

Section VI. Schedule of Requirements

The delivery schedule expressed as weeks/months stipulates hereafter a delivery date which is the date of delivery to the project site.

Item No.	Description	Quantity	Unit	Delivered, Weeks/Months
1	<p>Branded Enterprise-Grade IP PBX System</p> <ul style="list-style-type: none"> · IP Based Communications System · Analog Telephone FXS Ports: 8 RJ11 Port · PSTN Line FXO Ports: 8 RJ11 Port · Users: 6000 · Concurrent calls: 400 · Max concurrent SRTP calls: 240 · Video Conference: Up to 40 · Voice Conference: Up to 160 · Three self-adaptive Gigabit ports (switched, routed or dual card mode) with PoE+ · 1USB 2.0, 1USB 3.0, 1SD card interface · 320x240 color LCD with touch screen for Shortcut Keys and Scroll Bar 			
	<p>Branded VoIP GSM Gateway</p> <ul style="list-style-type: none"> · 2 SIM ports · GSM Frequency: 850/900/1800/1900 MHz · WCDMA Frequency: 850/1900 MHz, 850/2100 MHz, 900/2100 MHz · 4G LTE Band · Protocol:SIP, IAX2 · Transport:UDP, TCP, TLS, SRTP · Voice Codec:G.711 (alaw/ulaw), G.722, G.726, G.729A, GSM, ADPCM, Speex · DTMF Mode: RFC2833, SIP Info, In-band · Echo Cancellation:ITU-T G.168 LEC · Calling Type:Termination (VoIP to GSM/WCDMA), Origination (GSM/WCDMA to VoIP) · Network Protocol:FTP, TFTP, HTTP, SSH · LAN:1 10/100 Mbps Ethernet Interface + 2 10/100 Mbps Ethernet Interfaces · NAT Traversal:Static NAT, STUN · Network:DHCP, DDNS, Firewall, OpenVPN, Static IP, QoS, Static Route, VLAN 	1	lot	Sixty (60) calendar days

Schedule of Requirements - Proposed Procurement for the Supply, Delivery, Installation and Commissioning of IP Telephony for the Upgrade of Campus Internal Communication System

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<p>Enterprise IP Phone</p> <ul style="list-style-type: none"> · 12 lines, 6 SIP accounts, 5 soft keys and 5-way voice conferencing · 48 on-screen digitally customizable BLF/speed-dial keys · 4.3 inch (480x272) color-screen LCD · Dual Gigabit ports, integrated PoE · Integrated Bluetooth · Supports up to four Extension Modules for BLF/speed-dial access to up to 160 contacts · Protocol: SIP RFC3261, TCP/IP/UDP, RTP/RTCP, HTTP/HTTPS, ARP, ICMP, DNS (A record, SRV,NAPTR), DHCP, PPPoE, SSH, TELNET, TFTP, NTP, STUN, SIMPLE, LLDP, LDAP, TR-069,802.1x, TLS, SRTP, IPV6, CDP/SNMP/RTCP-XR · Codec:G7.29A/B, G.711µ/a-law, G.726, G.722(wide-band), G723.1, iLBC, Opus,in-band and out-of-band DTMF(in audio, RFC2833, SIP INFO), VAD, CNG, AEC, PLC, AJB,AGC · 12 line keys with up to 6 SIP accounts, 5 XML programmable context sensitive softkeys, 5 navigation/menu keys, 11 dedicated function keys for : MESSAGE (with LED indicator), PHONEBOOK, TRANSFER, CONFERENCE, HOLD, HEADSET, MUTE, SEND/REDIAL, SPEAKERPHONE, VOL+, VOL 			
<p>IP Phone Expansion Module</p> <ul style="list-style-type: none"> · large 128 x 384 graphic LCD and 20 programmable buttons (each with dual color LED). It offers up to 40 extensions per module by using the 2 page switch keys 			
<p>3-Line Essential IP Phone (150units)</p> <ul style="list-style-type: none"> · 3 lines, 6 SIP accounts,up to 3 call appearances · Dual switched autosensing 10/100/1000 Mbps Gigabit Ethernet ports with integrated PoE · Supports 5-way audio conferencing for easy conference calls 			

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<ul style="list-style-type: none"> · 132 x 64 (2.7'') backlit graphical LCD display · Full-duplex speakerphone with HD audio to maximize audio quality and clarity · Equipped with noise shield technology to minimize background noise · Enterprise-level protection including secure boot, dual firmware images, and encrypted data storage · 3 line keys with dual-color LED and support for 6 SIP accounts, 4 XML programmable context sensitive soft keys, 5 (navigation, menu) keys. 9 dedicated function keys for: MESSAGE(with LED indicator), TRANSFER, HOLD, HEADSET, MUTE, SEND/REDIAL, SPEAKERPHONE, VOL+, VOL 			
<p>Power Supply for IP Phone Essentials (25 units)</p> <p>Input 100-240VAC 50-60Hz; Output +5VDC,., 600mA;</p>			
<p>Branded Enterprise 10/100/1000 24 PORT, Full POE, 370W 4 SFP+ for 10G Uplink , 3 Yrs Warranty (8 units)</p> <ul style="list-style-type: none"> · Gigabit Ethernet / FE ports : 24 10/100/1000 RJ45 PoE+ · Uplink interfaces : 4 SFP+ · 8X5XNBD 24port GE, 4x10G SFP, LANB, 36-Months · PoE+power budget: 370W · CPU:ARM v7 800 MHz · DRAM:512 MB · Flash memory:256 MB · Forwarding bandwidth:FE: 6.4 Gbps 1G: 28 Gbps 10G: 64 Gbps · Switching bandwidth: FE: 12.8 Gbps 1G: 56 Gbps 10G: 128 Gbps · Forwarding rate (64-byte L3 packets) : FE: 9.52 Mpps 1G: 41.67 Mpps 10G: 95.23 Mpps · Console ports : RJ45-Ethernet USB mini-B USB-A port for storage and Bluetooth console · POE : IEEE 802.3af PoE and IEEE 802.3at PoE+ · Redundancy and resiliency: IEEE 802.1s/w Rapid Spanning Tree Protocol (RSTP) and Multiple Spanning Tree 			

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<p>Protocol (MSTP) ,Per-VLAN Rapid Spanning Tree (PVRST+),Switch-port auto-recovery (error disable),Link state tracking</p> <ul style="list-style-type: none"> · Enhanced QoS: Up to eight egress queues,Ingress policing,QoS through Differentiated Services Code Point (DSCP) mapping and filtering, QoS through traffic ,classification,Trust boundary, AutoQoS, Shaped Round Robin , Weighted Tail Drop , 802.1p Class of Service · Network security: Comprehensive 802.1X 802.1X support with Network Edge Access Topology (NEAT) IEEE 802.1X user distribution Ability to disable per-VLAN MAC learning Multidomain authentication Authentication, Authorization, and Accounting (AAA) command authorization Access Control Lists (ACLs) Port-based ACLs for Layer 2 interfaces SSH, Kerberos, and SNMP v3 SPAN, with bidirectional data support TACACS+ and RADIUS authentication MAC address notification to notify administrators about users added MAC Authentication Bypass (MAB) and WebAuth with downloadable ACLs Web authentication redirection Multilevel security on console access BPDU Guard IP Source Guard SSH v2 Spanning Tree Root Guard (STRG) Internet Group Management Protocol (IGMP) Dynamic VLAN assignment · Configuration Professional: Bluetooth for over-the-air access · Warranty : 8X5XNBD 36-Months 			
<p>Branded Enterprise CORE SWITCH , 24 GE ports , 8 x 10GE Network Module, 3 yrs Warranty</p> <ul style="list-style-type: none"> · 24-port data only, Network Advantage · 8X5XNBD 24-port data only, Network, 36-Months · DNA Premier, 24-Port, 3 Year Term License · 8 x 10GE Network Module · Switching capacity: 104 Gbps on 24-port Gigabit Ethernet model · Stacking bandwidth 480 Gbps 			

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<ul style="list-style-type: none"> · DRAM: 8 GB; Flash: 16 GB; VLAN IDs: 4000 · Total Switched Virtual Interfaces (SVIs): 2000 · Jumbo frames: 9198 bytes · Total routed ports per 9300 Series stack: 208 · Forwarding Rate: 154.76 Mbps · Switch fundamentals: STP, Trunking, private VLAN (PVLAN), Q-in-Q, IPv6, OSPF Routed Access, RIP, Policy-Based Routing (PBR), Virtual Router Redundancy Protocol (VRRP), Internet Group Management Protocol (IGMP), PIM Stub, Weighted Random Early Detection (WRED), Cisco UPOE, First Hop Security (FHS), 802.1X, MACsec-128, Control Plane Policing (CoPP) · Advanced switch capabilities and scale: BGP, EIGRP, Hot Standby Router Protocol (HSRP), IS-IS, Bootstrap Router (BSR), Multicast Source Discovery Protocol (MSDP), Class-Based Weighted Fair Queuing (CBWFQ), MACsec-256 · Management automation NETCONF/YANG, PnP, ZTP/Open PnP · Capacity planning, performance monitoring, and troubleshooting: Streaming telemetry, sampled NetFlow, Switched Port Analyzer (SPAN), Remote SPAN (RSPAN) · Flexible network segmentation for isolation: VPN Routing and Forwarding (VRF), Multiprotocol Label Switching (MPLS) VPNs – Layer 3 VPN (L3VPN), Ethernet over MPLS (EoMPLS), Hierarchical Virtual Private LAN Services (H-VPLS), IPv6 Provider Edge (6PE), IPv6 on Virtual Provider Edge (6VPE), Multicast VPN (MVPN) 			
<p>Transceiver for offered Switches 10G , SMh (16 units)</p>			
<p>Branded Storage Server</p> <ul style="list-style-type: none"> · Branded 12TB Network Attached Storage, 5-Years Warranty · 12-bay RackStation (up to 36-bay) · Quad Core 2.4 GHz (turbo to 2.7 GHz) · 8GB RAM (up to 64GB) · Railing Kit · 3 x 1GbE port, optional 10GbE NIC support · 8 x Seagate Enterprise EXOS 4TB, SATA 6Gb/s, 128MB Cache, 7200RPM 			

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<p>Branded UPS</p> <p>UPS 3000VA, 230V Rackmount 2U (8) IEC C13 (10A), (1) IEC C19 (16A Topology: On-line double conversion with PFC (Power Factor Correction) system Configuration:Rack Rating(VA/Watts):3000/2700 Warranty:2 years warranty</p>			
<p>SM Fiber Optic Patch Cord Jumper Cable SC to LC, 3m , SM, Duplex (12 units)</p>			
<p>SM Fiber Optic Patch Cord Jumper Cable ST to LC, 3m , SM , Duplex (4 units)</p>			
<p>Branded 16-Port Gigabit PoE Switch (8 units)</p> <p>16-port switch with 8 PoE+ and dedicated</p>			
<p>Installation,Configuration and Comissioning (Electrical Works, with consumables , Grounding and Data Cabinet with PDU)</p> <p>RJ45 - snap-in type (100 units) CAT 6 UTP Cable (5 boxes) Royal Cord(3 wires, no. 6) (30 meters) 3 Phase Breaker , DIN rail, 63A (2 units) Single-Phase Breaker, DIN rail, 63 A Panel Box Rail Type for 8-12 Miniature Circuit Breakers Automatic Transfer Switch, 63A Grounding Kit (Bus bar, broze ground clamp, 1/2' diameter Ground rod copper coated , 35mm2 thhn copper wire, bracket) (3 units) Configuration: IP Telephone System and Mail Server(Text messaging) Configuration and Training</p>			
<p>Note: Quarter maintenance check-up for one (1) year</p>			
<p>***** Nothing Follows*****</p>			

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