ARIS Cell
Dr. Rajendra Prasad Central Agricultural University
Pusa (Samastipur) 848125

No. 03 /ARIS/Pusa

Dated : 24/09/2020

Notice Inviting Tender

For Establishment of LAN

Dr. Rajendra Prasad Central Agricultural University, intends to extend its LAN to Pt. Deen Dayal Upadhyay College of Horticulture & Forestry Building of Horticulture,Piprakothi, Motihari. The interested firms are hereby invited to participate in the bidding process (in two bid system) through this notice. The details of the work, items required and terms and conditions can be downloaded from the website **www.rpcau.ac.in**. The tender document complete in all respect in the prescribed format shall reach to the **Controlling Oficer, ARIS Cell,Dr. RPCAU, Pusa** latest by _23/10/2020_ through registered/ speed post.

24/09/2020

C/O ARIS Cell.

Memo No. 36/ARIS/Pusa

Dated : 24/09/2020

Copy forwarded to Consultant (Publicity & Information) for publishing of this notice in **English Daily newspaper** in appropriate size and place on the earliest possible date. The bills alongwith tearsheet of the newspapers may be sent to the undersigned for payment.

24/09/2020

C/O ARIS Cell.

DETAILS OF WORK

Dr. Rajendra Prasad Central Agricultural University, intends to established LAN to Pt. Deen Dayal Upadhyay College of Horticulture & Forestry Building of Horticulture ,Piprakothi, Motihari,Bihar. The interested firms are hereby invited to participate in the bidding process (in two bid system) through this notice. The details of the work, items required and terms and conditions can be downloaded from the website **www.rpcau.ac.in**. The tender document complete in all respect in the prescribed format shall reach the **Controlling Officer,ARIS CEll, Dr. RPCAU, Pusa** latest by _____ through registered/ speed post.

Service Deliverables:

The following are the service deliverables required from the selected agency.

1. Establishment of LAN to upcoming buildings of Pt. Deen Dayal Upadhyay College of Horticulture & Forestry Building of Horticulture ,Piprakothi, Motihari,Bihar.. This buildings .

A. General Information:

1. The interested firms are required to submit their proposal in two bid system i.e. **Technical Bid** and the **Financial Bid**. The Bidder is required to fill up all these two parts and place them in two separate sealed envelopes, which should be super scribed as "Technical Bid for Establishment of LAN" and "Financial bid for Establishment of LAN" with NIT reference number, as the case may be. Both these envelop must be place in another envelop super scribed "Quotation for Establishment of LAN" with NIT reference number.

2. The Offer should be made in English and no conditional offers will be accepted

3. The Price, terms and conditions of the offer should be valid up to minimum of 180 days.

4. Submitted bid documents with overwriting or erasing will be liable for rejection.

5. The materials should be supplied as per quotation and same shall be verified by the authorized officer before installation.

6. Bidders are required to carry out the work at the specified location on turnkey basis and quote accordingly.

7. The bidders are expected to examine all instructions, forms, terms, project requirements and other details in the tender documents. Failure to furnish complete information as mentioned in the tender documents or submission of a proposal not substantially responsive to the tender documents in every respect will be at the bidder's risk and may result in rejection of the bid.

B. Terms and Conditions:

1. The bidder must show his/ her competency and experience in execution of the work of similar nature by means of the list of clients supported by the adequate proof during last 5 financial years.

2. The Bidder should be an organization/Company in operation for the last 10 yearfinancial years from the publication of this notice.

3. The firm should be an ISO-9001:2015& ISO 27001-2013certifiedCompany with its Original Equipment Manufacturer /their authorised bidder for this tender whose responsibility is to supply and installation of the equipment, giving warranty on the equipment's and deliver the desired services.

4. The Bidder must have prior experience in commissioning such projects relevant to this notice i.e. under taken the work of installation of LAN connectivity to Government / PSUs in India with minimum 01 Crores single order of ICT Infra during last 05 Financial years.

5. Rates quoted should be F.O.R. Dr. RPCAU,Pusa,Bihar inclusive of all taxes and charges. The rates must include packaging, forwarding, transit, installation and insurance charges. The same should be insured against pilferage, theft, loss or breakage during transit by the supplier before dispatch is made. The responsibility in this respect will be of the supplying firm and not of the university.

6. Supply of the goods is acceptable on bill basis only.

7. Payment shall be made within 60 days from the date of receipt of goods in proper, satisfactory, working conditions and after successful installation and commissioning.

8. The technical bid should include the Earnest Money (EMD) in the form of Demand Draft of a Nationalized bank(For Rs. 300000/-) drawn in favour of **Comptroller , Dr. RPCAU, Pusa** payable at PNB ,RAU Pusa (Branch Code: 4512). The tender received without proper EMD shall be summarily rejected. EMD is exempted for MSME`s as per GOI rules with proper certificate.

9. In terms of General Finance Rules (GFR-2017), tenderers may face legal action, if they amend tender, impair or derogates from the tender in any respect within the period of validity of this tender.

10. The bidders will have to attach a certificate to the effect that the material to be supplied will be of the same specification conforming to standard of the items specified.

11. The taxes which are not quoted in tender by the supplier will not be paid by the university under any case.

12. The terms and conditions given by the supplier will not be binding on us. Conditional tenders may be rejected at the sole discretion of the competent authority of the university.

13. The date / period of delivery of stores must be clearly mentioned.

14. The firm should give a certificate that his / her company or sister company is not black listed by any Govt. Department or any Institute in the country.

15. Any dispute arising in the process of the tender shall be referred to the sole arbitrator who in such case will be the Vice Chancellor of DR. RPCAU,Pusa whose verdict shall be final and binding on both the parties.

16. The tender so submitted shall be governed by the GFR-2017 in effect.

17. The bidders may be called for technical discussion by the purchase committee duly constituted or nominated by the competent authority of this university.

18. The acceptance of tender will rest with the university who does not bind itself to accept the lowest tender and reserves itself the authority to reject or partially accept, any or all the tenders received without assigning any reason.

19. The university reserves the right to place order for the scheduled quantity and or part thereof.

20. **The terms as below related to technical specifications must be strictly followed:**

    a) *Switches & Access Points should be of Single OEM.*

    b) *The Active devices should be backed with OEM Warranty Support for 3 years with Replacement with New products.*

    c) *OEM authorization specific to this tender should be available*

    d) *Technical compliance duly approved by the OEM letter head is required, failing which the Bid offer will be rejected.*

    e) *Product Certification must be enclosed*

    f) *Product specifications must be supported by catalogue*

21. Tenders are likely to be rejected in case it does not confirm to the specifications, terms and conditions etc as laid down.

22. The tender must reach to the office of the **Controlling Officer, ARIS Cell , Dr. RPCAU, Pusa** on or before the specified date and time through **Registered post / Speed post** only.

23. All the papers submitted must bear the signature and seal of the authorised person.

24. Accepted Bidder are required to complete work within 90 days from receiving work order from University.

25. Bidder turnover must not be less than 20.0 crore for average last three years.

26. OEM turnover must not be less than 50.0 crore for average last three years.

27. Performance Guarantee will have to be submitted @10% of contract value by the successful bidder at the time of signing Agreement.

28. Timely servicing/rectification of defects during warranty period, after having been notified of the same, service/rectification must be completed within 06 day's time limit, failing which a penalty of 0.5% of the unit price of the product shall be charged as penalty for each week of delay from the seller as per rule.

Dated
24/09/2020
C/O ,ARIS Cell

Technical Bid

A. General Details of the Organisation:

S. No.	Particulars	Remarks/ Documents to be attached
1	Name of the Agency as mentioned in the Registration Certificate	
2	Address of Head office	
	Telephone:	
	E-mail:	
	Fax number(if any):	
	Name(s) of the contact person(s):	
3	Corresponding Office address (if different from the above address):	
	Telephone number :	
	Name(s) of the contact person(s) along with mobile number and e-mail id.	
4	Year of establishment of the Organisation (enclose certificate of registration)	
5	Years of work experience in providing relevant services	
6	Turnover of the agency for the last three years (attach proof)	2019-20: 2018-19: 2017-18:
6	Income Tax - PAN No. (attach proof)	
7	Tax Payer Identification Number (GSTIN) (attach proof)	
11	The firm is a proprietary/ partnership/Limited Co./Society (Please attach documentary evidence)	
13	Details of clients for whom similar projects are under taken, along with value of orders executed. (attach documentary evidence)	
14	Details of EMD:	
	DD No. & Date of Issue	
	Amount :	INR 300,000.00
	Drawn on Bank	

S. No.	Particulars	Remarks/ Documents to be attached
	(Attach the original copy of DD with technical Bid)	

B. Organisational Competency: A Brief note pertaining to the Profile and background of the Agency / Firm explaining its previous experience, expertise in general, previous achievements, technical expertise that makes your Agency / Firm most competent to participate in the bidding process. Besides this, the details of similar kind of work experience of the agency is to be furnished in the format Below:

Details of the work executed

S. No.	Year	Name of Project	Name of Client/ Organisation	Value of the Order In INR	Documentary Evidence
1					
2					
3					
4					
5					

C. Bill of Material

S.No	Items Description	Qnty.
1.	Firewall ,for 500 Users with 3 years subscription	1
2.	16 Port SFP+ L3 Managed Switch & 8 x 10G BaseT UTP Ports, Stacking Module, Dual Hot-Plug power supplies .	2
3.	24 Port 10/100/1000Mbps L2 Managed POE+ Switch with 4 x 10G SFP/SFP+ slots . smart managed switch	18
4.	48 Port 10/100/1000Mbps L2 Managed POE+ Switch with 4 x 10G SFP/SFP+ slots	1
5.	24 Port Layer 2 managed Fiber optic switch	1
6.	3 x 3 Dual Band Wireless-AC Managed Access Point	90
7.	Access Point management software with license	1
8.	10G SM LC-Type SFP+ Transceiver Modules Fiber	25
9.	12 Port LIU Loaded with SC Pigtails,Coupler & Panels	4
10.	6 Port LIU Loaded with SC Pigtails,Coupler & Panels	10
11.	3M SC-LC OFC Patch cord ,SM Fiber	30
12.	UTP CAT-6A cable (305m box)	50
13.	6C SM Optical Fiber Cable with laying	2500 Mtr.
14.	UTP modular Cat 6A I/O with single faceplate & SMB	200
15.	CAT-6A 24 port Jack Panel Fully loaded	20
16.	CAT-6A Patch cord 1mtr.	200
17.	CAT-6A Patch cord 3mtr.	200
18.	42U Floor mount rack,withPDU,FAN,Cable manager &H/W	2
19.	12U Wall mount rack,withPDU,FAN,Cable manager &H/W	16

20.	HDPE 40/33 mm duct (in m)	2500m
21.	PVC pipe/ beat/duct (pcs) with required accessories	5000 pc
22.	Online UPS System of 10KVA ,with 100AH battery & Installation	1
23.	Online UPS System 3 KVA ,with 65 AH battery & Installation	2
24.	Computer system for Server monitoring & Maintenance	5
25.	Power supply 3 core 2.5.mm armoured (per m) for provision of switches and sockets as per requirement.	1000m
26.	Installation charges including splicing, crimping, power switch installation etc.	LS
	Total	

Technical Specification

Item No. 1. – Firewall – NGFW

S.No	Specification	Compliance (Yes/No)	If Yes, Cross-reference page no.
General Requirements			
1	Network security appliance should support "Stateful" policy inspection technology. It should also have application intelligence for commonly used TCP/IP protocols like telnet, ftp etc.		
2	The proposed vendor must have successfully completed NSS Labs' NGFW Methodology v8.0 testing with a minimum exploit blocking rate of 98%		
3	The OEM (Original Equipment Manufacturer) of the offered solution must be rated as 'Leaders' in the latest 'Magic Quadrants for Enterprise Network Firewalls' published by Gartner.		
4	Proposed solution should have Multi-Layer Threat Prevention suits with controls embedded like IPS, Antimalware, Anti-bot, application-visibility, Anti-APT etc.		
5	The proposed solution should have an Multi-tier engine to i.e. detect & Prevent Command and Control IP/URL and DNS		
6	8 Solution Architecture should be distributed deployment - NGFW firewall with threat Prevention features enabled & centralized Management for Policy management, advance Logging, Reporting features.		
7	Licensing should be a per device and not limited to user/IP based (should support unlimited users)		
8	The Device should be certified under Device Certification Criteria for functional, performance and platform security requirements by ICSA.		
Hardware & Interface requirements			
1	GE RJ45 WAN Interfaces 2 GE RJ45 Management/HA Ports 2 GE RJ45 Ports 14 GE SFP Slots 4 USB port 1 Console (RJ45) 1 Local Storage — 1x 480 GB SSD Included Transceivers 0		
2	IPS Throughput 2 2.2 Gbps NGFW Throughput 2, 4 1.8 Gbps Threat Protection Throughput 2, 5 1.2 Gbps		
3	The Appliance should have USB & Console Ports		
Performance and Availability			
1	Firewall Throughput (1518 / 512 / 64 byte UDP packets) 20 / 20 / 9 Gbps Firewall Latency (64 byte UDP packets)		
2	3 µs Firewall Throughput (Packets Per Second) 13.5 Mpps Concurrent Sessions (TCP) 2 Million New Sessions/Second (TCP)		

	135,000 Firewall Policies 10,000		
3	IPsec VPN Throughput (512 byte) 1 7.2 Gbps Gateway-to-Gateway IPsec VPN Tunnels 2,000 Client-to-Gateway IPsec VPN Tunnels 10,000 SSL-VPN Throughput 900 Mbps Concurrent SSL-VPN Users (Recommended Maximum, Tunnel Mode)		
4	500 SSL Inspection Throughput (IPS, avg. HTTPS) 3 820 Mbps SSL Inspection CPS (IPS, avg. HTTPS) 3 1,000 SSL Inspection Concurrent Session (IPS, avg. HTTPS) 3 240,000 Application Control Throughput (HTTP 64K) 2 3.5 Gbps CAPWAP Throughput (1444 byte, UDP)		
5	1.5 Gbps Virtual Domains (Default / Maximum) 10 / 10 Maximum Number of Switches Supported 64 Maximum Number of APs (Total / Tunnel Mode) 256 / 128 Maximum Number of Tokens 5,000 High Availability Configurations Active / Active, Active / Passive, Clustering		
6	Minimum Threat Prevention Throughput (measured with Firewall, Application Control, IPS & Malware Protection enabled) for real world or enterprise mix traffic		

Routing Protocols

1	Static Routing		
2	Policy Based Routing		
3	The Firewall should support Dynamic Routing Protocol for RIP1 & 2, OSPF, OSPFv3, BGP4, RIPng		

Firewall Features

1	Firewall should provide application inspection for LDAP, SIP, H.323, SNMP, FTP,SMTP, HTTP, DNS, ICMP, DHCP, RPC,SNMP, IMAP, NFS etc.		
2	IPv6-enabled inspection services for applications based on HTTP, FTP, SMTP, ICMP, TCP, and UDP		
3	Allows secure deployment of next-generation IPv6 networks, as well as hybrid environments that require simultaneous, dual stack support of IPv4 and IPv6		
4	The firewall should support transparent (Layer 2) firewall or routed (Layer 3) firewall Operation		
5	The Firewall should support ISP link load balancing.		
6	Firewall should support link aggregation functionality to group multiple ports as single port.		
7	Firewall should support minimum VLANs 1024		
8	Firewall should support static NAT, policy based NAT and PAT		
9	Firewall should support IPsec data encryption		
10	It should support the IPsec VPN for both site-site and remote access VPN		
11	Firewall should support IPsec NAT traversal.		
12	Control SNMP access through the use of SNMP and MD5 authentication.		
13	Firewall system should support virtual tunnel interfaces to provision route-based IPsec VPN		
14	The Firewall should have integrated solution for SSL VPN		

15	It should support the authentication protocols RADIUS, LDAP, TACACS, and PKI methods		
Integrated IPS Features Set			
1	IPS should have DDoS and DoS anomaly detection and protection mechanism with threshold configuration.		
2	Support SYN detection and protection for both targets and IPS devices.		
3	The device shall allow administrators to create Custom IPS signatures		
4	Should have a built-in Signature and Anomaly based IPS engine on the same unit		
5	Signature based detection using real time updated database & should have minimum 10000+ IPS signature database from day one		
6	Supports automatic security updates directly over the internet. (i.e. no dependency of any intermediate device)		
7	Signature updates do not require reboot of the unit.		
8	Configurable IPS filters to selectively implement signatures based on severity, target (client/server) and operating systems		
9	IPS Actions: Default, monitor, block, reset, or quarantine		
10	Should support packet capture option		
11	IP(s) exemption from specified IPS signatures		
12	Should support IDS sniffer mode		
AntiVirus&AntiBot			
1	Firewall should support antimalware capabilities , including antivirus, botnet traffic filter and antispyware		
2	Solution should be able to detect and prevent unique communication patterns used by BOTs i.e. information about botnet family		
3	The solution should support cloud based sandboxing for prevention from zero day threats		
4	Should have antivirus protection for protocols like HTTP, HTTPS, IMAPS, POP3S, SMTPS protocols etc.		
5	Solution should have an option of packet capture for further analysis of the incident		
6	Solution should uncover threats hidden in SSL links and communications		
7	The AV should scan files that are passing on CIFS protocol		
8	The proposed system shall provide ability to allow, block attachments or downloads according to file extensions and/or file types		
9	The proposed system should be able to block oversize file based on configurable thresholds		
Other support			
1	Should support features like Web-Filtering, Application-Control & Gateway level DLP from day one		

2	The proposed system should have integrated Enterprise-class Web Content Filtering solution with database which should support over 250 million webpages in 72+ categories and 68+ languages without external solution, devices or hardware modules.		
3	Should support detection over 3,000+ applications in multiple Categories: Botnet, Collaboration, Email, File Sharing, Game, General Interest, Network Service, P2P, Proxy, Remote Access, Social Media, Storage Backup, Update, Video/Audio, VoIP, Industrial, Special, Web (Others)		
4	The solution should have the flexibility to write security policies based on IP Address, User Name & endpoint operating system		
5	QoS features like traffic prioritization, differentiated services, Should support for QoS features for defining the QoS policies.		
6	It should support the VOIP traffic filtering		
7	Appliance should have identity awareness capabilities		
8	The firewall must support Active-Active as well as Active-Passive redundancy.		
9	Solution must support VRRP clustering protocol.		
Management & Reporting functionality			
1	Support for Built-in Management Software for simple, secure remote management of the security appliances through integrated, Web-based GUI.		
2	Support accessible through variety of methods, including console port, Telnet, and SSHv2		
3	Support for both SNMPv2 and SNMPv2c, providing in-depth visibility into the status of appliances.		
4	Should have capability to import configuration and software files for rapid provisioning and deployment using Trivial File Transfer Protocol (TFTP), HTTP, HTTPS		
5	Should capable to provide a convenient method for alerting administrators when critical events are encountered, by sending e-mail alert messages to administrator defined e-mail addresses		
6	The Firewall appliance should have minimum 450GB of internal storage for logging & reporting functionalities		
7	Solution must allow administrator to choose to login in read only or read-write mode		
8	Proposed solution should support 24X7X365 OEM TAC support and advance Next Business Day Hardware replacement.		

Item No. 2. – Layer 3 Switch

Sl. No.	Technical Specification	Compliance (Yes/No)	If Yes,Cross-reference page no.
1	**Architecture**		
1.1	Shall be 1RU, 19" Rack Mountable		
1.2	Switch shall have minimum 24 nos 10/100/1000 Base-T and 4x1/10G SFP+ ports		

1.3	Supplied with 2x10g Ethernet with SFP+ and 2x 1g Ethernet with SFP		
1.4	Shall have an RJ45 console port.		
1.5	Shall have 2GB of Memory and 512 MB of Flash memory		
1.7	Shall have switching capacity of 128 Gbps		
1.8	Shall have up to 95 million pps switching throughput		
	Switch shall have internal redundant power supply from day-1		
2	**Resiliency**		
2.1	The Switch should have the capability to extend the control plane across multiple active switches making it a virtual switching fabric, enabling interconnected switches to perform as single Layer-2 switch and Layer-3 Switch . The Fabric should be managed by a single IP Address.		
2.2	The connected servers or switches should be attached using standard LACP for automatic load balancing and high availability.		
2.3	The modules/cables to create virtual switching fabric shall be provided.		
2.4	The switch must support stacking of up to 9 devices.		
2.5	IEEE 802.1D Spanning Tree Protocol, IEEE 802.1w Rapid Spanning Tree Protocol and IEEE 802.1s Multiple Spanning Tree Protocol		
2.6	IEEE 802.3ad Link Aggregation Control Protocol (LACP)		
2.7	Shall support 64 Groups of up to 8 ports in a link aggregation		
2.8	The switch shall have modular OS		
3	**Layer 2 Features**		
3.1	Shall support min 32K MAC address table		
3.2	Shall support up to 4K VLANs		
3.3	Shall support GVRP or equivalent feature to allow automatic learning and dynamic assignment of VLANs		
3.4	Shall have the capability to monitor link connectivity and shut down ports at both ends if uni-directional traffic is detected, preventing loops		
3.5	Shall support IEEE 802.1ad QinQ and Selective QinQ to increase the scalability of an Ethernet network by providing a hierarchical structure		
3.6	Shall supports jumbo frame size of up to 9K-bytes		
3.7	Internet Group Management Protocol (IGMP)		
3.8	Multicast Listener Discovery (MLD) snooping		
3.9	IEEE 802.1AB Link Layer Discovery Protocol (LLDP)		
3.11	The switch shall support PVST		
3.12	Shall support port isolation or equivalent		
3.13	Shall support Voice VLAN feature to automatically assigns VLAN and priority to devices like IP phones		
4	**Layer 3 Features (any additional licenses required shall be included)**		
4.1	Static Routing for IPv4		
4.2	Static Routing for IPv6		
4.3	Shall support RIPv1, RIPv2,OSPF,BGP,IS-IS from day-1		
4.4	User Datagram Protocol (UDP) helper function to allow UDP broadcasts to be directed across router interfaces		
4.5	Dynamic Host Configuration Protocol (DHCP) client and Relay		
4.7	Should support policy based routing and ECMP		

5	**QoS and Security Features**		
5.1	Access Control Lists for Layer 2 to Layer 4 traffic filtering		
5.2	Shall support global ACL, VLAN ACL, port ACL, and IPv6 ACL		
5.3	Traffic classification using multiple match criteria based on Layer 2, 3, and 4 information		
5.4	Powerful QoS feature supporting strict priority (SP) queuing, weighted round robin (WRR) and and SP+WRR		
5.5	Shall support applying QoS policies on a port, VLAN, or whole switch, to set priority level or rate limit selected traffic		
5.6	IEEE 802.1x to provide port-based user authentication with multiple 802.1x authentication sessions per port		
5.7	Media access control (MAC) authentication to provide simple authentication based on a user's MAC address		
5.8	Dynamic Host Configuration Protocol (DHCP) snooping to prevent unauthorized DHCP servers		
5.9	Shall support Port security		
5.10	STP BPDU port protection to prevent forged BPDU attacks		
5.11	STP Root Guard to protect the root bridge from malicious attacks or configuration mistakes IP Source guard to prevent IP spoofing attacks		
5.12	IP Source guard to prevent IP spoofing attacks		
5.13	Dynamic ARP protection blocking ARP broadcasts from unauthorized hosts		
6	**Management Features**		
6.1	Configuration through the CLI, SSL, console, Telnet, SSH, SNMPv3 and Web Management		
6.2	SNMPv1, v2, and v3 and Remote monitoring (RMON) support		
6.3	sFlow (RFC 3176) or equivalent for traffic analysis		
6.4	Management security through multiple privilege levels		
6.5	FTP, TFTP, and Secure FTP support		
6.7	RADIUS/TACACS for switch security access administration		
6.8	Network Time Protocol (NTP) or equivalent support		
6.9	Shall have Ethernet OAM (IEEE 802.3ah) management capability		
7	**Software Defined Networking (SDN) Capability**		
7.1	The Switch should support OpenFlow without any hardware change from Day 1 to enable the switch to work in SDN environment.		
8	**Environmental Features**		
8.1	Shall provide support for RoHS and WEEE regulations		
8.2	Shall have features to improve energy efficiency like variable-speed fans, shutoff unused ports etc		
8.3	Operating temperature of 0°C to 45°C		
8.4	Safety and Emission standards including UL 60950-1; IEC 60950-1; VCCI Class A; EN 55022 Class A		
9	**OEM qualification Criteria**		
9.1	OEM should be leaders in Gartner magic quadarant report since last three years (wired and wireless)		
9.2	OEM Warranty should be 3 years onsite		

Item No. 3. – Layer 2 PoE Switch

S. No.	Technical Specification	Compliance (Yes/No)	If Yes, Cross-reference page no.
1	**Architecture**		
2	The switch should have minimum 24x RJ-45 autosensing 10/100/1000 POE+ ports with 4x1/10G SFP+ uplink port.		
3	The Switch should be 19" rack mountable.		
4	Should have minimum 128 Gbps switching capacity		
5	Switching throughput of up to 95 Mpps		
6	MAC Address table size of 16000 entries		
7	Should have 195W POE budget		
8	Shall support IEEE 802.3ad Link Aggregation Control Protocol (LACP)		
9	Shall support IEEE 802.1s Multiple Spanning Tree Protocol,802.1w(RSTP)		
10	Shall support IPv4 Static routing(Minimum 30 routes)		
11	Shall support IEEE 802.1Q (4000 VLAN IDs) and 256 VLANs simultaneously		
12	Shall support Jumbo frame		
13	Shall be IPv6 Capable		
14	Shall support IEEE 802.1AB Link Layer Discovery Protocol (LLDP)		
15	Shall support IEEE 802.1p Traffic prioritization for real-time traffic classification. Shall support traffic classification mapped to four queues		
16	Should support IEEE 802.1p/DSCP priority to queue mapping (4 queues)		
17	**Security**		
18	Should support RADIUS		
19	MAC address authentication		
20	Should support 802.1x,Packet storm protection		
21	TFTP,SCP and SSL		
22	Should support DHCP snooping, IGMP snooping, Dynamic ARP protection		
23	**Management & maintenance**		
24	SNMPv1/v2/v3		
25	RMON		
26	Web-based Management		
27	**Environmental Feature**		
28	Shall have an operating temperature of 0°C to 40°C		
29	Operating relative humidity 15% to 95%, noncondensing		
30	**Safety and Emission**		
31	VCCI-CISPR 32, Class A;CNS 13438; ICES-003 Issue 6 Class A; FCC CFR 47 Part 15, Class A;EN 55032: 2015 +AC:2016/CISPR-32,Class A;EN 55024:2010 / EN 55035:2017;EN 61000-3-2, IEC 61000-3-2		
32	The OEM should be in Gartner's Leader quadrant in wired and wireless since last 3 years		
33	OEM Warranty should be 3 years onsite		

Sr. No	**Item No. 4 : 48 Port_Layer 2 Non-POE Switch** Specifications	Compliance Yes / No	If Yes, Cross-reference page no.
	Architecture		
1	Switch should be Enterprise Grade		
1.1	48 RJ-45 autosensing 10/100/1000 Mbps ports		
1.2	Shall have minimum 4* SFP slot in addition to above ports		
1.3	1 RJ-45 (serial RS-232C) or USB micro-B console port		
1.4	128 MB DRAM, 32 MB Flash		
1.5	Packet buffer size of minimum 1.5 MB to support video/streaming traffic and huge file transfers		
1.6	Shall have switching capacity of 104 Gbps for providing non-blocking performance on all Gigabit ports		
1.7	Shall have up to 77 million pps switching throughput to achieve wire-speed forwarding on all Gigabit ports		
2	Resiliency		
2.1	IEEE 802.1D Spanning Tree Protocol, IEEE 802.1w Rapid Spanning Tree Protocol and IEEE 802.1s Multiple Spanning Tree Protocol		
2.2	IEEE 802.3ad Link Aggregation Control Protocol (LACP) up to eight links (ports) per group		
2.3	Shall support Virtual stacking to provides single IP address management for up to 16 switches		
3	Layer 2 Features		
3.1	MAC address table size of 16000 entries		
3.2	Shall support up to IEEE 802.1Q (4,094 VLAN IDs) and 512 VLANs simultaneously		
3.3	Shall support GARP VLAN Registration Protocol or equivalent feature to allow automatic learning and dynamic assignment of VLANs		
3.5	Shall support Jumbo frames to improve the performance of large data transfers		
3.6	Internet Group Management Protocol (IGMP)		
3.7	Multicast Listener Discovery (MLD) snooping		
3.8	IEEE 802.1AB Link Layer Discovery Protocol (LLDP) and LLDP-MED (Media Endpoint Discovery)		
3.9	IPv6 host and Dual stack (IPv4/IPv6) support to provide transition mechanism from IPv4 to IPv6		
4	QoS and Security Features		
4.1	Access Control Lists for traffic filtering,should support minimum 1K access control entries		
4.2	Source-port filtering or equivalent feature to allow only specified ports to communicate with each other		
4.3	Traffic prioritization based on IP address, IP Type of Service (ToS), Layer 3 protocol, TCP/UDP port number, source port, and DiffServ		
4.4	Shall support traffic classification into eight priority levels mapped to two or four queues using Weighted deficit round robin (WDRR) queuing		
4.5	Shall support traffic rate-limiting per port		
4.6	IEEE 802.1x to provide port-based user authentication with multiple 802.1x authentication sessions per port		
4.7	Media access control (MAC) authentication to provide simple authentication based on a user's MAC address		

4.8	Web-based authentication to provide a browser-based environment to authenticate clients that do not support the IEEE 802.1X supplicant		
4.9	Concurrent IEEE 802.1X and Web or MAC authentication schemes per port		
4.10	Port security to allow access only to specified MAC addresses		
4.11	MAC address lockout to prevent particular configured MAC addresses from connecting to the network		
4.12	STP BPDU port protection to prevent forged BPDU attacks		
4.13	STP Root Guard to protect the root bridge from malicious attacks or configuration mistakes		
5	Management Features		
5.1	Configuration through the CLI, console, Telnet, SSH and browser-based management GUI (SSL)		
5.2	SNMPv1, v2, and v3 and Remote monitoring (RMON) support		
5.3	sFlow (RFC 3176) or equivalent for traffic analysis		
5.4	TFTP and Secure FTP support		
5.5	Dual flash images to provide independent primary and secondary operating system files		
5.6	Multiple configuration files to allow multiple configuration files to be stored to a flash image		
5.7	RADIUS/TACACS+ for switch security access administration		
5.8	Simple Network Time Protocol (SNTP) or equivalent support		
5.9	Shall support single IP address management of up to 16 switches		
6	Environmental Features		
6.1	Shall support IEEE 802.3az Energy-efficient Ethernet (EEE) to reduce power consumption		
6.2	Operating temperature of 0°C to 45°C		
6.3	Safety and Emission standards including EN 60950; IEC 60950; VCCI Class A; FCC part 15 Class A		
7	OEM qualification Criteria		
7.1	OEM should be leaders in Gartner magic quadarant report since last three years (wired and wireless)		
7.2	OEM Warranty should be 3 years onsite		

Item No. 5 : **24 Port_Fiber Switch**

Sr. No	Specifications	Compliance Yes / No	If Yes, Cross-reference page no.
1	**Architecture**		
1.1	Shall be 1RU, 19" Rack Mountable		
1.2	Switch shall have 16 nos 1G SFP ports and 8 SFP dual-personality ports—10/100/1000BASE-T RJ-45 or 100/1000BASE-X Combo Ports		
1.3	The switch shall support up to four 10-Gigabit ports SFP+ in addition to the above ports		
1.4	1 RJ-45 serial console port		
1.5	1 GB SDRAM and 512 MB flash		
1.6	Shall have switching capacity of 128 Gbps		
1.7	Shall have up to 95 million pps switching throughput		
2	**Resiliency**		
2.1	Shall have the capability to extend the control plane across multiple active switches making it a virtual switching fabric, enabling interconnected switches to perform as single Layer-2 switch and Layer-3 router and and switch should support single IP managemnet upto 9 Switches		
2.2	The modules/cables to create virtual switching fabric shall be provided, wherever multiple switches are co-located		
2.3	Shall support up to 80 Gbps total stacking bandwidth (full duplex) in a resilient stacking configuration		
2.4	IEEE 802.1D Spanning Tree Protocol, IEEE 802.1w Rapid Spanning Tree Protocol and IEEE 802.1s Multiple Spanning Tree Protocol		
2.5	IEEE 802.3ad Link Aggregation Control Protocol (LACP)		
2.6	Ring protocol support to provide sub-100 ms recovery for ring Ethernet-based topology		
3	**Layer 2 Features**		
3.1	Shall support up to 4,000 IEEE 802.1Q-based VLANs		
3.2	Shall support GARP VLAN Registration Protocol or equivalent feature to allow automatic learning and dynamic assignment of VLANs		
3.3	Shall have the capability to monitor link connectivity and shut down ports at both ends if uni-directional traffic is detected, preventing loops		
3.4	Shall support IEEE 802.1ad QinQ and Selective QinQ to increase the scalability of an Ethernet network by providing a hierarchical structure		
3.5	Shall support Jumbo frames on GbE ports		
3.6	Internet Group Management Protocol (IGMP)		
3.7	Multicast Listener Discovery (MLD) snooping		
3.8	IEEE 802.1AB Link Layer Discovery Protocol (LLDP)		
3.9	Shall support Voice VLAN feature to automatically assigns VLAN and priority to devices like IP phones		
5	**Layer 3 Features (any additional licenses required shall be included)**		
5.1	Static Routing and RIP V1/V2 for IPv4		
5.2	Static Routing and RIP for IPv6		
5.4	Dynamic Host Configuration Protocol (DHCP) client and Relay		

6	QoS and Security Features		
6.1	Access Control Lists for Layer 2 to Layer 4 traffic filtering		
6.2	Shall support global ACL, VLAN ACL, port ACL, and IPv6 ACL		
6.3	Traffic classification using multiple match criteria based on Layer 2, 3, and 4 information		
6.4	Powerful QoS feature supporting strict priority (SP) queuing, weighted round robin (WRR) and and SP+WRR		
6.5	Shall support applying QoS policies on a port, VLAN, or whole switch, to set priority level or rate limit selected traffic		
6.6	IEEE 802.1x to provide port-based user authentication with multiple 802.1x authentication sessions per port		
6.7	Media access control (MAC) authentication to provide simple authentication based on a user's MAC address		
6.9	Port security and port isolation		
6.10	STP BPDU port protection to prevent forged BPDU attacks		
6.11	STP Root Guard to protect the root bridge from malicious attacks or configuration mistakes		
6.12	IP Source guard to prevent IP spoofing attacks		
6.13	Dynamic ARP protection blocking ARP broadcasts from unauthorized hosts		
7	Management Features		
7.1	Configuration through the CLI, console, Telnet, SSH and Web Management		
7.2	SNMPv1, v2, and v3 and Remote monitoring (RMON) support		
7.3	sFlow (RFC 3176) or equivalent for traffic analysis		
7.4	Management security through multiple privilege levels		
7.5	FTP, TFTP, and Secure FTP support		
7.7	RADIUS/TACACS+ for switch security access administration		
7.8	Network Time Protocol (NTP) or equivalent support		
7.9	Shall have Ethernet OAM (IEEE 802.3ah) management capability		
8	Environmental Features		
8.2	Shall have features to improve energy efficiency like variable-speed fans, shutoff unused ports etc		
8.3	Operating temperature of 0°C to 45°C		
8.4	Safety and Emission standards including UL 60950-1; IEC 60950-1; VCCI Class A; EN 55022 Class A		
9	Software Defined Networking (SDN) Capability		
9.1	OpenFlow protocol capability to enable software-defined networking		
10	OEM qualification Criteria		
10.1	OEM should be leaders in Gartner magic quadarant report since last three years (wired and wireless)		
10.2	OEM Warranty should be 3 years onsite		

Item No. 6 &7. – Access Point with inbuilt controller

Sr. No	Specifications	Compliance (Yes/No)	If Yes, Cross-reference page no.
	Technical Specification		
1	Access Point radio should be minimum 2x2 MIMO with 2 spatial streams. The AP should have Dual Radio 802.11ax access point with OFDMA and Multi-User MIMO (MU-MIMO)		
2	Access Point should be 802.11ax ready from day one		
3	AP should have one 10/100/1000BASE-T Ethernet network interface (RJ-45).		
4	AP should support minimum aggregated data rates of 1.2Gbps		
5	Access Point can have integrated internal antenna		
6	Should support 16x BSSID per AP radio.		
7	The access point should be capable of performing security scanning and serving clients on the same radio. It should be also capable of performing spectrum analysis and security scanning using same radio.		
8	Should support BPSK, QPSK, 16-QAM, 64-QAM, 256 QAM and 1024 QAM modulation types		
9	Access point should support 802.3af/at POE standard.		
10	Access point should have option of external power adaptor as well.		
11	Access point should have console port.		
12	Must operate as a sensor for wireless IPS		
13	AP model proposed must be able to be both a client-serving AP and a monitor-only AP for Intrusion Prevention services		
14	Access point must incorporate radio resource management for power, channel, coverage hole detection and performance optimization		
15	AP should have kensington lock slot.		
16	AP should support standalone mode/ Inbuilt Virtual controller mode for specific requirements.		
17	The AP should support Advanced Cellular Coexistence (ACC) to minimizes interference from 3G/4G cellular networks, distributed antenna systems and commercial small cell/femtocell equipment		
18	The AP should support Supports priority handling and policy enforcement for unified communication apps, including Skype for Business with encrypted videoconferencing, voice, chat and desktop sharing		
19	The AP should support deep packet inspection to classify and block, prioritize, or limit bandwidth for thousands of applications in a range of categories		
20	The Access point should support maximum ratio combining (MRC) for improved receiver performance		
21	The Access point should support cyclic delay/shift diversity (CDD/CSD) for improved downlink RF performance		
22	The Access point should support Space-time block coding (STBC) for increased range and improved reception		

23	The Access point should support Low-density parity check (LDPC) for high-efficiency error correction and increased throughput		
24	The Access-point should support Transmit beam-forming (TxBF) for increased signal reliability and range		
25	The Access point should support 802.11ax Target Wait Time (TWT) to support low-power client devices		
26	Should support Zigbee radio from day-1 for secure and reliable IOT environment		
27	Should support 0-50 degree temperature		
28	Certification - UL 2043,Wi-Fi Alliance-Wi-Fi CERTIFIED 6(ax),Wi-Fi CERTIFIED a, b, g, n, ac.Should be WPA, WPA2,WPA3 certified.		
29	The OEM should be in Gartner's Leader quadrant in wired and wireless since last 3 years		
30	OEM Warranty should be 3 years onsite		

Item No. 8-10G SFP+ Transceiver Modules

Sr. No	Specifications	Compliance (Yes/No)	If Yes, Cross-reference page no.
1	SFP Transceiver Module should be from same OEM as quoted Switch.		
2	**10GBASE-LR port (IEEE 802.3ae Type 10GBASE-LR), Full Duplex**		
3	Operating temperature: 0°C to 70°C		
4	Operating relative humidity: 0% to 85%, noncondensing		
5	Non-operating/Storage temperature: 0°C to40 °C		
6	Cabling Type: Single Mode		
7	Wavelength: 1310nm		
8	Maximum distance: 10 KM		

L9

No. 9 – 12 Core Rack Mountable LIU
Make:-(AMP/Tyco/Molex/Siemon/Panduit/Belden/CommScope)

Sr no	Specifications	Requirement	Compliance (Yes/No)	If Yes, Cross-reference page no.
1	Fiber Management Shelf	Configurable Fibre drawer is a 1U rack mount unit for storing and terminating incoming fibre cable. Using our vast range of 6 Pak Plates you can configure your fibre system to suit all fibre applications.		
		Aluminium base material for light mounting, Slim 1 Unit Mounting Height, Front mounted cable saddles for jumper management, Can manage both splices and terminations, Preassembled shelves in multiple configurations Can includes adapter panels for up to 48 LC, 24 SC, 24 ST or 24 FC terminations, Rubber fibre slotted bracket built-in, metal splice shelf to protect fibres,2 Fibre spools built-in for 900µm tight buffered fibre strong, Capable of storing up to 3 metres of 900µm tight buffered fibre per adapter, Snap-in locker design, easy to change adapter panels for various connectors Patching, Removable front and rear cover for better access to interior of LIU, Removable rubber grommet allows for pre-terminated fiber trunk installation, protects cable, and minimizes dust build-up, Accessory kit consists of cable ties, mounting ear screws, and spiral wrap tube		
		Configurable. Fits up to four 6 Pak Plates/ Angled 6 Pak plates		
		Management rings within system to accommodate excess fibre cordage behind the trough adapters and maintain fibre bend radius		
		Sliding drawer for ease of reconfiguring fibres		
		Rugged steel construction finished in attractive		
		Accommodates 1 x 12 fibre Splice Trays		

2	Weight	5KG		
3	Compact şize (mm)	45mm H x 485mm W x 255mm D		
4	Optical Fibre Adapter Plates Lorded	SC Duplex Fibre SM Plate		
5	No of Adapter Plate Req	As per Requirement		
6	Pigtail	12 x SC, Single mode, 9/125 µm		
7	No of Pigtail Req	As per Requirement		

No. 10 – 6 Core Rack Mountable LIU
Make:-(AMP/Tyco/Molex/Siemon/Panduit/Belden/CommScope)

Sr no	Specifications	Requirement	Compliance (Yes/No)	If Yes, Cross-reference page no.
1	Fiber Management Shelf	Configurable Fibre drawer is a 1U rack mount unit for storing and terminating incoming fibre cable. Using our vast range of 6 Pak Plates you can configure your fibre system to suit all fibre applications.		
		Aluminium base material for light mounting, Slim 1 Unit Mounting Height, Front mounted cable saddles for jumper management, Can manage both splices and terminations, Preassembled shelves in multiple configurations Can includes adapter panels for up to 48 LC, 24 SC, 24 ST or 24 FC terminations, Rubber fibre slotted bracket built-in, metal splice shelf to protect fibres,2 Fibre spools built-in for 900µm tight buffered fibre strong, Capable of storing up to 3 metres of 900µm tight buffered fibre per adapter, Snap-in locker design, easy to change adapter panels for various connectors Patching, Removable front and rear cover for better access to interior of LIU, Removable rubber grommet allows for pre-terminated fiber trunk installation, protects cable, and minimizes dust build-up, Accessory kit consists of cable ties, mounting ear screws, and spiral wrap tube		
		Configurable. Fits up to four 6 Pak Plates/ Angled 6 Pak plates		

		Management rings within system to accommodate excess fibre cordage behind the trough adapters and maintain fibre bend radius		
		Sliding drawer for ease of reconfiguring fibres		
		Rugged steel construction finished in attractive		
		Accommodates 1 x 6 fibre Splice Trays		
2	Weight	5KG		
3	Compact size (mm)	45mm H x 485mm W x 255mm D		
4	Optical Fibre Adapter Plates Lorded	SC Duplex Fibre SM Plate		
5	No of Adapter Plate Req	As per Requirement		
6	Pigtail	6 x SC, Single mode, 9/125 μm		
7	No of Pigtail Req	As per Requirement		

Item No. 11. – OFC Patch Cord
Make:-(AMP/Tyco/Molex/Siemon/Panduit/Belden/CommScope)

Sr no	Specifications	Requirement	Compliance (Yes/No)	If Yes, Cross-reference page no.
1	Make and Type	SC to LC Duplex tuned Fiber Optic Patch Cord 3 Mtr, 9/125 Micron		
2	Cable Sheath	LSZH		
3	Cable Diameter	1.8 mm twin zip		
4	Ferrule	Ceramic		
5	Buffer	Tight buffered		
6	Insertion Loss	MAX .3 db		
7	Return Loss	> 45 db		
8	ROHS	ROHS Compliant		

Item No. 12 –CAT 6A UTP Cables (LSZH).
Make:- (AMP/Tyco/Molex/Siemon/Panduit/Belden/CommScope)

Sr no	Feature	Requirement	Compliance (Yes/No)	If Yes, Cross-reference page no.
1	Type	Cat 6A U/FTP Cable is specifically designed to support high speed data network applications such as 10-Gigabit Ethernet (10GBASE-T). The cable is constructed of 4 screened pairs and a drain wire. This cable minimises alien crosstalk, provides excellent signal isolation and provides superior electromagnetic interference (EMI) protection.		
2	Technical Characteristics	Primary Insulation: Polyolefin Screen material: Laminated Aluminium Sheath Type: PVC or LSOH (Flame Test IEC 60332-1) Nominal OD: 7.2 NVP: 75-77% Screen: Each pair enclosed in laminated aluminium foil Drain Wire: tin-coated copper		
3	Electrical Characteristics	Capacitance: 40 pF/m nom. @1 KHz. DC Resistance: 72 /Km max. Propagation Delay: 514 + 36f1/2 nS/100m max @1-500 MHz Propagation Delay Skew: 45 nS/100 max @ 1-500 MHz Mean Impedance: 100 ± 6 @ 1-500 MHz Resistance Unbalance: 2% max. Coupling Attenuation: 45dB min @30-100 MHz 40-20 Log (f/100) @ 100-500 MHz		
4	Applications	Category 6A U/FTP Cable is intended for high speed data applications up to 500MHz including: IEEE 802.3 10GBASE-T 10Gb/s IEEE 802.3 1000GBASE-T 1Gb/s TIA/EIA-854 1000BASE-TX 1Gb/s ATM 155Mb/s 155Mb/s		
5	Commercial Standards:	ANSI/TIA/EIA-568-C.2 ISO/IEC 11801 A1.1 ETL independent testing		
6	ETL Certification	Compliant		
7	ETL Certificate	ETL Verified test report should be submitted along with bid.		

Item No. 13 – 6 Core SM OFC Cables
Make:- (AMP/Tyco/Molex/Siemon/Panduit/Belden/CommScope)

Sr. no	Specifications	Requirement	Compliance (Yes/No)	If Yes, Cross-reference page no.
1	Cable Type	6 fiber Single Mode, Armoured, Unitube, Gel filled cable complying to ISO.IEC 11801 - 2nd Edition, type OS2; AS/ACIF S008; AS/NZS 3080,ITU-T REC G 652D, IEC 60793/60794, TIA 568, EIA 455; suitable for use in direct burial, outdoor ducts and backbone cabling.		
2	Armour	Corrugated Steel Tape Armour -Thickness > 0.125mm		
3	Water Blocking	Thixotropic Gel (Tube), Petroleum Jelly (Interstices)		
4	Attenuation	,@ 1310nm <=0.35 db/Km MAX		
		,@1550nm <=0.22 db/Km MAX		
5	Numerical Aperture	0.14		
6	Attenuation Discontinuity	Both Windows <0.10dB		
7	Core/Mode-Field (um)	9		
8	Clad Diameter (um)	125 + - 1		
9	Coat Diameter	245 + - 10		
10	Loose tube material	Single PBTP Loose tube filled with water blocking Thixotropic gel		
11	Jacket material	UV Stabilised Polyethylene (HDPE)		
12	Peripheral Strength Member	Two Steel wires		
13	Tensile Strength	1000N		
14	Crush Resistance	2000N/10 cm		
15	Cable Diameter	9mm		
16	Max. Bending Radius (during installation)	20 X Overall diameter		
17	Max. Bending Radius (during full load)	10 X Overall diameter		
18	Cable weight Kg/Km	80 kg/km		

Item No. 14 – UTP CAT 6A I/O with Single Faceplate & SMB
Make:-(AMP/Tyco/Molex/Siemon/Panduit/Belden/CommScope)

Sr no	Feature	Requirement	Compliance (Yes/No)	If Yes, Cross-reference page no.
1	Type	Cat 6A Jack offers superior alien crosstalk suppression, excellent insertion loss, and provides enhanced electromagnetic interference (EMI) protection by utilizing robust die cast zinc alloy jack body housing.		
2	Mechanical Characteristics	RJ45 Connector Housing: Zinc Alloy plated Bright Ni/Cu Operating Life: Minimum 750 insertion cycles Contact Material: Copper Alloy Contact Plating: 1.25 micrometres Au/Ni Contact Force: 100g minimum Plug Retention Force: 6.8kg minimum Housing: Thermoplastic, UL94V-0 Operating Life: Minimum 20 determinations Contact Material: Copper Alloy IDC Contact Plating: Matte Tin Contact Force: 100g minimum Wire Accommodation: 22-24 AWG solid		
3	Electrical/Optical Characteristics	Interface Resistance: 20mΩ Initial Contact Resistance: 2.5mΩ Insulation Resistance: >100MΩ		
4	Modular Jack Housing	Zinc Alloy		
5	IDC Connecting blocks	Polycarbonate, 94V-0 rated		
6	Commercial Standards	TIA-568-C.2 Augmented Category 6 ISO 11801 Amd 1 Class EA IEC 60603-7 FCC Subpart F 68.5 Approvals: ETL independent testing UL-1863		
7	ROHS/ELV	Compliant		
8	ETL Certification	Compliant		

- Item No.15 – UTP CAT 6A Jack Panel.
  Make:-(AMP/Tyco/Molex/Siemon/Panduit/Belden/CommScope)

Sr no	Feature	Requirement	Compliance (Yes/No)	If Yes, Cross-reference page no.
1	Type	19" 24-port (1U) Cat 6A Shielded Patch Panels are made from robust sheet metal. These panels are also supplied with robust removable rear cable management trays for cable strain relief and neat cable dressing. Port numbering is provided on the front and rear of the panel and individual ports may be colour coded using connector icon labels for site specific network administration. Or Suitable for 22-26AWG stranded Identification: ID plate, PC, Transparent color with paper, Panel: SPCC, 1.5mm thickness with Black color painted, RJ45 Jack: Housing: PBT+ Glass Fiber, UL 94V-0 Contact Brackets: PBT+ Glass Fiber, UL 94V-0, Black Color RJ45 Jack Contact: Material: Phosphor Bronze with Nickel Plated Finish: 50 micro-inches Gold plated on plug contact area, IDC: Housing: PC, UL 94V-0 Terminal: phosphor Bronze with Tin plated, Jack Bracket Set: ABS Support Bar: SPCC, 1.5 mm thickness with Black color painted Complied with the ANSI/TIA/EIA-568-C.2 & ISO 11801 standard & ROHs UL Listed Contact Resistance: 20 Milliohms max. Insulation Resistance: 100 Megaohms min. @ 500 VDC RJ45 Jack Life: 750 Times min IDC Life: 200 Times min Storage Temperature: -40 To +70 dec c Operation temperature: -10 To +60 deg c		
3	Electrical/Optical Characteristics	Interface Resistance: 20mΩ Initial Contact Resistance: 2.5mΩ Insulation Resistance: >100 MΩ		
4	Category	Should accept 10G Approved Shielded Jacks CAT6A jacks		
5	Front Connector interface	RJ45		
6	Circuit Identification Scheme	Icons on each of 24-ports		

7	Port Identification	9mm or 12mm Labels on each of 24-ports (to be included in supply)		
8	Height 1 U	1.75 inches		
9	Interface	Polyester Moulding Compound, Black		
10	ROHS/ELV	Compliant		

Item No. 16 – UTP CAT 6A Patch Cord 1M Length
Make:-(AMP/Tyco/Molex/Siemon/Panduit/Belden/CommScope)

Sr no	Feature	Requirement	Compliance (Yes/No)	If Yes, Cross-reference page no.
1	Type	Cat 6A Patch Cords, specifically designed to support high speed data networks for 10-Gigabit Ethernet (10GBASE-T) applications.		
2	Conductor	26 AWG stranded bare copper		
3	Length	1 Meter		
4	Screen material	Aluminium/polyester shield with tinned copper drain wire		
5	Warranty	25-year component warranty		
6	Construction	Pairs in Metal Foil , 4 pair stranded S/FTP cable & Outer Sheath should be LSZH		
7	Plug Housing	Clear polycarbonate/Equivalent		
8	Commercial Standards	TIA/EIA-568-C.2 , ISO/IEC 11801 A1.1, FCC Subpart F 68.5, IEC-603-7, UL Listed, UL-1863, CSA C2.2		
9	Electrical Characteristics	Electrical Characteristics Max Voltage: 150 VAC (max) Max Current: 1.5A @ 25°C		
10	Mechanical Characteristics	Operating Life: Minimum 750 insertion cycles Contact Material: Copper Alloy Contact Plating: 1.25 micrometres Au/Ni		
11	ROHS/ELV	Compliant		
12	ETL Certification	Compliant		

·Item No. 17 – UTP CAT 6A Patch Cord 3M Length
Make:-(AMP/Tyco/Molex/Siemon/Panduit/Belden/CommScope)

Sr no	Feature	Requirement	Compliance (Yes/No)	If Yes, Cross-reference page no.
1	Type	Cat 6A Patch Cords, specifically designed to support high speed data networks for 10-Gigabit Ethernet (10GBASE-T) applications.		
2	Conductor	26 AWG stranded bare copper		
3	Length	3 Meter		
4	Screen material	Aluminium/polyester shield with tinned copper drain wire		
5	Warranty	25-year component warranty		
6	Construction	Pairs in Metal Foil , 4 pair stranded S/FTP cable & Outer Sheath should be LSZH		
7	Plug Housing	Clear polycarbonate/Equivalent		
8	Commercial Standards	TIA/EIA-568-C.2 , ISO/IEC 11801 A1.1, FCC Subpart F 68.5, IEC-603-7, UL Listed, UL-1863, CSA C2.2		
9	Electrical Characteristics	Electrical Characteristics Max Voltage: 150 VAC (max) Max Current: 1.5A @ 25°C		
10	Mechanical Characteristics	Operating Life: Minimum 750 insertion cycles Contact Material: Copper Alloy Contact Plating: 1.25 micrometres Au/Ni		
11	ROHS/ELV	Compliant		
12	ETL Certification	Compliant		

Item No. 18 – 42U Floor Mount Rack
Make:- (Valrack/Rittal/APW)

S.No.	Descriptions	Compliance (Yes/No)
1	Enclosure should be 800x 1000 floor mount	
2	Should haveFront Perforated Door and Rear Split Perforated Door with Castors	
3	Should have loaded with PDUS-1Ph 230V,32A,Vertical PDU with 12 X 5/15A, 7.36KVA Rating& 3-Meter Power Cord with Indian Plug	
4	Should have loaded with Shelf 725/600w	
5	Should have loaded with Hardware pkt of 20 No& 4 nos of FAN 230VAC 90 CFM	
6	Should have loaded with CABLE MANAGER 1U/19"	

Item No. 19 – 12U Wall Mount Rack
Make:- (Valrack/Rittal/APW)

S.No.	Descriptions	Compliance (Yes/No)
1	Enclosure should be 19", 6U/500MMD with front glass doorlock - CKD Flat Pack Format	
2	Should have loaded with FANS 90 CFM 230 VAC	
3	Should have loaded with PDU HORIZONTAL 5AMP WITH 6 SOCKET	
4	Should have loaded with HARDWARE FRONT PANEL MTG	
5	Should have loaded with SHELF CANTILEVER 1U/255	
6	Should have loaded with CABLE MANAGER 1U/19"	

Item No. 20 – 40MM HDPE
Make- Standard ISI marked

S.No.	Descriptions	Compliance (Yes/No)
1	40MM HDPE Pipe Standard ISI make	

Item No. 21 – PVC Conducts
Make- Standard ISI marked

S.No.	Descriptions	Compliance (Yes/No)
1	25mm PVC Pipe ISI Marked Medium	

Item No. 22 – Online UPS, 10KVA

Parameters	10 KVA On-Line UPS (1PH-1PH)	Compliance (Y/N)	If Yes, Cross-reference page no.
Eligible Brand	APC/Vertiv / Eaton		
Topology	True Online Double Conversion UPS with IGBT Converter		
Output power factor	Unity (OEM to choose next available higher rating if PF is 0.9 or less)		
Form factor	Rack/Tower Convertible -2U		
INPUT			
Phase	Single Phase		
Voltage	230V AC		
Voltage Range	160V - 275V AC		
	110V - 275V AC @ 50% Load		
Power Factor	0.99		
Current THD	<= 3%		
DC Volt	192 VDC		
Battery Backup	120 Min		
Battery VAH	19200 VAH (12V, 100AH x 16 Nos. battery)with battery stand		
OUTPUT			
Nominal Output voltage	208V/220VAC / 230VAC / 240VAC /		
Frequency	50Hz ± 0.1Hz		
Frequency synchronization	40-70HZ		
Voltage THD	< 1% THD@ linear load		
	<5% @non-linear load		

Efficiency			
AC/AC (Overall efficiency)	up to 95%		
ECO mode	>= 98%		
Overload capacity			
100% < Load≤105%:	Constant		
105% < Load≤125%:	10 minutes		
125% < Load≤150%:	30 Sec		
>150%	:500ms		
Communication			
RS 232	Required RS 232		
Operating Temperature	0 ~ 40°C Continuous		
Electrical			
Input Terminal	Terminal		
Output Terminal	Terminal		
Features			
Bypass parameters Configurable	Should be available		
SNMP	Should be offered with UPS		
Display	LCD Display		
Mechanical			
Ingress Protection	IP 20		
Standards			
Safety	CE		
Surge	IEC 61000-4-5 Level 4		
Performance	IEC 61000-4-2 Level 3 IEC 61000-4-3 Level 3 IEC 61000-4-4 Level 4		
Certification	UPS Should have Certified with ISO 9001 & 14001		
Warranty	2 years on UPS and 2 years on batteries		

Item No. 23 – Online UPS, 3KVA

Parameters	3KVA On-Line UPS (1PH-1PH)	Compliance (Yes/No)	If Yes, Cross-reference page no.
Eligible Brand	**APC/Vertiv/Eaton**		
Topology	True Online Double Conversion UPS with IGBT based converters		
Output Power factor	0.8		
Conformal Coating	Yes		
INPUT			
Phase	Single Phase		
Voltage	230V AC		
Voltage Range	160V - 300V AC		
	110V - 300V AC @ 50% Load		

Power Factor	0.99
Current THD	<9%
DC Volt	96 VDC
Battery Backup	60 Min
Battery VAH	6240 (12V,65AH x 8 Nos. battery)with battery stand
OUTPUT	
Nominal Output voltage	200VAC/208VAC/220VAC/230VAC/240VAC
Frequency	50Hz ± 0.5Hz
Frequency synchronization	47.5 to 52.5 Hz
Voltage THD	< 3% THD, linear load@Line mode < 3% THD, linear load @battery mode, battery voltage 12V / per battery
	< 7% THD, non-linear load@line mode < 7% THD, non-linear load @ battery mode, battery voltage 12V / per battery
Efficiency	
AC/AC (Overall efficiency)	>91%
ECO mode	>97.5
Overload capacity	
100%~105%	Constant
105%~130%	60 sec
130%~150%	10 sec
>150%	300 msec
Operating Temperature	0 ~ 40°C Continuous
Electrical	
Input Terminal	Input Breaker +Terminal
Output Terminal	3 x IEC 10A outlets, 1 terminal block
Features	
Convert Mode(CVCF)	UPS Should have Convert Mode with max derating of 60%
Bypass parameters Configurable	Should be available
SNMP	Ups should be having SNMP card and RS232 port
Display	LCD Display
Mechanical	
Ingress Protection	IP 20
Standards	
Safety	BIS
Surge	IEC 61000-4-5 Level 4
Performance	IEC 61000-4-2 Level 3/IEC 61000-4-3 Level 3/IEC 61000-4-4 Level 4
Certification	UPS Should have Certified with ISO 9001 & 14001
Warranty	2 years on UPS and 2 years on batteries
Item No. 19. – Online UPS, 10KVA	
Make:- (Eaton/APC/Vertiv)	

Item No.-24   Computer System for Server monitoring

Sl. No.	Minimum required Specifications	Compliance (Yes/No)
1.	**Physical Dimensions**	
	Product Dimension : 53.3 x 40.6 x 22.9 cm; 2 Kilograms	
	Standing Screen Display Size : 21.5 Inches	
	Item Height : 22.9 Centimeters	
	Item Width : 40.6 Centimeters	
	Screen Resolution : 1920 x 1080	
2.	**Processor Details**	
	Processor Brand : Intel	
	Processor Type : 10th Generation Core i5	
	Processor Speed : 2.7 GHz	
3.	**Memory Details**	
	Memory Technology : DDR4	
	Computer Memory Type : GDDR4	
	RAM Size : 8 GB	
	Maximum Memory Supported : 64 GB	
	Hard Drive Size : 1TB	
	Hard Disk Description : 1TB 5400RPM	
	Hard Drive Interface : ESATA	
	Hard Disk Rotational Speed : 5400RPM	
4.	**Graphics Card Description**	
	Integrated	
	Graphics RAM Type : DDR4 SDRAM	
	Graphics Card Interface: Integrated	
	Graphics Coprocessor : Intel® HD graphics 620 with shared graphics memory	
5.	Operating System : Preloaded Windows 10 Home with lifetime warranty Preinstalled Software: MS Office Home & Student 2019	
	Hardware Platform : Windows	
6.	Connectivity Platform	
	802.11ac + Bluetooth 4.1 Dual Band 2.4&5Ghz, 1x1	
7.	**Additional Accessories**	
	Keyboard and Mouse	
	Speaker : Waves Maxx Audio	
	webcam	

Item No. 25 – Power Cable

Sl.No.	Descriptions	Compliance (Yes/No)
1	2.5mm x 3 Core Power Cables armoured, ISI Mark	

Item No. 26 – Installation & Commissioning

Sl.No.	Descriptions	Compliance (Yes/No)
1	Installation & Commissioning of above items including I. Laying of UTP Cables Indoor/outdoor through PVC Pipes. II. Laying of OFC cables Indoor/Outdoor Underground through HDPE/PVC Pipes. III. Wall cutting may would require in the interim IV. Trenching of soils (Hard soil and soft soil) to be done. Notion marking of laid cable to be specified on route by cable markers. V. Installation of Floor Mount & Wall Mount Enclosures. VI. Installation &Termination of Jack Panels& I/O Points. VII. Installation &Terminations of LIU including Splicing and link testing. VIII. Installations & Configuration of all the active devices as per sites requirement& recommendations. IX. Final Integration, Testing and Commissioning with proper Documentation. X. Project Handover	

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S.No	Items Description	Qnty.		
1.	Firewall ,for 500 Users with 3 years subscription	1		
2.	16 Port SFP+ L3 Managed Switch & 8 x 10G BaseT UTP Ports, Stacking Module, Dual Hot-Plug power supplies .	2		
3.	24 Port 10/100/1000Mbps L2 Managed POE+ Switch with 4 x 10G SFP/SFP+ slots . smart managed switch	18		
4.	48 Port 10/100/1000Mbps L2 Managed POE+ Switch with 4 x 10G SFP/SFP+ slots	1		
5.	16 Port Layer 2 managed Fiber optic switch	1		
6.	3 x 3 Dual Band Wireless-AC Managed Access Point	90		
7.	Access Point management software with license	1		
8.	10G SM LC-Type SFP+ Transceiver Modules Fiber	25		
9.	12 Port LIU Loaded with SC Pigtails,Coupler & Panels	4		
10.	6 Port LIU Loaded with SC Pigtails,Coupler & Panels	10		
11.	3M SC-LC OFC Patch cord ,SM Fiber	30		
12.	UTP CAT-6A cable (305m box)	50		
13.	6C SM Optical Fiber Cable with laying	2500 Mtr.		

14.	UTP modular Cat 6A I/O with single faceplate & SMB	200		
15.	CAT-6A 24 port Jack Panel Fully loaded	20		
16.	CAT-6A Patch cord 1mtr.	200		
17.	CAT-6A Patch cord 3mtr.	200		
18.	42U Floor mount rack,withPDU,FAN,Cable manager &H/W	2		
19.	12U Wall mount rack,withPDU,FAN,Cable manager &H/W	16		
20.	HDPE 40/33 mm duct (in m)	2500m		
21.	PVC pipe/ beat/duct (pcs) with required accessories	5000 pc		
22.	Online UPS System of 10KVA ,with 100AH battery & Installation	1		
23.	Online UPS System 3 KVA ,with 65 AH battery & Installation	2		
24.	Computer system for Server monitoring & Maintenance	5		
25.	Power supply 3 core 2.5.mm armoured (per m) for provision of switches and sockets as per requirement.	1000m		
26.	Installation charges including splicing, crimping, power switch installation etc.	LS		
	Total			

Authorised Signatory with Seal