



## **ATTACHMENT A**

## 1. Introduction

This document outlines the technical requirements to provide CCTV System.

The recommendations of this document are limited to the cameras, servers, and other related video surveillance equipment installed within the CBSA controlled area of the *Emerson Commercial Expansion Site*.

## 2. Scope

The recommendations of this document are limited to the cameras, servers, and other related video surveillance equipment installed within the CBSA controlled area of the Emerson Commercial upgrade Site.

### 2.1 Tasks (not inclusive of all items)

The vendor must provide a 30 day follow-up visit on-site (after the commissioning of the site) to review any questions/concerns that the project authority has and verify the current state of the system.

Vendor must:

1. Install/Mount cameras in compliance with each specific manufacturer's installation guidelines; whether or not all required parts, components, systems, software or accessories are specified in the project's document. The vendor will determine on the site visit what additional hardware (screws, t- bar mounts, pedestal mounts, mid- spans, etc.) are required in order to install cameras at the pre-determined locations. The additional required hardware must be listed and line itemed as part of the bid package. Conduit leading up to the camera (not specified in Annex) must be provided and the cable ends terminated.
2. Provide all knowledge, labour, materials, scissor lifts, tools, equipment and services.
3. Install Milestone XProtect Corporate (latest released version) software on the server(s) and workstation(s). Assign cameras and workstations IP addresses (sequence to be provided by Project Authority) and configure the cameras in the software. Assign roles/users and set-up rules in the software (specific role/user/rule set-up to be provided by the Project Authority)
7. Provide any needed patch cables, HDMI or any other cables that may be required for a fully operational system.
8. All exterior cameras must be securely mounted using hardware that prevents wind from shaking the camera. This includes all hanging/suspended cameras as well. Hardware may have to be provided. This should be verified by the vendor at the site walk through and must be included in as a line item in the bid.
9. Conceal all connections and cables and use only tamperproof hardware on the exterior of the building(s)
10. Perform compliance verification tests along with the project authority, prior to final delivery and acceptance of the system. The Contractor must provide personnel, equipment, instruments and other supplies to perform the test. The compliance test shall demonstrate that the installed Video Management

System components function and comply with the project technical expectation and specifications.

11. Supply and install burial grade cabling in conduit pathways shown between camera and control equipment locations.
12. Contractor shall supply and install fiber optic cabling
13. Provide required power for viewing stations.
14. Provide a software license code, device license keys and corresponding Software Upgrades Packs.

The Contractor will provide a written warranty statement detailing each manufacturer's hardware warranties for any contractor supplied equipment. The written warranty is to cover all system components. The written warranty is to describe, in detail, the warranty policy for each equipment manufacturer.

The Contractor shall guarantee all labor, workmanship and new materials for a period of one (1) year from the date of substantial completion. Should failure occur within the first year, the Contractor shall provide all labor, materials necessary to restore the system to its original condition at no cost to CBSA. Should a failure occur due to an unforeseen circumstance such as lightning, fire or an act of God event, this warranty condition will be waived.

A report detailing each installed component's serial number, manufacturer name (including complete model number) and IP address (where applicable).

A security clearance of CBSA Reliability is required pursuant to the Government of Canada Policy on Government Security.

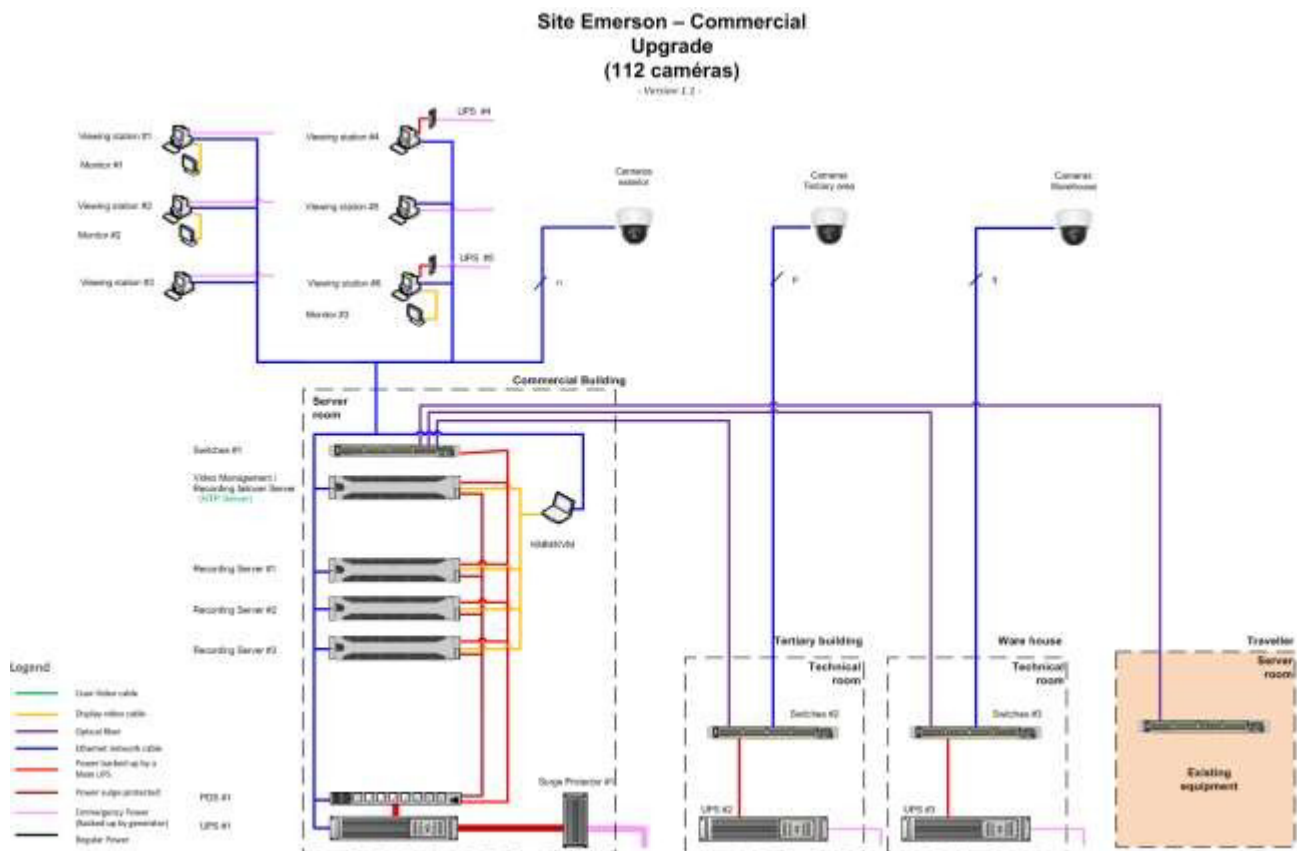
### **3. Requirements concerning the CCTV System equipment in General**

The supplied equipment and services must meet or exceed all of the specifications defined below. The supplied equipment is to be new, not used or refurbished. Generally, where applicable, the equipment supplied must be compliant and compatible with the requirements of the existing CBSA environment that hosts the equipment; this includes, but not limited to the available electric power, the connection type, the available voltages and the heat dissipation capacity (BTU) of this environment. As an additional criteria, it is desirable where available, to utilise a higher voltage source, for greater efficiency and power saving. It is the contractor's responsibility to ensure that the equipment it provides and it installs respect this compliance and compatibility. Systems not meeting all the following Mandatory Specifications will be considered non-compliant.

Please note that compliance with the stated criteria must be demonstrated by submission of supporting documentation such as technical literature/brochures, operating manuals, and/or written statement describing how each requirement is met. If a bidder only states "comply" without any further details, this is not considered as a demonstration of compliance.

**Proposal evaluation will be based upon the information supplied with the bid only. Failure to demonstrate compliance with any area of the criteria will render your proposal non-responsive and no further consideration will be given. References are to be specific to supporting documentation (ex. document title, page, and paragraph number).**

#### 4. CCTV System Architecture Specifications



**Figure 1 - CCTV System Architecture Diagram**

The diagram above represents the CCTV System architecture for the CBSA controlled areas of the concerned POE site.

This management and recording device is sized to be able to manage about 120 cameras. The site includes a server room which contains the CCTV equipment including but not limited to, servers, switches, UPS and all necessary IT accessories.

The CCTV solution includes:

- One (1) x Video Management / Video Recording Failover Server
- Three (3) x Video Recording Server

Note that the first server hosts both the Video Management and the Video Recording Failover applications. Video recording for all cameras should be done by default on the Video Recording Servers. In the event of a Video Recording Server failure, all assigned cameras to this server must switch to record on the Video Management / Video Recording Failover Server.

The total capacity of the storage solution is at least 94 TB for 30 days while the backup storage for 5 days is estimated to be at least 16 TB.

Existing Equipment in the above diagram is for future expansion purposes and is not part of this scope.

Six viewing stations allow operations officers to operate the video surveillance system.

The Video Management and Recording device located in the server room will be powered by a main UPS system that will be supported by the site generator. This main UPS will support the rack equipment in the server room, and may in case of power failure, keep the equipment power with a medium runtime, as defined in the UPS requirements table. Once the battery is below a minimum threshold, the UPS will softly shutdown all the equipment in a sequential manner.

The main viewing stations, located in the main officer room will be powered by UPS.

#### 6.1 Equipment by zone

Zone	Reference #	Equipment count
Exterior Commercial	D-2.3-100/VEW5	39
Exterior Commercial	D-1.2-80/VEW5	23
Exterior Commercial	Z-1-60-x30/E	14
Exterior Commercial	D-5-80/VEW1	11
Exterior Commercial	D-2.3-100/VW5	1
Interior Commercial	D-1.2-80/VW5	2
Interior Commercial	D-2.3-100/VW5	1
Interior Commercial	Z-1-60-x30	4
Interior Commercial	D-2.3-100/V	7
Interior Commercial	D-5-80/VEW1	4
Interior Commercial	D-1.2-100/V	6
Main Bulding	RCK-4532:GEN	1
Tertiary Building	RCK-W-1022:IT	1
Warehouse	RCK-W-1022:IT	1
Commercial Building	JOY-I:U	1

Traffic Building	JOY-I:U	2
Main building	KMM:VGA-2USB	1
Main building	KVM:8	1
Commercial Building	MNT-24	1
Traffic Building	MNT-24	2
Commercial Building	PDS-U	1
Commercial Building	SRV-R-L:R/R6-32TB	3
Commercial Building	SRV-R-L:MRF/R5-8TB	1
Commercial Building	SUR-U/120	1
Commercial Building	SWT-R:BB/P_PP	1
Commercial Building	SWT-R:S/P_PP	2
Commercial Building	UPS-R:H5.5	1
Commercial Building	UPS-T:WST0.9	1
Tertiary Building	UPS-R:M1.5	1
Warehouse Building	UPS-R1:S0.7	1
Commercial Building	VST-D-M32:CV/16	1
Commercial Building	VST-D-M24:CV/9	2
PIL Area	VST-D-M24:CV/4	1
Traffic Building	VST-D-M32:CV/16	2
Commercial Building	VMS-C	3
Commercial Building	VMS-M:F/L	1

PIL area	VMS-C	1
Traffic	VMS-C	1
Traffic Building	VMS-C	1

## 6.2 Equipment summary

Reference #	Equipment count
D-2.3-100/VEW5	39
D-1.2-80/VW5	2
D-2.3-100/VW5	2
D-1.2-80/VEW5	23
Z-1-60-x30/E	14
D-5-80/VEW1	15
Z-1-60-x30	4
D-2.3-100/V	7
D-1.2-100/V	6
RCK-W-1022:IT	2
RCK-4532:GEN	1
JOY-I:U	3
KMM:VGA-2USB	1
KVM:8	1
MNT-24	3
PDS-U	1

SRV-R-L:R/R6-32TB	3
SRV-R-L:MRF/R5-8TB	1
SUR-U/120	1
SWT-R:BB/P_PP	1
SWT-R:S/P_PP	2
UPS-R:H5.5	1
UPS-R:M1.5	1
UPS-R1:S0.7	1
UPS-T:WST0.9	1
VST-D-M32:CV/16	3
VST-D-M24:CV/9	2
VST-D-M24:CV/4	1
VMS-C	6
VMS-M:F/L	1

## 5. Cabling Recommendations

### *Cabling standards*

CBSA CCTV systems cabling must meet at least the following list of standards, where applicable:

- ANSI/TIA/EIA-568B (or CAN/CSA T529 M), Commercial Building Telecommunications wiring standard and all the Telecommunications Bulletin Boards (TSBs') and Addenda issued by the above standard body at the time of tender.
- CSA C22.1 Canadian Electrical Code, Part 1 19TH Edition (2002) and BC Amendments.
- CAN/CSA C22.2 No. 232-M Optical Fibre Cables
- EIA/TIA-568-B2 (2001) Commercial Building Standard for Telecommunications Cabling Standard Part 2 (Balanced Twisted – Pair Cable component).
- EIA/TIA-606-A (2002) - Administration Standard for Commercial Telecommunications appendix.
- ANSI/EIA/TIA-607 (or CSA T527), Commercial Building Grounding and Bonding requirements



for telecommunications.

- BICSI Telecommunications Distribution Method Manual 10th Edition.
- BICSI Information Transport System Manual 4th Edition
- CAN/ULC S102.4-M – (1987) Test for Fire and Smoke Characteristics of electrical Wiring and Cable
- ANSI/TIA/EIA-492AAAB (1998), Detailed Specification for 50mm Core Diameter/125 mm Cladding Diameter Class 1a Multimode, Graded-Index Multimode Optical Waveguide Fibres.
- ANSI/TIA/EIA-492BAAA, Detailed Specifications for Class IVa Dispersion-Unshifted Singlemode Optical Waveguide Fibres Used In Communications Systems.
- ANSI/TIA/EIA-455-61, FOTP-61 Measurement of Fibre or Cable Attenuation
- ANSI/TIA/EIA-526-14A, OFSTP14A (1998) Optical Power Loss Measurement of Installed Multimode Fibre Cable Plant.
- ANSI/TIA/EIA-604-3, FOCIS 3 Fibre Optic Connector Intermateability Standard.
- ANSI/ICEA S-83-596, Fibre Optic Premises Distribution Cable
- National Building Code / Provincial Building Code
- ANSI Z136.2, American Standards For The Safe Operation Of Optical Fibre Communication Systems Utilizing Laser Diode And LED Sources.
- Treasury Board Information Technology Standard (TBITS) No. 6.9 – Profile for the Telecommunications Wiring System in Government Owned and Leased Buildings.
- ANSI/TIA-568 C.0-2009, Generic Telecommunication Cabling for Customer Premises.
- ANSI/TIA-568 C.1-2009, Commercial Building Telecommunications Cabling Standard.
- ANSI/TIA-568 C.2-2009, Balanced Twisted Pair Telecommunications Cabling and Components Standard.
- TIA-569B Commercial Building Standard for Telecommunications Pathways and Spaces

### ***Location of conduits***

Given that the CCTV cameras transmit “Protected B” data over a network, dedicated conduits for the CCTV cables and equipment must be provided in accordance not only with applicable electrical standards, but also with *Shared Services Canada*’s data protection requirements.

The CCTV conduits must be routed and sized based on the CCTV System Design Document (D), which specifies the physical location of the cameras throughout the buildings and the grounds surrounding them.

### ***Size of conduits***

The size of the CCTV conduits will depend on the cables to be run through them, which will depend on the selected camera groupings.

### ***Type of cabling***

Generally speaking, unless otherwise specified, all IP cameras installed at the site will be connected through a single network cable using PoE (power over Ethernet). Therefore, a single network cable, Cat 6 or higher, will be required per camera. Where the cable can reach the server room directly (critical distance of less than ~80 m), the switch supplies power to the cameras through its PoE ports.

### ***PTZ-specific cabling***

The PoE standard for PTZ IP cameras, that is, their power supply standard, is different from that of conventional cameras, since they require a power supply of 60 watts, as opposed to the traditional 15 to 30 watts. Because of line loss, they therefore cannot be powered from the server room. One injector per PTZ camera must therefore be provided, and these high-PoE “super injectors” need to be positioned (and protected from weather) along the PTZ camera cable route, as close to the camera as possible. These injectors must be properly electrically powered. The injectors must be easily accessible for maintenance.

### ***Potential need for indoor/outdoor junction boxes***

If the length of the standard network cables exceeds the critical distance of about ~80 m and depending on the criteria of *Shared Services Canada*, an indoor or outdoor (as applicable) junction box will be required. This junction box will have a media converter function, properly electrically powered, to enable the connection of all cameras within a radius of less than 80 m and interconnect via fibre-optic to the server room. Outdoor junction boxes must meet a -40 Celsius requirement.

Generally speaking, if the boxes are not in an area with restricted access, they must be capable of being locked by key (lock specifics to be requested from Regional Security) and it must be specified if they are intended for an outdoor environment.

### ***Server room cabling***

The server room must have the required electrical power specified in the CCTV system specification document (S) to power all of the planned CCTV equipment, and must have an air conditioning system capable of evacuating the quantity of heat also indicated in the CCTV system specification document (S), in accordance with the standards set by *Public Works and Government Services Canada*. Bidders are responsible for proposing equipment that is compatible and consistent with the electrical environment and heat dissipation of the server room.

## 6. Camera Specifications

General Camera Specifications All stated requirements are mandatory		Reference to bid document (document name, page, and paragraph number)
Conduit	All exposed cabling must be contained within conduit.	
Cabling	Must meet all applicable fire and building codes. Includes the use of plenum rated cabling where required by code.	
Warranty	All cameras must carry one year (minimum) manufacturer's warranty covering parts and labor. Installing contractor is primary warranty contact for CBSA.	
Testing	All cameras must be thoroughly tested prior to installation.	
Specification sheets	Detailed specification sheets must be provided to contracting authority with bid/proposal, and also provided to end-user upon installation of system.	
Open Architecture	<ul style="list-style-type: none"> <li>Cameras must be IP if not specifically mentioned.</li> <li>Cameras must support ONVIF profile S.</li> </ul>	
Video	<p>If the camera is IP, it must support the following video settings:</p> <ul style="list-style-type: none"> <li>Multiple compressions formats, including but not limited to H.264 and MJPEG.</li> <li>Camera must be able to output at least two video streams simultaneously and must also support simultaneous streaming of multiple formats.</li> <li>Frame rate must be controllable for each stream.</li> </ul>	
Power	IP Cameras must be POE or High POE compatible.	
Disabled Audio	All cameras which are audio capable must have audio capability disabled from the camera and video management software (VMS), unless otherwise noted.	
Exposure Settings	<ul style="list-style-type: none"> <li>Must be configurable for different lighting conditions such as shutter speed, and gain.</li> <li>Must allow an automatic compensation of the image level with regard to the lighting conditions variations</li> </ul>	

Reference: D-1.2-100/V Indoor Camera 1.2MP Wide Angle, Vandal Resistant All stated requirements are mandatory		Reference to bid document (document name, page, and paragraph number)
Enclosure	The camera must be resistant to tampering. The camera must be contained in Dome housing type and securely mounted.	
Environment	The camera assembly must be dustproof and waterproof and must be rated IP52 or better. Only a compliant manufacturer approved enclosure may be considered acceptable	
VandalProof	These cameras must be resistant to vandalism and tampering. Must be rated IK10 or better.	
Field of View	The camera must provide a maximal horizontal field of view between 95 and 110 degrees.	
Focus	The camera must have remote focus.	
Frame per Second (FPS)	The camera must support at least 15 frames per second at the minimum resolution specified above.	
Night Capability	The camera must be a true Day/Night camera with a mechanical IR cut filter.	
Resolution	The camera must have approximately a 1.2 mega pixel (MP) resolution @ $\pm 10\%$ tolerance.	
Optical zoom	The camera must support at least a 2X optical zoom.	
Requested	Axis P3364-V 6mm	

Reference: Z-1-60-x30 Indoor PTZ Camera 1MP All stated requirements are mandatory		Reference to bid document (document name, page, and paragraph number)
Enclosure	The camera must be resistant to tampering. The camera must be contained in Dome housing type and securely mounted.	
Environment	The camera assembly must be dustproof and waterproof and must be rated IP52 or better. Only a compliant manufacturer approved enclosure may be considered acceptable	
Field of View	The camera must provide a maximal horizontal field of view between 55 and 65 degrees.	
Focus	The camera must have remote focus.	
Frame per Second (FPS)	The camera must support at least 20 frames per second at the minimum resolution specified above.	
Resolution	Camera must have about 1 mega pixel (MP) resolution @ $\pm 10\%$ tolerance.	
Optical zoom	The PTZ camera must support at least 30X optical zoom.	
Range of motion	Must have a pan range of 360 degrees endless. Must have a tilt range of at least 180 degrees.	
Preset positions	The camera must have at least 100 preset positions	
Preset when idle	The camera PTZ must be able to reset automatically to a preset position when a period of inactivity is detected. A configuration tool for the PTZ must be able to define this period of inactivity in a range from 1 second to 5 minutes.	
Requested	Axis Q6044	

Reference: Z-1-60-x30/E Outdoor PTZ Camera 1MP All stated requirements are mandatory		Reference to bid document (document name, page, and paragraph number)
Enclosure	The camera must be resistant to tampering. The camera must be contained in Dome housing type and securely mounted.	
Environment	The camera assembly must be dustproof and waterproof and must be rated IP66 or better. The camera assembly must have an operating temperature range between - 40 to +40 C. <del>A custom enclosure will not be considered acceptable.</del>	
Field of View	The camera must provide a maximal horizontal field of view between 55 and 65 degrees.	
Focus	The camera must have remote focus.	
Frame per Second (FPS)	The camera must support at least 20 frames per second at the minimum resolution specified above.	
Resolution	Camera must have about 1 mega pixel (MP) resolution @ $\pm 10\%$ tolerance.	
Optical zoom	The PTZ camera must support at least 30X optical zoom.	
Range of motion	Must have a pan range of 360 degrees endless. Must have a tilt range of at least 180 degrees.	
Preset positions	The camera must have at least 100 preset positions	
Preset when idle	The camera PTZ must be able to reset automatically to a preset position when a period of inactivity is detected. A configuration tool for the PTZ must be able to define this period of inactivity in a range from 1 second to 5 minutes.	
Requested	Axis Q6044-E	

Reference: D-5-80/VEW1 Outdoor Camera 5MP, Vandal Resistant, Wide Dynamic Range All stated requirements are mandatory		Reference to bid document (document name, page, and paragraph number)
Enclosure	The camera must be resistant to tampering. The camera must be contained in Dome housing type and securely mounted.	
Environment	The camera assembly must be dustproof and waterproof and must be rated IP66 or better. The camera assembly must have an operating temperature range between -40 to +40 C. A custom enclosure will not be considered acceptable.	
VandalProof	These cameras must be resistant to vandalism and tampering. Must be rated IK10 or better.	
Field of View	The camera must provide a maximal horizontal field of view between 75 and 85 degrees.	
Focus	The camera must have remote focus.	
Frame per Second (FPS)	The camera must support at least 12 frames per second at the minimum resolution specified above.	
Night Capability	The camera must be a true Day/Night camera with a mechanical IR cut filter.	
Resolution	Camera must have about 5 mega pixel (MP) resolution @ $\pm 10\%$ tolerance.	
Optical zoom	The camera must support at least a 2X optical zoom.	
Wide Dynamique Range	The camera must feature 'Wide Dynamic Range'.	
Requested	Axis P3367-VE	

Reference: D-1.2-80/VW5 Indoor Camera 1.2MP, Vandal Resistant, Very Wide Dynamic Range All stated requirements are mandatory		Reference to bid document (document name, page, and paragraph number)
Enclosure	The camera must be resistant to tampering. The camera must be contained in Dome housing type and securely mounted.	
Environment	The camera assembly must be dustproof and waterproof and must be rated IP52 or better. Only a compliant manufacturer approved enclosure may be considered acceptable	
VandalProof	These cameras must be resistant to vandalism and tampering. Must be rated IK10 or better.	
Field of View	The camera must provide a maximal horizontal field of view between 75 and 85 degrees.	
Focus	The camera must have remote focus.	
Frame per Second (FPS)	The camera must support at least 15 frames per second at the minimum resolution specified above.	
Night Capability	The camera must be a true Day/Night camera with a mechanical IR cut filter.	
Resolution	The camera must have approximately a 1.2 mega pixel (MP) resolution @ $\pm 10\%$ tolerance.	
Optical zoom	The camera must support at least a 2X optical zoom.	
Wide Dynamique	The camera must feature at least 120 dB of 'Wide Dynamic Range'	
Requested	Axis P3384-V	



Reference: D-1.2-80/VEW5 Outdoor Camera 1.2MP, Vandal resistant, Very Wide Dynamic Range All stated requirements are mandatory		Reference to bid document (document name, page, and paragraph number)
Enclosure	<p>The camera must be resistant to tampering.</p> <p>The camera must be contained in Dome housing type and securely mounted.</p>	
Environment	<p>The camera assembly must be dustproof and waterproof and must be rated IP66 or better.</p> <p>The camera assembly must have an operating temperature range between -40 to +40 C.</p> <p>A custom enclosure will not be considered acceptable.</p>	
VandalProof	These cameras must be resistant to vandalism and tampering. Must be rated IK10 or better.	
Field of View	The camera must provide a maximal horizontal field of view between 75 and 85 degrees.	
Focus	The camera must have remote focus.	
Frame per Second (FPS)	The camera must support at least 15 frames per second at the minimum resolution specified above.	
Night Capability	The camera must be a true Day/Night camera with a mechanical IR cut filter.	
Resolution	The camera must have approximately a 1.2 mega pixel (MP) resolution @ $\pm 10\%$ tolerance.	
Optical zoom	The camera must support at least a 2X optical zoom.	
Wide Dynamique	The camera must feature at least 120 dB of 'Wide Dynamic Range'	
Requested	Axis P3384-VE	

Reference: D-2.3-100/V Indoor Camera 2.3MP, Vandal Resistant All stated requirements are mandatory		Reference to bid document (document name, page, and paragraph number)
Enclosure	The camera must be resistant to tampering. The camera must be contained in Dome housing type and securely mounted.	
Environment	The camera assembly must be dustproof and waterproof and must be rated IP52 or better. Only a compliant manufacturer approved enclosure may be considered acceptable	
VandalProof	These cameras must be resistant to vandalism and tampering. Must be rated IK10 or better.	
Field of View	The camera must provide a maximal horizontal field of view between 95 and 110 degrees.	
Focus	The camera must have remote focus.	
Frame per Second (FPS)	The camera must support at least 15 frames per second at the minimum resolution specified above.	
Night Capability	The camera must be a true Day/Night camera with a mechanical IR cut filter.	
Resolution	The camera must have about 2.3 mega pixel (MP) resolution @ $\pm 10\%$ tolerance.	
Optical zoom	The camera must support at least a 2X optical zoom.	
Requested	Axis Q3505-V	

Reference: D-2.3-100/VW5 Indoor Camera 2.3MP, Vandal Resistant, Very Wide Dynamic Range All stated requirements are mandatory		Reference to bid document (document name, page, and paragraph number)
Enclosure	The camera must be resistant to tampering. The camera must be contained in Dome housing type and securely mounted.	
Environment	The camera assembly must be dustproof and waterproof and must be rated IP52 or better. Only a compliant manufacturer approved enclosure may be considered acceptable	
VandalProof	These cameras must be resistant to vandalism and tampering. Must be rated IK10 or better.	
Field of View	The camera must provide a maximal horizontal field of view between 95 and 110 degrees.	
Focus	The camera must have remote focus.	
Frame per Second (FPS)	The camera must support at least 15 frames per second at the minimum resolution specified above.	
Night Capability	The camera must be a true Day/Night camera with a mechanical IR cut filter.	
Resolution	The camera must have about 2.3 mega pixel (MP) resolution @ $\pm 10\%$ tolerance.	
Optical zoom	The camera must support at least a 2X optical zoom.	
Wide Dynamique Range	The camera must feature at least 120 dB of 'Wide Dynamic Range'	
Requested	Axis Q3505-V	

Reference: D-2.3-100/VEW5 Outdoor Camera 2.3MP, Vandal Resistant, Very Wide Dynamic Range All stated requirements are mandatory		Reference to bid document (document name, page, and paragraph number)
Enclosure	The camera must be resistant to tampering. The camera must be contained in Dome housing type and securely mounted.	
Environment	The camera assembly must be dustproof and waterproof and must be rated IP66 or better. The camera assembly must have an operating temperature range between -40 to +40 C. A custom enclosure will not be considered acceptable.	
VandalProof	These cameras must be resistant to vandalism and tampering. Must be rated IK10 or better.	
Field of View	The camera must provide a maximal horizontal field of view between 95 and 110 degrees.	
Focus	The camera must have remote focus.	
Frame per Second (FPS)	The camera must support at least 15 frames per second at the minimum resolution specified above.	
Night Capability	The camera must be a true Day/Night camera with a mechanical IR cut filter.	
Resolution	The camera must have about 2.3 mega pixel (MP) resolution @ $\pm 10\%$ tolerance.	
Optical zoom	The camera must support at least a 2X optical zoom.	
Wide Dynamique	The camera must feature at least 120 dB of 'Wide Dynamic Range'	
Requested	Axis Q3505-VE	

## 7. Rack Specifications

This section contains the minimum performance specifications with respect to power, temperature, humidity and dust control in a server room/enclosure which contains the servers, UPS systems, switches, local workstations, etc.

Power specifications and estimated BTU load for the server room/enclosure are to be included in vendor proposals.

General Rack Specifications All stated requirements are mandatory		Reference to bid document (document name, page, and paragraph number)
General	Power requirements and estimated BTU load for the server room/enclosure are to be included in vendor proposals.	

Reference: RCK-4532:GEN Large Video Surveillance Enclosure All stated requirements are mandatory		Reference to bid document (document name, page, and paragraph number)
Function	The enclosure must be able to contain all servers, the UPS, switch(es) and IT accessories of the CCTV system.	
Standards	The enclosure must be compliant with approved safety standards for use in Canada.	
Form Factor	<ul style="list-style-type: none"> <li>• The enclosure must be a Server Rack type.</li> <li>• The enclosure must be standalone and closed.</li> <li>• The enclosure must be a <i>4 Post Server Equipment Rack Enclosure</i> type.</li> <li>• The enclosure must have vertical Wire Managers.</li> </ul>	
Sizes	<p>The enclosure must be a « Rackmount » standard <b>with</b> a width of 19”.</p> <p>The enclosure must have sufficient <b>depth</b> to accommodate all the CCTV equipment for which the cabinet is dedicated and depth must be better or equal to 42".</p> <p>The enclosure must have sufficient useful <b>height</b> to contain all the CCTV equipment for which the cabinet is dedicated and height must be less than or equal to 45U.</p>	
Front Panel	Must be a key locking door (lock to be specified by Regional Security)	
Rear Panel	Must be a key locking door (lock to be specified by Regional Security)	
Knockouts	The enclosure must have electrical knockouts at the top and bottom of the rack for the passage of all the network cables and power wires.	
Rack Ventilation	The enclosure must have side vented panels and vented panel at the rear and front door so that there can be ventilation and an access control to the embedded equipment.	

	The enclosure must have at least one (1) fan at the top panel.	
Wheels	The enclosure must have wheel installed.	
Example	Rack such as Middle Atlantic BGR-SA Series Rack - 45 RU - 32 or equal	

Reference: RCK-W-1022:IT Tiny Wall Mount Video Surveillance Enclosure All stated requirements are mandatory		Reference to bid document (document name, page, and paragraph number)
Function	The enclosure must be able to contain IT accessories of the CCTV system.	
Standards	The enclosure must be compliant with approved safety standards for use in Canada.	
Form Factor	The enclosure must be a Server Rack type. The enclosure must be standalone and closed. The enclosure must be a Wall Mount Server Equipment Rack Enclosure type. The equipment bearing portion is hinged to allow it to be swung open for accessibility to equipment rear panels, wiring and wiring conduits. The enclosure must have Wire Managers.	
Sizes	The enclosure must be a « Rackmount » standard <b>with</b> a width of 19”. The enclosure must have sufficient <b>depth</b> to accommodate all the CCTV equipment for which the cabinet is dedicated and depth must be better or equal to 22”. The enclosure must have sufficient useful <b>height</b> to contain all the CCTV equipment for which the cabinet is dedicated and height must be less than or equal to 10U.	
Front Panel	Must be a key locking door (locks specifics to be provided by Regional Security)	

Knockouts	The enclosure must have electrical knockouts at the top of the rack for the passage of all the network cables and power wires.	
Rack Ventilation	<p>The enclosure must have side vented panel and vented front door so that there can be a ventilation and an access control to the embedded equipment.</p> <p>The enclosure must have at least one (1) fan at the top or bottom panel.</p>	
Holding	The wall mount enclosure must be able to be firmly anchored to the supporting structure, taking into account all the manufacturer's related stipulations. The gauge and construction must be rated to support the weight of the equipment to be housed with a minimum 50% margin.	
Example	Rack such as Middle Atlantic DWR Series Rack - 10 RU - 22	



## 8. Joystick Specifications

Reference: JOY-I:U 3 axis joystick device for video surveillance All stated requirements are		Reference to bid document (document name, page, and paragraph number)
Function	The video surveillance joystick must allow to select a specific PTZ on a LAN and to control it according to all axes: vertical, horizontal and according to the zoom.	
Form Factor	The device is a finished product consisting of one or two boxes  Contains an ergonomic joystick control and a keypad  Must be able to easily fit on a desk	
PTZ comand function	The joystick-type device must have a 3-axis joystick, with a rotary knob.	
Keyboard function	The joystick device must have integrated or separately, a keypad dedicated to video surveillance, that allows to select the device to control.	
Compatibility	The joystick must be compatible with the version of Windows and also the VMS client software installed on the viewing station.	
Connexion	The joystick device must be able to connect the viewing station via USB.	
Example	Joystick such as Axis T8311, Axis T8312	

## 9. KVM/KMM Specifications

Reference: KMM:VGA-2USB Keyboard, Monitor and Mouse, rack format All stated requirements are		Reference to bid document (document name, page, and paragraph number)
Function	The device is an KMM integrated COTS product which includes the keyboard, monitor and mouse functions.	
Form Factor	<ul style="list-style-type: none"> <li>• The product must have a closable display screen.</li> <li>• Width: The product must have 19-inch wide rack format, meeting the industry standards for installation purposes in a rack or cabinet.</li> <li>• Height: The closed product must not exceed a 1U high.</li> <li>• The product must have rails that allow drag the KMM outside the server rack and open the display screen.</li> </ul>	
Input	The product must have a keyboard and a "touchpad"	
Connectivity	The KMM must be able to connect with a VGA (DB-15) and 2 USB 3.0 ports interfaces.	
Monitor resolution	The product must have a screen resolution of at least 1366 X 768.	
Monitor size	The product must include a 18.5 " or more, LCD or LED display screen.	
Power supply	The device must be able to be powered on 120VAC and 230VAC.	
Example	KVM/KMM such as Dell DKMMLED185-G01 - 18.5" 1U KMM Console.	

Reference: KVM:8 Analog KVM Switch, rack format All stated requirements are mandatory		Reference to bid document (document name, page, and paragraph number)
Function	<ul style="list-style-type: none"> <li>The device is an KVM integrated COTS product (keyboard, video and mouse) for the inter connection between a set of monitor / keyboard / mouse and serveral computers or servers.</li> <li>The product allows switching and visualization using a KMM or remotely through an Ethernet connection.</li> </ul>	
Form Factor	<ul style="list-style-type: none"> <li>Width: The product must have 19-inch wide rack format, meeting the industry standards for installation purposes in a rack or cabinet.</li> <li>Height: The closed product must not exceed a 1U high.</li> </ul>	
Connectivity	<ul style="list-style-type: none"> <li>The KVM must have at least eight (8) ports each comprising: an analog VGA, mouse &amp; keyboard connection.</li> <li>The KVM needs access to the equipment by all following links: USB, PS2 and Serial.</li> <li>The KVM must have at least a TCP / IP network connection for remote access.</li> <li>The KVM must have at least one connection port for remote access by telephone modem.</li> </ul>	
Power supply	The device must be able to be powered on 120VAC and 230VAC.	
Example	KVM/KMM such as KVM Avocent MergePoint Unity MPU108EDAC-001 1U.	

## 10. Monitor Specifications

Reference: MNT-24 24 inch monitor for viewing station All stated requirements are mandatory		Reference to bid document (document name, page, and paragraph number)
Monitor Size	Must have 24" connected LCD or LED monitor.	
Monitor Resolution	Monitor(s) must have a minimum of 1920 X 1080 image resolution.	
Monitor Angle	The monitor must have a horizontal and vertical angle of view equal or better than 175 degrees. Complete with articulating arm.	
Monitor Static contrast	The monitor must have a static contrast ratio equal or better than 1000:1	
Monitor connexion	<ul style="list-style-type: none"> <li>The monitor must be able to be connected through HDMI and one of these two VGA or DVI-i types of connexion.</li> <li>If the distance between the monitor and the computer or server exceeds the recommended limit for this type of connection, a video extender system must be installed to maintain the quality of the video signal between the computer or server and the monitor.</li> </ul>	

## 11. Power Distribution Unit Specifications

Reference: PDS-U Power Distribution Solution All stated requirements are mandatory		Reference to bid document (document name, page, and paragraph number)
Function	<ul style="list-style-type: none"> <li>The Power Distribution System (PDS) must be able to manage the power distribution of all the <b>equipment supported by the main UPS</b>, such as servers and other IT equipment.</li> <li>The PDS solution can be comprised of one or more Power Distribution Units (PDU).</li> </ul>	
Form Factor	The PDS solution must be « Rackmount » standard, Width of 48.26 cm (19'')	
Input	The PDS solution input must be compatible with the electrical ratings of the environment to which it is connected in the CCTV rack. This means that the voltage and frequency rating and connection type must be compatible.	
Output	<ul style="list-style-type: none"> <li>The PDS solution outputs must be compatible with the CCTV equipment to which they are connected in the CCTV rack. This means that the voltage and frequency rating and connection type must be compatible.</li> <li>The PDS solution must have enough outputs in order to be able to distribute power to all the CCTV equipment hosted by the CCTV rack with at least 3 spare outputs.</li> </ul>	
Network Management	<ul style="list-style-type: none"> <li>Must have network management interfaces that provide standards-based management via Web, SNMP and Telnet.</li> <li>Must allow users to access, configure, and manage units remotely.</li> </ul>	
Power delays	The PDS solution must be able to allow users to configure the sequence in which power is turned on or off for each outlet.	
Visual indicators	The PDS solution must be able to visually indicate overload and warning conditions, based on the user-defined alarm thresholds.	
Example	Power Distribution Unit such as APC Switched Rack PDUs AP79xx or AP89xx series	

## 12. Server Specifications

General Server Specifications All stated requirements are mandatory		Reference to bid document (document name, page, and paragraph number)
General	<p>This list does not include networking accessories needed to setup the proposed CCTV solution.</p> <p>In the proposed solution, the servers must be able to be individually switched on or off, for maintenance or emergency purposes.</p> <p>In case of failure requiring replacement, the default server must be able to be independently replaced with a new server, without having to change the remaining functional servers.</p>	
Video Recording/Retention	<p>All cameras must be configured to record 24/7 continuously at the minimum specified resolution and frame rate for each camera type. The minimum frame rate for recording is 15 FPS, unless otherwise specified. Video Recording on motion should not be configured unless otherwise specified.</p> <p>The retention time of all camera footage must be of at least 30 days.</p>	

Write Failover	<p>The video surveillance system must continue to record with the same performance, all camera footage in the event of a Video Recording Server failure.</p> <p>In the event of a machine failure of the Video Recording Server, a Video Recording Failover Server must be configured to take over the recording. The Video Recording Failover server must provide a minimum of 5 days of storage. Live and archived video associated with the Video Recording Failover Server must be accessible at all times by the client applications.</p> <p>The Video Management software and the Video Recording Failover software must be installed on the same physical machine. RAID 5 is required for Video Recording Failover Server storage, and RAID 6 is required for Video Recording Server storage. RAID 1 is required for all OS/Application drives.</p>	
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Reference: SRV-R-L:MRF/R5-8TB Video Management System / Video Recording Failover Server All stated requirements are mandatory		Reference to bid document (document name, page, and paragraph number)
Function Type	The server must have a <b>Video Management</b> function AND also a <b>Video Recording Failover</b> function	
Form Factor	Must be « Rackmount » standard, Width of 48.26 cm (19’’) Must have sliding rails with cable management arm.	
Processor specifications	Number of Processors required: 2 or more Number of Cores required : 6 or more Instruction Set: 64-bit	
Processor Reference	Processor such as Intel Xeon E5-2620 v3 or better.	
Motherboard	Supports Dual processor Socket	
RAM Memory	16 GB RDIMM or higher	
RAID Controller	Must have 512 MB Battery Backed Cache or higher	
System/Application Drives	The drives must be RAID 1 managed. The total usable capacity after RAID must be 300GB or higher. Minimum of two (2) 2.5’’ or 3.5’’ drives must be present. Hard drive rotation speed must be at least 10K RPM or better	
Video Recording Drives	Drives must be setup on RAID 5 mode. The total usable capacity after RAID must be 8TB or higher. Minimum of 3 x 3.5’’ 4TB hot swappable drives must be present. Minimum of 2 empty additional 3.5’’ hot swappable bays for future expansion must be present.	



	Hard drive rotation speed must be at least 7.2K RPM or better Hard drives must be Near-line SAS type or better.	
Operating System	Must have Windows Server 2012 x64 installed. Server must be Certified by Microsoft for the version of Windows OS installed.	
Application Software	The Video Management and Video Recording Failover application software must be installed on the OS drive space. The version of the Video Management and Video Recording Failover application software installed must be compatible with the OS installed. Data base used for the application software must be installed and setup as recommended by the software manufacturer.	
NTP Software	Must have NTP server software installed on the OS partition and activated, able to communicate and synchronize its server time with all the Devices connected on the CCTV network.	
Communication software to the UPS	The server must have automated power shutdown software installed on the OS partition and activated. When the UPS send the order, this software must softly shutdown all the embedded applications on the server and must turn off the device.	
Network	Must have dual 1Gb Ethernet connection capability.	
Power Supply	Must have dual, hot-plug redundant power supplies.	
Requested	Dell PowerEdge R730xd	

Reference: SRV-R-L:R/R6-32TB Video Recording Server All stated requirements are mandatory		Reference to bid document (document name, page, and paragraph number)
Function Type	The server must have a <b><i>Video Recording</i></b> function.	
Form Factor	Must be « Rackmount » standard, Width of 48.26 cm (19'') Must have sliding rails with cable management arm.	
Processor specifications	Number of Processors required: 2 or more Number of Cores required : 6 or more Instruction Set: 64-bit	
Processor Reference	Processor such as Intel Xeon E5-2620 v3 or better.	
Motherboard	Supports Dual processor Socket	
RAM Memory	16 GB RDIMM or higher	
RAID Controller	Must have 512 MB Battery Backed Cache or higher	
System/Application Drives	The drives must be RAID 1 managed. The total usable capacity after RAID must be 300GB or higher. Minimum of two (2) 2.5'' or 3.5'' drives must be present. Hard drive rotation speed must be at least 10K RPM or better	
Video Recording Drives	Drives must be setup on RAID 6 mode. The total usable capacity after RAID must be 32TB or higher. Minimum of 10 x 3.5'' 4TB hot swappable drives must be present. Minimum of 2 empty additional 3.5'' hot swappable bays for future expansion must be present. Hard drive rotation speed must be at least 7.2K RPM or better	

	Hard drives must be Near-line SAS type or better.	
Operating System	Must have Windows Server 2012 x64 installed. Server must be Certified by Microsoft for the version of Windows OS installed.	
Application Software	The Video Recording application software must be installed on the OS drive space. The version of the Video Recording application software installed must be compatible with the OS installed. Data base used for the application software must be installed and setup as recommended by the software manufacturer.	
NTP Software	Must have NTP client software installed on the OS partition, able to communicate and synchronize the Device time with the NTP server installed on the CCTV network.	
Communication software to the UPS	The server must have automated power shutdown software installed on the OS partition and activated. When the UPS send the order, this software must softly shutdown all the embedded applications on the server and must turn off the device.	
Network	Must have dual 1Gb Ethernet connection capability.	
Power Supply	Must have dual, hot-plug redundant power supplies.	
Requested	Dell PowerEdge R730xd	

### 13. Surge protector Specifications

Reference: SUR-U/120 Surge Protector 120kA All stated requirements are mandatory		Reference to bid document (document name, page, and paragraph number)
Function	Must be able to protect equipment such as UPS, Data center and other IT equipment, against overvoltage.	
Peak Current Normal Mode	The Surge Protector must be able to protect the equipment against a Peak Current of 120 kAmps in normal mode.	
Response time	The Surge Protector must be able to react and filter the overvoltages in less than 1 ns in normal mode.	
EMI/RFI Noise rejection	The Surge Protector must have a EMI/RFI Noise rejection of at least 50 db between 100 kHz to 10 MHz.	
Input	The Surge Protector input must be compatible with the electrical environment available in the CCTV server room, which includes compatible voltage and frequency rating and connection type.	
Output	The Surge Protector output must be compatible with the devices it connects and supports, which includes compatible voltage and frequency rating and connection type.	
Power	The Surge Protector must be able to support the full power rating specified by the UPS and any other equipments that it protects.	
Example	Surge protector such as Eaton - 120KA Surge protector - SPD120 Series	

#### 14. Switch Specifications

Reference: SWT-R:BB/P_PP Backbone Switches Solution All stated requirements are mandatory		Reference to bid document (document name, page, and paragraph number)
Function	The Switch Solution must interconnect CCTV equipments on the same standalone network. The list includes, but is not limited to, servers, viewing stations, cameras and network accessories.	
Form Factor	<ul style="list-style-type: none"> <li>• The <i>Switch Solution</i> can include one or several interconnected switches.</li> <li>• The <i>Switch Solution</i> must be compliant with the Canadian industry standards when apply.</li> <li>• The <i>Switch Solution</i> must have 19 inch standard width and must be able to be installed in a grade server rack/cabinet.</li> </ul>	
Ethernet Port Number	<p>As a backbone, the <i>Switch Solution</i> must have enough Ethernet ports in order to connect all the servers, viewing stations, KVM and all needed IT accessories at the appropriate bandwidth to accomodate the associated equipment.</p> <p>Once needed du to long distances or a high bandwith, the <i>Switch Solution</i> must include enought optical fiber ports, equiped with SFP type modules, to inter connect the <i>Switch Solution</i> to the equipments or secondary switches.</p> <p>The <i>Switch Solution</i> must have enough RJ45 Ethernet ports in order to connect all IP cameras of the considered zone and all needed IT accessories.</p> <p>The <i>Switch Solution</i> must be sized to host 15% of additional cameras.</p>	
Network Bandwidth	The Switch Solution must support the bandwidth of the traffic of all servers, viewing stations and cameras or the considered zone being viewed and recorded continuously and simultaneously. Each camera is supposed to have an average bandwidth of 2Mb/s in recording mode and 3Mb/s in viewing mode.	
Multicast routing	The Switch Solution must allow optimizing bandwidth on the CCTV network, supporting routing type "Multicast" for IPv4 and IPv6. In particular it must enable <b>monitoring IGMP (Internet Group Management Protocol)</b> IPv4 and IPv6 MLD (versions 1 and 2) and must enable customers to rapidly join and leave multicast streams and limit intensive video traffic to bandwidth only applicants.	

Latency	The Switch Solution must be able to switch video streams in a transparent manner and must not contribute to generate latency more than 80ms on the CCTV network.	
IPv6	<ul style="list-style-type: none"> <li>• IPv6 host: enables switches to be managed and deployed at the IPv6 network's edge</li> <li>• Dual stack (IPv4/IPv6): transitions from IPv4 to IPv6, supporting connectivity for both protocols</li> <li>• MLD snooping: forwards IPv6 multicast traffic to the appropriate interface</li> <li>• IPv6 ACL/QoS: supports ACL and QoS for IPv6 network traffic, preventing traffic flooding.</li> <li>• IPv6 routing: supports static and OSPFv3</li> </ul>	
Power over Ethernet (PoE/PoE+)	<ul style="list-style-type: none"> <li>• <b>PoE in accordance with IEEE 802.3af</b></li> </ul> <p>All ports of switches connected cameras directly must be a minimum configurable PoE in accordance with IEEE 802.3af and thus must be able to provide a power of 15W to each camera that is connected to the port.</p> <ul style="list-style-type: none"> <li>• <b>PoE PLUS accordance with IEEE 802.3at</b></li> </ul> <p>All ports of switches connected directly to the cameras that require PoE +, must be configured PoE + according to IEEE 802.3at, and must thus be able to provide 30W to each device connected to the said port.</p> <p>The total power budget of switches must be sufficient to withstand the power of PoE and PoE + ports needed.</p> <p><i>Independent power injectors may be used</i></p>	
Backup Power	To get a high availability network, all switches of the CCTV solution, including secondary switches, must be powered by an uninterruptible power supply (UPS) with a 20 minutes run time.	
Management	<ul style="list-style-type: none"> <li>• <b>Remote Intelligent Mirroring:</b></li> </ul> <p>Mirrors selected ingress/egress traffic based on ACL, port, MAC address, or VLAN to a local or remote 8200zl, 6200yl, 5400zl, or 3500yl switch anywhere on the network.</p> <ul style="list-style-type: none"> <li>• <b>RMON, XRMON, and sFlow v5:</b></li> </ul> <p>Provide advanced monitoring and reporting capabilities for statistics, history,</p>	

	<p>alarms, and events.</p> <ul style="list-style-type: none"> <li>• <b>IEEE 802.1AB Link Layer Discovery Protocol (LLDP):</b> Automated device discovery protocol provides easy mapping by network management applications.</li> <li>• <b>Uni-Directional Link Detection (UDLD):</b> Monitors cable between two switches and shuts down the ports on both ends if the cable is broken turning the bi-directional link into uni-directional; this prevents network problems such as loops.</li> <li>• <b>Remote Power Management:</b> Must be capable of controlling the power to the individual ports, i.e. remote POE OFF/ON.</li> </ul>	
Security	<ul style="list-style-type: none"> <li>• <b>Access control lists (ACLs):</b> Provide filtering based on the IP field, source/destination IP address/subnet, and source/destination TCP/UDP port number on a per-VLAN or per-port basis.</li> <li>• <b>Multiple user authentication methods:</b> IEEE 802.1X users per port: provides authentication of multiple IEEE 802.1X users per port; prevents user "piggybacking" on another user's IEEE 802.1X authentication. Web-based authentication: authenticates from Web browser for clients that do not support IEEE 802.1X supplicant; customized remediation can be processed on an external Web server</li> <li>• <b>Virus throttling:</b> Detects traffic patterns typical of WORM-type viruses and either throttles or entirely prevents the virus from spreading across the routed VLANs or bridged interfaces, without requiring external appliances</li> <li>• <b>DHCP protection:</b> Blocks DHCP packets from unauthorized DHCP servers, preventing denial-of-service attacks.</li> <li>• <b>Secure management access:</b> Securely encrypts all access methods (CLI, GUI, or MIB) through SSHv2,</li> </ul>	

Reference: SWT-R:S/P_PP Secondary Switches Solution All stated requirements are mandatory		Reference to bid document (document name, page, and paragraph number)
Function	The secondary Switch Solution must interconnect CCTV equipments on the same standalone network. The list includes mainly cameras and network accessories.	
Form Factor	<ul style="list-style-type: none"> <li>• The <i>Switch Solution</i> can include one or several interconnected switches.</li> <li>• The <i>Switch Solution</i> must be compliant with the Canadian industry standards when apply.</li> <li>• The <i>Switch Solution</i> must have 19 inch standard width and must be able to be installed in a grade server rack/cabinet.</li> </ul>	
Ethernet Port Number	<p>The <i>Switch Solution</i> must have enough RJ45 Ethernet ports in order to connect all IP cameras of the considered zone and all needed IT accessories.</p> <p>Once needed due to long distances or a high bandwidth, the <i>Switch Solution</i> must include enough optical fiber ports, equipped with SFP type modules, to inter connect the <i>Switch Solution</i> to the equipments or primary switches.</p>	
Network Bandwidth	<p>The Switch Solution must support the bandwidth of the traffic of all cameras of the considered zone being viewed and recorded continuously and simultaneously. Each camera is supposed to have an average bandwidth of 2Mb/s in recording mode and 3Mb/s in viewing mode.</p> <p>Each Port must support the bandwidth of the device connected.</p>	
Multicast routing	The Switch Solution must allow optimizing bandwidth on the CCTV network, supporting routing type "Multicast" for IPv4 and IPv6. In particular it must enable <b>monitoring IGMP (Internet Group Management Protocol)</b> IPv4 and IPv6 MLD (versions 1 and 2) and must enable customers to rapidly join and leave multicast streams and limit intensive video traffic to bandwidth only applicants.	
Latency	The Switch Solution must be able to switch video streams in a transparent manner and must not contribute to generate latency more than 80ms on the CCTV network.	



IPv6	<ul style="list-style-type: none"> <li>• IPv6 host: enables switches to be managed and deployed at the IPv6 network's edge</li> <li>• Dual stack (IPv4/IPv6): transitions from IPv4 to IPv6, supporting connectivity for both protocols</li> <li>• MLD snooping: forwards IPv6 multicast traffic to the appropriate interface</li> <li>• IPv6 ACL/QoS: supports ACL and QoS for IPv6 network traffic, preventing traffic flooding.</li> <li>• IPv6 routing: supports static and OSPFv3</li> </ul>	
Power over Ethernet (PoE/PoE+)	<ul style="list-style-type: none"> <li>• <b>PoE in accordance with IEEE 802.3af</b></li> </ul> <p>All ports of switches connected cameras directly must be a minimum configurable PoE in accordance with IEEE 802.3af and thus must be able to provide a power of 15W to each camera that is connected to the port.</p> <ul style="list-style-type: none"> <li>• <b>PoE PLUS accordance with IEEE 802.3at</b></li> </ul> <p>All ports of switches connected directly to the cameras that require PoE +, must be configured PoE + according to IEEE 802.3at, and must thus be able to provide 30W to each device connected to the said port.</p> <p>The total power budget of switches must be sufficient to withstand the power of PoE and PoE + ports needed.</p> <p><i>Independent power injectors may be used</i></p>	
Backup Power	<p>To get a high availability network, all switches of the CCTV solution, including secondary switches, must be powered by an uninterruptible power supply (UPS) with a 20 minutes run time.</p>	
Management	<ul style="list-style-type: none"> <li>• <b>Remote Intelligent Mirroring:</b></li> </ul> <p>Mirrors selected ingress/egress traffic based on ACL, port, MAC address, or VLAN to a local or remote 8200zl, 6200yl, 5400zl, or 3500yl switch anywhere on the network.</p> <ul style="list-style-type: none"> <li>• <b>RMON, XRMON, and sFlow v5:</b></li> </ul> <p>Provide advanced monitoring and reporting capabilities for statistics, history, alarms, and events.</p> <ul style="list-style-type: none"> <li>• <b>IEEE 802.1AB Link Layer Discovery Protocol (LLDP):</b></li> </ul>	

	<p>Automated device discovery protocol provides easy mapping by network management applications.</p> <ul style="list-style-type: none"> <li>• <b>Uni-Directional Link Detection (UDLD):</b></li> </ul> <p>Monitors cable between two switches and shuts down the ports on both ends if the cable is broken turning the bi-directional link into uni-directional; this prevents network problems such as loops.</p> <ul style="list-style-type: none"> <li>• <b>Remote Power Management:</b></li> </ul> <p>Must be capable of controlling the power to the individual ports, i.e. remote</p>	
Security	<ul style="list-style-type: none"> <li>• <b>Access control lists (ACLs):</b></li> </ul> <p>Provide filtering based on the IP field, source/destination IP address/subnet, and source/destination TCP/UDP port number on a per-VLAN or per-port basis.</p> <ul style="list-style-type: none"> <li>• <b>Multiple user authentication methods:</b></li> </ul> <p>IEEE 802.1X users per port: provides authentication of multiple IEEE 802.1X users per port; prevents user "piggybacking" on another user's IEEE 802.1X authentication. Web-based authentication: authenticates from Web browser for clients that do not support IEEE 802.1X supplicant; customized remediation can be processed on an external Web server</p> <ul style="list-style-type: none"> <li>• <b>Virus throttling:</b></li> </ul> <p>Detects traffic patterns typical of WORM-type viruses and either throttles or entirely prevents the virus from spreading across the routed VLANs or bridged interfaces, without requiring external appliances</p> <ul style="list-style-type: none"> <li>• <b>DHCP protection:</b></li> </ul> <p>Blocks DHCP packets from unauthorized DHCP servers, preventing denial-of-service attacks.</p> <ul style="list-style-type: none"> <li>• <b>Secure management access:</b></li> </ul> <p>Securely encrypts all access methods (CLI, GUI, or MIB) through SSHv2, SSL 3.0, and/or SNMPv3.</p>	

## 15. UPS Specifications

Reference: UPS-R1:S0.7 Small UPS for server and switches All stated requirements are mandatory		Reference to bid document (document name, page, and paragraph number)
Grade	UPS must be considered 'Server Grade'.	
Form Factor	« Rackmount » standard, Width of 48.26 cm (19'') The height of the UPS must be 1U	
Topology	The UPS must be Online Topology type, converting the power from AC to DC then back to AC.	
Power Rating	The uninterruptible power supply (UPS) must meet the highest of these two criterias: <ul style="list-style-type: none"> <li>• The UPS or series of uninterruptible power supplies must be able to supply power to the servers, the Ethernet POE switches and all critical devices of the CCTV System in the rack.</li> <li>• The UPS must be able to supply at least 700W.</li> </ul>	
Power runtime	The uninterruptible power supply (UPS) must be able to supply a minimum of 20 minutes of power at full power capacity of the supported equipment during a power outage.	
Output Waveform	True sine wave output Output voltage distortion with less than or equal to 5% distortion at full load.	
Soft Shutdown	In the event of a power outage, the UPS system is to be configured to initiate a safe shutdown of the servers based on battery capacity and/or time delay.	
Connectivity	UPS system must be able to connect to each server through a network interface in order to initiate the shutdown in case of power outage.	
Example	UPS such as APC Smart-UPS RT 1000VA RM	

Reference: UPS-R:M1.5 Medium UPS All stated requirements are mandatory		Reference to bid document (document name, page, and paragraph number)
Grade	UPS must be considered 'Server Grade'.	
Form Factor	« Rackmount » standard, Width of 48.26 cm (19'')	
Topology	The UPS must be Online Topology type, converting the power from AC to DC then back to AC.	
Power Rating	The uninterruptible power supply (UPS) must meet the highest of these two criterias: <ul style="list-style-type: none"> <li>• The UPS or series of uninterruptible power supplies must be able to supply power to the servers, the Ethernet POE switches and all critical devices of the CCTV System in the rack.</li> <li>• The UPS must be able to supply at least 1.35kW.</li> </ul>	
Power runtime	The uninterruptible power supply (UPS) must be able to supply a minimum of 20 minutes of power at full power capacity of the supported equipment during a power outage.	
Output Waveform	True sine wave output Output voltage distortion with less than or equal to 5% distortion at full load.	
Soft Shutdown	In the event of a power outage, the UPS system is to be configured to initiate a safe shutdown of the servers based on battery capacity and/or time delay.	
Connectivity	UPS system must be able to connect to each server through a network interface in order to initiate the shutdown in case of power outage.	
Example	UPS such as Eaton 9130 Rackmount UPS	

Reference: UPS –R:H5.5 Huge UPS All stated requirements are mandatory		Reference to bid document (document name, page, and
Grade	UPS must be considered ‘Server Grade’.	
Form Factor	« Rackmount » standard, Width of 48.26 cm (19’’)	
Topology	The UPS must be Online Topology type, converting the power from AC to DC then back to AC.	
Power Rating	<p>The uninterruptible power supply (UPS) must meet the highest of these two criterias:</p> <ul style="list-style-type: none"> <li>• The UPS or series of uninterruptible power supplies must be able to supply power to the servers, the Ethernet POE switches and all critical devices of the CCTV System in the rack.</li> <li>• The UPS must be able to supply at least 5.5kW.</li> </ul>	
Power runtime	The uninterruptible power supply (UPS) must be able to supply a minimum of 20 minutes of power at full power capacity of the supported equipment during a power outage.	
Output Waveform	<p>True sine wave output</p> <p>Output voltage distortion with less than or equal to 5% distortion at full load.</p>	
Soft Shutdown	In the event of a power outage, the UPS system is to be configured to initiate a safe shutdown of the servers based on battery capacity and/or time delay.	
Connectivity	UPS system must be able to connect to each server through a network interface in order to initiate the shutdown in case of power outage.	
Example	UPS such as Eaton 9PX Rackmount UPS.	

Reference: UPS-T:WST0.9 Tower Medium UPS for viewing station & IT equipment All stated requirements are mandatory		Reference to bid document (document name, page, and paragraph number)
Grade	UPS must be considered 'Server Grade'.	
Form Factor	Tower format standard	
Topology	The UPS must be Online Topology type, converting the power from AC to DC then back to AC.	
Power Rating	<p>The uninterruptible power supply (UPS) must meet the highest of these two criterias:</p> <ul style="list-style-type: none"> <li>• The UPS or series of uninterruptible power supplies must be able to supply all the equipment's it supplies.</li> <li>• The UPS must be able to supply at least 900W.</li> </ul>	
Power runtime	The uninterruptible power supply (UPS) must be able to supply a minimum of 5 minutes of power at full power capacity of the supported equipment during a power outage.	
Soft Shutdown	In the event of a power outage, the UPS system is to be configured to initiate a safe shutdown of the servers based on battery capacity and/or time delay.	
Connectivity	UPS system must be able to connect to each server through a network interface in order to initiate the shutdown in case of power outage.	
Audio noise at one metre	Audio noise generated by the UPS must be less than 50db	
Example	UPS such as Eaton 9130 Rackmount UPS	

## 16. Viewing Station Specifications

Reference: VST-D-M24:CV/4 Small power Desktop Viewing Station for VMS All stated requirements are mandatory		Reference to bid document (document name, page, and paragraph number)
Form Factor	The computer is a Desktop type computer	
Processor / RAM	<p>The computer must be sized in terms of CPU and RAM, in order to be able to uncompress and display 4 x H.264 video streams at the same time at 30 frames per second and a resolution of HD 1080p</p> <p>This viewing function should take less than 50% of CPU resources at full usage.</p>	
Hard Drive Storage	500 GB Hard Drive <ul style="list-style-type: none"> <li>Partition OS of 100 GB for the Operating System</li> <li>Partition 400GB for Storage</li> </ul>	
Graphic Card	Must have graphic card with an output that includes but not limited to DVI- I or HDMI, at a display resolution of 1920 X 1080. We are looking for minimal to no converter use (to be discussed at site visit)	
Exporting	Must allow exporting and saving the data, images and video directly onto a DVD support and also a USB memory device.	
Operating System	Windows 7 or higher	
Application Software	The client computer must have a VMS client software installed on the OS partition, able to manage remotely the VMS sever through a LAN.	
NTP software	Must have NTP client software installed on the OS partition, able to communicate and synchronize the Device time with the NTP server installed on the CCTV network.	
Communication software to the	If the viewing workstation is power supplied by a UPS, the workstation must have automated power shutdown software installed and activated, like "Powerchute". When the UPS send the order, this software must softly	

UPS	shutdown all the embedded applications and must turn off the device.	
Monitor Size	Must have 24” connected LCD or LED monitor.	
Monitor Resolution	Must be configured with a minimum of 1920 X 1080 image resolution on each display.	
Monitor Angl	The monitor must have an horizontal and vertical angle of vue equal or better than 175 degrees.	
Monitor Static contrast	The monitor must have a static contrast ratio equal or better than 1000:1	
Keyboard	Wired keyboard Microsoft Compatible USB	
Mouse	Wired keyboard Microsoft Compatible USB Three button Right and left hand Optical motion detection	



Reference: VST-D-M24:CV/9 Medium power Desktop Viewing Station for VMS All stated requirements are mandatory		Reference to bid document (document name, page, and paragraph number)
Form Factor	The computer is a Desktop type computer	
Processor  / RAM  memory	The computer must be sized in terms of CPU and RAM, in order to be able to uncompress and display 9 x H.264 video streams at the same time at 30 frames per second and a resolution of HD 1080p  This viewing function should take less than 50% of CPU resources at full usage.	
Hard  Drive  e Storage	500 GB Hard Drive <ul style="list-style-type: none"> <li>• Partition OS of 100 GB for the Operating System</li> <li>• Partition 400GB for Storage</li> </ul>	
Graphic Card	Must have graphic card with an output that includes but not limited to DVI- I or HDMI, at a display resolution of 1920 X 1080.	
Exporting	Must allow exporting and saving the data, images and video directly onto a DVD support and also a USB memory device.	
Operating System	Windows 7 or higher	
Application Software	The client computer must have a VMS client software installed on the OS partition, able to manage remotely the VMS sever through a LAN.	
NTP software	Must have NTP client software installed on the OS partition, able to communicate and synchronize the Device time with the NTP server installed on the CCTV network.	
Communication software to the UPS	If the viewing workstation is power supplied by a UPS, the workstation must have automated power shutdown software installed and activated, like "Powerchute". When the UPS send the order, this software must softly shutdown all the embedded applications and must turn off the device.	

Monitor Size	Must have 24" connected LCD or LED monitor.	
Monitor Resolution	Must be configured with a minimum of 1920 X 1080 image resolution on each display.	
Monitor Angle of view	The monitor must have a horizontal and vertical angle of view equal or better than 175 degrees.	
Monitor Static contrast	The monitor must have a static contrast ratio equal or better than 1000:1	
Keyboard	Wired keyboard Microsoft Compatible USB	
Mouse	Wired keyboard Microsoft Compatible USB Three button Right and left hand Optical motion detection	

Reference: VST-D-M32:CV/16 Very large power Desktop unit for client VMS viewing Station All stated requirements are mandatory		Reference to bid document (document name, page, and paragraph number)
Form Factor	The computer is a Desktop type computer	
Processor  / RAM memory	<p>The computer must be sized in terms of CPU and RAM, in order to be able to uncompress and display 16 x H.264 video streams at the same time at 30 frames per second and a resolution of HD 1080p.</p> <p>This viewing function should take less than 50% of CPU resources at full usage.</p>	
Hard Drive Storage Capacity	500 GB Hard Drive <ul style="list-style-type: none"> <li>• Partition OS of 100 GB for the Operating System</li> <li>• Partition 400GB for Storage</li> </ul>	
Graphic Card	Must have graphic card with an output that includes but not limited to DVI- I or HDMI, at a display resolution of 1920 X 1080.	
Exporting	Must allow exporting and saving the data, images and video directly onto a DVD support and also a USB memory device.	
Operating System	Windows 7 or higher	
Application Software	The client computer must have a VMS client software installed on the OS partition, able to manage remotely the VMS sever through a LAN.	
NTP software	Must have NTP client software installed on the OS partition, able to communicate and synchronize the Device time with the NTP server installed on the CCTV network.	
Communication software to the UPS	If the viewing workstation is power supplied by a UPS, the workstation must have automated power shutdown software installed and activated, like "Powerchute". When the UPS send the order, this software must softly shutdown all the embedded applications and must turn off the device.	

Monitor Size	Must have 32" connected LCD or LED monitor.	
Monitor Resolution	Must be configured with a minimum of 1920 X 1080 image resolution on each display.	
Monitor Angle	The monitor must have an horizontal and vertical angle of view equal or better than 175 degrees.	
Monitor Static contrast	The monitor must have a static contrast ratio equal or better than 1000:1	
Keyboard	Wired keyboard Microsoft Compatible USB	
Mouse	Wired keyboard Microsoft Compatible USB Three button Right and left hand Optical motion detection	

## 17. Video management system Specifications

General Video management system Specifications		Reference to bid document (document name, page, and paragraph number)
All stated requirements are mandatory		
General Architecture	<ul style="list-style-type: none"> <li>• The VMS software used to control and manage the cameras must offer a client-server model.</li> <li>• The server application can be in a remote location and must be able to provide camera control (live viewing, PTZ controls) and video archiving functions.</li> <li>• The client application must be able to connect remotely the server to access: live video from cameras, and archived videos. The individual requirements for the server and client applications are outlined below.</li> <li>• The product must be able to group cameras in logical group. It must be possible to select one or more groups within the programmed hierarchy and go directly to that camera group's views.</li> <li>• It must be possible to use a traditional CCTV keyboard and connect it to the control center PC to allow full virtual matrix control without the need for PC keyboard and mouse control.</li> <li>• The product must support multiple streams from the same camera at different resolution.</li> </ul>	
Open standards	<ul style="list-style-type: none"> <li>• The product must support "Open Standards" architecture to interoperate with a variety of cameras, encoder, and IT infrastructure.</li> <li>• The product must be "ONVIF profile S" compliant.</li> <li>• The product must have a Software Development Kit (SDK) available.</li> <li>• The product must support commercial off the shelf (COTS) client workstations, servers, and customer selected archiving system.</li> <li>• The product must be compatible with open architecture industry leading camera manufacturers including but not limited to: Sony, Axis, Panasonic and Bosch.</li> <li>• All camera connected to the VMS must be approved and certified by the manufacturer.</li> </ul> <p>The product must be able to support an application programming interface (API) for integration of third party software such as video analytics or license plate recognition.</p>	

Languages	Support at least the two official languages: English and French.	
Retention periode	The product must have an unlimited video retention time.	
Software compatibility	<ul style="list-style-type: none"> <li>The software used to control and manage the cameras must be compatible with the server and the Operating System that hosts the software.</li> </ul>	

Reference: VMS-M:F/L Large scale site Video Management Server Software All stated requirements are mandatory		Reference to bid document (document name, page, and paragraph number)
Function	The software is hosted by the Video Management Server and must be able to manage the videosurveillance devices connected to the CCTV network, including but not limited to Cameras, Servers, Digital Input/Output devices (I/O).	
Architecture	<ul style="list-style-type: none"> <li>The VMS software used to control and manage the cameras must offer a client-server model, centrally managed and distributed sites.</li> <li>The VMS software must be able to support multiple servers System.</li> </ul>	
Scalability / future expansion	<ul style="list-style-type: none"> <li>The product must be upgradeable without migration to another platform.</li> <li>The server application must be scalable, i.e. the same application must be able to support unlimited cameras, without additional application upgrades or purchases.</li> </ul>	
Video Archiving and Retrieval	<ul style="list-style-type: none"> <li>The product must support management, distribution and storage of video surveillance data in a centralized and also distributed network environment.</li> <li>Must have the capability of recording video at 18 FPS at least and have an adjustable frame rate.</li> <li>The product must support multiple recording modes and formats, such as:</li> </ul>	

	<p>Always recording, on motion recording, pre and post motion recording, and scheduled recording. These modes must be available for all compatible cameras.</p> <ul style="list-style-type: none"> <li>o The product must support video recording in multiple standard compression formats including but not limited to H.264, configured at the camera level.</li> <li>• The product must be able to record audio that is synchronized with the video.</li> <li>• The product supports internal and external storage devices, including but not limited to servers, NAS / SAN solutions.</li> <li>• The product must provide advanced search functions, including but</li> </ul>	
Dynamic Video Stream Setting	<p>In order to display a large number of tiles on the Video Monitor at the same time, the VMS must be able to dynamically select the video stream resolution and frame rate based on the size of the tile on the monitor. It is only required to switch between two different streams.</p>	
Interconnection	<ul style="list-style-type: none"> <li>• The product must be able to connect multiple independent Remote Systems in order to view on live and playback, videos from the cameras hosted by these systems.</li> <li>• The viewing procedure of the remote cameras must be transparent to the user and the same as for the local cameras.</li> </ul>	
Federation	<p>The VMS software must be able to connect and federate other compatible VMS as a parent or as a child VMS System.</p> <p>As a parent or child VMS System, the Software must allow a federation function to centralize the Remote Management of these sites, including but not limited to:</p> <ul style="list-style-type: none"> <li>• Remote Live Monitoring,</li> <li>• Remote Playback,</li> <li>• Remote PTZ control,</li> <li>• Remote Alarm management,</li> <li>• Remote Reporting.</li> </ul>	
Availability	<ul style="list-style-type: none"> <li>• The product must provide a high level of availability for the recording function with failover features to ensure recording of all cameras at all times on the failover server without loss of data.</li> <li>• The product must provide a high level of availability for the viewing function with failover features to ensure access to all live data at all times through the failover server without service</li> </ul>	

Audit log	<p>The VMS must allow the management, the visualization and the printing of an audit log which includes, but not limited to the following:</p> <ul style="list-style-type: none"> <li>• The VMS must log user actions types</li> <li>• The VMS must log who did the action and when</li> <li>• The VMS must log User login/logoff action</li> <li>• The VMS must log Camera setting modification</li> <li>• The VMS must log PTZ move</li> <li>• The VMS must log Video export</li> <li>• The VMS must log Alarms and events</li> <li>• The VMS must log Disk above a threshold</li> <li>• The VMS must log Camera not working</li> <li>• The VMS must have a user interface to display and search the log</li> </ul>	
Video surveillance events	<ul style="list-style-type: none"> <li><input type="checkbox"/> The VMS must allow Video surveillance “Events” configuration through a friendly integrated Graphic User Interface.</li> <li><input type="checkbox"/> The “Events” handled by the VMS includes, but not limited to motion detection, video analytics, time of day etc.</li> </ul> <p>The VMS must also be able to handle third party events</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Events must trigger associated alarms.</li> <li><input type="checkbox"/> The alarm management function must have a role-based setup of alarm handling.</li> </ul> <p>The product provides user options to log text descriptions of Event</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Triggers, Actions, and Alarms.</li> </ul> <p>Alarms must be associated with user defined actions.</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> The VMS must be able to provide independent live viewing</li> <li><input type="checkbox"/> windows for the alarms / events management, including but not limited to alarm acknowledgement, alarm disabling, alarm forwarding, etc.</li> </ul>	
Diagnostic Events	<ul style="list-style-type: none"> <li><input type="checkbox"/> The VMS software must allow “Diagnostic Events” through a friendly integrated Graphic User Interface.</li> <li><input type="checkbox"/> The “Events” handled by the VMS must also be based on the CCTV device and function health monitoring where event includes, but not limited to, “Disk or server failure”, “camera failure”, “recording “Disk space full”, etc...</li> <li><input type="checkbox"/> Events must trigger associated alarms.</li> <li><input type="checkbox"/> The alarm management function must provide an overview of all components controlled by the VMS.</li> <li><input type="checkbox"/> The alarm management function must have a role-based setup of alarm handling.</li> <li><input type="checkbox"/> The product provides user options to log text descriptions of Event</li> </ul>	



	<p>Triggers, Actions, and Alarms.</p> <ul style="list-style-type: none"><li>• Alarms must be associated with user defined actions.</li><li>• The VMS must be able to provide independent live viewing windows for the alarms / events management, including but not limited to alarm acknowledgement, alarm disabling, alarm forwarding, etc.</li><li>• Alarms must be sent if needed to users through email, SNMP and text message.</li></ul>	
Video transmission Type	<p>The product must support multicast and unicast transmission.</p>	
Configuration function or tool	<ul style="list-style-type: none"><li>• The VMS configuration tool must be managed by a Graphic User Interface (GUI)</li><li>• The camera settings including but not limited to frame rate, resolution and compression must be configurable by the VMS.</li><li>• The camera settings including motion detection must be configurable by the VMS.</li><li>• The VMS must provide a hardware discovery tool.</li></ul>	
Configuration reporting	<ul style="list-style-type: none"><li>• The VMS software must allow the user to generate a configuration report listing all the the settings of the equipment managed by the software.</li><li>• This configuration Report must be exportable by the VMS software in a popular electronic file format like pdf, and it must be written in a readable and understandable format.</li></ul>	

Security	<p>The product must provide a role based authorization mechanism that includes, but not limited to the following features:</p> <ul style="list-style-type: none"><li>• Must have User ID and Password protection for each client connection to the server application.</li><li>• Must be able to have automatic password expiry function.</li><li>• Must be able to have encryption of stored Passwords.</li><li>• The proposed solution must support role-based access control (RBAC) management or group-based access control (GBAC) management where privileged users can define roles or groups and can assign users to roles or groups.</li><li>• Must have at least one administrator role with full access rights and also multiple user and group profiles with restricted rights.</li><li>• Must be able to define hierarchy and inheritance mechanisms on user/group rights.</li></ul>	
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	<ul style="list-style-type: none"> <li>• The proposed solution must allow the assignment of granular restriction to users, groups or roles. The granularity of these restriction must include but is not limited to: <ul style="list-style-type: none"> <li>○ Restricted access by device (cameras, microphones, I/O devices,...)</li> <li>○ Restricted access to live view for specific cameras</li> <li>○ Restricted access to playback for specific cameras</li> <li>○ Restricted access to PTZ</li> <li>○ Restricted access to export</li> <li>○ Restricted access to the VMS setup</li> <li>○ Restricted access on enabling/disabling recording and listening of audio.</li> </ul> </li> <li>• The contractor gives warranty that the VMS has no existing back door or non-modifiable default password that gives permanent access to third party to any of the infrastructure or components implemented unless explicitly authorized by the CBSA authority.</li> </ul>	
PTZ Controls	<ul style="list-style-type: none"> <li>• Pan-tilt-zoom function must be supported by traditional CCTV keyboard such that the PC keyboard and mouse are not required / mandatory for normal pan-tilt-zoom.</li> <li>• Variable speed and direction pan-tilt-zoom control must be available using the PC mouse by dragging a directional pointer around the video pane. This includes zoom in, zoom out, focus near, focus far and multiple speed pan and tilt operations.</li> <li>• Must be able to store and manage unlimited preset positions for each camera.</li> </ul>	
Requested	Milestone XProtect Corporate (latest release)	

Reference: VMS-C Video Management Client Software All stated requirements are mandatory		Reference to bid document (document name, page, and paragraph number)
Function	The software is hosted by the Viewing Workstation and must be able to inter connect and interact with the Video Management Server Software in order to let users to control and manage all the VMS functions, including but not limited to, video live viewing, video playback, CCTV System configuration, etc.	
Live Viewer	<ul style="list-style-type: none"> <li>• The live viewer client application must display live video from cameras connected to the server located in a remote location.</li> <li>• The live viewer must have these features: <ul style="list-style-type: none"> <li>○ Must provide help options to locate a function or feature.</li> <li>○ Must be able to display live video at 30 FPS at least and must have an adjustable live display frame rate.</li> <li>○ Must be able to display live video at different resolutions.</li> <li>○ Provides configurable live audio functions, including but not limited to audio ON/OFF, audio synchronized with video and adjustable audio volume.</li> <li>○ The operator must be able to choose playback layouts including 2x2, 4x4 and various customs layouts.</li> <li>○ The VMS must be able to add bookmark with notes in order to tag live events.</li> <li>○ Must be able to show different views on multiple monitors (up to 3)</li> </ul> </li> </ul>	
Play Back	<ul style="list-style-type: none"> <li>• The product must provide multiple playback functions, including but not limited to play, pause, fast forward, rewind, and variable play speed functions.</li> <li>• The product must provide synchronized playback from multiple cameras.</li> <li>• The archive player must have multiple layouts to playback videos from multiple cameras e.g. It must be possible to play 2, 4, or 16 videos synchronously.</li> <li>• Live viewer software must have synchronous play back mode.</li> <li>• It must be possible to disable audio during playback.</li> <li>• The product must be able to export video in a non-proprietary format (such as AVI or ASF) readable on computers without the need to install</li> </ul>	

	<p>additional software /codes.</p> <ul style="list-style-type: none"> <li>• The VMS must be able to export video in an original format with watermarking and timestamp.</li> <li>• The VMS must also be able to export multiple video at the same time.</li> </ul>	
Video transmission Type	The product must support multicast and unicast transmission.	
Security	<p>The product must provide a role based authorization mechanism that includes, but not limited to the following features:</p> <ul style="list-style-type: none"> <li>• Must have User ID and Password protection for each client connection to the server application.</li> <li>• Must be able to have automatic password expiry function.</li> <li>• Must be able to have encryption of stored Passwords.</li> <li>• The proposed solution must support role-based access control (RBAC) management or group-based access control (GBAC) management where privileged users can define roles or groups and can assign users to roles or groups.</li> <li>• Must have at least one administrator role with full access rights and also multiple user and group profiles with restricted rights.</li> <li>• Must be able to define hierarchy and inheritance mechanisms on user/group rights.</li> <li>• The proposed solution must allow the assignment of granular restriction to users, groups or roles. The granularity of these restriction must include but is not limited to: <ul style="list-style-type: none"> <li>○ Restricted access by device (cameras, microphones, I/O devices,...)</li> <li>○ Restricted access to live view for specific cameras</li> <li>○ Restricted access to playback for specific cameras</li> <li>○ Restricted access to PTZ</li> <li>○ Restricted access to export</li> <li>○ Restricted access to the VMS setup</li> <li>○ Restricted access on enabling/disabling recording and listening of audio.</li> </ul> </li> <li>• The contractor gives warranty that the VMS has no existing back door or non-modifiable default password that gives permanent access to third party to any of the infrastructure or components implemented unless</li> </ul>	
Requested	Milestone XProtect Smart client	

## 18. CCTV System Installation Specifications

### 18.1 General installation setup

Equipment	Set up
All	<ul style="list-style-type: none"> <li><input type="checkbox"/> All equipment on the network must have a fixed IP address assigned, unless otherwise indicated.</li> <li><input type="checkbox"/> The installer should change all default passwords of installed equipment.</li> <li><input type="checkbox"/> Configure the video management server / backup NTP server mode Recording (Network Time Protocol) Central.</li> <li><input type="checkbox"/> All equipment such as cameras, server, etc ... other than the video management server / backup recording will be configured NTP client and synchronized to the central NTP server.</li> <li><input type="checkbox"/> The installer must produce a traceability file for the installation settings and submit all the information to the CBSA after completing the installation of the CCTV system. traceability includes, but is not limited to IP addresses assigned to devices, the administrator passwords of all equipment, the VMS setting report launched at the end of the installation, etc.</li> </ul>
Camera	<ul style="list-style-type: none"> <li><input type="checkbox"/> All camera parameters that are not mentioned must be setup by default</li> <li><input type="checkbox"/> Setup the day/night filter to auto</li> <li><input type="checkbox"/> Setup the shutter speed to auto</li> <li><input type="checkbox"/> Setup the Automatic Gain Control (AGC) to auto</li> <li><input type="checkbox"/> Set the focal length at the nominal distance in order to have the appropriate Field of View</li> <li><input type="checkbox"/> Adjust the focus of the lens for each camera</li> <li><input type="checkbox"/> Setup recording mode as continuous at the frame rate specified on each camera table, except when other recording mode is specified</li> <li><input type="checkbox"/> Set up the viewing frame rate at 20 frames per second by default for all cameras if applicable</li> <li><input type="checkbox"/> The audio on all cameras must be disabled unless otherwise specified.</li> </ul>

## 18.2 Specific installation setup

The heights specified below are not set in stone. There must be a balance between the heights provided in order to ensure that the camera has the requested provided rendered view.

#	Equipment	Reference #	Set up
1	C1	D-2.3-100/VEW5	Height: 4m Nominal Focal Length: 7mm The audio must be <b>disabled</b> Set WDR on
2	C2	D-2.3-100/VEW5	Height: 4m Nominal Focal Length: 7mm The audio must be <b>disabled</b> Set WDR on
3	C3	D-1.2-80/VEW5	Height: 1.5m Nominal Focal Length: 3.26mm The audio must be <b>disabled</b> Set WDR on
4	C4	D-2.3-100/VEW5	Height: 3m Nominal Focal Length: 3mm The audio must be <b>disabled</b> Set WDR on
5	C5	D-2.3-100/VEW5	Height: 2m Nominal Focal Length: 5mm The audio must be <b>disabled</b> Set WDR on
6	C6	D-5-80/VEW1	Height: 5m Nominal Focal Length: 3mm The audio must be <b>disabled</b> Set WDR on
7	C7	D-1.2-80/VEW5	Height: 1.5m Nominal Focal Length: 3.26mm The audio must be <b>disabled</b> Set WDR on
8	C8	D-1.2-80/VEW5	Height: 3m Nominal Focal Length: 3mm The audio must be <b>disabled</b> Set WDR on
9	C9	D-1.2-80/VEW5	Height: 2m Nominal Focal Length: 7mm The audio must be <b>disabled</b> Set WDR on
10	C10	D-1.2-80/VEW5	Height: 5m Nominal Focal Length: 3.8mm The audio must be <b>disabled</b> Set WDR on
#	Equipment	Reference #	Set up
11	C11	D-1.2-80/VEW5	Height: 1.5m Nominal Focal Length: 3.26mm The audio must be <b>disabled</b> Set WDR on

12	C12	D-1.2-80/VEW5	Height: 3m Nominal Focal Length: 3mm The audio must be <b>disabled</b> Set WDR on
13	C13	D-1.2-80/VEW5	Height: 2m Nominal Focal Length: 7mm The audio must be <b>disabled</b> Set WDR on
14	C14	D-1.2-80/VEW5	Height: 5m Nominal Focal Length: 4mm The audio must be <b>disabled</b> Set WDR on
15	C15	D-1.2-80/VEW5	Height: 1.5m Nominal Focal Length: 3.26mm The audio must be <b>disabled</b> Set WDR on
16	C16	D-1.2-80/VEW5	Height: 3m Nominal Focal Length: 3mm The audio must be <b>disabled</b> Set WDR on
17	C17	D-1.2-80/VEW5	Height: 2m Nominal Focal Length: 7mm The audio must be <b>disabled</b> Set WDR on
18	C18	D-1.2-80/VEW5	Height: 5m Nominal Focal Length: 3mm The audio must be <b>disabled</b> Set WDR on
19	C19	D-2.3-100/VEW5	Height: 5m Nominal Focal Length: 4mm The audio must be <b>disabled</b> Set WDR on
20	C20	D-2.3-100/VEW5	Height: 5m Nominal Focal Length: 4mm The audio must be <b>disabled</b> Set WDR on
21	C21	D-2.3-100/VEW5	Height: 5m Nominal Focal Length: 4mm The audio must be <b>disabled</b> Set WDR on
22	C22	D-2.3-100/VEW5	Height: 5m Nominal Focal Length: 4mm The audio must be <b>disabled</b> Set WDR on
#	Equipment	Reference #	Set up
23	C23	D-5-80/VEW1	Height: 5m Nominal Focal Length: 4mm The audio must be <b>disabled</b> Set WDR on
24	C24	D-1.2-80/VEW5	Height: 4m Nominal Focal Length: 4mm The audio must be <b>disabled</b> Set WDR on
25	C25	D-5-80/VEW1	Height: 4m Nominal Focal Length: 3.8mm



			The audio must be <b>disabled</b> Set WDR on
26	C26	D-5-80/VEW1	Height: 5m Nominal Focal Length: 3mm The audio must be <b>disabled</b> Set WDR on
27	C27	D-2.3-100/VEW5	Height: 4m Nominal Focal Length: 4mm The audio must be <b>disabled</b> Set WDR on
28	C28	D-2.3-100/VEW5	Height: 5m Nominal Focal Length: 4mm The audio must be <b>disabled</b> Set WDR on
29	C29	D-2.3-100/VEW5	Height: 4m Nominal Focal Length: 4mm The audio must be <b>disabled</b> Set WDR on
30	C30	D-2.3-100/VEW5	Height: 4m Nominal Focal Length: 4mm The audio must be <b>disabled</b> Set WDR on
31	C31	D-2.3-100/VEW5	Height: 4m Nominal Focal Length: 7mm The audio must be <b>disabled</b> Set WDR on
32	C32	D-1.2-80/VEW5	Height: 5m Nominal Focal Length: 3mm The audio must be <b>disabled</b> Set WDR on
33	C33	D-1.2-80/VEW5	Height: 5m Nominal Focal Length: 3mm The audio must be <b>disabled</b> Set WDR on
34	C34	D-5-80/VEW1	Height: 4.5m Nominal Focal Length: 6mm The audio must be <b>disabled</b> Set WDR on
#	Equipment	Reference #	Set up
35	C35	D-5-80/VEW1	Height: 4m Nominal Focal Length: 3mm The audio must be <b>disabled</b> Set WDR on
36	C36	D-5-80/VEW1	Height: 5m Nominal Focal Length: 3mm The audio must be <b>disabled</b> Set WDR on
37	C37	D-2.3-100/VEW5	Height: 4m Nominal Focal Length: 4mm The audio must be <b>disabled</b> Set WDR on
38	C38	Z-1-60-x30/E	Height: 5m Nominal Focal Length: 4.4mm The audio must be <b>disabled</b>

39	C39	Z-1-60-x30/E	Height: 5m Nominal Focal Length: 4.4mm The audio must be <b>disabled</b>
40	C40	Z-1-60-x30/E	Height: 5m Nominal Focal Length: 4.4mm The audio must be <b>disabled</b>
41	C41	Z-1-60-x30/E	Height: 5m Nominal Focal Length: 4.4mm The audio must be <b>disabled</b>
42	C42	Z-1-60-x30/E	Height: 5m Nominal Focal Length: 4.4mm The audio must be <b>disabled</b>
43	C43	Z-1-60-x30/E	Height: 5m Nominal Focal Length: 4.4mm The audio must be <b>disabled</b>
44	C44	Z-1-60-x30/E	Height: 4m Nominal Focal Length: 4.4mm The audio must be <b>disabled</b>
45	C45	Z-1-60-x30/E	Height: 4m Nominal Focal Length: 4.4mm The audio must be <b>disabled</b>
46	C46	Z-1-60-x30/E	Height: 4m Nominal Focal Length: 4.4mm The audio must be <b>disabled</b>
47	C47	D-5-80/VEW1	Height: 4m Nominal Focal Length: 5mm The audio must be <b>disabled</b> Set WDR on
48	C48	D-5-80/VEW1	Height: 4m Nominal Focal Length: 5mm The audio must be <b>disabled</b> Set WDR on
49	C49	D-1.2-80/VEW5	Height: 1.5m Nominal Focal Length: 3.26mm The audio must be <b>disabled</b> Set WDR on
#	Equipment	Reference #	Set up
50	C50	D-1.2-80/VEW5	Height: 3m Nominal Focal Length: 3mm The audio must be <b>disabled</b> Set WDR on
51	C51	D-1.2-80/VEW5	Height: 1.5m Nominal Focal Length: 3.26mm The audio must be <b>disabled</b> Set WDR on
52	C52	Z-1-60-x30/E	Height: 4m Nominal Focal Length: 5mm The audio must be <b>disabled</b>
53	C53	D-2.3-100/VEW5	Height: 4m Nominal Focal Length: 3mm The audio must be <b>disabled</b> Set WDR on
54	C54	D-2.3-100/VEW5	Height: 4m Nominal Focal Length: 3mm The audio must be <b>disabled</b> Set WDR on
55	C55	D-2.3-100/VEW5	Height: 4m Nominal Focal Length: 3mm

			The audio must be <b>disabled</b> Set WDR on
56	C56	D-2.3-100/VEW5	Height: 4m Nominal Focal Length: 3mm The audio must be <b>disabled</b> Set WDR on
57	C57	D-2.3-100/VEW5	Height: 4m Nominal Focal Length: 3mm The audio must be <b>disabled</b> Set WDR on
58	C58	D-2.3-100/VEW5	Height: 4m Nominal Focal Length: 3mm The audio must be <b>disabled</b> Set WDR on
59	C59	D-2.3-100/VEW5	Height: 4m Nominal Focal Length: 3mm The audio must be <b>disabled</b> Set WDR on
60	C60	D-2.3-100/VEW5	Height: 4m Nominal Focal Length: 3mm The audio must be <b>disabled</b> Set WDR on
61	C61	D-1.2-80/VEW5	Height: 3m Nominal Focal Length: 3mm The audio must be <b>disabled</b> Set WDR on
#	Equipment	Reference #	Set up
62	C62	D-2.3-100/VEW5	Height: 1.5m Nominal Focal Length: 7mm The audio must be <b>disabled</b> Set WDR on
63	C63	Z-1-60-x30/E	Height: 4m Nominal Focal Length: 4.4mm The audio must be <b>disabled</b>
64	C64	D-2.3-100/VEW5	Height: 4m Nominal Focal Length: 4mm The audio must be <b>disabled</b> Set WDR on
65	C65	D-2.3-100/VEW5	Height: 4m Nominal Focal Length: 4mm The audio must be <b>disabled</b> Set WDR on
66	C66	D-2.3-100/VEW5	Height: 4m Nominal Focal Length: 7mm The audio must be <b>disabled</b> Set WDR on
67	C67	D-2.3-100/VEW5	Height: 4m Nominal Focal Length: 6mm The audio must be <b>disabled</b> Set WDR on
68	C68	D-2.3-100/VEW5	Height: 4m Nominal Focal Length: 4mm The audio must be <b>disabled</b>

			Set WDR on
69	C69	D-2.3-100/VEW5	Height: 4m Nominal Focal Length: 4mm The audio must be <b>disabled</b> Set WDR on
70	C70	D-5-80/VEW1	Height: 4m Nominal Focal Length: 3mm The audio must be <b>disabled</b> Set WDR on
71	C71	D-2.3-100/VEW5	Height: 4m Nominal Focal Length: 3mm The audio must be <b>disabled</b> Set WDR on
72	C72	D-2.3-100/VEW5	Height: 4m Nominal Focal Length: 4mm The audio must be <b>disabled</b> Set WDR on
73	C73	D-2.3-100/VEW5	Height: 3m Nominal Focal Length: 3mm The audio must be <b>disabled</b> Set WDR on
#	Equipment	Reference #	Set up
74	C74	Z-1-60-x30/E	Height: 4m Nominal Focal Length: 4.4mm The audio must be <b>disabled</b>
75	C75	D-2.3-100/VEW5	Height: 4m Nominal Focal Length: 3mm The audio must be <b>disabled</b> Set WDR on
76	C76	D-2.3-100/VEW5	Height: 4m Nominal Focal Length: 4mm The audio must be <b>disabled</b> Set WDR on
77	C77	D-5-80/VEW1	Height: 3.5m Nominal Focal Length: 3mm The audio must be <b>disabled</b> Set WDR on
78	C78	D-2.3-100/VEW5	Height: 4m Nominal Focal Length: 4.2mm The audio must be <b>disabled</b> Set WDR on
79	C79	Z-1-60-x30/E	Height: 4m Nominal Focal Length: 4.4mm The audio must be <b>disabled</b>
80	C80	D-5-80/VEW1	Height: 4m Nominal Focal Length: 3mm The audio must be <b>disabled</b> Set WDR on
81	C81	D-1.2-80/VEW5	Height: 2m Nominal Focal Length: 7mm The audio must be <b>disabled</b> Set WDR on

82	C82	D-1.2-80/VEW5	Height: 4m Nominal Focal Length: 6mm The audio must be <b>disabled</b> Set WDR on
83	C83	D-2.3-100/VEW5	Height: 4m Nominal Focal Length: 3mm The audio must be <b>disabled</b> Set WDR on
84	C84	Z-1-60-x30/E	Height: 4m Nominal Focal Length: 4.4mm The audio must be <b>disabled</b>
85	C85	D-2.3-100/VEW5	Height: 4m Nominal Focal Length: 3mm The audio must be <b>disabled</b> Set WDR on
86	C86	D-2.3-100/VEW5	Height: 4m Nominal Focal Length: 3mm The audio must be <b>disabled</b> Set WDR on
#	Equipment	Reference #	Set up
87	C87	D-2.3-100/VEW5	Height: 4m Nominal Focal Length: 7mm The audio must be <b>disabled</b> Set WDR on
88	C88	Z-1-60-x30	Height: 3m Nominal Focal Length: 20mm The audio must be <b>disabled</b>
89	C89	Z-1-60-x30	Height: 3m Nominal Focal Length: 20mm The audio must be <b>disabled</b>
90	C90	Z-1-60-x30	Height: 3m Nominal Focal Length: 7mm The audio must be <b>disabled</b>
91	C91	D-2.3-100/V	Height: 2m Nominal Focal Length: 3mm The audio must be <b>disabled</b>
92	C92	D-5-80/VEW1	Height: 4m Nominal Focal Length: 3mm The audio must be <b>disabled</b> Set WDR on
93	C93	D-5-80/VEW1	Height: 4m Nominal Focal Length: 3mm The audio must be <b>disabled</b> Set WDR on
94	C94	D-1.2-100/V	Height: 2.75m Nominal Focal Length: 2.5mm The audio must be <b>disabled</b>
95	C95	D-1.2-100/V	Height: 2.75m Nominal Focal Length: 2.5mm The audio must be <b>disabled</b>
96	C96	D-2.3-100/VW5	Height: 3m Nominal Focal Length: 7mm The audio must be <b>disabled</b> Set WDR on
97	C97	D-1.2-100/V	Height: 2.75m Nominal Focal Length: 5mm The audio must be <b>disabled</b>

98	C98	D-1.2-100/V	Height: 2.75m Nominal Focal Length: 2.5mm The audio must be <b>disabled</b>
99	C99	D-1.2-100/V	Height: 2.75m Nominal Focal Length: 2.5mm The audio must be <b>disabled</b>
100	C100	D-1.2-100/V	Height: 2.75m Nominal Focal Length: 2.5mm The audio must be <b>disabled</b>
101	C101	D-2.3-100/V	Height: 4m Nominal Focal Length: 3mm The audio must be <b>disabled</b>
102	C102	D-2.3-100/V	Height: 4m Nominal Focal Length: 3mm The audio must be <b>disabled</b>
#	Equipment	Reference #	Set up
103	C103	D-2.3-100/V	Height: 4m Nominal Focal Length: 3mm The audio must be <b>disabled</b>
104	C104	D-2.3-100/V	Height: 4m Nominal Focal Length: 3mm The audio must be <b>disabled</b>
105	C105	D-2.3-100/V	Height: 4m Nominal Focal Length: 3mm The audio must be <b>disabled</b>
106	C106	D-1.2-80/VW5	Height: 3m Nominal Focal Length: 3mm The audio must be <b>disabled</b> Set WDR on
107	C107	D-2.3-100/V	Height: 4m Nominal Focal Length: 3mm The audio must be <b>disabled</b>
108	C108	Z-1-60-x30	Height: 4m Nominal Focal Length: 4.4mm The audio must be <b>disabled</b>
109	C109	D-5-80/VEW1	Height: 4m Nominal Focal Length: 3mm The audio must be <b>disabled</b> Set WDR on
110	C110	D-5-80/VEW1	Height: 4m Nominal Focal Length: 3mm The audio must be <b>disabled</b> Set WDR on
111	C111	D-2.3-100/VW5	Height: 2.75m Nominal Focal Length: 3mm The audio must be <b>disabled</b> Set WDR on
112	C112	<b>D-1.2-100/V</b>	<b>Height: 2.75m Nominal Focal Length: 3mm</b> <b>The audio must be disabled</b>
<b>113</b>	<b>C113</b>	<b>D-5-80/VEW1</b>	<b>Height: 4m Nominal Focal Length: 3mm</b> <b>The audio must be disabled</b> <b>Set WDR on</b>
<b>114</b>	<b>C114</b>	<b>D-5-80/VEW1</b>	<b>Height: 4m Nominal Focal Length: 3mm</b> <b>The audio must be disabled</b>

			Set WDR on
115	C115	D-2.3-100/V	Height: 2.75m Nominal Focal Length: 3mm The audio must be <b>disabled</b>
116	C116	D-1.2-100/V	Height: 2.75m Nominal Focal Length: 2.5mm The audio must be <b>disabled</b>
#	Equipment	Reference #	Set up
117	C117	D-1.2-100/V	Height: 2.75m Nominal Focal Length: 2.5mm The audio must be <b>disabled</b>
118	PDS #1	PDS-U/6	Configure the Power Distribution System in order to define an asynchronous sequence in which the servers and IT equipment are turned on or off through each outlet.
119	Recording Server #1	SRV-R-L:R/R6-32TB	<p>Configure the Server in order to have by default only one active Power supply at a time. Setup always the same Power supply for all the servers. If this Power supply fails, the redundant one must become active.</p> <p>Install the Operating System software on the OS partition and set up according to the VMS manufacturer recommendations.</p> <p>Install and set up the Video Recording Software according to the manufacturer recommendation and assign a balanced amount of cameras to the server with regard to the workload.</p> <p>Assign the recording space to the Recording server.</p> <p>Configuration file must be backed up in secondary location.</p> <p>Setup Administrator, Superintendent, BSO roles.</p>
120	Recording Server #2	SRV-R-L:R/R6-32TB	<p>Configure the Server in order to have by default only one active Power supply at a time. Setup always the same Power supply for all the servers. If this Power supply fails, the redundant one must become active.</p> <p>Install the Operating System software on the OS partition and set up according to the VMS manufacturer recommendations.</p> <p>Install and set up the Video Recording Software according to the manufacturer recommendation and assign a balanced amount of cameras to the server with regard to the workload.</p> <p>Assign the recording space to the Recording server.</p> <p>Configuration file must be backed up in secondary location.</p> <p>Setup Administrator, Superintendent, BSO roles.</p>

#	Equipment	Reference #	Set up
121	Recording Server #3	SRV-R-L:R/R6-32TB	<p>Configure the Server in order to have by default only one active Power supply at a time. Setup always the same Power supply for all the servers. If this Power supply fails, the redundant one must become active.</p> <p>Install the Operating System software on the OS partition and set up according to the VMS manufacturer recommendations.</p> <p>Install and set up the Video Recording Software according to the manufacturer recommendation and assign a balanced amount of cameras to the server with regard to the workload.</p> <p>Assign the recording space to the Recording server.</p> <p>Configuration file must be backed up in secondary location.</p> <p>Setup Administrator, Superintendent, BSO roles.</p>
122	Video Management/Recording Failover Server	SRV-R-L:MRF/R5-8TB	<p>Configure the Server in order to have by default only one active Power supply at a time. Setup always the same power supply for all the servers. If this Power supply fails, the redundant one must become active.</p> <p>Install the Operating System software on the OS partition and set up according to the VMS manufacturer recommendations.</p> <p>Install and set up the Video Management Software according to the manufacturer recommendation and assign the cameras to the server.</p> <p>Install and setup the recording failover software in order to have a failover server if one of the recording servers fails and assign the cameras to the server.</p> <p>Assign the recording space of the Recording Failover server to all the Recording servers.</p> <p>Audio must be disabled on cameras outside of interview rooms.</p> <p>Wet cells must have toilet area masked out.</p> <p>Installation log to be provided to technical authority for approval.</p> <p>Configuration file must be backed up in secondary location.</p> <p>Setup Administrator, Superintendent, BSO roles</p>
#	Equipment	Reference #	Set up



123	UPS #1	UPS-R:H5.5	<input type="checkbox"/> Connect the equipment hosted by the server rack, including servers and switches, to the output of the UPS. <input type="checkbox"/> Configure the UPS in order to safely shut down servers that it supplies prior to exhaustion of UPS battery in case of power outage. This shutdown must be done in a sequential manner
124	UPS #2	UPS-R:M1.5	<input type="checkbox"/> Connect the equipment hosted by the server rack, including servers and switches, to the output of the UPS. <input type="checkbox"/> Configure the UPS in order to safely shut down servers that it supplies prior to exhaustion of UPS battery in case of power outage. This shutdown must be done in a sequential manner
125	UPS #3	UPS-R1:S0.7	<input type="checkbox"/> Connect the equipment hosted by the server rack, including servers and switches, to the output of the UPS. <input type="checkbox"/> Configure the UPS in order to safely shut down servers that it supplies prior to exhaustion of UPS battery in case of power outage. This shutdown must be done in a sequential manner
126	UPS #4	UPS-T:WST0.9	<input type="checkbox"/> Connect the equipment hosted by the server rack, including servers and switches, to the output of the UPS. <input type="checkbox"/> Configure the UPS in order to safely shut down servers that it supplies prior to exhaustion of UPS battery in case of power outage.
127	UPS #5	UPS-T:WST0.9	<input type="checkbox"/> Connect the equipment hosted by the server rack, including servers and switches, to the output of the UPS. <input type="checkbox"/> Configure the UPS in order to safely shut down servers that it supplies prior to exhaustion of UPS battery in case of power outage.
128	Viewing Station #1	VST-D-G2-M32:CV/16H	Install on the system OS partition, the client software chosen by the installer and configure it. Configure the Administrator, Superintendent and agents roles Configure the viewing station in collaboration with the CBSA End-User Freeze Video Data export capabilities.
#	Equipment	Reference #	Set up
129	Viewing Station #2	VST-D-G2-M32:CV/16H	Install on the system OS partition, the client software chosen by the installer and configure it. Configure the Administrator, Superintendent and agents roles

			<p>Configure the viewing station in collaboration with the CBSA End-User</p> <p>Freeze Video Data export capabilities.</p>
130	Viewing Station #3	VST-D-M24:CV/9H	<p>Install on the system OS partition, the client software chosen by the installer and configure it.</p> <p>Configure the Administrator, Superintendent and agents roles</p> <p>Configure the viewing station in collaboration with the CBSA End-User</p>
131	Viewing Station #4	VST-D-M24:CV/9H	<p>Install on the system OS partition, the client software chosen by the installer and configure it.</p> <p>Configure the Administrator, Superintendent and agents roles</p> <p>Configure the viewing station in collaboration with the CBSA End-User</p>
132	Viewing Station #5	VST-D-M24:CV/4H	<p>Install on the system OS partition, the client software chosen by the installer and configure it.</p> <p>Configure the Administrator, Superintendent and agents roles</p> <p>Configure the viewing station in collaboration with the CBSA End-User</p> <p>Freeze Video Data export capabilities.</p>
133	Viewing Station #6	VST-D-G2-M32:CV/16H	<p>Install on the system OS partition, the client software chosen by the installer and configure it.</p> <p>Configure the Administrator, Superintendent and agents roles</p> <p>Configure the viewing station in collaboration with the CBSA End-User</p> <p>Freeze Video Data export capabilities.</p>
134	Viewing Station #7	VST-D-M24:CV/9H	<p>Install on the system OS partition, the client software chosen by the installer and configure it.</p> <p>Configure the Administrator, Superintendent and agents roles</p> <p>Configure the viewing station in collaboration with the CBSA End-User</p> <p>Freeze Video Data export capabilities.</p>

Equipment by Zone

Zone	Reference #	Equipment count
Commercial - Exterior Tertiary	Z-1-60-x30/E	2
Commercial - Exterior Tertiary	D-5-80/VEW1	2
Commercial - Exterior Tertiary	D-2.3-100/VEW5	2
Commercial - Interior Teritary	D-1.2-100/V	1
Commercial - Interior Tertiary	D-5-80/VEW1	3
Commercial - Interior Tertiary	D-2.3-100/VW5	1
Commercial - Interior Tertiary	D-2.3-100/V	1
Commercial - Interior Tertiary	D-1.2-100/V	2
Exterior Commercial	D-2.3-100/VEW5	37
Exterior Commercial	D-1.2-80/VEW5	22
Exterior Commercial	Z-1-60-x30/E	12
Exterior Commercial	D-5-80/VEW1	10
Exterior Commercial	D-2.3-100/VW5	1
Interior Commercial	D-1.2-80/VW5	1
Interior Commercial	Z-1-60-x30	4
Interior Commercial	D-2.3-100/V	7
Interior Commercial	D-5-80/VEW1	3
Interior Commercial	D-1.2-100/V	6
Main Building - Commercial	RCK-4532:GEN	1
Tertiary Building	RCK-W-1022:IT	1
Warehouse	RCK-W-1022:IT	1
Main Building - Commercial	JOY-I:U	1
Traffic Building	JOY-I:U	2
Main Building - Commercial	KMM:VGA-2USB	1
Main Building - Commercial	KVM:8	1
Main Building - Commercial	MNT-24	1
Traffic Building	MNT-24	2
Main Building - Commercial	PDS-U/6	1
Main Building - Commercial	SRV-R-L:R/R6-32TB	3

Zone	Reference #	Equipment count
Main Building - Commercial	SRV-R-L:MRF/R5-8TB	1
Main Building - Commercial	SUR-U/120	1
Main Building - Commercial	SWT-R:BB/P_PP	1
<b>Tertiary Building</b>	SWT-R:S/P_PP	1
Warehouse Building	SWT-R:S/P_PP	1
Main Building - Commercial	UPS-R:H5.5	1
Main Building - Commercial	UPS-T:WST0.9	1
Tertiary Building	UPS-R:M1.5	1
<b>Traffic Building</b>	UPS-T:WST0.9	1
Warehouse Building	UPS-R1:S0.7	1
Main Building - Commercial	VST-D-G2-M32:CV/16H	1
Main Building - Commercial	VST-D-M24:CV/9H	2
PIL Area	VST-D-M24:CV/4H	1
<b>Tertiary Building</b>	VST-D-M24:CV/9H	1
Traffic Building	VST-D-G2-M32:CV/16H	2
Main Building - Commercial	VMS-C	3
Main Building - Commercial	VMS-M:F/L	1
PIL area	VMS-C	1
<b>Tertiary Building</b>	VMS-C	1
Traffic Building	VMS-C	2

### Equipment summary

Reference #	Equipment count	Notes about the change
D-2.3-100/VEW5	39	
D-1.2-80/VW5	1	reduced by 1
D-2.3-100/VW5	2	
D-1.2-80/VEW5	22	reduced by 1
Z-1-60-x30/E	14	
D-5-80/VEW1	18	increased by 3
Z-1-60-x30	4	
D-2.3-100/V	8	reduced by 1
D-1.2-100/V	9	reduced by 3

Reference #	Equipment count	Notes about the change
RCK-W-1022:IT	2	
RCK-4532:GEN	1	
JOY-I:U	3	
KMM:VGA-2USB	1	
KVM:8	1	
MNT-24	3	
PDS-U/6	1	Reference#
SRV-R-L:R/R6-32TB	3	
SRV-R-L:MRF/R5-8TB	1	
SUR-U/120	1	
SWT-R:BB/P_PP	1	
SWT-R:S/P_PP	2	
UPS-R:H5.5	1	
UPS-R:M1.5	1	
UPS-R1:S0.7	1	
UPS-T:WST0.9	2	increased by 1
VST-D-G2-M32:CV/16H	3	Reference#
VST-D-M24:CV/9H	3	increased by 1 & Reference#
VST-D-M24:CV/4H	1	Reference#
VMS-C	7	increased by 1
VMS-M:F/L	1	

### CCTV System Architecture Diagram

The diagram above represents the CCTV System architecture for the CBSA controlled areas of the concerned POE site.

This management and recording device is sized to be able to manage about **117** cameras. The site includes a server room which contains the CCTV equipment including but not limited to, servers, switches, UPS and all necessary IT accessories.

### The CCTV solution includes:

One (1) x Video Management / Video Recording Failover Server

Three (3) x Video Recording Server

Note that the first server hosts both the Video Management and the Video Recording Failover applications. Video recording for all cameras should be done by default on the Video Recording Servers. In the event of a Video Recording Server failure, all assigned cameras to this server must switch to record on the Video Management / Video Recording Failover Server.

The total capacity of the storage solution is at least **95** TB for 30 days while the failover storage for 5 days is estimated to be at least 16 TB.

The electrical power required for the Server Room must be at least 6.8 kW, in order to power the CCTV server rack and all CCTV equipment that are hosted there. The cooling system in the Server Room must also be capable of dissipate about 10,000 BTU heat generated by the equipment housed, and maintain a stable temperature according to the standards imposed by PWGSC.

Seven viewing stations allow operations officers to operate the video surveillance system.

The Video Management and Recording device located in the server room will be powered by a main UPS system that will be supported by the site generator. This main UPS will support the rack equipment in the server room, and may in case of power failure, keep the equipment power with a medium runtime, as defined in the UPS requirements table. Once the battery is below a minimum threshold, the UPS will softly shutdown all the equipment in a sequential manner.

The main viewing stations, located in the main officer room will be powered by UPS.