

## TERMS OF REFERENCES (TOR)

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### BODY-WORN CAMERA SYSTEM

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#### **I. RATIONALE AND BRIEF BACKGROUND**

##### Project Background and Content

The Department of Public Order and Safety (DPOS) of Quezon City is mandated to maintain orderliness through the strict implementation of all existing rules for peace and order.

To maintain a high standard of law enforcement and continuously improve public safety service in the city, the DPOS plans to utilize the Body Worn Camera (BWC) device and its associated technology for security and disaster control.

DPOS would like to use the Body Worn Camera and its associated technology to resolve some of its pain points such as:

- Providing a recording device that is hand-free and records all details of incidents encountered during daily duties and an archiving solution to store all recorded media for extended periods.
- Providing a reliable voice communications network for Field Officers during daily duties.
- Providing a means to send live video feeds to central monitoring command post(s) to be more aware of the situation on the ground while on-the-move.
- Deter public from obstructing the field officers and field officers from using excessive amounts of force.

#### **II. PROJECT DESCRIPTION**

This Project involves the provision of the Body Worn Camera, a system for which the Body Worn Camera can offload all recorded content, a dispatching platform to enable the Body Worn Camera to offer real-time voice, video and data communications for the DPOS officers.

The offered solution is developed and designed for all Public Safety Agencies. It is based on a compact recording device that is attached to the law enforcement officer's body that integrates a digital camera for video recording, audio recording and photography, and a communication device capable of voice communication.

Since this device is attached to the officer, it enables hands-free recording of any incident handling in progress without affecting an ongoing task or a required action such as self-defense when threatened. It replaces manual means of incident logging to prevent recordings to be tampered with or lost accidentally.

III. PROJECT SCOPE OF WORK

- 276 sets of Body Worn Camera with Clip and Battery, supporting the insertion of a 4G SIM card for public network access and capable of livestreaming
- 23 sets of 12-slot Docking Station for the charging of Body Worn Camera and downloading of recorded media from the Body Worn Camera
- 1 set of Evidence Management System for the gathering of all recordings from all Body Worn Cameras to a Central Location for Centralized Management
- 1 set of NAS Storage attached to the Evidence Management System for ease of expanding the data storage accordingly to needs
- 1 set of Dispatching Platform to enable the Body Worn Cameras and the command center to communicate voice, video, and data
- Networking equipment such as routers, switches, and firewall to provide connection between the Body Worn Cameras on 4G Public Network and the application software at the data center
- Video Wall for the viewing of Live Video from the Body Worn Cameras

IV. AREA OF COVERAGE / TECHNICAL SPECIFICATIONS

Sl.#	Description	Technical Specification
1.	Item Name	Body Worn Camera
	Required Qty	Two Hundred Seventy-Six (276) Sets
	The device is designed to be worn on the torso. It features video recording and live video streaming capabilities	
	Supports quick startup within 6s after the device is powered on	
	Support the 1080P(30FPS), 720P(30FPS) and D1 (640*480 30FPS) for video streaming (online)	
	Support 4K (30FPS) resolution for local video recording (offline)	
	The body worn camera has a dedicated hardware button to mark a video as important when recording is in progress. A visible indicator will be shown on the body worn camera display if the video recording is marked.	
	Support 8 mega pixels, 16 mega pixels for still image snapshots	
	Support H.264/H.265 video coding and encoding	
	At least dual microphones	
	Support auto white balance and Infrared night-vision function	
	Support Camera Flash	
	Support hardware gyroscope and six-axis anti-shake algorithm, providing low video jitter	
	Speaker power at least 1W	
	Support wide-angle Field-of-view (FOV), horizontal angle of at least 128 degrees, vertical angle of at least 70 degrees	
	Support IEEE 802.11b/g/n Wi-Fi standards	
	Support Bluetooth 4.0 EDR or later	

	Support Nano SIM card slot	
	Support LTE network frequency, Band 1/2/3/4/5/7/8/20/26/28/38/40/39/41	
	Support streaming of real-time video, initiated from Body Worn Camera and initiated by Dispatching Console/Client	
	Support up to 32GB storage, support 64GB/128GB (customized) expansion if required	
	Support the automatic adjustment of video coding rate according to the wireless network condition	
	Support at least 8 hours continuous video recording in offline scenario 1080p with one additional replaceable battery	
	Support Mini USB interface for data transfer and charging	
	At least IP68 ingress protection rating	
	Supports 2 meters anti-drop (six sides) and compliant with the US military standard MIL-STD-810G	
	Support operating temperature of between -30°C and 55°C.	
	Support uninterruptible power supply for 3 to 5 minutes during battery replacement	
	Reach, RoHS, and CE certification	
	Standard package comes with: Data cable, cable charger adapter and back clip	
	Supports Video Recording Watermark:	
	GPS coordinates (Latitude, Longitude)	

Date & Time	
User ID	
Built-in Accelerometer	
Built-in Recording Indicator	
Built-in Battery Indicator	
Every operational activity of body worn camera worn should be recorded on the device activity log and may only be extracted by authorized operator. The device activity log records the following information but not limited to: <ul style="list-style-type: none"><li>• Panic Button Activation Time</li><li>• When Video Streaming was activated</li><li>• When device was Turned On/Turned Off</li><li>• Support dual-channel video streaming while video is being streamed to the dispatching platform for viewing, Body Worn Camera automatically starts recording locally</li></ul>	
Data SIM with 3 years data	
Three (3) years warranty & maintenance	

SL. #	Description	Technical Specification
2.	Item Name	Docking Station
	Required Qty	Twenty-Three (23) Units

	The Docking Station will allow the safe download of all recorded footage and transfer to the evidence management system	
	Support 4K H.265 HD video playback	
	Support 18.5 inches touch screen	
	Supports Windows 10 Operating System	
	Supports 12 independent slots for up to 12 BWC to charge and sync data simultaneously	
	System disk SSD 64GB. With at least 4TB HDD for data and up to 40TB expansion space	
	Support 110VAC to 240VAC	
	The device works properly within the range of 85% to 110% of rated power voltage	
	Automatically detects and identifies, and automatically copies the audio, video, pictures, and log materials from the BWC	
	Support resuming from breakpoint between the docking station and the Digital Evidence Management System (DEMS).	
	After data upload is complete, automatically clean the internal storage of the BWC	
	Automatic time synchronization with the connected body worn cameras is supported	
	Support charging of the connected BWC	
	Allows authorized users to view, playback, mark and delete imported data	
	Support file search based on the combination of username, time	
	The collected data can be stored locally or uploaded to a centralized management server for storage and archiving	
	The storage duration can be configured. Data that exceeds the storage period can be automatically deleted	
	When the local storage space of the collection site is lower than the threshold, an alarm will be automatically sounded as indication	
	User rights can be managed, including viewing, exporting, and deleting user rights	
	The Dock station can identify the connected devices automatically, unauthorized devices will not be able to connect to the dock station	
	Collected data is protected to prevent unauthorized processes from reading, modifying, and deleting collected video data and audio data	
	Three (3) years warranty & maintenance	

SL. #	Description	Technical Specification
3.	Item Name	Evidence Management System Software
	Required Qty	One (1) Lot
	Access and management of recorded video footage uploaded from connected cameras	
	Support the management of 50000 end users and 5 levels	
	System adopts the B/S architecture	
	Support querying all media data based on the department, time type, time range, username/alias, key mark, and media type	

Support the functions of pause, resume, fast-forward, rewind, playback in full screen, adjusting the volume, playback frame by frame, and screenshot.	
Support download of the file to a local directory	
Support unified management of user rights: operation rights and file access scope	
Support the restriction of unauthorized external devices to connect to the docking station	
Support users to add, modify, and delete collection stations, and query device information, device name, ID, device IP address, device vendor, device model, central storage, online status, maintenance owner, and device version	
Support the functions of add, view, modify, and delete file upload services, set service start time segments, and view storage service information, such as the IP address, online status, total capacity, and remaining capacity	
Support configuring storage service policies (storage duration), the storage period can be set for common files and important files	
Support the uploading of Body Worn Camera firmware package to the Dock Station for automatic firmware upgrading once the Body Worn Camera is docked	
Support unified login authentication. Login password and verification function	
Support integration to external NAS with NFS protocol to expand storage	

SL.#	Description	Technical Specification
4.	Item Name	Evidence Management System Server
	Required Qty	One (1) Set
	Evidence Management Servers with minimum server specification; The evidence management server allows administrators to manage all recorded video and create incidents and exports videos	
	Videos are watermarked to prevent unauthorized editing	
	CPU: 2 x Intel Xeon Silver 4210R 2.4G, 10C/20T, 9.6GT/s, 13.75M Cache, Turbo, HT (100W) DDR4-2400 or its equivalent benchmark processor;	
	Memory: 4 x 16GB RDIMM, 3200MT/s, Dual Rank	
	System Disk: 2 x 600GB	
	Data Disk: 14 x 4TB	
	Network Port : 1 x Intel Ethernet I350 Dual Port 1GbE BASE-T Adapter, PCIe Full Height 1 x Intel X520 Dual Port 10GbE SFP+ & i350 Dual Port 1GbE BASE-T, rNDC	
	Ports: Front ports: VGA, 2 x USB 2.0, dedicated IDRAC Direct Micro-USB Rear ports: VGA, Serial, 2 x USB 3.0, dedicated network port Video card: VGA	
	Raid Controller: 2GB NV Cache, Mini card	
	Fan: 6 Hot Plug Standard Fans	
	Power Module: Dual, Hot-plug, Redundant Power Supply (1+1), 750W	
	System management:	
	IPMI 2.0 compliant iDRAC9 with Lifecycle Controller (Express, Enterprise), Quick Sync 2 wireless module optional	

RAID Controller, 2GB NV Cache, Adapter, Low Profile	
RAID 5 Software	
Security: TPM 1.2/2.0 optional	
Cryptographically signed firmware	
Secure Boot	
Operating System: SUSE Linux Enterprise Server 12 SP4	

SL.#	Description	Technical Specification
5.	Item Name	NAS Storage
	Required Qty	One (1) Set
	System Architecture : The storage system uses a symmetric active-active architecture. LUNs do not belong to any controller. Service loads of a single LUN are balanced among all controllers. Minimum of 2 controllers per controller enclosure.	
	System should also offer convergence in SAN and NAS	
	CPU: at least 1 x 48 cores CPU with 2.6 GHz frequency per controller	
	Cache: The total cache capacity in the system is at least 384 GB	
	Front-end network :	
	should be able to support 10GE, 25GE, 40GE, InfiniBand and 1GE should have at least 8 x 10Gb Eth SFP ports	
	Usable Capacity: The total usable capacity should be at least 300TiB using RAID 6	
	Disk Configuration:	
	SAS SSD: 6 x 3.84TB	
	Hard Disk: 41 x 10TB NL SAS	
	Supported Data Protection Level RAID 5, RAID 6, RAID TP	
	Maintainability : Supports hot-swappable disks, power modules, and I/O modules	
	Provides an intuitive and user-friendly GUI facilitating system O&M	
	Snapshot : A snapshot is a fully usable copy of a specific data collection. Such a copy contains a static image of the source data at the copy point in time. A snapshot can be used for manufacturing tests and data backup and recovery.	
	Replication : Data at the primary site can be backed up to the remote DR site to ensure that the data can still be accessible when the primary site is damaged due to some unexpected reasons. If the primary system at the production site fails or the primary system must be taken off due to system maintenance or upgrade, the secondary system at the remote site can provide services for the upper-layer applications, minimizing the downtime.	
	Thin provisioning: thin provisioning that enables on-demand storage resource allocation	
	NAS basic software package: NAS functions. Supports NFS, CIFS, NDMMP, multi-tenancy, and directory quota	
	Global namespace : Supports global namespace	
	WORM : WORM. The data that has been written cannot be modified or deleted within the specific retention period but can be read multiple times, ensuring the security of mission-critical service files, and complying with laws and regulations	
	O&M features:	
	Supports real-time monitoring of hardware status, service software version, disks, system	

capacity, fan, and node service status.	
Supports system logs, alarm logs, device logs, and operation logs; Allows users to query logs by time and export logs	
Warranty : 3-year 24/7 manufacturer onsite service	
Market recognition : GartnerVendor should be a leader in the Gartner Magic Quadrant for Primary Storage	

SL.#	Description	Technical Specification	
6.	Item Name	Dispatching Platform Software	
	Required Qty	One (1) Lot	
	Video Streaming system is deployed in a Client-Server architecture. The video streaming server provides video streaming service		
	The system supports the video uploading to command center. The video resolution can support 1080p/720p/D1 video format		
	The Dispatching Console can initiate mobile video surveillance to pull video from Body Worn Camera and User Equipment		
	The Dispatching Software consists of the eMDC (Multimedia Dispatching and Processing Center) to dispatch and manage video services to meet the commanding and dispatching requirements in various complex environment.		
	The Dispatching Software consists of the eUDC (User and Device Controller) to centrally manage all terminals. All terminals can be remotely configured, and user permission policies are also managed by the eUDC.		
	The eUDC provides functions including user (body worn camera) registration and user service control. Certain functions or services can be disabled for users when required.		
	The eUDC and the eMDC of the Dispatching Software shall be co-deployed on one server.		
	The Dispatching Console consists of the eDC (Dispatching Console), which is a client software that can be installed on a laptop, desktop, or workstation. The Dispatching Console provides man-machine interface for HD video dispatching services. The Dispatching Console can view user information, group information. The Dispatching Console can also provide video surveillance on deployed body worn cameras.		
	The Dispatching Software supports H.265 encoding to reduce bandwidth consumption		
	Supports concurrent uploading of up to 28 channels of video streams		
	The Dispatching Software shall be able to specify the maximum number of login attempts. If a wrong password is entered for this maximum number of attempts the account will be locked.		
	The Dispatching Software shall be able to specify the duration that the account will be locked. This duration is in minutes.		
	The Dispatching Software shall be able to specify the validity period of an account.		
	Support ONVIF and GB28181 for connecting of fixed camera to the dispatching software for video streaming		

SL.#	Description	Technical Specification	
7.	Item Name	Dispatching Platform Server	
	Required Qty	One (1) Set	
	The Video Streaming Server is installed with the Video Streaming Application Software that allows for the live streaming of video.		

	CPU: 2 x Intel Xeon Gold 5218 2.3G, 16C/32T, 10.4GT/s, 22M Cache, Turbo, HT (125W) DDR4-2666 Or its equivalent benchmark	
	Memory: 2 x 64GB RDIMM, 3200MT/s, Dual Rank	
	Storage: 5 x 1.2TB 10K RPM SAS 12Gbps 512n 2.5in Hot-plug Hard Drive	
	Network port: 1 x Intel Ethernet I350 Dual Port 1GbE BASE-T Adapter, PCIe Full Height 1 x Intel X520 Dual Port 10GbE SFP+ & i350 Dual Port 1GbE BASE-T, rNDC	
	Port: Front ports: VGA, 2 x USB 2.0, dedicated iDRAC Direct Micro-USB Rear ports: VGA, Serial, 2 x USB 3.0, dedicated iDRAC network port Video card: VGA	
	Fan: 6 Hot Plug Standard Fans	
	Power Module: Dual, Hot-plug, Redundant Power Supply (1+1), 750W	
	System management: IPMI 2.0 compliant iDRAC9 with Lifecycle Controller (Express, Enterprise) Quick Sync 2 wireless module optional	
	RAID Controller, 2GB NV Cache, Adapter, Low Profile RAID 5 Software	
	Security: TPM 1.2/2.0 optional Cryptographically signed firmware Secure Boot	
Operating System: SUSE Linux Enterprise Server 11 SP3		

SL. #	Description	Technical Specification
8.	Item Name	Core Switch
	Required Qty	Two (2) Sets
	Interface	Minimum 48 × 10 Gig SFP+, 6 x 40/100 Gig QSFP28
	Switching capacity	Minimum 2.16 Tbit/s
	Forwarding performance	Minimum 940 Mpps
	System buffer	Minimum 40MB
	MAC	Minimum 256K MAC address entries
	VLAN	Support QinQ
		Adding access, trunk, and hybrid interfaces to VLANs
	ARP table size	Minimum 256K
	IP routing	IPv4 routing protocols, such as RIP, OSPF, IS-IS, and BGP. IPv6 routing protocols, such as RIPv6, OSPFv3, IS-ISv6, and BGP4+, IP packet fragmentation and reassembly
	Network virtualization	VXLAN, BGP-EVPN, QinQ access VXLAN



Programmability	OPS programming, Ansible-based automatic configuration and open-source module release
QoS/ACL	Traffic classification based on Layer 2, Layer 3, Layer 4, and priority information;
	ACL, CAR, re-marking, and scheduling;
	Queue scheduling modes such as PQ, DRR and PQ+DRR;
	Congestion avoidance mechanisms, including WRED and tail drop;
	Traffic shaping;
Security and management	Support 30K ACL numbers
	Command line authority control based on user levels, preventing unauthorized users from using commands;
	Defense against DoS address attacks, ARP storms, and ICMP attacks
	Port isolation, port security, and sticky MAC
	Link Aggregation Control Protocol (LACP);
Reliability	STP, RSTP, VBST, and MSTP
	Hardware-based Bidirectional Forwarding Detection (BFD)
	Network management protocols, such as SNMPv1/v2/v3
Configuration and maintenance	Console, Telnet, and SSH terminals;
	Zero Touch Provisioning (ZTP)
	Provide Dual AC Power from day one
Fan modules	Hot-swappable, Redundant Fan Module
Reference Document	Bidder should submit the required compliance reference document for the proposed device.
Warranty	Period of warranty shall be 03 (Three) years for part from the date of commissioning. Bidder shall provide manufacturer's 36 months comprehensive warranty. OEM should have a local Support/ Service Center in Philippine.
Installation & Commissioning	Bidder will carry out on site Installation, testing and commissioning with necessary accessories.

SL.#	Description	Technical Specification
9.	Item Name	Management Switch
	Required Qty	Two (2) Sets
	Interface	Minimum 48 x 10/100/1000BASE-T ports, 4 x 10 GE SFP+ ports
	Switching capacity	Minimum 176 Gbit/s
	Forwarding capacity	Minimum 125 Mpps
	MAC address table	MAC address learning and aging
		Minimum 64K MAC entries

		Static, dynamic, and black hole MAC address entries	
		Minimum 4K VLANs	
		Guest VLAN and voice VLAN	
		MUX VLAN or equivalent	
	VLAN features	VLAN assignment based on MAC addresses	
		VLAN mapping	
		VXLAN support for future use	
		RRPP ring topology	
		SEP	
		ERPS (G.8032)	
	Ethernet protection	STP (IEEE 802.1d), RSTP (IEEE 802.1w), and MSTP (IEEE 802.1s)	
	loop	BPDU protection, root protection, and loop protection	
		PIM-DM, PIM-SM, PIM-SSM	
	Multicast	IGMPv1/v2/v3 and IGMPv1/v2/v3 snooping	
		Port-based multicast traffic statistics	
		Static route, RIPv1/2, RIPvng, OSPF, OSPFv3, BGP4+, IS-ISv6	
	IP routing	Minimum8K FIBv4 entries	
		Minimum3K FIBv6 entries	
		Minimum 3K ND entries	
	IPv6 features	Path MTU (PMTU)	
		EFM OAM (802.3ah)	
	Reliability	CFM OAM (802.1ag)	
		LACP, LLDP	
		Stack technologies,	
	Management and maintenance	SNMPv1/v2c/v3	
		RMON	
	Power supply	Redundant AC Power Supply from day one.	
	Fan	Air-cooling heat dissipation and intelligent speed adjustment	
	Reference Document	Bidder should submit the required compliance reference document for the proposed device.	
	Installation & Commissioning	Bidder will carry out on site Installation, testing and commissioning with necessary accessories.	

SL.#	Description	Technical Specification
10.	Item Name	NOC Switch
	Required Qty	One (1) Set
	Fixed Port	Support twenty-Four 10/100/1000Base-T ports and four SFP+ ports
	Operating Temperature	-5°C to +45°C
	Storage Temperature	-40°C to +70°C
	Relative Humidity	5% to 90% (non-condensing)
		≥ 16K MAC address entries
		Switching capacity ≥ 32 Gbps
		≥ 4K active VLANs
		IEEE 802.1d
	Layer 2 Function	Automatic learning and aging of MAC addresses
		IEEE 802.1w
		IEEE 802.1s
		≥ 4K FIBv4 entries
		≥ 1K FIBv6 entries
	Layer 3 Function	Static routes
		RIP V1/2 and RIPvng
		OSPF and OSPFv3
		Rate limiting for incoming and outgoing packets on an interface
	QoS/ACL	802.1p and DSCP priority re-marking
		Layer 2 to Layer 4 packet filtering
		Queue-based rate limiting and traffic shaping on an interface
		MFF
		NAC function
	Security Features	AAA authentication and RADIUS authentication
		IEEE 802.1X/MAC/Portal authentication
		SSH V2.0/HTTPS
	Reliability	Eth-Trunk
		LLDP
		Y.1731
	Management and Maintenance	SNMPv1/v2c/v3
		RMON
	Ring protection	RRPP

protocol	
Reference Document	Bidder should submit the required compliance reference document for the proposed device.
Installation & Commissioning	Bidder will carry out on site Installation, testing and commissioning with necessary accessories.

SL.#	Description	Technical Specification
11.	Item Name	Core Router
Required Qty	Two (2) Sets	
Slot	4*WSIC; 4*SIC	
Performance	WAN with service performance (IMIX) $\geq$ 10Gbps.	
Fixed Interface	14 * 10GE SFP+(compatible with GE SFP) +10 * GE RJ45 (All WAN ports can be configured as LAN)	
Interface Type	WAN interface: Support FE, GE, 10GE Support 5G and LTE Interface card	
Operating Temperature	0-45 °C	
LAN Access	Support IEEE 802.1P, 802.1Q standard. Support IEEE 802.1d (STP), 802.1w (RSTP), 802.1s (MSTP) standard. Support static MAC address and dynamic MAC address. Support MAC address limit, LLDP, Transparent bridge.	
WAN Access	Support PPP, MP, PPPoE C/S Support route backup and circular DCC. Support IPv4 and IPv6 PPP, MLPPP. Support NAT, NAT ALG. Support DNS Client, DNS proxy/relay, DDNS, DNS6 Client, DNS6 Proxy/Relay.	
IP Application	Support IPv4 VRRP, VRRP6. Support NQA ICMP/UDP/TCP/SNMP/FTP/HTTP UDP jitter test/DHCP/Trace/DNS test. Support DHCP Client, DHCP relay, DHCP Server, DHCPv6 Client, DHCPv6 relay and DHCPv6 Server. Support RIPv1/v2, RIPvng, OSPFv2, OSPFv3, IS-IS, IS-ISv6, BGP4, BGP4+, MBGP. Support Smart Policy Route.	
Routing	Support IGMPv1/v2/v3, IGMP Proxy. Support PIM-DM, PIM-SM and PIM SSM.	
MPLS	Support IPv4 LDP and LDP FRR. Support Hub-Spoke VPN, HoVPN, Support MCE, Support manual VPN FRR and VPN Auto FRR.	

	Support local CCC, SVC VLL, Martini VLI, and inter-domain Martini VLL.	
	Support MPLS TE.	
VPN	Support GRE, L2TP, IPsec VPN	
	IPsec tunnels $\geq 6000$ .	
	Support DSVPN or similar VPN.	
Wireless Network (AC)	Support A2A VPN	
	Support AC function without additional hardware. At least support to manage 64 APs.	
	Support WEP, WPA, WPA2;	
	Support WLAN QoS	
Security	Support packet filtering firewall, ASPF, Attack defense, Active/Standby firewall.	
	Support 802.1x & MAC authentication	
	Support Web authentication, User access management.	
	Support ARP packet suppression, ARP spoofing, DAI, Broadcast suppression	
	Support ICMP attack defense, uRPF, IPSG, Attach Source Track	
	Support IPS, URL filtering & files Filtering	
QoS	Support basic IPv4 ACLs, extended IPv4 ACLs, and Ethernet frame header-based Layer 2 ACLs and name ACLs.	
	Support CAR, Shaping, WRED	
	Support SP/WRR/SP+WRR on LAN port, PQ/CBWFQ on WAN port	
	Support sub-interface QoS, FR QoS, IPv6 QoS, ATM QoS and hierarchical QoS.	
Reliability	Support Smart Application Control (SAC)	
	All interface cards support hot-swappable.	
	Support VRRP	
OAM	Support Netstream or other similar features	
	Support FTP/FTTP, SSH, Telnet.	
	Support SYSLOG, SNMP V1/V2/V3, RMON, Web Management.	
	Support NetConf/YANG.	
Reference Document	Support USB drive to configure devices for plug-and-play.	
Warranty	Bidder should submit the required compliance reference document for the proposed device.	
	Period of warranty shall be 03 (Three) years for part from the date of commissioning. Bidder shall provide manufacturer's 36 months comprehensive warranty. OEM should have a local Support/ Service Center in Philippines	
Installation &	Bidder will carry out on site Installation, testing and commissioning	

Commissioning	with necessary accessories.
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SL. #	Description	Technical Specification	
12.	Item Name	Access router	
	Required Qty	Seven (7) Sets	
	Performance	Forwarding Performance ≥1Gbps	
	Fixed interfaces	WAN interfaces ≥2*GE LAN interfaces ≥8*GE RJ45	
	LTE	Support LTE Interface card	
	LAN Access	Support IEEE 802.1P, 802.1Q standard. Support IEEE 802.1d (STP), 802.1w (RSTP), 802.1s (MSTP) standard. Support static MAC address and dynamic MAC address. Support MAC address limit, LLDP, Transparent bridge. Number of VLANs ≥= 128.Number of MACs ≥=2048	
	WAN Access	Support PPP, MP, PPPoE C/S, Support route backup and circular DCC. Support IPv4 and IPv6 PPP, MLPPP.	
	IP Application	Support NAT, NAT ALG, NAPT Support DNS Client, DNS proxy/relay, DDNS, DNS6 Client, DNS6 Proxy/Relay. Support IPv4 VRRP, VRRP6. Support NQA ICMP/UDP/TCP/SNMP/FTP/HTTP UDP jitter test/DHCP/Trace/DNS test.	
	IPv6 Tunnel	Support DHCP Client, DHCP relay, DHCP Server, DHCPv6 Client, DHCPv6 relay and DHCPv6 Server. ISATAP tunnel. 6 over 4 manual tunnel. Supports IPv4 address-compatible automatic tunnel. 6 over 4 GRE tunnel.	
	Routing	Support RIPv1/v2, RIPvng, OSPFv2, OSPFv3, ISIS, ISISv6, BGP4, BGP4+,MBGP. Support Smart Policy Route. Support IPv4 LDP and LDP FRR.	
	VPN	Support GRE, L2TP, IPsec VPN, IPsec tunnels ≥2000 Support DSVPN or similar VPN	
	Security	IPsec Performance Up to 800Mbps Support packet filtering firewall, ASPF, Attack defense, Active/Standby firewall. Support Zone-based Stateful FW Support 802.1x & MAC authentication Support Web authentication, User access management. Support ARP packet suppression, ARP spoofing, DAI Support ICMP attack defense, uRPF, IPSG, Attach Source Track Support IPS, URL filtering & files Filtering	

QoS	Support basic IPv4 ACLs, extended IPv4 ACLs, and Ethernet frame header-based Layer 2 ACLs and name ACLs. Support CAR, Shaping, WRED Support SP/WRR/SP+WRR on LAN port, PQ/CBWFQ on WAN port Support sub-interface QoS, IPv6 QoS, ATM QoS and hierarchical QoS.
	Support Smart Application Control (SAC)
Reliability	Single-hop and multi-hop BFD, BFD for VRRP, BFD for a routing protocol. Support VRRP
OAM	Support Netstream or other similar features
	Support FTP/TFTP, SSH, Telnet,
	support SYSLOG,SNMP V1/V2/V3,RMON,Web Management
	Support NetConf/YANG.
	Support USB drive to configure devices for plug-and-play.

Sl. #	Description	Technical Specification
13.	Item Name	Firewall
	Required Qty	Two (2) Sets
	Basic Firewall	The appliance-based security platform should be a stateful NGFW, Next-Generation IPS, malware protection, URL protection, providing firewall, application visibility, and IPS functionality in a single appliance.
	Hardware Architecture	8×GE COMBO + 4×GE RJ45 + 4×GE SFP + 6×10GE SFP+ Single AC power supply; optional dual AC power supplies
	Performance Requirements	Layer 3 throughput ≥20Gbps; concurrent connections per second ≥ 8,000,000; new connections per second ≥200,000; IPSec VPN throughput (AES-256,1420 byte) ≥20 Gbps
	Routing	Application controlling and IPS throughput ≥ 10Gbps; Supports static routes, policy-based routing, and routing protocols such as RIP, OSPF, BGP, and IS-IS;
	Intelligent Selection	Policy-based routing supports the following matching conditions: source IP address, destination IP address, service type, application type, user/user group/security group, inbound interface, and DSCP priority.
	NAT	Supports service specific PBR and intelligent uplink selection based on multiple load balancing algorithms (for example, based on bandwidth ratio and link health status) in multi-egress scenarios. Supports full NAT functions and NAT ALG for multiple application-layer protocols, including ILS, DNS, PPTP, SIP, FTP, ICQ, RTSP, MSN, and MMS. Supports Source NAT automatic detection and exclusion of invalid

	addresses in NAT address pools.	
	Firewall should support NAT444, NAT66 (IPv6-to-IPv6) , Nat46 (IPv4-to-IPv6) and DS-Lite NAT	
Traffic Control	Supports application-layer protocol-based traffic control policies, including setting the maximum bandwidth, guaranteed bandwidth, and protocol traffic priority.	
	Supports bandwidth guarantee based on users and IP addresses.	
	Supports maximum number of connections per IP address or user.	
	Supports attack detection and prevention based on over 7000 local signatures.	
	Supports the customization of intrusion prevention policy templates based on scenarios.	
Intrusion prevention and antivirus	Supports brute-force cracking prevention for common application services (HTTP, FTP, SSH, SMTP, and IMAP) and database software (MySQL, Oracle, and MSSQL).	
	Supports malicious domain name-based filtering to block C&C.	
	Supports antivirus for protocols such as HTTP, FTP, SMTP, POP3, IMAP, and NFS.	
URL Filtering	Provides a URL category database with over 120 million URLs and accelerates access to specific categories of websites, improving access experience of high-priority websites.	
	Supports DNS filtering, in which accessed web pages are filtered based on domain names.	
	Supports the SafeSearch function to filter resources of search engines, such as Google, to guarantee access to only healthy network resources.	
DDoS Defense	Supports application-layer flood attacks such as HTTP, HTTPS, DNS, and SIP, supports traffic auto-learning, the setting of the auto-learning time, and automatic generation of anti-DDoS policies.	
Policy & Management	Allows users to configure security policies based on time, user/user group/security group, application-layer protocol, geographical location, IP address, port, domain name group, URL category, access type, VLANID and content security.	
Network access user authentication	Supports multiple user authentication methods, including local, RADIUS, HWTACACS, AD, and LDAP.	
Reliability	Supports BFD link detection and association of BFD and VRRP/OSPF to implement rapid active/standby switchover.	
	Supports the smooth upgrade of HA(Active/Active or Active/Standby) Mode, the software of different versions can be used for hot standby.	
Product certification	Has been listed as Leader or Challenger in Gartner Magic Quadrant,	
Reference Document	Bidder should submit the required compliance reference document for the proposed device.	
Protection License	The bidder must provide minimum 3 (Three) years Threat protection service include IPS, URL, AV from day one.	
Warranty	Period of warranty shall be 03 (Three) years for part from the date of commissioning. Bidder shall provide manufacturer's 36 months comprehensive warranty. OEM should have a local Support/ Service Center in Philippine.	
Installation & Commissioning	Bidder will carry out on site Installation, testing and commissioning with necessary accessories.	



SL.#	Description	Technical Specification
14.	Item Name	Video Wall Monitor
	Required Qty	Eight (8) Sets
	LED monitors must have a bezel no more than 0.88mm	
	Must be at least 55-inches diagonal	
	Must provide micro-adjustable wall mount bracket for each display	
	Must provide required support and accessories for the installation of the LED monitors	
	Must support resolution of up to 1920 x 1080 pixels	
	Must support brightness of at least 500cd/m <sup>2</sup>	
	Must support a viewing angle of 178° horizontal and 178° vertical	
	Must have HDMI, DVI in and HDMI out interface	
	Must support 24-hour operation	

SL.#	Description	Technical Specification
15.	Item Name	Video Wall Controller
	Required Qty	One (1) Set
	Modular frame with minimum 11-card slots	
	Must have a minimum of 8-channel HDMI inputs and support resolution up to 1920 x 1200	
	Must have a minimum 12-channel HDMI outputs and support resolution up to 1920 x 1200	
	Must support 1/4/9/16 image division of a single output interface, and the full screen switching of sub windows	
	Must support displaying dynamic images on multiple display terminals at the same time	
	Must have built-in matrix	
	Must support 4K@60 Hz input, transmission and output	
	Must have two (2) 10/100/1000M self-adaptive Ethernet interface	
	Must have at least one (1) 10G optical interface	
	Must support decoding standard stream such as H.264/H.265	

SL.#	Description	Technical Specification
16.	Item Name	Transfer of Technology
	Required Qty	One (1) Lot
	The supplier must provide at least 1 member of staff per shift with the three (3) 8hour shifts per day for a period of 12 months	
	Members of staff will assist Quezon City personnel with the day management of the system and system maintenance	

SL.#	Description	Technical Specification
17.	Item Name	PC Workstation
	Required Qty	Seven (7) Sets
	CPU: Intel Xeon W-2223 (8.25 MB cache, 4C/8T, 3.6 GHz to 3.90 GHz Turbo 120W) Or its equivalent benchmark	
	RAM: 16GB	
	NIC: Integrated NIC	
	Graphic Card: 4GB GDDR6	
	Audio Card: Integrated Audio Card	
	Storage: M.2 512GB PCIe NVMe Class 40 SSD + 2TB 7200 RPM, 3.5-inch SATA HDD 256 MB cache	
	OS: Windows 10 Pro 64-Bit	
	Display: 24-inch FHD Monitor x 2 /set	
	Accessories: USB Keyboard and Mouse, 600VA UPS	
	Application: MS Office 2019 perpetual license	
	Antivirus: Antivirus - 2yrs Subscription	

**V. PROJECT STANDARDS & REQUIREMENTS**

The following are the minimum qualifications and requirements for the Contractor:

- Bidder must provide manufacturer certificate for Body Worn Camera System, Network and Storage as authorized Partner;
- Bidder must have a minimum of Ten (10) year experience in supplying, commissioning, and servicing systems related to the project.
- Bidder must have completed at least 1 significant Body Worn Camera project in supplying, commissioning, and servicing systems related to the project in the last 3 years.
- Must have the capacity to support replacement of parts and provide reliable service during the warranty period.
- Bidder must have at least one (1) Project Manager with a Minimum of Three (3) years of project Management, Coordination, and Implementation.
- Bidder must provide functional designs of the systems to be provided.
- Bidder must indicate the model numbers, specifications, and source of origin of all products to be bid.
- Bidder must submit a service level certificate indicating the coverage of the warranty of the products and the nature of services.

**VI. TRAINING**

Once the system is installed and fully operational, the winning bidder/supplier shall conduct the following trainings.

	MODULE	TARGET PARTICIPANTS
1.	BWC System Basic Operations Training	10 QC DPOS Personnel – 1 day [8 hours]
2.	Operations and Maintenances Training	10 QC DRRMO Personnel – 1 day [8 hours]

**VII. PROJECT DURATION**

Project duration is Two Hundred Ten (210) calendar days upon issuance of Notice to Proceed,

**VIII. APPROVED BUDGET FOR THE CONTRACT**

Approved Budget for the Contract is one hundred thirteen million three hundred four thousand three hundred sixty-three pesos (Php 113,304,363.00).

**No Price Adjustment**

The Project cost shall be fixed and there shall be no price adjustments applicable for the duration of the contract except when the operations costs are increased by more than 10% because of any extraordinary circumstance as determined by the National Economic Development Authority (NEDA). Pursuant to the provisions of RA 9454 and its IRR on contract price escalation, all contract price escalation shall be approved by the Government Procurement Policy Board (GPPB).

**IX. BASIS OF PAYMENT**

The terms and conditions of Payment for the project. Defines what a contractor will be paid for the service or goods bought, and the duration of the contract. The method of payment stipulates how payment is to be made.

Item	Deliverables	Payment Percentage
<b>Delivery &amp; Installation of 1-lot BWC System and Videowall System</b> (276) Body Worn Camera (23) Docking Station (1) Digital Evidence Management System – Software (1) Dispatching Platform (1) Dispatch Server (1) Digital Evidence Management System Server (7) Dispatch Workstation (14) 24” FHD Monitor (8) 55” FHD LED Monitor (8) Videowall Mounting System with Rails	Project Acceptance Document: Receipt, Inventory, Installation Completion and Maintenance & Warranty Certificate	15%

(1) Videowall Controller (2) 4ch HDMI Input Card (3) 4ch DVI Output Card		
<b>Delivery &amp; Installation 1-lot Network and Storage System</b> (2) Firewall (2) Router (2) 10GE Switch (2) 1GE Switch (1) NOC Access Switch (7) Access Router (1) NAS Storage	Project Acceptance Document: Fully Delivered System and Documentation Completion and Maintenance & Warranty Certificate	75%
Training	Training Certificate	10%


**X. PENALTIES FOR BREACH OF CONTRACT**

Failure to deliver the services according to the standards and requirements set by the City shall constitute an offence and shall subject the Contractor to penalties and/or liquidated damages pursuant to RA 9184 and its revised Implementing Rules and Regulations.

**XI. CANCELLATION OR TERMINATION OF CONTRACT**

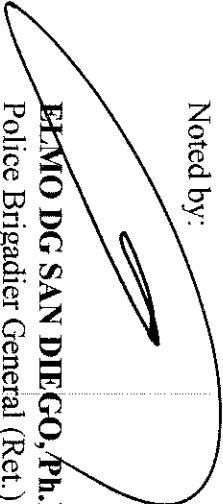
The guidelines contained in RA 9184 and its revised IRR shall be followed in the termination of any service contract. In the event the City terminated the Contract due to default insolvency, or for cause, it may enter negotiated procurement pursuant to section 53 (d) of RA 9184 and its IRR.

Prepared by:



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