Uttarakhand Technical University, Uttarakhand,Sudhowala PO Chandanwari

INVITATION LETTER

Package Code: TEQIP-III/UK/utuu/12   **Current Date: 27-Jul-2019**

Package Name: Campus Networking & Firewall   **Method: Shopping Goods**

Sub: INVITATION LETTER FOR Campus Networking & Firewall

Dear Sir,

1.   You are invited to submit your most competitive quotation for the following goods with item wise detailed specifications given at Annexure I,

Sr. No	Item Name	Quantity	Place of Delivery	Installation Requirement (if any)
1	Networking (Switch, patch panel, wiring for LAN etc)	1	UTU Dehradun	

2.   Government of India has received a credit from the International Development Association (IDA) towards the cost of the **Technical Education Quality Improvement Programme [TEQIP]-Phase III** Project and intends to apply part of the proceeds of this credit to eligible payments under the contract for which this invitation for quotations is issued.

3.   **Quotation**

3.1   The contract shall be for the full quantity as described above.

3.2   Corrections, if any, shall be made by crossing out, initialling, dating and re writing.

3.3   All duties and other levies payable by the supplier under the contract shall be included in the unit Price.

3.4   Applicable taxes shall be quoted separately for all items.

3.5   The prices quoted by the bidder shall be fixed for the duration of the contract and shall not be subject to adjustment on any account.

3.6   The Prices should be quoted in Indian Rupees only.

4.   Each bidder shall submit only one quotation.

5.   Quotation shall remain valid for a period not less than **30**days after the last date of quotation submission.

6. Evaluation of Quotations: The Purchaser will evaluate and compare the quotations determined to be Substantially responsive i.e. which

   6.1 are properly signed; and

   6.2 Confirm to the terms and conditions, and specifications.

7. The Quotations would be evaluated for all items together.

8. Award of contract The Purchaser will award the contract to the bidder whose quotation has been determined to be substantially responsive and who has offered the lowest evaluated quotation price.

   8.1 Notwithstanding the above, the Purchaser reserves the right to accept or reject any quotations and to cancel the bidding process and reject all quotations at any time prior to the award of Contract.

   8.2 The bidder whose bid is accepted will be notified of the award of contract by the Purchaser prior to expiration of the quotation validity period. The terms of the accepted offer shall be Incorporated in the purchase order.

9. Payment shall be made in Indian Rupees as follows:

Payment Description	Expected Delivery Period (in Days)	Payment Percentage
Satisfactory Acceptance	30	100

10. Liquidated Damages will be applied as per the below:
Liquidated Damages Per Day Min %:N/A
Liquidated Damages Max %:N/A

11. All supplied items are under warranty of **36** months from the date of successful acceptance of items and AMC/Others is **.**

12. You are requested to provide your offer latest by **05:30** hours on **16-Aug-2019.**

13. Detailed specifications of the items are at Annexure I.

14. Training Clause (if any)

15. Testing/Installation Clause (if any) **required**

16. Performance Security shall be applicable**: %**

17. Information brochures/ Product catalogue, if any must be accompanied with the quotation clearly indicating the model quoted for.

18. Sealed quotation to be submitted/ delivered at the address mentioned below, **TEQIP Cell, Uttarakhand Technical University, Uttarakhand, Sudhowala PO Chandanwari, Dehradun.** Superscripting the **"Quotation for Networking under of TEQIP-III"** on top of the sealed Envelope**.**

19. We look forward to receiving your quotation and thank you for your interest in this project.

20. You are advised to regularly check the website (www.uktech.ac.in) for any notification/modification of the tender.

(Authorized Signatory)
Name & Designation

Annexure I

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S.No.	Items	Qty	Remark
	Computer Lab Networking- BOM		
1	Network Firewall/ UTM with 3 years of Full Protection Subscription	1	For 300 Plus Users
2	24Port 10/100/1000 + 2 SFP Managed Switch	5	
3	8 Port Unmanaged switch	1	
4	SM Fiber Module	10	Compatible with UTM and switches
5	Fiber Patch Cord 2 Mtr (SC-LC) SM	2	
6	Fiber Patch Cord 2 Mtr (LC-LC) SM	4	for Uplink
7	6 Core Fiber Cable outdoor armored	300	On Actual
8	12 Port LIU (6 Port loaded with SC Adaptor and pig tail)	2	
9	**42U Server Rack 800Wx1000D front glass door** with (Full Length Shelf - 1 No, Castors wheel - 4 Nos, Power Distribution Box (10 Port) - 1 No,Cable manager -6 Nos and Fan Tray with 4 Nos Fan - 1 No)	1	
10	Cat6 Patch Panel 24 Port	5	
11	Cat6 I/Os with 1 port face plate	100	with Out Gang box
12	Cat6 Patch cord 1 Mtr.	100	
13	Cat6 Patch cord 2 Mtr.	100	
14	Cat6 Cable Box (305 Mtr.)	10	On Actual
15	PVC Batton 3/4''	1	On Actual
16	PVC Batton 1 ''	1	On Actual
17	PVC Batton 1 1/4''	1	On Actual
18	PVC Batton 2''	1	On Actual
19	PVC Batton 4''	1	On Actual
20	PVC Pipe 3/4''	1	On Actual
21	PVC Pipe 1''	1	On Actual
22	PVC Pipe 1 1/4''	1	
23	Flexible Pipe 3/4''	1	On Actual
24	Flexible Pipe 2''	1	On Actual
25	HDEP Pipe	1	On Actual
26	CMS 12x4''	80 feet	On Actual
	Installation & Commissioning Charges		
S.No.	Work details	Qty	Remark
1	Fiber Cable Pulling	300	
2	Fiber Splicing	12	
3	Patch Panel termination	5	
4	I/Os termination	100	
5	Cat6 cable Pulling	3050	On Actual
6	PVC Batton Fixing	1	On Actual

7	PVC Pipe Fixing	1	On Actual
8	Floor Chesling	1 Mtr .	If required
9	HDEp Pipe Fixing	1	On Actual
10	Rack Fixing	1	
11	CMS Fixing	80 feet	On Actual

Electric BOQ		
S.No.	Item	Qty
1	Wire 2.5 SQ MM Red	3 Nos (90 Mtr. Per Bundle)
2	Wire 2.5 SQ MM Black	3 Nos (90 Mtr. Per Bundle)
3	Wire 1.5 SQ MM Green	3 Nos (90 Mtr. Per Bundle)
4	Sheet 6 Module	100 sheet
5	Switch 5 Amp.	200 Nos.
6	Socket 5 Amp.	200 Nos.
7	MCB 6 AMP Single Pole	36 Nos.
8	MCB 4 Pole 40 Amp	1 Pole
9	UTPN MCB Box	1 Nos
10	Batton 4 "	15 Mtr
Installation & Commissioning Charges		
1	Electricals Wiring , UPS Power Point Wiring, Switch Socket fixing & Sheet fixing etc	237 nos.

TECHNICAL SPECIFICAITONS AND STANDARDS FOR UNIFIED THREAT MANAGEMENT
Basic Criteria
·   OEM should have support Centre in India and should be available 24*7*365 via email, phone and remote assistance.
·   Appliance should have ICSA certification for Firewall, and other well-known certifications like: CB, CE, FCC Class A and Latest Report NSS Lab for Firewall.
·   Proposed solution be part of Gartner's Leader Quadrant of UTM for consecutive 3 years and above.
·   The proposed solution should support High Availability Active-Active/Active-Passive mode
Appliance Throughput
·   Firewall throughput of 50 Gbps and Firewall IMIX throughput 17 Gbps to handle intensive network traffic load during peak time.

· Minimum 7 Gbps of Antivirus Throughput
· Minimum 20 Million Concurrent sessions
· Minimum 10 Gbps of IPS throughput
· Minimum 200,000 New Sessions/second
· Minimum 5.5 Gbps of VPN throughput
· Scanning through signature based engines like "IPS + App Ctrl" equal to or higher than 9 Gbps
· Solution Must be based on Multicore Parallel Processing Architecture and have a 64-bit hardware platform
· Should have internal 2*hot-swap Storage of 240 GB SSD or above
· Minimum 2*USB ports, 1*Micro USB, 1*Management Port and 1*HDMI port
· Next-Gen Firewall appliance should have minimum preinstalled 8*1 Gig copper ports, 2*10 GbE SFP+ flexible to use any port as LAN, WAN, & DMZ
· Multi-function LCD display
General Features
· Should be appliance based and rack mountable
· Identity based Firewall (Layer 8 Technology)
· Next Gen Intrusion Prevention System
· Firewall should have dual gateway antivirus engine one must be from Gartner leader quadrant AV vendor
· Gateway Anti-spam with DLP functionality
· Web Content & Application Filtering
· Web Application Firewall
· Sandstorm Protection
· Bandwidth Management
· High Availability (Active-Active & Active-Passive)
· User Threat Quotient for identifying risky users based on recent browsing behavior and ATP triggers

·   Network: OSPF, RIPv2, BGP, High Availability, QoS, etc., Server Load Balancing.
·   Support for Guest user authentication and in built two factor authentications without any additional cost.
·   The proposed solution should support integration for Authentication via: Active Directory, eDirectory, RADIUS, LDAP and TACACS+
·   Country Based Blocking, FQDN support and should support MIX mode deployment
·   Should have an integrated wireless controller and should be able to manage multiple wireless access points centrally from web admin console.
Gateway Antivirus, Anti-Spyware and Anti-Spam
Virus, Worm, Trojan Detection and Removal, Automatic Virus signature database update, Real-Time blacklist, MIME header check, and Redirect spam mails to dedicated email address, image-spam filter, Spam Notification, Zero hour Virus outbreak protection. Should have dual AV engine, DLP engine with automatic scanning of emails and attachments for sensitive data. Password based mail encryption. Support for full Message Transfer Agent capabilities with DLP methods, support for both anti-spam and anti-malware scanning and identity-based encryption. Integrated Advanced Sandbox Protection for zero-day attack
Web and Application Filtering
·   URL, Keyword, File type block, Block Java applets, cookies, ActiveX, Block malware, phishing, pharming URL, block P2P application, anonymous proxies, Customized block on group basis. Minimum of 89 categories with more than 35 million URLS supported. 2000+ application support categorized into Characteristics, Technology, Category and Risk Level.
·   The proposed solution must work as a HTTP proxy server with integrated Firewall, Anti-Virus, Anti-Spam, Content filtering, IPS.
·   Application Risk Meter provides and overall risk factor based on the risk level of applications on the network
Wireless Security and Control
Should act as a wireless controller with same OEM Access Points, Simple plug-and-play deployment of wireless indoor and outdoor access points (APs) - automatically appear on the firewall control center, Central monitor and manage all APs and wireless clients through the built-in wireless controller, Support for IEEE 802.1X (RADIUS authentication), Wireless repeating and bridging meshed network mode with supported Aps, Support for 802.11r (fast transition).
Security Features
Intrusion Prevention System (IPS):
For different attacks like Mail Attack, FTP Attack, HTTP Attack, DNS Attack, ICPM Attack, TCP/IP Attack, DOS and DDOS Attack, TelNet Attack. Signatures: Default (5000+), Custom, IPS Policies: Multiple, Custom, User-based policy creation, Automatic real-time updates from CR Protect networks, Protocol Anomaly Detection
·   **Web Application Firewall (WAF):**
Should have an option of WAF with Positive Protection Module, Protection against SQL Injections, Cross Site Scripting (XSS), Session Hijacking, URL tampering, Cookie Poisoning, Reverse Proxy,

Dual AV Engine, Extensive Logging and reporting.

· **Advance Threat Protection:**
Advanced Threat Protection (Detect and block network traffic attempting to contact command and control servers using multi-layered DNS, AFC, and firewall).

· **Sandboxing:**
Should Inspects executables and documents containing executable content like

· Windows executables (including .exe, .com, and .dll)

· Word documents (including .doc, .docx, docm and .rtf)

· PDF documents

· Archives containing any of the file types listed above (ZIP, BZIP, GZIP, RAR, TAR, LHA/LZH, 7Z, Microsoft Cabinet)

· **VPN:**
IPsec, L2TP, PPTP and SSL as a part of Basic Appliance, VPN redundancy, Hub and Spoke support, 3DES, DES, AES, MD5,SHA1 Hash algorithms, IPsec NAT Transversal. Support for remote Ethernet devices. HTML5 self-service portal with support for RDP, HTTP, HTTPS, SSH, Telnet and VNC.

· **Load Balance:**
For Automated Failover/Failback, Multi-WAN failover, WRR based Load Balancing. High availability: Active-Active. QoS, OSPF, RIPv2, BGP, Policy routing based on Application and User support Round Robin Load Balancing.

· **Bandwidth Management:**
Application and user identity based bandwidth management, Multi WAN bandwidth reporting, Guaranteed and Burstable bandwidth policy. Bandwidth for User, Group, Firewall Rule, URL and Applications.

· **Monitoring and Reporting System:**
Includes Web Based reporting,, Monitoring & Logging, Monitoring suspicious activity and alerts, Graphical real-time and historical monitoring, email notification of reports, viruses and attacks reports. IPS, Web filter, Antivirus, Anti-spam system reports. IP and User basis report, various Compliance reports and 1000+ drilled down reports on the appliance. Advanced trouble-shooting tools in GUI (e.g., Packet Capture), Self-service user portal, and Central management support. Current Activity Monitoring: system health, live users, IPsec connections, remote users, live connections, wireless clients, quarantine, and DoS attacks.

· **License for UTM (Unified Threat Management)**
Three Years license for Firewall, IPsec and SSL VPN, Wireless, IPS, ATP, Anti-malware, Web and App visibility, control, and protection, Anti-spam, DLP, Web Application Firewall and reverse proxy, Sandstorm, 24x7 support Via telephone, Remote and email, security and software updates, adv. exchange warranty for the

period of licenses. OEM should provide online support case management and reporting portal.

License period will be counted after activation.

· **Manufacturing Authorization Certificate**

Manufacturing authorization certificate valid for this specific enquiry should be enclosed.

24 Ports UTP Cat-6 Patch Panel	
S/N	**Specification/Qualitative Requirement**
1	The Cat-6 transmission performance is in compliance with the ANSI/TIA/EIA 568C.2 standard.
2	Allow for a minimum of 200 re-terminations without signal degradation below standards compliance limit.
3	Have port identification numbers on the front of the panel.
4	Should have self-adhesive, clear label holders and white labels with the panel Panel should be of 1U height with 24 port pre-loaded IO.
5	IDC: Suitable for 22-26 AWG stranded and solid wire compatible with both 110 & Krone punch down tools
6	Each port / jack on the panel should be individually removable on field from the panel.
7	IDC cap : ABS, UL 94V -2 and Phosphor bronze with tin plated and Made of powder coated steel
8	Plastic Housing: Polycarbonate, UL94V-0 rated or equivalent
9	Jack Bracket set ABS , UL94V-0 rated
10	Operating Life: Minimum 750 insertion cycles
11	Contact Material: Copper Alloy
12	Contact Plating: 50μ" Gold plated on plug contact area
13	Contact Force: 20N max (IEC 60603-7-4)
14	Plug Retention Force: 15 lb.
UTP Cat-6 Patch Cord (1 Meter & 2 Meter)	
S/N	**Specification/Qualitative Requirement**
1	Equipped with modular 8-position modular plugs on both ends, wired straight through with standards compliant wiring.
2	The Patch cords shall, at a minimum comply with proposed ANSI/TIA/EIA-568-C.2 Commercial Building Cabling Standards Transmission Performance Specifications for 4 pair 100W Category 6 Cabling.
3	Should have 50 micro inches of gold plating over nickel contacts.
4	Should be covered by ETL verification program for compliance with TIA 568.C.2
5	Conductor size: 24 AWG stranded bare copper
6	Cable flame property should follow VW-1 and FT-1 Standard
7	Jacket: PVC UL-94V-O
8	Temperature range: -10oC to +80oC

9	Operating life: Minimum 750 insertion cycles
10	Contact blade: Phosphor bronze
11	Contact plating: 50μ" Gold
12	Plug dimensions & tolerances compliant with FCC Part 68.500 and IEC 60603-7
13	Approvals: UL 444 for copper conductor
14	Dielectric withstanding voltage :500 V AC
15	Insulation resistance : 35 M Ohm (Max)

Cat-6 I/O with Face Plate and Surface Mount box

S/N	Specification/Qualitative Requirement
1	Information Outlet should support Category 6, ANSI/EIA/TIA568 C.2 and 568A/B configuration
2	All information outlets for 100 Ω 22-26 AWG copper shall Use insulation displacement connectors (IDC)
3	Allow for a minimum of 200 re-termination without signal degradation below standards compliance limits
4	Be Constructed of high impact, flame-retardant thermoplastic with color and icon options for better visual identification
5	IDC contact Plating Phosphor bronze with tin plated and housing PC + glass fiber (UL 94 V-2)
6	Insertion Force:20N max (IE 60603-7-4)
7	Contact Plating: 50 pinches gold on plug contact area
8	Information Outlet (RJ45jack) should be covered under ETI, Verification program for vcompliance TIA568.C.2
9	Operation Temp: - 10C to 60C
10	Plastic Housing: Polycarbonate, UL94V-0 rated or equivalent
11	Operating Life: Minimum 750 insertion cycles
12	Contact Material: Copper alloy

Face Plate

13	Single & DUAL square plate (86*86mm) , Quad in Rectangular shape (146*86mm) (ABS, UL94-HB)
14	Write on labels in transparent plastic window – supplied with plate PC (UL94V-2)
15	Screw hole covers – to be supplied with plate M3.5 x L25mm
16	It should have clear label for application identification and inbuilt shutters for protection against dust (ABS, UL94-HB)
17	Should be able to support variety of jacks – UTP5e, UTP6, UTP6A and STP
18	Compatible Gang Box for Face Plate having enough space to conceal up to 1 feet Cat 6 Cable

1 G Fiber Module Single Mode

S/N	1 G Fiber Module Single Mode
1	Orignal OEM Fiber Modules, same as proposed switch make (OEM Compatible not acceptable)
2	Single mode with SC/LC
3	Should Support 1G till 10 Kms

12 Port & 24 Port fully loaded LIU (with SC Pigtail Single Mode)	
S/N	Specification/Qualitative Requirement
1	Have sufficient slots accommodate Simplex SC adapters individually loaded.
2	Aluminum base material for light mounting
3	Should have Splice Tray & Cable Spool provision inside
4	Accessory kit consists of cable ties, mounting ear screw earthling and spiral wrap tube.
5	Panel cover should be slide out for easy maintenance
6	Can Include 12SC Terminations
1 G Fiber Module Single Mode	
S/N	Specification/Qualitative Requirement
1	Orignal OEM Fiber Modules, same as proposed switch make (OEM Compatible not acceptable)
2	Single mode with SC/LC
3	Should Support 1G till 10 Kms
UTP Cat-6 4 Pair Copper Cable (OEM)	
S/N	Specification/Qualitative Requirement
1	This cable well exceeds the requirements of TIA/EIA-568-C.2 and ISO/IEC 11801
2	Construction: 4 twisted pairs separated by internal X shaped, 4 channel, polymer spine / full separator. Half shall not be accepted.
3	The 4 pair Unshielded Twisted Pair cable shall be ULÒ Listed.Cable should also be tested and verified by ERTL.
4	Conductor Solid bare Copper and Jacket FR PVC and UL approved CM rated cable and Outer jacket sheath of the cable shall be LSZH.
5	Insulation :High Density Polyethylene
6	Dielectric Strength of cable should be 1.0KV dc
7	Attenuation (< 17 db), Pair – to – pair and PS NEXT, ELFEXT and PSELFEXT, Return Loss, ACR and PS ACR.
8	Bending Radius should be < 25.4mm at –20°C ± 1°C and Pulling Force: 11.5 Kg
9	Nominal Outer Diameter of Cable should be 6.1 mm and Conductor Diameter 0.56 mm (23 AWG)
10	Cable should support operating Temperature from -20° to +70°C
11	Cable should come with printed sequential Length Counter on each meter
12	Cable support Conductor Resistance < 9.38 Ω /100m
13	Mutual Capacitance of cable should be < 5.6nF/100m
14	Max Resistance Unbalance of cable should be 5% Max
15	Capacitance Unbalance of cable should max 330pF/100m
16	Cable support Delay Skew: < 45nS, Operating Voltage: 72V and NVP: 69%
17	Category 6 UTP cables shall Supports Gigabit Ethernet (1000 base-T) standard and Operates at bandwidth of 600MHz.
SC-LC Fiber Patch Cord Single Mode (5 Meters)	

S/N	Specification/Qualitative Requirement
1	All optical fiber patch leads shall comprise of Single mode 9/125µm fiber with SC/LC, fiber connectors terminated at each end. The optical fiber patch leads shall comply with the following specifications:
2	Optical Fiber – Corning Single Mode
3	Connector: Zirconia ceramic ferrule
4	Pre-radiuses and pre-polished ferrule
5	Simplex / Duplex
6	Color-coded Yellow for SM
7	Insertion Loss - <0.2 db
8	Cable: 9/125, SM
9	Repeatability - < 0.2 db
10	Durability – 1000 mating cycle
11	Working Temp : -40 deg C.to + 85 deg. C
12	Standard : G652D, G 657A & G 657B
13	Length : 5 mtr

6 Core Single Mode Indoor Un-Armoured Optical Fiber Cable (OEM)

S/N	Specification/Qualitative Requirement
1	The fiber type should be Matched Cladding Single Mode
2	The fiber should be optimized for operation at 1310 nm and at 1550 nm.
3	Should fulfill the requirements of: • IEC 793-2: 1992, • EN 188101 • ITU-T Recommendation G.652
4	Testing methods should be in accordance with the following standards: • ITU-T G.652.D • IEC 793-1 • EN 188 000
5	Nominal mode field diameter: 9.2 µm
6	Mode field diameter tolerance: ±4%
7	Cladding diameter: 125 µm
8	Cladding diameter tolerance: ±1 µm
9	Mode field concentricity error: < 1 µm
10	Cladding non-circularity: < 2 %
11	Attenuation (of cable with fibers):At 1310 nm: <= 0.36 dB/km In the range 1285-1330 nm: <= 0.40dB/km At 1550 nm :<= 0.22 dB/km

12	Cut-off wavelength: High limit: 1330 nm Low limit : 1180 nm
13	Cut-off wavelength Lcc: High limit 1260 nm
14	Loss increase at 1550 nm for 100 turns of fiber loosely wound with a 37.5 mm radius: Max. : 0.1 dB
15	Loss due to hydrogen: Maximum induced permanent loss after 1000 h at 1 bar H2 at 70 °C and out gassing for 72 h at 70°C (valid both at 1310 nm and at 1550 nm) :0.2 dB/km
16	Dispersion:Zero dispersion wavelength: 1310 nm
17	Tolerance of zero dispersion:Wavelength : -10/+12 nm
18	Zero-dispersion slope: Max.: 0.092 ps/(nm² km)
19	Chromatic dispersion coefficient: In 1285 nm - 1330 nm interval: Max.: 3.5ps/km •nm
20	In 1270 nm - 1340 nm interval:Max. : 6 ps/km nm
21	At 1550 nm :Max.: 18 ps/km nm
22	Polarisation Mode Dispersion (PMD):Max. <=0.2 ps/km
23	In homogeneity of OTDR trace for any two 1000 meter fiber lengths: Max. 0.1 dB/km Proof test level : 1 %

15 U Equipment Rack (600WX600D)	
S/N	**Specification/Qualitative Requirement**
1	**27U Equipment Rack 600Wx600D front glass door** (Reputed OEM Only)
2	Castors wheel - 4 Nos
3	Power Distribution Box (5 Port) - 2 Nos
4	Cable manager - 5 Nos
5	Fan Tray with 4 Nos Fan - 1 No
6	H/W Packets - 10 Nos

42 U Server Rack (600WX1000D)	
S/N	**Specification/Qualitative Requirement**
1	**42U Equipment Rack 600Wx1000D front glass door** (Reputed OEM Only)
2	Heavy Duty Castors wheel - 4 Nos
3	Power Distribution Box (10 Port 5/15 Amp) - 2 Nos
4	Cable manager - 5 Nos
5	Fan Tray with 4 Nos Fan - 1 No
6	H/W Packets - 20 Nos

Layer 2+ Manageable Gigabit Switch	
S/N	**Switch Hardware Specification**
1	Switch with at least 24 X 10/100/1000BASE-T Ports and 2 x 10G Base-T and 4 X SFP+ Ports.
2	Switch should have console port, Out-of band-management Port and USB port for connecting a USB storage device.
3	Switch should support Redundant power supply (RPS) and should support Smart fan design.

4	Switch should support Physical Stacking up to 9 units per stack. Stacking bandwidth should be up to 80G. All switches in the stack are managed as a single switch and controlled by one configuration file under same firmware version which makes the network topology simpler.
5	Operating temperature should be 0 to 50 ˚C.
6	Certification: CE, FCC, BSMI, CB and cUL.
7	Approved Make: OEM should available in Gartner Magic Quadrant for Wired and Wireless LAN Access Infrastructure Report from latest last three consecutive year.
S/N	**Switch Software Specification**
1	Should have 802.1D STP, 802.1w RSTP and 802.1s MSTP Spanning Tree Protocol.
2	Should support BPDU Filter, Loop detection, BPDU restriction, Root restrction
3	Should support IGMP & MLD Snooping, Able to create 250 or more IGMP groups and require support for IGMP / MLD Snooping Fast Leave.
4	Should support 16 L3 IP interfaces and IPv4/IPv6 Loopback interface.
5	Should support VRRPv3, Policy-based Route (PBR), IPv6 Neighbor Discovery, Equal-Cost Multi-Path (ECMP) and UDP helper.
6	Should support Static route for both IPv4 and IPv6, RIP V1/V2/ng.
7	Switch should support IEEE 802.1Q VLAN with different type of VLAN like Port based, Voice VLAN, Private, Double (Q-In-Q), Multicast VLAN (ISM VLAN for IPv4/IPv6), 802.1v Protocol VLAN ,VLAN Trunking, Super VLAN
8	should have per-port broadcast, multicast, and unicast storm control to prevents faulty end stations from degrading overall systems performance.
9	Should support port security to secures the access port based on MAC address.
10	Require prevention of DoS attacks, which include Land, Blat, TCP Null Scan, TCP Xmas Scan, TCP SYNFIN, Ping of Death Attack and TCP Tiny Fragment attack.
11	Should support DHCP snooping and DHCP server screening, DHCP server.
12	Should support 802.1X port based and 802.1X host based access control,Identity-driven Policy (VLAN, ACL or QoS) Assignment, Support RADIUS and TACACS+ authentication and support Authentication database failover.
13	Switch should support QoS (quality of service) IEEE 802.1P for traffic prioritization. It should support 8 queues per port.
14	Different type of QoS priority like Strict Priority Queue and Weighted Round Robin, Strict + WRR, Congestion control using Weighted Random Early Detection (WRED) or WTD
15	Should support Remark 802.1p priority, Remark ToS/DSCP and Rate limiting in Policy map.
16	Support at least 2K ingress & 512 egress access control entries. ACL based on MAC, IPv4 and IPv6, TCP/UDP port number, User-defined packet contentm, CPU Interface Filtering. Should support time based ACL.
17	Support for Telnet server, TFTP Client, FTP Client and Secure FTP (SFTP) client for IPv4/IPv6 access.
18	Should have multiple Image and configuration support to reduced down time for the switches.
19	Should support SNMP v1, v2c, v3 and SNMP Traps and Remote Monitoring (RMON).
20	Support for DHCP Client support for IPv4/IPv6, DHCP server, DHCP Relay and DNS client.
21	Should have SNTP/NTP protocol for time synchronization.
22	Should support CDP/UDLD, Link Layer Discovery Protocol (LLDP) and LLDP-MED.

FORMAT FOR QUOTATION SUBMISSION
(In letterhead of the supplier with seal)

Date: _____

To:_____
_____

Sl. No.	Description of goods \ (with full Specifications)	Qty.	Unit	Quoted Unit rate in Rs. (Including Ex-Factory price, excise duty, packing and forwarding, transportation, insurance, other local costs incidental to delivery and warranty/ guaranty commitments)	Total Price (A)	Sales tax and other taxes payable	
						In %	In figures (B)
Total Cost							

Gross Total Cost (A+B): Rs. _____

We agree to supply the above goods in accordance with the technical specifications for a total contract price of Rs. ——————— (Amount in figures) (Rupees ———————amount in words) within the period specified in the Invitation for Quotations.

We confirm that the normal commercial warranty/ guarantee of ——————— months shall apply to the offered items and we also confirm to agree with terms and conditions as mentioned in the Invitation Letter.

We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery.

Signature of Supplier
Name: _____
Address: _____
Contact No. _____