Guard feature, to shut down Spanning Tree Protocol Port Fast-enabled interfaces when BPDUs are received to avoid accidental topology loops.
It shall support Spanning-Tree Root Guard (STRG) to prevent edge devices not in the network administrator's control from becoming Spanning Tree Protocol root nodes.
It shall support for up to 512 access control entries (ACEs).
Management:
The LAN switch shall have CLI support to provide a common user interface and command set with all routers and switches of the same vendor.
It shall have Remote Monitoring (RMON v1 and v2) software agent to support for enhanced traffic management, monitoring, and analysis.
It shall have support for RMON groups through the use of a mirrored port, which permits traffic monitoring of a single port, a group of ports, or the entire switch from a single network analyzer or RMON probe.
It shall have layer 2 trace route to ease troubleshooting by identifying the physical path that a packet takes from source to destination or it shall support OAM 802.3ah.
It shall support Trivial File Transfer Protocol (TFTP) and File Transfer Protocol (FTP)

to reduce the cost of administering software upgrades by downloading from a centralized location.
It shall support Simple Network Time Protocol/Network Timing Protocol (SNTP/NTP) to provide an accurate and consistent timestamp to all intranet switches.
It shall support RMON v1 and v2 standards.
It shall support SNMPv1, SNMPv2, and SNMPv3 and Telnet interface to deliver comprehensive in-band management, and a CLI-based management console to provide detailed out-of-band management.
It shall support IPV6 management. ACL and QoS and IPv6 Neighbor Discovery.
It Shall Support SDN Platform and have Provision to be Work Standalone or Controller Based and support Zero-Touch Provisioning (ZTP)
Device OEM must be must be ISO 9001 & 14001 Certified at the time of bidding
Device OEM must be Gartner Magic Quadrant for Enterprise Wired and Wireless LAN Infrastructure in Last 4 Quarter
4. Wireless Access Point
AP shall have hardened enclosures for indoor deployment and shall have a robust design for durability
It shall have dual radios for concurrent dual band (5 GHz / 2.4 GHz) operation
It shall have Simultaneous 574 Mbps on 2.4 GHz and 1201 Mbps on 5 GHz totals 1775 Mbps Wi-Fi speeds
AP must support 1024 QAM
AP must Support WEP, WPA-Personal/Enterprise, WPA2-Personal/Enterprise, WPA3-Personal/Enterprise
Minimum 1 number of 1 Gbps Ethernet port RJ-45.
AP shall support Multi user MIMO
AP shall support Outfitted with the latest 802.11ax technology
The AP shall comply with IEEE 802.11ax at a minimum and be backwards compatible to IEEE 802.11a/b/g/n/ac standards.
AP shall operate at least in full 2X:2 MIMO or more mode without any loss of features or capabilities
AP shall Support PoE 802.3at PoE for convenient and affordable installation
AP must support 20 MHz, 40 MHz and 80 MHz channels.

Each AP must support minimum 80 concurrent clients in total (including both 2.4GHz and 5GHz radios).
The AP shall provide a minimum of 20 dBm EIRP for both 2.4 GHz and and 23 dBm for 5 GHz frequencies. Field deployment shall be with EIRP as per regulatory guidelines.
AP shall support QoS and WMM latest technology
AP shall support Multiple operating modes including managed AP and standalone AP mode
AP shall support Band Steering, Beamforming, Airtime Fairness and Load Balance and OFDMA features
AP shall support rogue access point detection
AP shall have dual-Band Omni-directional Antenna, either internal or external. Field deployment shall be with EIRP as per the WPC guideline.
AP should be compatible for Simple mounting on any wall or ceiling surface
AP should support management VLAN
AP should support Captive portal and Rate limit feature
AP shall support Reboot Schedule, Wireless Schedule and Wireless Statistics based on SSID/AP/Client
Intelligent RF control plane for self-healing, and self-optimization
AP Shall support Wireless Mac Address Filtering, Wireless Isolation Between Clients and SSID to VLAN Mapping
AP shall support 802.1X authentication and external radius server
AP shall be able to assign end User the IP address as received from backend core DHCP Server.
AP shall support Hardware controller or Software controller and Zero-Touch Provisioning (ZTP)‡, Centralized Cloud Management, and Intelligent Monitoring.
Shall support Operating Temperature of 32℉~144℉
Device OEM must be must be ISO 9001 & 14001 Certified at the time of bidding
Device OEM must be Gartner Magic Quadrant for Enterprise Wired and Wireless LAN Infrastructure in Last 4 Quarter
5. Broadband Router
Device must Support IEEE 802.3, 802.3u, 802.3ab, IEEE 802.3x, IEEE 802.1q TCP/IP, DHCP, ICMP, NAT, PPPoE, NTP, HTTP, HTTPS, DNS, IPSec, PPTP, L2TP, OpenVPN, SNMP

Device must Support 1 gigabit SFP WAN port, 1 gigabit RJ45 WAN port, 2 gigabit WAN/LAN ports
Device must have 128 MB NAND Flash and 256MB DDR DRAM
Device must have 4 kV surge protection
Device must support 150,000 Concurrent Session and 5,500 New Sessions /Second
Device must WAN Connection Type Static/Dynamic IP , PPPoE, PPTP, L2TP
Device must Support IPv6 StaticIP / SLAAC / DHCPv6 / PPPoE / 6to4Tunnel / PassThrough
Device must supprot 802.1Q VLAN
Device must support Static Routing & Policy Routing
Device must support WAN Failover and Load Balance for uninterrupted Internet Connection
Device Must supprot One-to-One Nat , Multi Net , NAT-DMZ ,Virtual Server and Port Triggering
Device must Support SPI Firewall , VPN Passthrough ,DoS Defence, Ping of Death
Device must support VPN Like IPSEC , PPTP, L2TP and Open VPN , GRE , Wireguard
Device must support URL Filtering and Web Security
Device Must supprot ARP-Scanning and IP-MAC Binding
Device must support following Attack Defense TCP/UDP/ICMP Flood Defense ,Block TCP Scan (Stealth FIN/Xmas/Null) Block Ping from WAN
Device Must Support Access controler based on Source/Destination IP Based Access Control
Device must support DDNS Service such as Dynamic DNS (Dyndns, No-IP, Peanuthull, Comexe
Device must Support ZTP (zero touch provisioning)
Device must support Controller Mode and Standalone Mode
Device OEM Must be ISO 9001 and 140001 certified at the time of Bidding
Device must be in Gartner Magic Quadrant at least in last 4 Quarters at the time of bidding
6. Server
1U Rack mountable
Minimum 4 Cores or above with 2.8GHZ frequency
Must have 4x16GB DDR% Memory 4800MT or above

2 Nos of 1.9TB or above SSD
RAID controller supporting SAS/SATA with minimum 4GB Cache
2 Nos of Titanium grade PSU with minimum 800w or above
Server RAID should support 8 Nos of SSD/HDD from day 1
3 YR Warарnty
7. NAS with HDD
NAS Storage with minimum 1.5 GHz processor
Minimum 4GB DDR System Memory upgradable up to 16GB
Should support SSD and HDD from day one
Minimum 2 10G SFP+ Port populated from day 1
4x8tb or higher HDD populated from day one
Should support minimum 200TB per volume size
LUN must support Thick & Thin provsioning
3 Yr Warranty
8. Firewall
Should have 10 Ethernet ports from day 1 with Minimum 2 SFP ports
Expandable up to 8 more ports
Should have 100GB storage or above
Must be 1U rack mountable
Must have minimum 30000 MBPS firewall throughput
Must support 6M minimum concurrrent sessions
Must have minimum 5000 MBPS NGFW throughput or above
1 Year subscription fromm OEM
9. Workstation
Intel core i9 or above with 36 MB cache and 64 Cores minimum
Should have 64GB (2x32GB) DDR5 4800 UDIMM ECC Memory
Should have Operating System Load to M.2 from day 1 with Windows 11 Pro 64 High End
1xNVIDIA RTX 4500 Ada 24 GB 4DP Graphics
1xIntel AX211 Wi-Fi 6 +Bluetooth 5.3 WW WLAN with Internal Antennae
Keyboard Mouse
3 Yr Warranty
2 TB minimum M.2 SSD from day 1

10. Laptop(8 Nos)
15.6" Laptop
Must be energy Star certified
Should have 16GB Memory from day 1
Minium 1TB SSD from day 1
Core i7 13th Gen or above
Wifi 6E adaptor & Bluetooth
Win 11 pro 64 bit
3 Yr warranty
1X 1G Ethenetport
1X1 HDMI PORT
1X USB 3.0

Terms and Conditions

1. The tender should be submitted in two cover system (Technical bid & Financial bid).
2. Bidders shall keep their tendered rate firm for a period of 120 days from the date of opening of the tender.
3. The bidder shall quote their rates in the standard Indian currency in the BOQ provided, indicating the breakup details and the total rate tendered should be inclusive of all taxes, transportation, installation, supply, support charges & other Charges if any.
4. Tender fee and EMD for each item as given below should be remitted online (SBI MOPS) as indicated in the e-tender website. However, 18% GST of the Tender Fee should be remitted to GST Department directly and upload the receipt in the e-procurement portal.

Sl. No	Item	Tender Fee without GST	18% GST	Tender Fee including GST	EMD
1.	Supply, Installation, Testing, and Commissioning of Network Protection and Access Management lab at Department of IT, Mangattuparamba Campus, Kannur University	₹ 5,800/-	₹ 1,044/-	₹ 6,844/-	₹ 38,070/-

5. **All the MSMEs with Udyog Aadhar Registration or any other body specified by the Ministry of Micro, Small and Medium Enterprises working within the state of Kerala will be exempted from the payment of Tender Fee and EMD. Under MSME category, only Manufactures for Goods and Service Providers for Services are eligible for EMD/Tender fee exemptions.**

6. Forfeiture of EMD:

   (i) If any bidder withdraws from his tender before the expiry of the bid validity period specified or

   (ii) in case after being successful bidder, he/firm fails to sign the contract, and to furnish the performance security.

7. The bidder should upload along with the tender a preliminary agreement executed and signed in Kerala Stamp Paper of value of Rs.200/- as per format given as Annexure 3.
8. The successful bidder shall, before signing the agreement and within the period specified in the letter of acceptance of his tender, deposit a sum equivalent to **5% of the value of the contract** by way of Security Deposit or Demand Draft or bank guarantee drawn in favour of the **Finance Officer, Kannur University** payable at SBI Kannur Branch or Kannur Branch of other Nationalized or Scheduled bank, **as performance security** for the satisfactory fulfilment of the contract.
9. All bid/tender documents are to be submitted online only and in the designated cover(s)/envelope(s) on the website. Tenders/bids shall be accepted only through online mode on the website and no manual submission of the same shall be entertained.
10. Profile of Bidder as per Annexure 1 shall be provided.
11. Bidders shall produce copy of the valid GST Registration and PAN card.
12. The OEM (Original Equipment Manufacturer) is required to have a support setup in Kerala and should able to provide onsite support in Kannur.
13. The supplier should have a track record of supplying at least two similar item that have been offered to Government organizations/PSUs specifically in Kerala .
14. Detailed Bill of Materials for all the required components should be Submitted, Any Additional Materials required for successful completion of the Project must be include and supply by the Bidder without any additional charges
15. All the damages to the walls, floors, articles, etc.during the execution, shall be repaired and modified/ replaced by the Firm at its own cost.
16. The bids shall be opened online at Kannur University on the date mentioned in Invitation Bid. If the date fixed for opening happens to be a holiday/ due to technical issue, the tenders will be opened on the next working day, at the same time.
17. Tenderers shall invariably specify in their tenders the delivery conditions including the time required for the supply of articles tendered for.
18. The final acceptance of the tenders rests entirely with the University who do not bind themselves to accept the lowest or any tender. But the tenderers on their part should be prepared to carry out such portion of the supplies included in their tenders as may be allotted to them.
19. The supplier shall guarantee to repair/replace without any extra cost, the items supplied or part thereof, if found defective due to bad designing, workmanship or substandard materials, within the warranty period. The entire expenditure towards replacement/repair in this regard shall be borne by the supplier. The period of warranty for the repaired/replaced item will recommence from the date of replacement/repair.

20. Payment will be made after the receipt and successful Installation, Testing, Commissioning of the System. No advance payment will be made to the Contractor/Supplier.
21. The financial bid of those bidders who qualify the technical evaluation after opening of Technical bid shall only be opened.
22. Dedicated/ toll free Telephone No. for service support, Escalation Matrix for Service support shall be provided.
23. Any attempt on the part of the tenderers or their agents to influence the University/Department in their favour by personal canvassing with the Officers concerned will disqualify the tenderers.
24. Registrar, Kannur University reserves the right not to process the tender, cancel the contract, supply order, hold the payment and to trade or not to trade the old stores without assigning any reason.
25. The tenderer shall have to pay all stamp duty, lawyers charges and other expenses incidental to the execution of the agreement.
26. The successful bidder has to execute an agreement within 15 days on receipt of the Purchase order. In cases where a successful bidder, after having made partial supplies fails to fulfil the contract in full, all or any of the materials not supplied may at the discretion of the Registrar, be purchased by means of another tender/ quotation or by negotiation or from the next higher bidder who had offered to supply already and the loss, if any caused to the University shall there by together with such sums as may be fixed by the University towards the damage be recovered from the defaulting bidder.
27. The Kannur University reserves the right to cancel the contract of the selected bidder and recover expenditure incurred by the Kannur University if the selected bidder commits a breach of any of the terms and conditions of the bid/contract.
28. Failure to supply and install the items within the specified time period as per the agreement will attract a penalty at the rate as specified in Kerala Stores Purchase Manual/ KPWD Manual.
29. Custom clearance of the consignment including all the stages of custom clearance will be under the purview of the supplier.
30. The provisions of Kerala Stores Purchase Manual/ KPWD Manual Rules are applicable to this tender and further proceedings.
31. No tender received after the specified date and time will be accepted on any account.
32. No representation for enhancement of rates once accepted will be considered.
33. Further Information and inquiries can be obtained from the Director, IT Directorate, Kannur University during working hours of the University. **Phone: 0497 2715468, e mail: directoritcentre@kannuruniv.ac.in**

GST No. of Kannur university : 32AAAGK0152J1ZT

DOCUMENTS TO BE SCANNED AND UPLOADED

1. **Bidder Profile** (as per format mentioned in Annexure 1)

2. **Bid Particulars** (as per format mentioned in Annexure 2)
3. **Preliminary Agreement**: Scanned copy of Preliminary Agreement in Kerala Stamp Paper of Rs.200/- (as per format mentioned in Annexure 3).
4. **Compliance Statement** (as per format mentioned in Annexure 4)
5. **Form of Tender** (as per format mentioned in Annexure 5)
6. **Integrity Pact** (as per format mentioned in Annexure 6)
7. **Completion Period Certificate** (as per format mentioned in Annexure 7)
8. **GST payment receipt:** Copy of GST payment receipt to Kerala GST Department (18% of tender fee). (MSME firms should upload MSME certificate/ UDYAM registration certificates).
9. **Escalation Matrix**: The OEM escalation matrix and the bidder escalation matrix must include details for at least 3 service engineers, along with their email IDs and contact numbers.(The OEM is required to have a support setup in Kerala and should able to provide onsite support in Kannur).
10. **OEM Authorization**: Valid authorization certificate from OEM (MAF) (in case of resellers)
11. **Warranty Declaration**: A warranty declaration certificate from the OEM for this bid is required.
12. **Documentation Requirements**: Scanned copy of valid registration certificate (GST), PAN Card and bank details
13. **Quality Certifications**: The ISO 9001 certificate of the bidder, along with the ISO 9001:2015 certificates of the OEM, must be uploaded at the time of bidding.
14. **Registered Office Requirement**: Bidder must have a registered office in Kerala for last 3 years. Proof of this must be submitted.
15. **Purchase Order Submission**: Bidder must have completed at least 2 IT related deployment in any of the Government or PSU sector in Kerala. Relevant PO or other document to be shared.
16. **Non-Blacklist Declaration**: OEM and Bidder shall not be blacklisted in any State and Central Government organization, Government PSU and self-declaration shall be submitted on company letter head.
17. **Bill of Materials**:Detailed Bill of Materials (BOM) for all the required components should be Submitted

Prof.(Dr.) Wilson V A
Development Officer (Registrar in-charge)

ANNEXURE 1

BIDDER PROFILE

Sl.No.	Particulars	
Details of bidder (Firm/Company)		
1	Name	
2	Address	
3	Telephone & Mobile Number	
4	Email & website	
Details of Authorized Person		
5	Name	
6	Address	
7	Telephone & Email	
Information about the company		
8	Status of Company (Public Ltd. / Pvt. Ltd)	
9	Details of Registration of Firm (Provide Ref.)	
10	Number of Professionals	
11	Location and address of offices (in India & overseas)	
12	Service Tax Registration Number	
13	Income Tax Registration Number(PAN)	
14	GST Registration Number	

Signature of the Bidder

ANNEXURE 2

TECHNICAL BID (BID PARTICULARS)

1. Tender Number :----------

2. Name of the Bidder :----------

3. Full Address of the Bidder :----------

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4. Name of the actual signatory of the product(s) offered :----------

5. Bidder's proposal number and date :----------

6 . Name & Address of the officer to whom all references shall be made regarding the Tender :----------

Telephone :----------

Mobile **:** ----------

E-mail :----------

Bidder Signature Name ----------

Designation ----------

Company ----------

Date ----------

ANNEXURE - 3

PRELIMINARY AGREEMENT

Articles of agreement executed on this the …… day of …… …… between the Registrar, Kannur University (hereinafter referred to as "the University") of the one part and Shri.…… …… (H.E. name and address of the tenderer) (hereinafter referred to as "the bounden") of the other part.

WHEREAS in response to the Notification No…….. dated …… the bounden has submitted to the University a tender for the …… specification therein subject to the terms and conditions contained in the said tender;

WHEREAS the bounden has also deposited with the University a sum of Rs…… `……. as earnest money for execution of an agreement undertaking the due fulfillment of the contract in case his tender is accepted by the University

NOW THESE PRESENTS WITNESS and it is hereby mutually agreed as follows:

1. In case the tender submitted by the bounden is accepted by the University and the contract for …… is awarded to the bounden, the bounden shall within …….days of acceptance of his tender execute an agreement with the University incorporating all the terms and conditions under which the University accepts his tender.

2. In case the bounden fails to execute the agreement as aforesaid incorporating the terms and conditions governing the contract, the University shall have power and authority to recover from the bounden any loss or damage caused to the University by such breach as may be determined by the University by appropriating the earnest money deposited by the bounden if the earnest money is found to be inadequate the deficit amount may be recovered from the bounden his properties movable and immovable in the manner hereinafter contained.
.
3. All sums found due to the University under or by virtue of this agreement shall be recoverable from the bounden and his properties movable and immovable under the provisions of the Revenue Recovery Act for the time being in force as though such sums are arrears of land revenue and in such other manner as the University may deem fit.

In witness where of Shri…….. (name and designation) for and on behalf of the University and Shri. ……. Bounden have hereunto set their hands the day and year shown against their respective signatures.

Signed by Shri. …….. (date) ……..
In the presence of witnesses:
1. ……
2. ……

Signed by Shri. …….. (date) ……..
In the presence of witnesses:
1. ……

2. ……

ANNEXURE – 4

COMPLIANCE STATEMENT

1.Core L3 Switch (1 No)	Compliance (Yes/No)	Deviations (If any)
Physical Specification:		
The LAN switch shall be rack mountable with 24× 25G SFP28 ports with 4× 100G QSFP28 slots		
The LAN Switch should have 2 x USB 3.0 Ports, 1 x RJ 45 Ports MGMT Port , 1x RJ45 Console Port and 1 x USB Type C Port		
General Specification:		
The LAN switch shall be available with minimum 2000 Gbps switching capacity.		
The LAN switch shall have minimum packet forwarding rate of 810 Mpps million packets per second at 64 byte packet length.		
The LAN switch shall support minimum 128K MAC addresses.		
The LAN Switch must Support Stacking up to 12 Units and upto 800 Gbps Bandwidth on Stacking		
There shall be 2048 IGMP groups.		
The switch shall be able to work on both IPv4 and IPv6 (dual stack) from day one.		
The LAN Switch should shoud support Layer 3 Features like RIP , OSPF v2/v3 , VRRP v2/v3 and ECMP, BGP , ISIS		
All ports in the switch shall operate at wire-speed / line-rate.		
The switch shall be capable of working with AC Power Supply with a voltage varying from 170-240Volts at 50 +/-2 Hz with RPS Support		
The switch shall support 19 inch rack mounting.		
Layer - 2 Features:		
The LAN switch shall support IEEE 802.1Q VLAN encapsulation. Maximum 4K VLAN Groups.		
It shall support for Automatic Negotiation of Trunking Protocol, to help minimize the configuration & errors.		
It shall support 802.1d, 802.1p, 802.1Q, 802.1s, 802.1w, 802.1x, 802.1ab,802.3ad.		
It shall support 2,048 IPv4, 1,024 IPv6 Routing Entries, with 256 IP Interfaces		
It shall support spanning-tree root guard or any other industry standard protocol to prevent other edge switches becoming the root bridge.		
ll support IGMP snooping v1, v2 and v3.		
ll support Link Aggregation Protocol (LACP).		
ll Support ERPS , STP,MSTP,RSTP, PIM-DM (IPv4)		

It shall Support 802.3ah Ethernet Link OAM for Detection of Unidirectional links and to disable them to avoid problems such as spanning tree loops and shloud support for L2PT,DLDP		
It shall be able to discover the neighboring device of the same vendor giving the details about the platform, IP Address, Link connected through etc, thus helping in troubleshooting connectivity problems.		
It shall support for Switch port auto recovery (err disable) to automatically re- enable a link that is disabled because of a network error.		
It shall support Multicast VLAN registration.		
It shall support LLDP / LLDP-MED including client location information. It shall exchange link and device information in multi vendor networks.		
It shall support configuration rollback to replace current configuration with any saved configuration file.		
It shall support configurable maximum transmission unit (MTU) of up to 9000 bytes, with a maximum Ethernet frame size of 9018 bytes (Jumbo frames) for bridging on Gigabit Ethernet ports.		
QoS Features:		
The LAN switch shall have per-port broadcast, multicast, and unicast storm control.		
It shall have standard 802.1p CoS and DSCP classification using marking and reclassification on a per-packet basis by source and destination IP address, source and destination MAC address, or Layer 4 TCP or UDP port number.		
There shall be eight egress queues per port to enable differentiated management of up to eight traffic types.		
There shall be weighted round robbin (WRR) or any other industry standard protocol to provide congestion avoidance.		
There shall be strict priority queuing mechanisms.		
Granular Rate Limiting functions to guarantee bandwidth in increments shall be as low as 64 Kbps.		
Rate limiting support based on source and destination IP address, source and destination MAC address, Layer 4 TCP and UDP information, or any combination of these fields, using QoS ACLs (IP ACLs (IPv4 and IPv6) or MAC ACLs), class maps, and policy maps shall be available. ACL should be based on user defined packet content (Max. 6bytes length user defined).		
There shall be support for Asynchronous data flows ream and downstream from the end station or on the ık using ingress policing and egress shaping.		

There shall be support for Automatic Quality of Service for easy configuration of QoS features for critical applications.		
Network Security Features:		
The LAN switch shall support IEEE 802.1x to allow dynamic, port-based security, providing user authentication.		
The LAN switch shall support for Admission Control features to improve the network's ability to automatically identify, prevent, and respond to security threats and also to enable the switches to collaborate with third-party solutions for security-policy compliance and enforcement before a host is permitted to access the network.		
It shall support port-based ACLs (PACLs) for Layer 2 interfaces to allow application of security policies on individual switch ports. It shall also support VLAN based filters.		
It shall support unicast MAC filtering to prevent the forwarding of any type of packet with a matching MAC address. It shall support Unicast and Multicast MAC addresses and associated VLANs.		
It shall support unknown unicast and multicast port blocking to allow tight control by filtering packets that the switch has not already learned how to forward.		
It shall support IGMP filtering which shall provide multicast authentication by filtering out no subscribers and limits the number of concurrent multicast streams available per port.		
It shall support for SSHv2, SNMPv3 to provide network security by encrypting administrator traffic during Telnet and SNMP sessions.		
The switch shall support 2 session of Port Mirroring based on port basis / VLAN basis to support intrusion prevention system deployment in different VLANs. It shall support bidirectional data on mirror port which allows IDS to take action when an intruder is detected.		
It shall support RADIUS authentication to enable centralized control of the switch and restrict unauthorized users from altering the configuration.		
It shall support MAC address notification to allow administrators to be notified of users added to or removed from the network / It shall support SNMP Trap for new MAC notification.		
It shall support DHCP snooping to allow administrators to ensure consistent mapping of IP to addresses. This can be used to prevent attacks attempt to poison the DHCP binding database, and te limit the amount of DHCP traffic that enters a		

switch port.		
It shall support DHCP Interface Tracker (Option 82) to augment a host IP address request with the switch port ID.		
It shall support port security to secure the access to an access or trunk port based on MAC address. After a specific timeframe, the aging feature should remove the MAC address from the switch to allow another device to connect to the same port.		
It shall support multilevel security on console access to prevent unauthorized users from altering the switch configuration.		
It shall support BPDU Guard feature, to shut down Spanning Tree Protocol Port Fast-enabled interfaces when BPDUs are received to avoid accidental topology loops.		
It shall support Spanning-Tree Root Guard (STRG) to prevent edge devices not in the network administrator's control from becoming Spanning Tree Protocol root nodes.		
It shall support for up to 2K access control entries (ACEs).		
Management:		
The LAN switch shall have CLI support to provide a common user interface and command set with all routers and switches of the same vendor.		
It shall have Remote Monitoring (RMON v1 and v2) software agent to support for enhanced traffic management, monitoring, and analysis.		
It shall have support for RMON groups through the use of a mirrored port, which permits traffic monitoring of a single port, a group of ports, or the entire switch from a single network analyzer or RMON probe.		
It shall have layer 2 trace route to ease troubleshooting by identifying the physical path that a packet takes from source to destination or it shall support OAM 802.3ah.		
It shall support Trivial File Transfer Protocol (TFTP) and File Transfer Protocol (FTP) to reduce the cost of administering software upgrades by downloading from a centralized location.		
It shall support Simple Network Time ocol/Network Timing Protocol (SNTP/NTP) to ide an accurate and consistent timestamp to all net switches.		
all support RMON v1 and v2 standards.		

It shall support SNMPv1, SNMPv2, and SNMPv3 and Telnet interface to deliver comprehensive in-band management, and a CLI-based management console to provide detailed out-of-band management.		
It shall support IPV6 management. ACL and QoS and IPv6 Neighbor Discovery.		
Device OEM must have opreation and and their establishment for more than 10 Years		
Device OEM must be must be ISO 9001 & 14001 and 27001 Certified at the time of bidding		
Device OEM must be Gartner Magic Quadrant for Enterprise Wired and Wireless LAN Infrastructure in Last 4 Quarter		

2.Switch - L2 (2 Nos)		
Physical Specification:		
The LAN switch shall be rack mountable with 24 Nos. 10/100/1000 Base-T ports with 4 Nos. SFP+ Ports		
General Specification:		
The LAN switch shall be available with minimum 128 Gbps Gbps Switching Fabric.		
The LAN switch shall have minimum packet forwarding rate of 95.23 Mpps million packets per second at 64 byte packet length.		
The LAN switch shall support minimum 16K MAC addresses.		
There shall be 512 IGMP groups.		
The switch shall be able to work on both IPv4 and IPv6 (dual stack) from day one.		
All ports in the switch shall operate at wire-speed / line-rate.		
The switch shall be capable of working with AC Power Supply with a voltage varying from 170-240Volts at 50 +/-2 Hz.		
The switch shall support 19 inch rack mounting.		
Layer - 2 Features:		
The LAN switch shall support IEEE 802.1Q VLAN encapsulation. Maximum 4K VLAN Groups.		
It shall support for Automatic Negotiation of Trunking Protocol, to help minimize the configuration & errors.		
It shall support 802.1d, 802.1p, 802.1Q, 802.1s, 802.1w, 802.1x, 802.1ab,802.3ad.		
It shall support spanning-tree root guard or any other industry standard protocol to prevent other edge ches becoming the root bridge.		
all support IGMP snooping v1, v2 and v3.		
all support Link Aggregation Protocol (LACP).		

It shall Support 802.3ah Ethernet Link OAM for Detection of Unidirectional links and to disable them to avoid problems such as spanning tree loops		
It shall be able to discover the neighboring device of the same vendor giving the details about the platform, IP Address, Link connected through etc, thus helping in troubleshooting connectivity problems.		
It shall support for Switch port auto recovery (err disable) to automatically re- enable a link that is disabled because of a network error.		
It shall support Multicast VLAN registration.		
It shall support LLDP / LLDP-MED including client location information. It shall exchange link and device information in multi vendor networks.		
It shall support configuration rollback to replace current configuration with any saved configuration file.		
It shall support configurable maximum transmission unit (MTU) of up to 9000 bytes, with a maximum Ethernet frame size of 9018 bytes (Jumbo frames) for bridging on Gigabit Ethernet ports.		
It shall support auto sensing speed on 10/100/1000 ports, auto negotiating half/full-duplex on all ports and Auto-MDIX.		
QoS Features:		
The LAN switch shall have per-port broadcast, multicast, and unicast storm control.		
It shall have standard 802.1p CoS and DSCP classification using marking and reclassification on a per-packet basis by source and destination IP address, source and destination MAC address, or Layer 4 TCP or UDP port number.		
There shall be eight egress queues per port to enable differentiated management of up to eight traffic types.		
There shall be weighted round robbin (WRR) or any other industry standard protocol to provide congestion avoidance.		
There shall be strict priority queuing mechanisms.		
Granular Rate Limiting functions to guarantee bandwidth in increments shall be as low as 64 Kbps.		
Rate limiting support based on source and destination IP address, source and destination MAC address, Layer 4 TCP and UDP information, or any combination of these fields, using QoS ACLs (IP ACLs (IPv4 and IPv6) or MAC ACLs), class maps, and policy maps shall be available. ACL should be based on user defined packet ent (Max. 6bytes length user defined).		

There shall be support for Asynchronous data flows upstream and downstream from the end station or on the uplink using ingress policing and egress shaping.		
There shall be support for Automatic Quality of Service for easy configuration of QoS features for critical applications.		
Network Security Features:		
The LAN switch shall support IEEE 802.1x to allow dynamic, port-based security, providing user authentication.		
The LAN switch shall support for Admission Control features to improve the network's ability to automatically identify, prevent, and respond to security threats and also to enable the switches to collaborate with third-party solutions for security-policy compliance and enforcement before a host is permitted to access the network.		
It shall support port-based ACLs (PACLs) for Layer 2 interfaces to allow application of security policies on individual switch ports. It shall also support VLAN based filters.		
It shall support unicast MAC filtering to prevent the forwarding of any type of packet with a matching MAC address. It shall support Unicast and Multicast MAC addresses and associated VLANs.		
It shall support unknown unicast and multicast port blocking to allow tight control by filtering packets that the switch has not already learned how to forward.		
It shall support IGMP filtering which shall provide multicast authentication by filtering out no subscribers and limits the number of concurrent multicast streams available per port.		
It shall support for SSHv2, SNMPv3 to provide network security by encrypting administrator traffic during Telnet and SNMP sessions.		
The switch shall support 2 session of Port Mirroring based on port basis / VLAN basis to support intrusion prevention system deployment in different VLANs. It shall support bidirectional data on mirror port which allows IDS to take action when an intruder is detected.		
It shall support RADIUS authentication to enable centralized control of the switch and restrict unauthorized users from altering the configuration.		
It shall support MAC address notification to allow administrators to be notified of users added to or removed from the network / It shall support SNMP Trap for new MAC notification.		

It shall support DHCP snooping to allow administrators to ensure consistent mapping of IP to MAC addresses. This can be used to prevent attacks that attempt to poison the DHCP binding database, and to rate limit the amount of DHCP traffic that enters a switch port.		
It shall support DHCP Interface Tracker (Option 82) to augment a host IP address request with the switch port ID.		
It shall support port security to secure the access to an access or trunk port based on MAC address. After a specific timeframe, the aging feature should remove the MAC address from the switch to allow another device to connect to the same port.		
It shall support multilevel security on console access to prevent unauthorized users from altering the switch configuration.		
It shall support BPDU Guard feature, to shut down Spanning Tree Protocol Port Fast-enabled interfaces when BPDUs are received to avoid accidental topology loops.		
It shall support Spanning-Tree Root Guard (STRG) to prevent edge devices not in the network administrator's control from becoming Spanning Tree Protocol root nodes.		
It shall support for up to 512 access control entries (ACEs).		
Management:		
The LAN switch shall have CLI support to provide a common user interface and command set with all routers and switches of the same vendor.		
It shall have Remote Monitoring (RMON v1 and v2) software agent to support for enhanced traffic management, monitoring, and analysis.		
It shall have support for RMON groups through the use of a mirrored port, which permits traffic monitoring of a single port, a group of ports, or the entire switch from a single network analyzer or RMON probe.		
It shall have layer 2 trace route to ease troubleshooting by identifying the physical path that a packet takes from source to destination or it shall support OAM 802.3ah.		
It shall support Trivial File Transfer Protocol (TFTP) and File Transfer Protocol (FTP) to reduce the cost of administering software upgrades by downloading from a centralized location.		
hall support Simple Network Time ocol/Network Timing Protocol (SNTP/NTP) to ide an accurate and consistent timestamp to all net switches.		

It shall support RMON v1 and v2 standards.		
It shall support SNMPv1, SNMPv2, and SNMPv3 and Telnet interface to deliver comprehensive in-band management, and a CLI-based management console to provide detailed out-of-band management.		
It shall support IPV6 management. ACL and QoS and IPv6 Neighbor Discovery.		
It Shall Support SDN Platform and have Provision to be Work Standalone or Controller Based and support Zero-Touch Provisioning (ZTP		
Device OEM must be must be ISO 9001 & 14001 Certified at the time of bidding		
Device OEM must be Gartner Magic Quadrant for Enterprise Wired and Wireless LAN Infrastructure in Last 4 Quarter		

3.Unmanaged Switch (3Nos)		
Physical Specification:		
The LAN switch shall be rack mountable with 24 Nos. 10/100/1000 Base-T ports with 4 Nos. SFP Ports		
General Specification:		
The LAN switch shall be available with minimum 56 Gbps Switching Fabric.		
The LAN switch shall have minimum packet forwarding rate of 41.66 million packets per second at 64 byte packet length.		
The LAN switch shall support minimum 16K MAC addresses.		
The LAN Switch must support Packet Buffer Memory 12 Mbit		
There shall be 512 IGMP groups.		
The switch shall be able to work on both IPv4 and IPv6 (dual stack) from day one.		
All ports in the switch shall operate at wire-speed / line-rate.		
The switch shall be capable of working with AC Power Supply with a voltage varying from 170-240Volts at 50 +/-2 Hz.		
The switch shall support 19 inch rack mounting.		
Layer - 2 Features:		
The LAN switch shall support IEEE 802.1Q VLAN encapsulation. Maximum 4K VLAN Groups.		
It shall support 802.1d, 802.1p, 802.1Q, 802.1s, 802.1w, 802.1x, 802.1ab,802.3ad.		
It shall support spanning-tree root guard or any other stry standard protocol to prevent other edge ches becoming the root bridge.		
all support IGMP snooping v1, v2 and v3.		

It shall support Link Aggregation Protocol (LACP).		
It shall Support 802.3ah Ethernet Link OAM for Detection of Unidirectional links and to disable them to avoid problems such as spanning tree loops and support Unidirectional Link Detection (UDLD) or equivalent.		
It shall be able to discover the neighboring device of the same vendor giving the details about the platform, IP Address, Link connected through etc, thus helping in troubleshooting connectivity problems.		
It shall support for Switch port auto recovery (err disable) to automatically re- enable a link that is disabled because of a network error.		
It shall support Multicast VLAN registration.		
It shall support LLDP / LLDP-MED including client location information. It shall exchange link and device information in multi vendor networks.		
It shall support configuration rollback to replace current configuration with any saved configuration file.		
It shall support configurable maximum transmission unit (MTU) of up to 9000 bytes, with a maximum Ethernet frame size of 9018 bytes (Jumbo frames) for bridging on Gigabit Ethernet ports.		
It shall support auto sensing speed on 10/100/1000 ports, auto negotiating half/full-duplex on all ports and Auto-MDIX.		
QoS Features:		
The LAN switch shall have per-port broadcast, multicast, and unicast storm control.		
It shall have standard 802.1p CoS and DSCP classification using marking and reclassification on a per-packet basis by source and destination IP address, source and destination MAC address, or Layer 4 TCP or UDP port number.		
There shall be eight egress queues per port to enable differentiated management of up to eight traffic types.		
There shall be weighted round robbin (WRR) or any other industry standard protocol to provide congestion avoidance.		
There shall be strict priority queuing mechanisms.		
Granular Rate Limiting functions to guarantee bandwidth in increments shall be as low as 64 Kbps.		
Rate limiting support based on source and destination IP address, source and destination MAC address, Layer 4 TCP and UDP information, or any combination of these fields, using QoS ACLs (IP ACLs (IPv4 and IPv6) or : ACLs), class maps, and policy maps shall be able. ACL should be based on user defined packet ent (Max. 6bytes length user defined).		

There shall be support for Asynchronous data flows upstream and downstream from the end station or on the uplink using ingress policing and egress shaping.		
There shall be support for Automatic Quality of Service for easy configuration of QoS features for critical applications.		
Network Security Features:		
The LAN switch shall support IEEE 802.1x to allow dynamic, port-based security, providing user authentication.		
The LAN switch shall support for Admission Control features to improve the network's ability to automatically identify, prevent, and respond to security threats and also to enable the switches to collaborate with third-party solutions for security-policy compliance and enforcement before a host is permitted to access the network.		
It shall support port-based ACLs (PACLs) for Layer 2 interfaces to allow application of security policies on individual switch ports. It shall also support VLAN based filters.		
It shall support unicast MAC filtering to prevent the forwarding of any type of packet with a matching MAC address. It shall support Unicast and Multicast MAC addresses and associated VLANs.		
It shall support unknown unicast and multicast port blocking to allow tight control by filtering packets that the switch has not already learned how to forward.		
It shall support IGMP filtering which shall provide multicast authentication by filtering out no subscribers and limits the number of concurrent multicast streams available per port.		
It shall support for SSHv2, SNMPv3 to provide network security by encrypting administrator traffic during Telnet and SNMP sessions.		
The switch shall support 2 session of Port Mirroring based on port basis / VLAN basis to support intrusion prevention system deployment in different VLANs. It shall support bidirectional data on mirror port which allows IDS to take action when an intruder is detected.		
It shall support RADIUS authentication to enable centralized control of the switch and restrict unauthorized users from altering the configuration.		
It shall support MAC address notification to allow administrators to be notified of users added to or ...oved from the network / It shall support SNMP Trap ...ew MAC notification.		

It shall support DHCP snooping to allow administrators to ensure consistent mapping of IP to MAC addresses. This can be used to prevent attacks that attempt to poison the DHCP binding database, and to rate limit the amount of DHCP traffic that enters a switch port.		
It shall support DHCP Interface Tracker (Option 82) to augment a host IP address request with the switch port ID.		
It shall support port security to secure the access to an access or trunk port based on MAC address. After a specific timeframe, the aging feature should remove the MAC address from the switch to allow another device to connect to the same port.		
It shall support multilevel security on console access to prevent unauthorized users from altering the switch configuration.		
It shall support BPDU Guard feature, to shut down Spanning Tree Protocol Port Fast-enabled interfaces when BPDUs are received to avoid accidental topology loops.		
It shall support Spanning-Tree Root Guard (STRG) to prevent edge devices not in the network administrator's control from becoming Spanning Tree Protocol root nodes.		
It shall support for up to 512 access control entries (ACEs).		
Management:		
The LAN switch shall have CLI support to provide a common user interface and command set with all routers and switches of the same vendor.		
It shall have Remote Monitoring (RMON v1 and v2) software agent to support for enhanced traffic management, monitoring, and analysis.		
It shall have support for RMON groups through the use of a mirrored port, which permits traffic monitoring of a single port, a group of ports, or the entire switch from a single network analyzer or RMON probe.		
It shall have layer 2 trace route to ease troubleshooting by identifying the physical path that a packet takes from source to destination or it shall support OAM 802.3ah.		
It shall support Trivial File Transfer Protocol (TFTP) and File Transfer Protocol (FTP) to reduce the cost of administering software upgrades by downloading from a centralized location.		
hall support Simple Network Time ocol/Network Timing Protocol (SNTP/NTP) to ide an accurate and consistent timestamp to all net switches.		

It shall support RMON v1 and v2 standards.		
It shall support SNMPv1, SNMPv2, and SNMPv3 and Telnet interface to deliver comprehensive in-band management, and a CLI-based management console to provide detailed out-of-band management.		
It shall support IPV6 management. ACL and QoS and IPv6 Neighbor Discovery.		
It Shall Support SDN Platform and have Provision to be Work Standalone or Controller Based and support Zero-Touch Provisioning (ZTP)		
Device OEM must be must be ISO 9001 & 14001 Certified at the time of bidding		
Device OEM must be Gartner Magic Quadrant for Enterprise Wired and Wireless LAN Infrastructure in Last 4 Quarter		

4.Wireless Access Point		
AP shall have hardened enclosures for indoor deployment and shall have a robust design for durability		
It shall have dual radios for concurrent dual band (5 GHz / 2.4 GHz) operation		
It shall have Simultaneous 574 Mbps on 2.4 GHz and 1201 Mbps on 5 GHz totals 1775 Mbps Wi-Fi speeds		
AP must support 1024 QAM		
AP must Support WEP, WPA-Personal/Enterprise, WPA2-Personal/Enterprise, WPA3-Personal/Enterprise		
Minimum 1 number of 1 Gbps Ethernet port RJ-45.		
AP shall support Multi user MIMO		
AP shall support Outfitted with the latest 802.11ax technology		
The AP shall comply with IEEE 802.11ax at a minimum and be backwards compatible to IEEE 802.11a/b/g/n/ac standards.		
AP shall operate at least in full 2X:2 MIMO or more mode without any loss of features or capabilities		
AP shall Support PoE 802.3at PoE for convenient and affordable installation		
AP must support 20 MHz, 40 MHz and 80 MHz channels.		
Each AP must support minimum 80 concurrent clients in total (including both 2.4GHz and 5GHz radios).		
The AP shall provide a minimum of 20 dBm EIRP for both 2.4 GHz and and 23 dBm for 5 GHz frequencies. Field deployment shall be with EIRP as per regulatory guidelines.		
AP shall support QoS and WMM latest technology		
hall support Multiple operating modes including aged AP and standalone AP mode		

AP shall support Band Steering, Beamforming, Airtime Fairness and Load Balance and OFDMA features		
AP shall support rogue access point detection		
AP shall have dual-Band Omni-directional Antenna, either internal or external. Field deployment shall be with EIRP as per the WPC guideline.		
AP should be compatible for Simple mounting on any wall or ceiling surface		
AP should support management VLAN		
AP should support Captive portal and Rate limit feature		
AP shall support Reboot Schedule, Wireless Schedule and Wireless Statistics based on SSID/AP/Client		
Intelligent RF control plane for self-healing, and self-optimization		
AP Shall support Wireless Mac Address Filtering, Wireless Isolation Between Clients and SSID to VLAN Mapping		
AP shall support 802.1X authentication and external radius server		
AP shall be able to assign end User the IP address as received from backend core DHCP Server.		
AP shall support Hardware controller or Software controller and Zero-Touch Provisioning (ZTP)‡, Centralized Cloud Management, and Intelligent Monitoring.		
Shall support Operating Temperature of 32°F~144°F		
Device OEM must be must be ISO 9001 & 14001 Certified at the time of bidding		
Device OEM must be Gartner Magic Quadrant for Enterprise Wired and Wireless LAN Infrastructure in Last 4 Quarter		

5.Broadband Router		
Device must Support IEEE 802.3, 802.3u, 802.3ab, IEEE 802.3x, IEEE 802.1q TCP/IP, DHCP, ICMP, NAT, PPPoE, NTP, HTTP, HTTPS, DNS, IPSec, PPTP, L2TP, OpenVPN, SNMP		
Device must Support 1 gigabit SFP WAN port, 1 gigabit RJ45 WAN port, 2 gigabit WAN/LAN ports		
Device must have 128 MB NAND Flash and 256MB DDR DRAM		
Device must have 4 kV surge protection		
Device must support 150,000 Concurrent Session and 5,500 New Sessions /Second		
Device must WAN Connection Type Static/Dynamic IP , PPPoE, PPTP, L2TP		
ce must Support IPv6 StaticIP / SLAAC / DHCPv6 / E / 6to4Tunnel / PassThrough		
ce must supprot 802.1Q VLAN		

Device must support Static Routing & Policy Routing		
Device must support WAN Failover and Load Balance for uninterrupted Internet Connection		
Device Must supprot One-to-One Nat , Multi Net , NAT-DMZ ,Virtual Server and Port Triggering		
Device must Support SPI Firewall , VPN Passthrough ,DoS Defence, Ping of Death		
Device must support VPN Like IPSEC , PPTP, L2TP and Open VPN , GRE , Wireguard		
Device must support URL Filtering and Web Security		
Device Must supprot ARP-Scanning and IP-MAC Binding		
Device must support following Attack Defense TCP/UDP/ICMP Flood Defense ,Block TCP Scan (Stealth FIN/Xmas/Null) Block Ping from WAN		
Device Must Support Access controler based on Source/Destination IP Based Access Control		
Device must support DDNS Service such as Dynamic DNS (Dyndns, No-IP, Peanuthull, Comexe		
Device must Support ZTP (zero touch provisioning)		
Device must support Controller Mode and Standalone Mode		
Device OEM Must be ISO 9001 and 140001 certified at the time of Bidding		
Device must be in Gartner Magic Quadrant at least in last 4 Quarters at the time of bidding		

6.Server		
1U Rack mountable		
Minimum 4 Cores or above with 2.8GHZ frequency		
Must have 4x16GB DDR% Memory 4800MT or above		
2 Nos of 1.9TB or above SSD		
RAID controller supporting SAS/SATA with minimum 4GB Cache		
2 Nos of Titanium grade PSU with minimum 800w or above		
Server RAID should support 8 Nos of SSD/HDD from day 1		
3 YR Wararnty		

7.NAS with HDD		
NAS Storage with minimum 1.5 GHz processor		
Minimum 4GB DDR System Memory upgradable up to 16GB		
Should support SSD and HDD from day one		
Minimum 2 10G SFP+ Port populated from day 1		
b or higher HDD populated from day one		
uld support minimum 200TB per volume size		
must support Thick & Thin provsioning		

3 Yr Warranty		

8.Firewall		
Should have 10 Ethernet ports from day 1 with Minimum 2 SFP ports		
Expandable up to 8 more ports		
Should have 100GB storage or above		
Must be 1U rack mountable		
Must have minimum 30000 MBPS firewall throughput		
Must support 6M minimum concurrrent sessions		
Must have minimum 5000 MBPS NGFW throughput or above		
1 Year subscription fromm OEM		

9.Workstation		
Intel core i9 or above with 36 MB cache and 64 Cores minimum		
Should have 64GB (2x32GB) DDR5 4800 UDIMM ECC Memory		
Should have Operating System Load to M.2 from day 1 with Windows 11 Pro 64 High End		
1xNVIDIA RTX 4500 Ada 24 GB 4DP Graphics		
1xIntel AX211 Wi-Fi 6 +Bluetooth 5.3 WW WLAN with Internal Antennae		
Keyboard Mouse		
3 Yr Warranty		
2 TB minimum M.2 SSD from day 1		

10.Laptop(8 Nos)		
15.6" Laptop		
Must be energy Star certified		
Should have 16GB Memory from day 1		
Minium 1TB SSD from day 1		
Core i7 13th Gen or above		
Wifi 6E adaptor & Bluetooth		
Win 11 pro 64 bit		
3 Yr warranty		
1X 1G Ethenetport		
1X1 HDMI PORT		
1X USB 3.0		

ANNEXURE – 5

FORM OF TENDER

Name of Work: Supply, Installation, Testing, and Commissioning of Network Protection and Access Management lab at Department of IT, Mangattuparamba Campus, Kannur University under PM-USHA Scheme.

From,

……..

……

……

To,

The Registrar,
Kannur University,
Thavakkara, Kannur.

Sir,

I/We do hereby tender to execute the works enumerated in the Schedule accompanying in accordance the terms in your tender Notification……..date……..and specifications and conditions of contract in the bidding document.

In consideration I/We being invited to tender, I/We agree to keep the tender open for acceptance 120 days from the date of submission thereof and not to make any modifications in its terms and conditions which are not acceptable.

I/We agree that the tender inviting authority shall, without prejudice to any other right or remedy be at liberty to forfeit the earnest money/ Bid security absolutely and also recover from me/us the entire loss that may be caused to the Kannur University by the retender or rearrangement of the work or otherwise under the provision of the Revenue Recovery Act or otherwise.

Signature :

Full Name & Address of Bidder :

ANNEXURE - 6

Integrity Pact

CERTIFICATE

I/We……undertake that the tender submitted by us is downloaded from the website www.etenders.kerala.gov.in and any deviation, of detected, at any stage, would entitle the Employer to reject our bidding/offer without assigning any reason or recourse to any penal action and would be legally binding on us.

Signature ..... (of tenderer)

Seal ……

ANNEXURE – 7

COMPLETION PERIOD

(To be submitted in the letter pad of the firm indicating full name and address, telephone no. & E-mail etc.)

Supply, Installation, Testing, and Commissioning of Network Protection and Access Management lab at Department of IT, Mangattuparamba Campus, Kannur University under PM-USHA Scheme shall be completed within a period of **90 days** from the date of receipt of Purchase Order.

SIGNATURE OF THE BIDDER WITH SEAL