Republic of the Philippines
DEPARTMENT OF EDUCATION
Region X
Division of El Salvador City

TERMS OF REFERENCE
REGION X - EL SALVADOR CITY
ENHANCED ICT INFRASTRUCTURE PROJECT

I. RATIONALE

The Department of Education Region X- Division of El Salvador City envisioned to establish an ICT Infrastructure facility that aims to support all Division personnel and services to schools to achieve desired productivity and efficiency in the delivery of services. Also, in advancing the ICT Infrastructure of the Division, it will be able to implement the policies of the Department of Education in terms of monitoring and management in the usage of the Internet and ensure security.

Hence, DEPED Region X-Division of El Salvador City have long recognized the importance of information as a resource, thus, this project intends to scale-up and provide sustainable strategic ICT transformation raising its level of services to its stakeholders using Information and Communications Technology (ICT).

This project has multiple components to enhance the current ICT infrastructure on our office to include:
1) Local Area Network and Structured Cabling
2) Network Active Components
3) DATA CENTER DEVELOPMENT (Renovation/Extension)
4) CCTV
5) IPBX

The ICT infrastructure development project specifically internal networks and Internet connectivity is very much emphasized in this project hence stable connectivity is one of the requirements for the various application systems to work specially that applications being develop under various projects of DepEd Central Office are mostly web-based. Also, the current network setup of the office is not yet integrated which needs to be improve for easier monitoring and management of the network.

To respond to this, DEPED – EL SALVADOR CITY has embarked on the acquisition of upgraded network infrastructure facility.

Coverage of the project:

1.) FIBER AND COPPER NETWORK STRUCTURED CABLING
2.) NETWORK ACTIVE COMPONENTS
3.) DATA CENTER DEVELOPMENT (Renovation/Extension)
4.) CCTV

5.) IPBX

Hence, the project for the Upgrading of Network Infrastructure for the Department of Education – Division of El Salvador City must be carried out.

II. OBJECTIVES

The over-all project objective is to enhance network infrastructure that can provide a better user experience in accessing local area network and internet connectivity, utilizing communications facility, and operating and managing security systems. The specific objectives are:

a. Enhance the existing Local Area Network (LAN) of the Division of El Salvador City office with industry-standard data networks.
b. Stabilize the internal connectivity with industry-standard structured fiber-optics and Copper CAT6 cabling systems.
c. Provide high-speed vertical Fiber Optic Cable Network connecting different buildings to Data Center and Category 6 copper horizontal distribution within the building.
d. Provide appropriate active network devices to support new Fiber and horizontal cabling.
e. Promote reliable proper communication and coordination between offices and its inter-related/external offices.
f. Provide responsive and effective delivery of services to the internal and external networks.
g. Utilize existing and useable IT equipment and devices
h. Enhance communication through the deployment of IPBX system
i. Enhance security in the office through the deployment of CCTV system

III. QUALIFICATION REQUIREMENTS

A. The prospective bidder shall be involved in System Integration and shall have at least 10 years' experience in undertaking similar project. Must attached proof.
B. For cables and fibers, the prospective bidder should have a written authority from/issued by the manufacturer of their authorized representative, that they are authorized to re-sell, install, service and honor warranty.
C. To guarantee responsiveness of the winning bidder for after-sales support, the bidder/participant shall preferably have a local partner in Cagayan de Oro City or nearest city and shall provide names and contact details of the persons responsible.
D. All bidding participants should provide the implementation/project organizational structure of their project implementation team including roles, necessary information, and among others which usually consists of key management personnel like project manager, network designers, laborer, data cablers, installers, among others.
E. Technicians or installers should be Industry-Certified Professionals or Network Cabling-Certified Installer from any Cabling System Manufacturer for Copper and Fiber Solutions and shall present necessary proof thereof.
F. Actual site inspections and assessment by interested participants can be allowed during pre-bid conference and prior to dropping and opening of bids.
G. Certification that the prospective bidder has conducted site survey to ensure correctness of distance and placement of equipment.

H. Must have Employees at least one (ECE) Electronic Communications Engineer and (REE) Registered Electrical Engineer.
I. Other documentary requirements to be submitted by the bidder:

1) Certification of After Sales Support for the Network equipment indicating the Support should include online, telephone support, on-call, on-site and replacement if the hardware that is defective is under warranty.
2) Brochures or Technical Data Sheet or equivalent document for the following:
   a) Active Networking Devices
   b) Fiber Optic Cable
   c) Category 6 UTP
3) Items/equipment showing compliance with the required Technical Specifications:
   a) Active Networking Devices
   b) Fiber Optic Cable
   c) Category 6 UTP
4) Proposed design, configuration, and specification of offered design, systems and technology shall show compliance, compatibility, and best fit to the desired systems subject for evaluation of the procuring entity.
5) Proposed Work Plan and Detailed Implementation Schedule for the Project covering the whole period. Prospective Bidders are required to conduct site inspection. This is to ensure the reliability, security, and efficiency of the required services that the prospective bidder shall perform. Timeframe should be specified for each activity to be done and shall include Gantt Chart Summary.

The Prospective bidder shall complete the delivery and installation of work within sixty (60) calendar days from date of receipt or Notice to Proceed.

The completion schedule provided shall be considered extended under the following:

A. Delays caused by force majeure events.
B. Delays caused by special cases and events beyond the control of the contractor, subject for evaluation and approval by DepEd – El Salvador City Division Office.
C. In all cases, the period or number of days of extension shall be agreed upon with the DepEd – El Salvador City Division Office in writing.
D. Claims for time extension of the contract period due to force majeure shall be subject to approval by the DepEd – El Salvador City Division Office.

The prospective bidder shall guarantee that the entire structured cabling and networks are free from all defective workmanship and materials, and will remain so for the period of:

1. Minimum Two (2) Year Warranty on Active Components
2. Minimum One (1) Year Warranty on Workmanship

DepEd – El Salvador City Division Office shall not be responsible for lack of materials and equipment to be supplied by the winning Bidder. It shall be the sole responsibility of the winning bidder to assess and re-assess on the Materials to be supplied to the Agency and shall be DepEd – El Salvador City Division Office's property.

IV. DUTIES AND RESPONSIBILITIES OF THE PROSPECTIVE BIDDER

A. Scope of Work and Activities

The prospective bidder shall furnish all equipment, labor, materials, tools, and perform all operations necessary to complete the supply, delivery, installation, testing and commissioning of **Fiber Optic Vertical Cabling, Structured Cabling, Network Active Components, Data Center Upgrading, IPBX System and CCTV Setup** of DEPED EL SALVADOR CITY DIVISION OFFICE. The prospective bidder must provide demonstration and training for IT Personnel for at least two (2) days. The Prospective bidder shall provide warranty service within the warranty period. Provision of upgrades and patches to be installed must be free of charge during the warranty period. Bidder shall be responsible for all the cost related to the warranty period for hardware products.

A.1 FIBER AND COPPER NETWORK STRUCTURED CABLING

1) Submission of Proposed Detailed Plan/Design and Specifications for Fiber Optic Vertical Cabling and Structured Cabling for Data.
2) Submission of Project Management Plan
3) Provision of Technical documentation
4) Supply of labor, delivery and installation of various fiber, cables, and components.
5) Copper, fiber cables, supplies, materials, and all other passive peripherals shall be in the same brand/manufacturer to ensure complete compatibility. The maximum allowable loss across a fusion splice should be between 0.1-0.2 dB only. Evidence of the testing should be witnessed by the Division IT Officer.
6) Conduct of site survey and provisions of appropriate site specifications for the supplied materials.
7) Submission of the Bill of Materials for the project.
8) Provision of the in-house wiring, from the cable entrance to the network rack where the active components are located.
9) Supply, delivery, and pulling of Category 6A UTP cable and Fiber optic cable
10) Supply, delivery, and installation of metal support for Cable Gutter, PVC conduits and other consumables
11) End to end Tagging and Labelling
12) Conduct Testing and Commissioning
13) Conduct Training

A.2 FIBER AND COPPER NETWORK ACTIVE COMPONENTS

1) Submission of Proposed Detailed Design, Configuration and Specifications of Active Components.
2) Submission of Project Management Plan
3) Submission of the Bill of Materials for the project.
4) Supply and delivery of active components.
5) Supply of labor, delivery, installation and configuration of equipment and software.
6) Conduct of site survey and provisions of appropriate site specifications for the supplied materials.
7) Conduct Testing and Commissioning
8) Conduct Training

A.3 DATA CENTER UPGRADING

1) Submission of Project Management Plan.

2) Submission of Technical Documentation.
3) Submission of the Bill of Materials for the project.
4) Conduct of site survey and provisions of appropriate site specifications for the supplied materials.
5) Supply, delivery, installation, set-up and commissioning of the following equipment and materials:
    a. Required Cables tray and other materials/accessories
    b. Fiber Switch
    c. Electrical Circuit Components which include but not limited to the Split Type Air Conditioning Unit
    d. Rehabilitation of existing CAT 6 connection to ensure that it is working, configured, and labeled properly.
6) Conduct Testing and Commissioning
7) Conduct Training

A.4 CCTV

1) Submission of Project Management Plan.
2) Submission of Technical Documentation.
3) Submission of the Bill of Materials for the project.
4) Conduct of site survey and provisions of appropriate site specifications for the supplied materials.
5) Supply, delivery, installation, set-up and commissioning of the following equipment and materials:
    a. Required wires, accessories, and other materials.
    b. Cameras both indoor and outdoor
6) Conduct Testing and Commissioning
7) Conduct Training

A.5 IPBX

1) Submission of Project Management Plan.
2) Submission of Technical Documentation.
3) Submission of the Bill of Materials for the project.
4) Conduct of site survey and provisions of appropriate site specifications for the supplied materials.
5) Supply, delivery, installation, set-up and commissioning of the following equipment and materials:
    a. Required wires, accessories, and other materials.
    b. Telephones
    c. The IP Based Communication System, FXS Gateway and the telephones should be on the same brand to ensure compatibility and maximum performance.
6) Conduct Testing and Commissioning
7) Conduct Training

B. Pre-installation

1) Submit Work Plan within five (5) working days upon receipt of Notice to Proceed

C. Installation

1) Supply, deliver and install the required components as specified in the Work Plan duly approved by DEPED – EL SALVADOR CITY DIVISION OFFICE and following the Technical Specifications of this TOR.
2) Winning bidder in close coordination with DEPED – EL SALVADOR CITY DIVISION OFFICE project manager is given the flexibility on their technical design on how the cable will route along ramps, walls, ceilings, and beams for practicality.
3) All installations of cables, peripherals, accessories, or electrical wires are expected to be neat, clean, or concealed using metal, aluminum, or plastic molding or concealer.
4) Whenever necessary, winning bidder may use metal post or metal pole enough to carry weight of the cables and its tensions. Post/Pole vertical clearance should be high enough not to be disturbed by possible highest passing vehicle especially those encompassing/crossing public streets or road right of way.

D. Post-Installation

1) Restore damages to property caused by excavation, installation, maintenance and/or removal of cabling equipment and other procedures conducted by the prospective bidder to accomplish the project.
2) Conduct free training for IT personnel of DEPED – EL SALVADOR CITY DIVISION OFFICE on the basic maintenance and operational requirements of structured cabling and the equipment.
3) Provide at least one (1) copy of the technical manual/documentation (English) in printed hard copy and electronic (soft copy) formats. The documents include Cabling and equipment installation, operation, configuration, and testing.
4) Render support services to DEPED – EL SALVADOR CITY DIVISION OFFICE within the warranty period as follow:

    i. Technical support will be provided through phone calls or email within regular working hours from Monday to Friday, 8:00AM to 5:00PM
    ii. Supplier must be able to respond 2 hours onsite when critical issue arises.
    iii. Supplier must have a local office in Cagayan de Oro City.
    iv. If the supplied equipment is found defective and need to be pulled out, the prospective bidder shall provide replacement with the same or higher specifications.
    v. Rectify and or/replace any part that fail to pass any test/inspection or make alteration necessary to meet the specification.

    vi. Responsible and accountable for any damage caused solely by the Prospective bidder or its agent to the DEPED – EL SALVADOR CITY DIVISION OFFICE Building as a direct result of the installation maintenance, and removal of any cabling components and devices.

V. DUTIES AND RESPONSIBILITIES OF DEPED – Division of El Salvador City

A. Assist prospective bidders during the conduct of Site Survey.

B. Review and approve the work plan submitted by Prospective bidder within five (5) working days.

C. Grant the Prospective bidder authorized representative access to its premises and facilities located therein to perform its obligations, provided that such representative shall be accompanied by the duly assigned DEPED – EL SALVADOR CITY DIVISION OFFICE personnel.

D. Reject any unit or any part thereof that fail to pass any test and/or inspection or do not conform to specifications.

E. Pay the Prospective bidder in accordance with condition set in the Payment Scheme.

F. Issue a Certification of Inspection and Acceptance upon determination by the Division IT Officer and Inspectorate Team that the delivered and installed equipment and components are usable and in good working condition.

VI. LAYOUT

A simple layout of the building is provided for the supplier to have an idea where the access points and ethernet ports will be placed and where the connection will be terminated.

VII. BILL OF MATERIALS & TECHNICAL SPECIFICATIONS

Please refer to "Annex B" for the complete Bill of Materials.

Agency Endorsement:

We, the undersigned, have reviewed and endorsed the proposal for the project as described above.

PREPARED BY:

SHERRIE R. DUNGOG
Information and Technology Officer - I
Signature Over Printed Name and Date

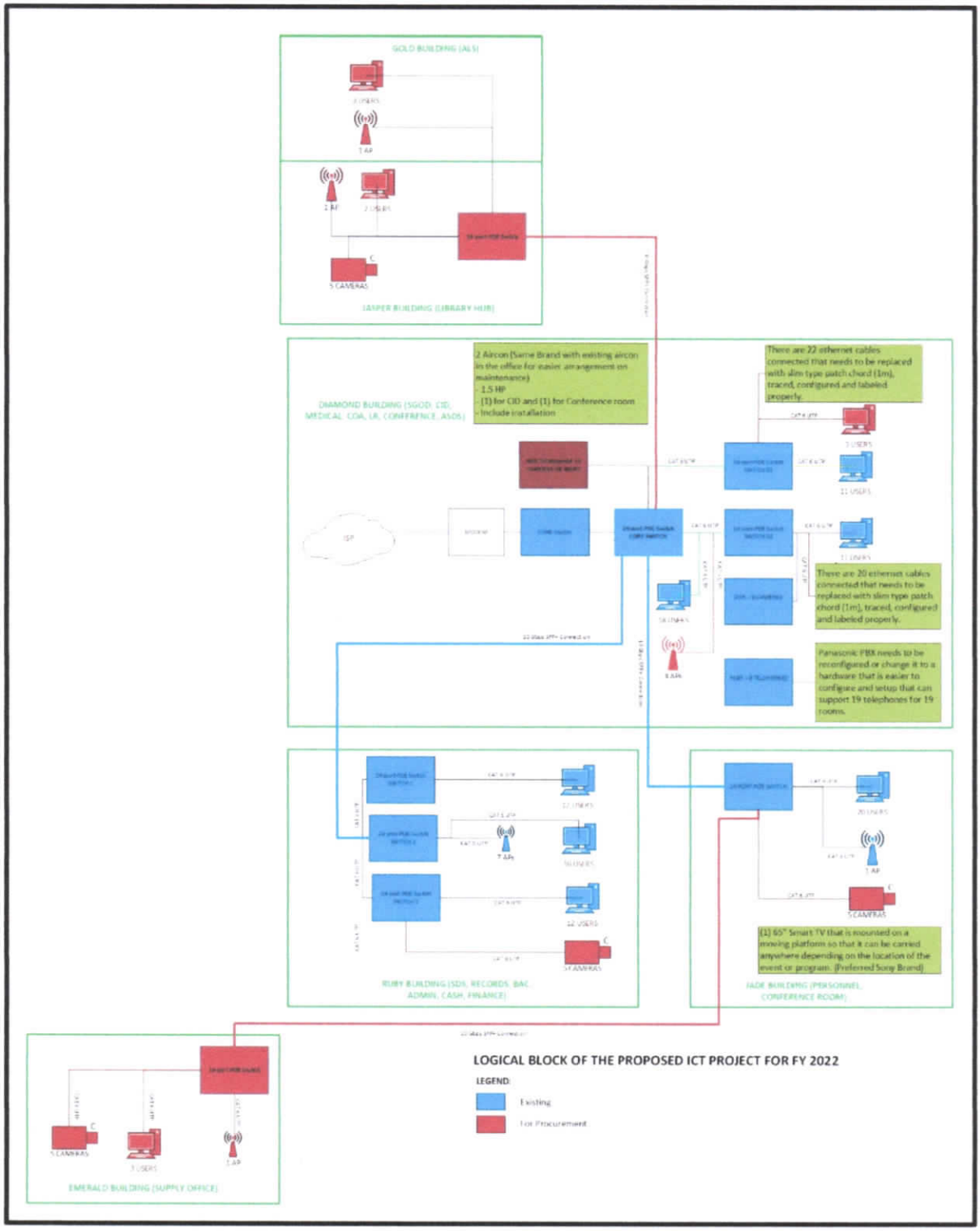
APPROVED BY:

OLGA C. ALONSABE, PhD, CESO V
Schools Division Superintendent
Signature Over Printed Name and Date

Annexes:

Annex A: Logical Network Diagram
Annex B: Summary of Ports
Annex C: Bill of Materials and Specification

ANNEX A: LOGICAL NETWORK DIAGRAM



ANNEX B: SUMMARY OF PORTS

Building	Office	Data	Telephones	Port for Rehab	AP	Camera (CCTV)	
						Indoor	Outdoor
GOLD BUILDING (ALS)	ALS	3	1		1	1	4
JASPER BUILDING (LIBRARY HUB)	LIBRARY HUB	2	1		1	1	
DIAMOND BUILDING (SGOD, CID, MEDICAL, COA, LR, CONFERENCE, ASDS)	SGOD	2	1	44			
	ASDS	1	1				
	CID	2	1		1		
	Lobby (2nd Floor)				1		
	Lobby (1st Floor)				2		
	LRMS		1				
	Doc Gladys		1				
	Nurse		1				
	COA		1				
EMERALD BUILDING (SUPPLY OFFICE)	SUPPLY	3	1		1	1	3
JADE BUILDING	HR-Personnel		1			1	2
RUBY BUILDING	SDS		1			1	3
	AO V		1			2	1
	BAC/RECORD		1				
	CASHIER		1				
	BUDGET		1				
	ICT		1				
	ADAS		1				
	ACCOUNTING		1				
TOTAL		13	19	44	7	7	13

ANNEX C: BILL OF MATERIALS AND SPECIFICATION

NOTE: The images serve as reference only on the possible physical appearance of the items to ensure that the supplier will have an idea on the items required for this project. The appearance could look different if the description and specification match the items specified below.

NO.	IMAGE AS REFERENCE ONLY ON THE POSSIBLE PHYSICAL APPEARANCE OF THE ITEM	DESCRIPTION	QTY
1		Branded, Category 6 U/UTP Installation Cable, 305 m Box, PVC, Blue, 23 AWG	5
2		Branded, Wall Cabinet,540*600*327, Tempered glass door, 6U | Assembled frame structure | Powder coated, side panel removable | Powder coated finish | Standard Compliance: ANSI/EIA RS-310-D, IEC60297-2, DIN41494 PART1, DIN41494 PART7 | Keys: 2 sets | Doors are removable for a stable mounting structure | Rear hinge allows main section to swing out 90° and disconnects from cabinet for easy mounting	2
3		Branded, Category 6 U/UTP, Slim Type Patchcord, 30AWG, LSOH, 1m | RJ45 contacts 50µ inch gold plated | Molded snag proof boot | Compliant: ANSI/TIA 568-2.D:2018, ISO/IEC 11801-1 Class E:2017, CENELEC EN 50173-1:2018, CENELEC EN 50288-10-2:2015, IEC 61935-2:2010 (Edition 3.0), IEC 61156-6:2012 | Compliant with Safety Standards: Compliant with safety standards as: IEC 60332-1-2:2004, RoHS compliant (EU Directive 2011/65/EC)	112
4		Branded, Faceplate, Bevel, 45° Entry, 86*86, Snap-In, w/-Shutter, 1-Port, White	84
5		Branded, Category 6 180° Unshielded Keystone Jack, Dual Type IDC, White | Admissible Conductor: 22AWG ~ 26AWG insulation wire | Conform to TIA/EIA-568.2-D, ISO/IEC 11801-1 and EN50173-1 specifications | Supports T568 A&B wiring & easy installation | Termination by 110 or Krone tools | RoHS compliant	84

6		Branded, Category 6 U/UTP Retail Patchcord, PVC, 3 m, Red	84
7		Branded, Category 6 180° 0.5U 24-Port Unshielded Patch Panel, Dual Type IDC, W/Cable Management Bar, Black	3
8		Branded, HORIZONTAL FINGER DUCT CABLE MANAGER | Powder-coated cold rolled steel or plastic | 482.6x47.8mm	3
9		Branded LC/UPC-LC/UPC Duplex Single mode, 9/125 Patch Cord 2 M, 2.0 mm, LSOH	6
10		1U 19" power distribution unit, w/aluminum body, US (NEMA5-15P) Plug, 6 universal outlets, w/LED master switch	3
11		Branded, fiber optic pigtail LC-UPC, MM OM4, 0.9mm, LSOH, 1m	8
12		LC/PC Duplex MM Adapter w/zirconia Sleeve	8
13		Branded, 19" Rack Mounted ODF, 24cores, w/ Splice Trays, w/o Adapter	2
14		1 port Back Box (86 x 86 x 42mm	44
15		1.5 HP Wall Mounted Inverted Type	2

16		65" TV | Wi-Fi Standard: Wi-Fi Certified 802.11a/b/g/n/ac | WI-FI FREQUENCY: 2.4 Ghz/5 GHz | ETHERNET INPUTS: 1 rear | BLUETOOTH PROFILE SUPPORT: Version 5.0, HID (mouse/keyboard connectivity)/HOGP (Low Energy device connectivity)/Advanced Audio Distribution Profile (stereo audio) 2/AVRCP (AV remote control) /SPP (Serial Port Profile)| CHROMECAST BUILT-IN: Yes | APPLE AIRPLAY: Yes | APPLE HOMEKIT: Yes | RF (TERRESTRIAL/CABLE) CONNECTION INPUT(S): 1 (Side) | COMPOSITE VIDEO INPUT(S): 1 (Rear) | HDMI INPUTS TOTAL: 3 (Side) | HDCP: HDCP 2.3 (for HDMI™ 1/2/3) | DIGITAL AUDIO OUTPUT(S): 1 Rear | USB PORTS: 2 (Side) | USB DRIVE FORMAT SUPPORT: FAT16/FAT32/NTFS | MPEG1: MPEG1/MPEG2 PS: MPEG2/MPEG2 TS (HDV, AVCHD): MPEG2, AVC/MP4 (XAVC S): AVC, MPEG4, HEVC, AV1/AVI: Motion Jpeg/ASF (WMV): VC1/MOV: AVC, MPEG4/MKV: AVC, MPEG4, VP8, HEVC/3GPP: MPEG4, AVC/MP3/ASF (WMA)/LPCM/WAV/MP4AAC/FLAC/JPEG, WEBM: AV1/AC4/ogg/AAC | Display Type: LCD | DISPLAY RESOLUTION (H X V, PIXELS): 3840 x 2160 | BACKLIGHT TYPE: Direct LED | VIDEO SIGNAL SUPPORT: HDMI™ signal :4096x2160p(24,50,60Hz), 3840x2160p(24,25,30,50,60Hz), 1080p(30,50,60Hz), 1080/24p, 1080i(50,60Hz), 720p(30,50,60Hz), 720/24p, 576p, 576i 480p, 480i | PICTURE MODES: Vivid, Standard, Cinema, Game, Graphics, Photo, Custom | AUDIO POWER OUTPUT: 10 W + 10 W | SPEAKER TYPE: Open Baffle Speaker | SPEAKER CONFIGURATION: Full Range (Bass Reflex) x 2 | DOLBY AUDIO FORMAT SUPPORT: Dolby™ Audio | OPERATING SYSTEM: Android TV™ | Google TV | ON-BOARD STORAGE (GB): 16 GB	1
17		Branded, 6 TB Hard Drive, 5400 RPM, Surveillance	2

18		Up to 32-ch IP camera inputs | H.265+/H.265/H.264+/H.264 video formats | Up to 2-ch @ 8MP or 4-ch @ 4MP or 8-ch @ 1080P decoding capacity | 1 HDMI and 1 VGA interfaces: both interfaces support independent video output | 4 HDDs for continuous video recording which supports maximum of 10 TB per drive | Up to 256 Mbps incoming bandwidth	1
19		2 MP Fixed Bullet Network Camera |High quality imaging with 2 MP resolution | Excellent low-light performance |Efficient H.265+ compression technology | Water and dust resistant (IP67) | 24/7 colorful imaging	13
20		2 MP Fixed Turret Network Camera | High quality imaging with 2 MP resolution | Excellent low-light performance | Efficient H.265+ compression technology | Water and dust resistant (IP67) 24/7 colorful imaging |Video Max. Resolution: 1920 × 1080 | Image Sensor: 1/2.8" Progressive Scan CMOS | Min. Illumination: Color: 0.001 Lux @(F1.0, AGC ON), 0 Lux with white light | Shutter Speed:1/3 s to 1/100, 000 s | Slow Shutter: Yes | Wide Dynamic Range: Digital WDR | Angle Adjustment: Pan: 0° to 360°, tilt: 0° to 75°, rotate: 0° to 360°| Camera Material Metal & Plastic | Ethernet Interface 1 RJ45 10 M/100 M self-adaptive Ethernet port| Network Protocols: Protocols TCP/IP, ICMP, HTTP, HTTPS, FTP, DHCP, DNS, DDNS, RTP, RTSP, RTCP, NTP, UPnP™, SMTP, IGMP, 802.1X, QoS, IPv6, Bonjour, IPv4, UDP, SSL/TLS	7
21		IP Based Communications System | 2 FXO ports | 2 FXS ports | Supports 500 Users | Asterisk Based IP PBX	1
22		FXS Gateway with 16 telephone FXS ports | 1 x Gigabit auto sensing Network port | high-density FXS gateway that enable businesses of all sizes to create an easy-to-deploy VoIP solution that takes advantage of Gigabit speeds. These FXS gateways offer the ability to seamlessly connect multiple locations and all devices within an office to any hosted or on-premise IP PBX network to make deployments as easy as possible.	1

23		2 Lines, 2 SIP Accounts, PoE	12
24		18-Port Gigabit Rackmount PoE Switch with 16 PoE+ |16× gigabit PoE+ RJ45 ports, 2× gigabit non-PoE RJ45 ports, and 2× combo gigabit SFP slots | Network Media: • 10BASE-T: UTP category 3, 4, 5 cable (maximum 100m) • EIA/TIA-568 100Ω STP (maximum 100m) • 100BASE-TX: UTP category 5, 5e cable (maximum 100m) • EIA/TIA-568 100Ω STP (maximum 100m) • 1000BASE-T: UTP category 5, 5e, 6 or above cable (maximum 100m) • EIA/TIA-568 100Ω STP (maximum 100m) • 1000BASE-X MMF, SMF | Fan Quantity = 2 | Switching Capacity: 36 Gbps | Packet Forwarding Rate 26.78 Mbps | MAC Address Table: 8K | Advanced Functions: • Compatible With IEEE 802.3af/at Compliant PDs • 802.1p/DHCP QoS • Mac Address Auto-Learning and Auto-Aging • IEEE802.3x Flow Control For Full-Duplex Mode And Backpressure For Half-Duplex Mode |	2
25		Multi Mode Fiber LC-LC. Multi-mode MiniGBIC module | Compatible with all SFP ports of the existing switches in the network and media converter| Supports up to 550m range with 50/125 µm multi-mode fiber|Supports up to 275m range with 62.5/125 µm multi-mode fiber| Data Rate is 1.25 Gbps	4
26		Wifi 6 Access Point | Ceiling Mount |Simultaneous 574 Mbps on 2.4 GHz and 1201 Mbps on 5 GHz totals 1775 Mbps Wi-Fi speeds | It can be managed via centralized cloud management or managed locally |It supports Seamless Roaming where even video streams and voice calls are unaffected as users move between locations |PoE+ Powered where it supports DC (adapter included) |802.3at POE+ |Passive POE for flexible installations |It can secure Guest Network.	7

27		PORT: 2× 10/100 Mbps Ethernet Ports, 1× USB 2.0 Port, 1× Micro USB Port, Cloud controller that provides centralized management of all access points in the network. It features 802.3af/802.3at POE-in port and 5V/1A micro USB	1
28	Network Attached Storage	4-BAY Network Attached Storage (NAS) (3-year warranty including the hard drives) (Supports RAID Type: 0,5,6,10)	1
29	Hard Drive for the Network Attached Storage	'4 TB Hard Disk Drive that is compatible with the Network Attached Storage (NAS)	2
30		Customized Portable 65" TV Rack. The TV will be mounted on the rack, and it can easily be carried to other locations at any time. The purpose of the rack is to have a steady support of the TV wherever it is placed. The base of the rack should be stable and can hold the weight of the TV. The TV should be at least 4 ft above the ground or floor.	1
31		CABLING MATERIALS, LABOR, AND CONFIGURATIONS	
	TOTAL COST		**P1,000,000.00**