

Video Surveillance for the Springfield Apartments and Pinewood Place Apartment complexes in Tallahassee Florida

PART 1 – GENERAL

1.1 INTRODUCTION

The Tallahassee Housing Authority is seeking Bids for a Pelco IP Video Surveillance System to be installed at their Springfield Apartments and Pinewood Place Apartments in Tallahassee Florida.

1.2 GENERAL REQUIREMENTS

- A. The work under this section includes the installation of a Pelco video surveillance system for the protection of the residences in the apartment complex. The system will be a complete operating system on the property and will be capable of providing sufficient quality video to provide assistance in identifying harmful activities and events.
- B. Provide all necessary items for the system to operate over a local network and to provide video for recording onto a server. The stored video shall be accessible on site and off site by authorized personnel.
- C. Provide all necessary wiring, fiber cables, and switches needed to route the camera video to the NVR server.
- D. The contractor shall be Pelco factory certified in the installation of IP camera systems. Documentation of current certification is to be submitted with the bid.
- E. The contractor is responsible for supplying a complete and functional system. The surveillance system of cameras and recording server shall be from Pelco and shall be the most current models of the equipment.
- F. The contractor must have an office within 50 miles of the project location prior to bid date.
- G. The contractor must have at least two (2) Pelco Certified Integrators on staff at time of the bid.
- H. The contractor must submit with bid three (3) similar video surveillance projects from within the past 3 years.
- I. Tallahassee Housing Authority is requiring a 3 year warranty with a 4 hour response time for service calls.

1.3 SUMMARY

- A. The surveillance system shall operate over a high-speed network that has been established for the video system.
- B. All outside wiring runs shall be made using fiber optic cables and brought back to a network switch.
- C. All equipment in the system shall have a battery backup system that shall sustain the equipment for at least 30 minutes.
- D. The head-end server shall provide storage of the video at 10 images per second at maximum resolution for 30 days. Recording shall be a continuous recording 24 hour a day. The recording system shall be accessible by authorized personnel that might be off-site using workstations or portable devices.
- E. Interior equipment shall be in a secured location with controlled access by only authorized personnel.
- F. The exterior cameras shall be used to observe entrances into the complex with sufficient video to help identify vehicles and personnel inside the vehicles.
- G. Cameras shall be placed at street intersections for detection of the movement of vehicles and personnel.
- H. Cameras shall be installed to observe movement of personnel in the areas on the back side of the housing units.
- I. All systems and components of the surveillance system shall be provided with the availability of a toll-free, 24-hour technical assistance program (TAP) from the manufacturer. The TAP shall allow for immediate technical assistance for either the dealer/installer or the end user.

- J. All fiber optic and network cabling will be OSP rated and installed in a minimum 2 inch conduit that will be installed by the winning bidder. The underground 2 inch conduit shall be required at both Springfield and Pinewood Place Apartments. See attached site map for conduit layout.

1.4 RELATED DOCUMENTS

- A. Provisions of the contract are governed by the attached policies.

PART 2 – PRODUCTS

2.1 APPROVED MANUFACTURERS

- A. The approved camera manufacturer for this project is Pelco.
- B. Alternates: None

2.2 Cameras

A. Outdoor Panoramic Cameras. The panoramic cameras shall consist of a multi-imager camera with electronically stitched seamless single image output. The camera is available in a 180-, 270- or 360-degree models. The camera shall transparently integrate video across all sensors in the camera. The camera shall have excellent low light performance, Wide Dynamic Range greater than 120 db, and 8 built-in analytics. The camera can also be adjusted for smart compression technology for reduced bandwidth. Cameras shall be PoE powered.

B. Outdoor Fixed cameras. The outdoor fixed cameras shall be a dome with excellent low light performance, Wide Dynamic Range greater than 120 db, and 8 built-in analytics. The camera can also be adjusted for smart compression technology for reduced bandwidth. Cameras shall be PoE powered. The camera shall be a 3 MP camera with 3 to 9 MM lens and IR LED's for night time recording.

- 2.3 Video Management System. The Video Management System (VMS) shall be a Microsoft Windows-based video management and surveillance system that is designed for superior user interface and robust features. The VMS supports up to 450 Mbps of video and has multiple hardware storage configurations. The VMS operates on Dell iDRAC units and comes with mapping for the camera system. The included video player is used to review the custom video files for playback and review. The VMS can be accessed for live and review using a smart phone and the downloaded app. The VMS shall have an API, SDK, and plug-ins for integration with other systems and programs. The VMS can be accessed using client software or authorized web browsers.

2.3.1. Equipment Specifications

OUTDOOR PANOMERSIVE NETWORK CAMERAS

- A. The IP Panoramic indoor/outdoor multi-sensor camera system shall transparently integrate video across all sensor's in the camera presenting a seamless fully stitched and blended total resolution of 12 megapixel (MPx), 2048 x 1536 x 4.
- B. The IP Panoramic indoor/outdoor multi-sensor camera system technology shall include options for 180°, 270° and 360° camera functionality as well as provide pan and tilt adjustment of the camera module for 180° degree models and pan for 270° and 360° modules.
- C. In conjunction with a Video Management System "VMS" that integrates the Panomersive Toolkit, the camera shall be able to support seamless panoramic views and simultaneous Immersive Views that allow for the pan, tilt and zoom in, across the entire field of view.
- D. The IP Panoramic indoor/outdoor multi-sensor camera system housing technology shall meet the IK10 impact specification as well as standard mounting hardware capabilities that would include but not be limited to Pendant, Surface, and Ceiling mount hardware.
- E. The IP Panoramic indoor/outdoor multi-sensor camera system shall provide SureVision™ 2.0 technology that seamlessly delivers extended True Wide Dynamic Range (WDR), low-light performance, and anti-bloom technology, operating in a simultaneous mode of operation.

- F. The IP Panoramic indoor/outdoor multi-sensor camera system shall provide a slot for a removable, local storage medium (not provided by camera manufacturer) (Micro SD) to capture video clips of varying lengths in accordance with the ONVIF G Profile. Any Video Management System "VMS" that is conformant to this standard can initiate storage and retrieval of video, for instance to safeguard against network failure.
- G. The IP Panoramic indoor/outdoor multi-sensor camera system shall provide a service video stream in addition to and independent of the video streams.
- H. The IP Panoramic indoor/outdoor multi-sensor camera system shall provide advanced low-light capabilities for day/night models with sensitivity down to 0.03 lux for the 180° and 0.05 lux in the 270° and 360° models respectively while in night mode.
- I. The IP Panoramic indoor/outdoor multi-sensor camera system shall support industry standard Power over Ethernet Plus (PoE+) IEEE 802.3at, Class4 to supply power to the camera over the network.
- J. The IP Panoramic indoor/outdoor multi-sensor camera system shall provide options for clear and smoked lower domes.
- K. The IP Panoramic indoor/outdoor multi-sensor camera system shall provide Wide Dynamic Range (WDR) up to 120 dB with dynamic adjustments through the User Interface across the cameras field of view.
- L. The IP Panoramic indoor/outdoor multi-sensor camera system shall have a mechanical IR cut filter mechanism for increased sensitivity in low-light installations. Set points for the IR cut filter feature shall be configurable through an embedded Web browser.
- M. The IP Panoramic indoor/outdoor multi-sensor camera system shall support H.264 High, Main or Base profiles, using constrained variable bit rate (CVBR) as the default, variable bit rate (VBR), or constant bit rate (CBR) with target range.
- N. Pelco's Smart Compression Technology lowers bandwidth and storage requirements by up to 70%. Our technology allows the user to make intelligent decisions regarding storage savings and image quality.
- O. The IP Panoramic indoor/outdoor multi-sensor camera system shall provide 802.1x port security to establish point-to-point access through a wired or wireless port using Extensible Authentication Protocol (EAP).
- P. The IP Panoramic indoor/outdoor multi-sensor camera system shall conform to the ONVIF Profile S and Profile G, and support open architecture best practices with a published API available to third-party network video recording and management systems. A "Panomersive" SDK that would enable Video Management Systems to d-warp the streams from this camera into panoramic and Immersive Views shall be made available.
- Q. The IP Panoramic indoor/outdoor multi-sensor camera system shall support SNMP v2c and v3.
- R. The IP Panoramic indoor/outdoor multi-sensor camera system shall support IPv6 configurations in conjunction with IPv4.
- S. The IP Panoramic indoor/outdoor multi-sensor camera system shall provide Auto or Manual exposure settings for adjusting the amount of light detected by the camera sensor.
- T. The IP Panoramic indoor/outdoor multi-sensor camera system shall provide user-selectable configurations for day/night auto mode. Transitional levels shall be used to set the desired light level for transitioning to night mode. Transition detect time shall control the length of time that the camera is exposed to a light level before changing to color or monochrome mode.
- U. The IP Panoramic indoor/outdoor multi-sensor camera system shall be factory focused, requiring no manual adjustment of focus in the field.
- V. The IP Panoramic indoor/outdoor multi-sensor camera system shall provide User and Group settings to assign permissions and access levels to the camera.
- W. The IP Panoramic indoor/outdoor multi-sensor camera system shall be based on a 1/3.2-inch high resolution CMOS sensor and includes four of them in the cameras standard configuration.
- X. The IP Panoramic indoor / outdoor network camera system shall include a camera module, back box, and lower dome.
- Y. The IP Panoramic indoor/outdoor multi-sensor camera system shall support standard IT protocols.
- Z. The IP Panoramic indoor/outdoor multi-sensor camera dome system shall provide a 1000Base-T network interface.
- AA. The IP Panoramic indoor/outdoor multi-sensor camera system shall be plenum-rated per 2008 NEC article 300.22(C)(2).
- BB. The IP Panoramic indoor/outdoor multi-sensor camera system shall be vandal and tamper resistant with an impact resistance of IK10 (20 Joules).
- CC. The IP Panoramic indoor/outdoor multi-sensor camera system shall be NEMA-4X, IP66 rated.

- DD. The IP Panoramic indoor/outdoor multi-sensor camera system shall provide a 3/4-inch NPT conduit attachment on the side and top of the back box for in-ceiling and surface mounted applications.
- EE. The IP Panoramic indoor/outdoor multi-sensor camera system shall attach to a standard (1900) 4-inch square box or standard 2-gang electrical box for surface mounted applications.
- FF. The IP Panoramic indoor/outdoor multi-sensor camera system shall provide a 1.5-inch NPT conduit attachment for pendant mounted applications.
- GG. The IP Panoramic indoor/outdoor multi-sensor camera system shall provide for a standards based HTML interface.
- HH. The IP Panoramic indoor/outdoor multi-sensor camera system shall provide Window Blanking Technology for user defined privacy areas.
- II. The IP Panoramic indoor/outdoor multi-sensor camera system shall feature open architecture connectivity for third-party software recording solutions allowing integration into virtually any IP-based system. It is also compatible with Pelco VideoXpert and Digital Sentry® video management systems.
- JJ. The IP Panoramic indoor/outdoor multi-sensor camera system shall provide integrated video analytics with the ability to provide hardware and software alarms based on the analytic behaviors presented.
- KK. Pelco Analytics for the IP Panoramic indoor/outdoor multi-sensor camera system shall include:
 - a. Abandoned Object: Detects objects placed in a defined zone and triggers an alarm if the object remains in the zone longer than the user-defined time allows. An airport terminal is a typical installation for this behavior. This behavior can also detect objects left behind at an ATM, signaling possible card skimming.
 - b. Adaptive Motion: Detects and tracks objects that enter a scene and then triggers an alarm when the objects enter a user-defined zone. This behavior is primarily used in outdoor environments with light traffic to reduce the number of false alarms caused by environmental changes.
 - c. Camera Sabotage: Detects contrast changes in the field of view. An alarm is triggered if the lens is obstructed with spray paint, a cloth, or a lens cap. Any unauthorized repositioning of the camera also triggers an alarm.
 - d. Directional Motion: Generates an alarm in a high traffic area when a person or object moves in a specified direction. Typical installations for this behavior include an airport gate or tunnel where cameras can detect objects moving in the opposite direction of the normal flow of traffic or an individual entering through an exit door.
 - e. Loitering Detection: Identifies when people or vehicles remain in a defined zone longer than the user-defined time allows. This behavior is effective in real-time notification of suspicious behavior around ATMs, stairwells, and school grounds.
 - f. Object Counting: Counts the number of objects that enter a defined zone or cross a tripwire. This behavior might be used to count the number of people at a store entrance/exit or inside a store where the traffic is light. This behavior is based on tracking and does not count people in a crowded setting.
 - g. Object Removal: Triggers an alarm if an object is removed from a defined zone. This behavior is ideal for customers who want to detect the removal of high value objects, such as a painting from a wall or a statue from a pedestal.
 - h. Stopped Vehicle: Detects vehicles stopped near a sensitive area longer than the user-defined time allows. This behavior is ideal for airport curbside drop-offs, parking enforcement, suspicious parking, traffic lane breakdowns, and vehicles waiting at gates.
- LL. The IP Panoramic indoor/outdoor multi-sensor camera system shall meet or exceed the following design and performance specifications.
 - 1. Camera Specifications
 - a. Imaging Device 1/3.2-inch
 - b. Imager Type CMOS
 - c. Imager Readout Progressive scan
 - d. Highest Resolution 12 MP, 2048 x 1536 x 4
 - e. Signal-to-Noise Ratio >50 db
 - f. Sensitivity
 - 1. 180° Model f/2.0, 0.3 lux color (33 ms),
0.14 lux mono (33 ms)
 - 2. 270°, 360° Models f/2.5, 0.5 lux color (33 ms),
0.2 lux mono (33 ms)
 - g. Day/Night Capabilities Yes

h.	Mechanical IR Cut Filter	Yes, (ON/OFF/AUTO selectable) with different set points
i.	Wide Dynamic Range	120 dB
2.	Lens Specifications	
a.	Length	
1.	180° Model	f/2.0 ~ 4.8 mm
2.	270°, 360° Models	f/2.5 ~ 2.7 mm
b.	Field of View	
1.	180° Model	180° horizontal, 41° vertical
2.	270° Model	270° horizontal, 73° vertical
3.	360° Model	360° horizontal, 73° vertical
3.	Video Specifications	
a.	Video Streams	Set of streams to deliver full resolution views; secondary stream that comprises a lower resolution mosaic of above streams
b.	Frame Rate(s)	User selectable up to 12.5 frames per second (fps)
c.	Video Encoding	H.264 High, Main, or Base profiles; MJPEG (mosaic stream only); Pelco Smart Compression
d.	Bit Rate Control	Default maximum for Constrained Variable Rate (CVBR) at maximum resolution and frame rate
1.	180° Model	28 Mbps
		Note: Actual bit rates are lower depending on scene complexity
e.	Network	
1.	Supported Protocols	TCP/IP, UDP/IP (Unicast, Multicast IGMP), UPnP, DNS, DHCP, RTP, RTSP, NTP, IPv4, IPv6, SNMP v2c/v3, QoS, HTTP, HTTPS, SSH, SSL, SMTP, FTP, ARP, ICMP, and+ 802.1x(EAP) Note: IPv6 supports mixed IPv4 and IPv6 installations, but not IPv6-only deployments
2.	Users	
i.	Unicast	Up to 20 simultaneous depending on the resolution settings, and frame rate
ii.	Multicast	Unlimited H.264
f.	Security Access	Password protected
g.	Software Interface	Web browser view and setup
h.	Pelco System Integration	Pelco VideoXpert, Digital Sentry
i.	Open API Integration	Pelco API, Panomersive SDK, ONVIF Profile S and G
j.	Minimum System Requirements	
1.	Processor	Intel® Core™ i3 processor, 2.4 GHz
2.	Operating System	Microsoft Windows® 10, Windows® 7 (32- and 64-bit), or Windows Vista®; or Mac® OS X 10.9 (or later)
3.	Memory	4 GB RAM
4.	Network Interface	100 Mbit (or greater)
5.	Monitor	Minimum of 1024 x 768 resolution, 16- or 32-bit pixel color resolution
6.	Web Browser	Internet Explorer® 8.0 (or later); Mozilla® Firefox® 35 (or later); Google® Chrome 40 (or later)
k.	Analytics	
1.	Open API	The Pelco API can transmit behavior alarm data to third-party applications, Go to pdn.pelco.com

4. Electrical Specifications
 - a. Network Port
 1. RJ-45 connector for 1000Base-T
 2. 1 Gigabit/sec Auto MDI/MDI-X PoE+; Class 4
 - b. Cabling Type
 1. Category 5 or better
 - c. Input Power
 1. PoE+ (IEEE 802.3at, Class 4)
 - d. Power Consumption
 1. Without Heater
 1. 17 watts
 2. With Heater
 1. 23 watts
 - e. Local Storage
 1. Micro SD, SDHC
 - f. Alarm
 1. Unsupervised
 1. Detects open or closed alarm state
 2. Supervised
 1. Detects open and short alarm state with external 1-kohm resistor to detect alarm tampering
 2. 3.5 VDC maximum, 3.5 mA maximum
 3. ±32 VDC maximum, 150 mA maximum
 3. Input
 - g. Relay Output
 - h. Audio
 1. Streaming
 1. Bidirectional: full or half duplex
 2. Input/Output
 1. 600 ohm differential, 1Vp-p max. signal level
 3. Compression
 1. G.711 PCM 8 bit, 8 kHz mono at 64 kbit/s
5. Back box and lower dome specifications
 - a. Indoor Vandal, In-Ceiling
 1. Installation
 1. Single back box for suspended or hard ceiling applications
 2. Back Box
 1. Plenum rated
 3. Cable Entry
 1. 0.75-inch NPT or 25 mm conduit attachments on side and top of back box
 4. Operating Temperatures
 1. -10° to 50°C (14° to 122°F)
 5. Operating Humidity
 1. 15 to 85%, RH non-condensing
 6. Impact Resistance
 1. IK10
 7. Shock and Vibration
 1. EN50155 Category 1, Class B; IEC 60068:2-6 and 2-27, ISTA-2A, Sequence 5, MIL810G
 8. Construction
 1. Alodine aluminum
 - b. Indoor Vandal, Surface Mount
 1. Installation
 1. Attaches to standard 4-inch square outlet box and 2-gang electrical box; 0.75-inch NTP or 25 mm conduit attachments on side back box; wire entry through grommet on top of back box
 2. Operating Temperatures
 1. -10° to 50°C (14° to 122°F)
 3. Operating Humidity
 1. 15 to 85%, RH non-condensing
 4. Impact Resistance
 1. IK10
 5. Shock and Vibration
 1. EN50155 Category 1, Class B; IEC 60068:2-6 and 2-27, ISTA-2A, Sequence 5, MIL810G
 6. Construction
 1. Alodine aluminum
 - c. Indoor Vandal, Pendant
 1. Installation
 1. 1.5-inch NPT conduit/pipe attachment
 2. Operating Temperatures
 1. -10° to 50°C (14° to 122°F)
 3. Operating Humidity
 1. 15 to 85%, RH non-condensing
 4. Impact Resistance
 1. IK10
 5. Shock and Vibration
 1. EN50155 Category 1, Class B; IEC 60068:2-6 and 2-27, ISTA-2A, Sequence 5, MIL810G
 6. Construction
 1. Alodine aluminum
 - a. Environmental Vandal, In-Ceiling
 7. Installation
 1. Single back box for suspended or hard ceiling applications
 8. Back Box
 1. Plenum rated
 9. Cable Entry
 1. 0.75-inch NPT or 25 mm conduit attachments on side and top of back box

- 10. Operating Temperatures −40° to 50°C (−40° to 122°F)
- 11. Operating Humidity 10 to 95%, RH non-condensing
- 12. Impact Resistance IK10
- 13. Shock and Vibration EN50155 Category 1, Class B; IEC 60068:2-6
and 2-27, ISTA-2A, Sequence 5, MIL810G
- 14. Construction Alodine aluminum
- 15. Ingress protection IP66
- b. Environmental Vandal, Surface Mount
 - 1. Installation Attaches to standard 4-inch square outlet box
and 2-gang electrical box
 - 2. Cable Entry 0.75-inch NPT or 25 mm conduit attachments on
side and top of back box. Wire entry through
grommet on top of back box
 - 3. Operating Temperatures −40° to 50°C (−40° to 122°F)
 - 4. Operating Humidity 10 to 95%, RH condensing
 - 5. Impact Resistance IK10
 - 6. Shock and Vibration EN50155 Category 1, Class B; IEC 60068:2-6
and 2-27, ISTA-2A, Sequence 5, MIL810G
 - 7. Construction Alodine aluminum
 - 8. Ingress protection IP66
- c. Environmental Vandal, Pendant
 - 1. Installation 1.5-inch NPT thread for use with Pelco wall
mounts
 - 2. Operating Temperatures −40° to 50°C (−40° to 122°F)
 - 3. Operating Humidity 10 to 95%, RH condensing
 - 4. Impact Resistance IK10
 - 5. Shock and Vibration EN50155 Category 1, Class B; IEC 60068:2-6
and 2-27, ISTA-2A, Sequence 5, MIL810G
 - 6. Construction Alodine aluminum
 - 7. Ingress protection IP66
- 2. Dome System Specifications
 - a. Indoor Vandal, In-Ceiling 5.90 cm (2.32 in) above ceiling, lower dome
9.85 cm (3.88 in) below ceiling, 16.15 cm
(6.36 in) diameter
 - b. Indoor Vandal, Surface Mount 14.65 cm (5.76 in) overall length (including
dome) by 15.93 cm (6.27 in) diameter
 - c. Indoor Vandal, Pendant 17.80 cm (7.00 in) overall length (including
dome) by 15.75 cm (6.20 in) diameter
 - d. Environmental Vandal, In-Ceiling 5.90 cm (2.32 in) above ceiling, lower dome
9.85 cm (3.88 in) below ceiling, 16.15 cm
(6.36 in) diameter
 - e. Environmental Vandal, Surface 14.65 cm (5.76 in) overall length (including
dome) by 15.93 cm (6.27 in) diameter
 - f. Environmental Vandal, Pendant 17.80 cm (7.00 in) overall length (including
dome) by 15.75 cm (6.20 in) diameter
- 3. Mechanical Specifications
 - a. Dome Attenuation
 - 1. Clear f/0.0 light loss
 - 2. Smoked f/1.0 light loss
 - b. Pan Adjustable (All Models) 370°
 - c. Tilt Adjustable (180 Model) 0° - 180°
- 4. General Specifications
 - a. Unit Weight
 - 1. In-Ceiling 1.5 kg (3.3 lb)
 - 2. Surface Mount 1.7 kg (3.9 lb)
 - 3. Pendant Mount 1.7 kg (3.9 lb)
- 5. Warranty
 - a. 36-months, parts and labor

B. Pelco Model Numbers

- | | |
|------------------------|---|
| 1. IMM12018-xxx Series | 180° indoor/outdoor panoramic IP camera, 12 MPx |
| 2. IMM12027-xxx Series | 270° indoor/outdoor panoramic IP camera, 12 MPx |
| 3. IMM12036-xxx Series | 360° indoor/outdoor panoramic IP camera, 12 MPx |

2.3.2 Outdoor Fixed Cameras:

- i. NextGen Sarix Enhanced Outdoor Environmental Mini Domes Cameras with IR Illumination:

3 MPx	IME329-1RS
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- ii. The network camera system shall offer two simultaneous video streams with up to 3 MPx, 2048 x 1536 resolution, auto iris, and varifocal lens capabilities.
- iii. The network camera system shall possess the following primary characteristics:
1. H.264 High, Main or Base profiles; and MJPEG compression
 2. up to 3 megapixels
 3. dual streaming (two independent IP video streams)
 4. day/night operation with IR cut filter
 5. Wide Dynamic Range (WDR): 130 dB
 6. PoE (IEEE 802.3af, Class 3), 24 VAC, 12 VDC
 7. Pelco H.264 Smart Compression Technology
 8. multicast and unicast capable with unlimited H.264 viewers
 9. unicast capable with up to 20 simultaneous viewers
 10. local storage via SD/SDHC/SDXC
 11. audio input and output
 12. alarm input and output
 13. IP66 and IK10
 14. Type 4X (indoor/environmental models with IMEEBAP adapter plate accessory)

iv. Scanning: Progressive

v. Image Control Settings

1. White balance range: 2,000° to 10,000°K
2. Adaptive IR Illumination up to 30 meters (100 feet)
3. Day and night settings
4. Privacy zone definition: Up to 16 zones of window blanking
5. 3D noise reduction

vi. Lens:

1. Built-in, varifocal
2. Focal Length: F1.3, 3 ~ 9 mm, F1.6, 9 ~ 22 mm
3. Zoom: Remote
4. Auto Iris: P-iris lens
5. Auto Focus: Four user-selectable modes of automatic focus during runtime operation
 - a. Every 10 degrees in Celsius temperature change
 - b. Day/night transition
 - c. Every 24 hours
 - d. Manual trigger

vii. Video:

1. The network camera system shall support up to 2 simultaneous streams; the secondary stream is variable based on the setup of the primary stream.
2. Compression type: H.264 High, Main, or Base profiles; and MJPEG
3. Corridor Mode: Image rotate 90°, 180°, 270°. Image mirror.
4. Service Stream: 640 x 480 or 640 x 352; 2 ips, JPEG
5. Available resolutions:

<u>MPx</u>	<u>Width x Height</u>	<u>Aspect Ratio</u>
3.0	2048 x 1536	4:3
2.95	1984 x 1488	4:3
1.8	1600 x 1200	4:3 (3 MPx camera only)
1.2	1280 x 960	4:3
0.5	800 x 600	4:3
0.3 (480p)	640 x 480	4:3
0.08	320 x 240	4:3
2.0 (1080p)	1920 x 1080	16:9
0.9 (720p)	1280 x 720	16:9
0.6	1024 x 576	16:9
0.5	800 x 448	16:9
0.3	640 x 360	16:9
0.2	640 x 360	16:9
0.06	320 x 192	16:9

6. Constrained variable bit rate (CVBR) and constant bit rate.

7. Frame rate:

<u>Images per Second (ips) (depending on the coding, resolution, stream, and WDR configuration)</u>
Up to 60, 50, 30, 25, 20, 16, 15, 12, 10, 7, 6, 5, 4, 3, 2, 1

8. Video streams shall support ONVIF profile S.
9. Low resolution JPEG stream for configuration of camera settings.

viii. Storage and Recording

1. The network camera system control shall have onboard SD card storage.

- a. Card type: SD
 - b. Capacity: up to 128 GB
2. The local SD storage shall have the ability to be backed up to alternate media without removal of the SD card from the camera.
3. Local recording on the SD card shall commence upon loss of network connectivity, based on a pre-programmed schedule. Note: The camera will record if it still has power during a network outage.
4. The network camera system shall record video continuously in the case of network outage. Note: The camera will record if it still has power during a network outage.
5. Alarm recording: The network camera system shall capture selectable 1, 5, 10 15, 30 and 30 second video clips on camera sabotage, motion detection, or alarm input.
6. Video recording and storage shall support ONVIF profile G.

- ix. Manual Pan Tilt
 - 1. Pan Range: 355°
 - 2. Tilt Range: 75°
 - 3. Rotate Range: 340°
- x. Suite of eight built-in analytics.
 - 1. Abandoned Object
 - 2. Intrusion Detection
 - 3. Camera Sabotage
 - 4. Wrong Direction
 - 5. Loitering Detection
 - 6. Object Counting
 - 7. Object Removal
 - 8. Stopped Vehicle

b. ADDITIONAL FEATURES

- i. Alarm – The network camera system shall have one alarm/sensor inputs and a relay output for alarm or control.
 - 1. The alarm input shall be able to detect an open or closed alarm state function in unsupervised modes.
 - 2. Relay Output: ±350 VDC maximum, ±130 mA maximum
- ii. Audio – The network camera system shall have bi-directional audio capability.
 - 1. Input/Output
 - 2. Encoding: G.711 PCM 8 bit, 8 kHz mono at 64 kbit/s
- iii. Discovery - Manufacturer shall offer a discovery program to identify all devices of his manufacture on the network.
- iv. System Information
 - 1. The system settings of the network camera system shall be exportable as a separate file.
 - 2. The network camera system shall maintain an accessible log of system and motion-triggered events.

c. NETWORK

- i. Connectivity: 100 BASE-TX Ethernet with RJ-45 connector
- ii. Protocols supported
 - 1. Transmission Control Protocol (TCP), Internet Protocol (IP) v4 and v6, User Datagram Protocol (UDP)
 - 2. Configuration: Dynamic Host Configuration Protocol (DHCP)

3. Web services: Hypertext Transfer Protocol (HTTP), Secure HTTP (HTTPS)
4. Network services: Domain Name System (DNS), Network Time Protocol (NTP), Internet Control Message Protocol (ICMP), Simple Network Management Protocol (SNMP) v2c/v3, Universal Plug and Play (UPnP)
5. Media: Real-Time Transport Protocol (RTP), Real-Time Streaming Protocol (RTSP)
6. Multicast: Internet Group Management Protocol (IGMP)
7. Notifications: File Transfer Protocol (FTP), Simple Mail Transfer Protocol (SMTP)
8. Remote Access: Secure Shell (SSH)
9. Security: Secure Sockets Layer (SSL), IEEE 802.1x (EAP-MD5, EAP-TLS, EAP-TTLS, EAP-PEAP and EAP-FAST)
10. Quality of Service: IEEE 802.1p Layer 3 Differentiated Services Code Point (DSCP)
11. DDNS – The network camera system shall support DDNS services offered by the Manufacturer and other publicly available service offerings. (DNS)
12. NTCIP 1205

iii. Security

1. The network camera system shall support IP address filtering whereby users can enter a list of allowed or blocked IP addresses for viewing video and configuring camera settings
2. The network camera system shall provide three levels of user access with password protection.

d. **CAMERA SOFTWARE**

- i. The network camera system shall have a built in web server which supports browser-based configuration.
- ii. The camera's web server shall allow access to camera information and all primary software functions.
- iii. The Manufacturer shall offer video viewer and configuration to implement the following actions:
 1. Camera discovery
 2. Live Video
 - a. Video stream selection
 - b. Video stream configuration
 - i. Use preset video setting configurations
 - ii. Configure custom video setting configurations
 1. compression type
 2. resolution
 3. image rate
 4. I-frame interval

- 5. H.264 profile
 - 6. Image quality
 - 7. Bit rate control
 - iii. Multicast
 - iv. Unicast
 - v. JPEG frame rate
 - c. Maximize view area of video to full size of browser
 - i. Revert to normal view
 - d. Open stream in new window
 - e. Capture and save image as .jpg file
 - f. Resize viewing area
3. Image Settings
- a. image quality
 - b. exposure
 - c. focus
 - d. white balance
 - e. window blanking
 - f. digital zoom
 - g. lighting mode
 - h. video noise reduction
 - i. digital processing (color and detail adjustment)
 - i. image enhancement
 - ii. quick setup preset modes
 - iii. sharpness
 - iv. saturation
 - v. contrast
 - vi. brightness
 - j. exposure modes
4. Recording
- a. Initiate instant record and playback
 - b. Manage SD card storage
5. Events
- a. configure event sources:
 - i. external alarm events
 - ii. analytic events
 - b. e-mail setup
 - c. define web addresses for notifications
6. Camera network settings
7. System
- a. firmware upgrade

- b. reset to factory default
 - c. set date, time, and NTP server synchronization
 - d. user access control
 - e. view and export camera settings
 - f. view system logs
- iv. Acceptable Web Browsers:
- a. Microsoft® Internet Explorer® 8.0 (or later)
 - b. Google® Chrome™ 51 and later
 - c. Apple® Safari® 7.0.6
 - d. Mozilla® Firefox® 3.5.9 (or later)
- v. The Manufacturer shall offer a mobile application with the capability to access live video from up to 500 cameras.
- vi. The Manufacturer shall support integrations as follows:
1. Video Management: VideoXpert™; Endura® 2.0 (or later); Digital Sentry® 7.3 (or later); Third-party system through Pelco API/SDK, ONVIF Profile S, ONVIF Profile G, and ONVIF Profile Q
 2. Mobile Application: Pelco Mobile
 3. Camera Discovery and Firmware: Discover cameras upgrade firmware upgrade using Pelco Device Utility 2 (version 2.2 or later) or Pelco Utilities

e. ELECTRICAL

- i. Power
 1. Source Options
 - a. 24 VAC and PoE+
 - b. PoE+ Class 4
 - c. 18 to 32 VAC range, 12 VDC
 2. Power Consumption: <16 W (with heater ring)
- ii. Connectors:
 1. Ethernet: RJ-45 connector
 2. External power: 2-conductor power to terminal block

f. MECHANICAL AND ENVIRONMENTAL

- i. Construction Material: Aluminum base and plastic trim ring, polycarbonate bubble (indoor models), aluminum construction, polycarbonate bubble (outdoor models)
- ii. Finish: RAL 9003 (indoor models), RAL 7047 (outdoor models)
- iii. Impact Resistance: IK10 (20J)

- iv. Dimensions (D x H): 13.38 cm (5.27 in) x 11.74 cm (4.62 in)
- v. Temperature:
 - 1. Operating: -10°C to 55°C (14°F to 131°F) (indoor models)
-40°C to 55°C (-40°F to 131°F) (outdoor models)
 - 2. Storage: -40°C to 60°C (-40°F to 140°F) (indoor and outdoor models)
- vi. Ingress Protection: IP66 (indoor/outdoor models)
- vii. NEMA Type 4X (outdoor models with IMEEBAP adapter plate accessory)

g. CERTIFICATIONS

- i. CE – EN 55022 (Class A), EN 50130-4, EN 60950-1
- ii. FCC (Class A) – 47 CFR Part 15
- iii. UL and cUL Listed – UL 60950-1, CAN/CSA-C22.2 No. 60950-1-07
- iv. ICES-003 (Class A)
- v. RCM
- vi. KC
- vii. RoHS
- viii. ONVIF Profile S, Profile G, and Profile Q conformant

2.3.3 Video Management System:

ix. VideoXpert Professional Power Range Servers:

Model	Range	Raw Capacity	RAID level	Power Supply
VXP-P-28-6-S	Power	28 TB	RAID 6	Single
VXP-P-28-5-S	Power	28 TB	RAID 5	Single
VXP-P-28-J-S	Power	28 TB	JBOD	Single
VXP-P-20-5-S	Power	20 TB	RAID 5	Single
VXP-P-20-J-S	Power	20 TB	JBOD	Single
VXP-P-8-J-S	Power	8 TB	JBOD	Single
VXP-P-0-J-S	Power	0 TB	JBOD	Single
VXP-F-28-5-S	Flex	28 TB	RAID 5	Single
VXP-F-28-J-S	Flex	28 TB	JBOD	Single
VXP-F-20-5-S	Flex	20 TB	RAID 5	Single
VXP-F-20-J-S	Flex	20 TB	JBOD	Single
VXP-F-8-J-S	Flex	8 TB	JBOD	Single
VXP-F-4-J-S	Flex	4 TB	JBOD	Single

VXP-F-0-J-S	Flex	0	JBOD	Single
VXP-E-12-J-S	Eco	12 TB	JBOD	Single
VXP-E-8-J-S	Eco	8	JBOD	Single
VXP-E-4-J-S	Eco	4	JBOD	Single
VXP-E-0-J-S	Eco	0	JBOD	Single
VXP-WKS	Workstation	-	-	Single

x. Alternates: None

2.3.3.1 General Description

xi. The Video Management System (VMS) shall be a Microsoft Windows-based video management and surveillance system consisting of two primary components, as follows:

1. An IP video management system. This application shall:
 - a. Maintain the database of cameras and recording devices and to provide a web-based administrative portal to manage the video surveillance system
 - b. route video traffic to users as requested and appropriate
 - c. record and store video from resources on the network.
2. A client presentation application to allow users to view and manage live and recorded video.

2.3.3.2 IP Video Management System Description

The Video Management System (VMS) shall be a Microsoft Windows-based video management and surveillance system consisting in a single server performing the following functions:

2.3.3.3 Allow users to define users and assign sets of permissions (known as roles) to each user.

2.3.3.4 Record and store video per user-defined retention settings for up to 96 cameras per server

2.3.3.5 Serve live and recorded video to clients on demand

2.3.4 The IP video management system shall record video and audio streams from IP cameras and video encoders on the network.

2.3.4.1 Video: H.264 in High, Main, or Base Profile streams from both standard resolution and megapixel cameras

2.3.5 The system shall support recording schedules, including the ability to record based on motion, analytic, and alarm events.

2.3.6 The IP video management system shall be capable of continuous scheduled alarm/event and motion recording. Pre- and post- alarm recording shall also be available and shall be fully programmable on a per channel basis.

2.3.7 The IP video management system shall have the ability to record and playback audio streams along with associated video.

- 2.3.8 The IP Video Management System shall support recording of primary or secondary streams.
- 2.3.9 The IP Video Management System shall support video bookmarking, such that users can identify and recall important moments in recorded video.
- 2.3.10 The IP video management system shall allow the administrator to set minimum and maximum retention periods for recorded video.
- 2.3.11 The IP video management system shall support network health and monitoring utilizing third-party SNMP monitoring tools.
- 2.3.12 The IP video management system shall indicate system performance and operation status utilizing a variety of reports.
- 2.3.13 The system shall be configurable remotely or over a network.
- 2.3.14 The system shall discover both Pelco and 3rd-party cameras on the network.
- 2.3.15 The system shall allow users to manually add cameras and devices by IP address.
- 2.3.16 The system shall allow users with sufficient rights to control cameras (pan, tilt, and/or zoom).
- 2.3.17 The system shall support aggregation by a higher-level system (VideoXpert Ultimate), tying multiple VxPro servers together in a single, unified environment.
- 2.3.18 The system shall support third-party cameras using ONVIF profiles S and G or native drivers.
- 2.3.19 The IP VMS shall support Lightweight Directory Access Protocol (LDAP) to authenticate users.
- 2.3.20 The IP video management system shall allow archival of video data to external network locations or NAS devices over a network connection. The archival schedule shall be either automatic at user-defined intervals or manually executed.
- 2.3.21 The video management system shall be available as a hardware server with capacity to record 96 cameras at up to <X> recording throughput.
- 2.3.22 The video management system shall be available as a software product that can be installed on COTS hardware.
- 2.3.23 The server shall support semantic grouping and organization of cameras/devices into groups using "tags".
- 2.3.24 The system shall allow users to export video on request; exported video shall be stored locally on the server or on another network location selected by the administrator.
- 2.3.25 The system shall support aggregation by a higher level environment, allowing the IP video management system to belong to a confederation of servers.
- 2.3.26 Specifications / Minimum Requirements for VXP-P Models (Up to 96 Cameras)
 - 2.3.26.1 Processor: Intel Xeon E5-2620 v4
 - 2.3.26.2 Operating System: Microsoft Windows 10 IoT Enterprise 64-bit (LTSB)
 - 2.3.26.3 RAM: 16 GB
 - 2.3.26.4 SSD Storage: 200 GB
 - 2.3.26.5 HDD: Up to 28 TB (depending on model)
 - 2.3.26.5.1 RAID Level: RAID 5 / RAID 6 / JBOD (depending on model)
 - 2.3.26.6 Video
 - 2.3.26.6.1 Outputs:
 - 2.3.26.6.1.1 VGA

- 2.3.26.7 USB Ports:
 - 2.3.26.7.1 USB 2.0: 2x Front; 1x Rear
 - 2.3.26.7.2 USB 3.0: 1x Rear
- 2.3.26.8 Networking: 4x Gigabit Ethernet (1000Base-T) Ports
 - 2.3.26.8.1 Throughput
- 2.3.26.9 Dimensions: 66.8 x 48.24 x 8.68 cm (26.3 x 19 x 3.4 in)
- 2.3.27 Specifications / Minimum System Requirements: VXP-F models (Up to 64 Cameras)
 - 2.3.27.1 Processor: Intel Xeon E5-1230 v5
 - 2.3.27.2 Operating System: Microsoft Windows 10 IoT Enterprise 64-bit (LTSB)
 - 2.3.27.3 RAM: 16 GB
 - 2.3.27.4 SSD Storage: 120 GB
 - 2.3.27.5 HDD: Up to 28 TB (depending on model)
 - 2.3.27.5.1 RAID Level: RAID 5 / RAID 6 / JBOD (depending on model)
 - 2.3.27.6 Video
 - 2.3.27.6.1 Outputs:
 - 2.3.27.6.1.1 DisplayPort
 - 2.3.27.6.1.2 VGA
 - 2.3.27.7 USB Ports:
 - 2.3.27.7.1 USB 2.0: 2x Front; 1x Rear
 - 2.3.27.7.2 USB 3.0: 1x Rear
 - 2.3.27.8 Networking: 4x Gigabit Ethernet (1000Base-T) Ports
 - 2.3.27.8.1 Throughput
 - 2.3.27.9 Dimensions: 55.86 x 21.8 x 43.03 cm (22.77 x 8.58 x 17.04 in)
- 2.3.28 Specifications / Minimum System Requirements: VXP-E Models (32 Cameras)
 - 2.3.28.1 Processor: Intel Xeon E5-1230 v5
 - 2.3.28.2 Operating System: Microsoft Windows 10 IoT Enterprise 64-bit (LTSB)
 - 2.3.28.3 RAM: 16 GB
 - 2.3.28.4 SSD Storage: 120 GB
 - 2.3.28.5 HDD: Up to 28 TB (depending on model)
 - 2.3.28.5.1 RAID Level: RAID 5 / RAID 6 / JBOD (depending on model)
 - 2.3.28.6 Video
 - 2.3.28.6.1 Outputs:
 - 2.3.28.6.1.1 DisplayPort
 - 2.3.28.6.1.2 VGA
 - 2.3.28.7 USB Ports:
 - 2.3.28.7.1 USB 2.0: 2x Front; 1x Rear
 - 2.3.28.7.2 USB 3.0: 1x Rear
 - 2.3.28.8 Networking: 2x Gigabit Ethernet (1000Base-T) Ports
 - 2.3.28.8.1 Throughput
 - 2.3.28.9 Dimensions: 55.86 x 21.8 x 43.03 cm (22.77 x 8.58 x 17.04 in)

2.3.29 Specifications / Minimum System Requirements: VXP-E models (Up to 32 Cameras)

2.3.29.1	Processor:	Intel Xeon E5-1220 v5
2.3.29.2	Operating System:	Microsoft Windows 10 IoT Enterprise 64-bit (LTSC)
2.3.29.3	RAM:	8 GB
2.3.29.4	SSD Storage:	120 GB
2.3.29.5	HDD:	Up to 8 TB (depending on model)
2.3.29.5.1	RAID Level:	RAID 5 / JBOD (depending on model)
2.3.29.6	Video	
2.3.29.6.1	Outputs:	
2.3.29.6.1.1	DisplayPort	
2.3.29.6.1.2	VGA	
2.3.29.7	USB Ports:	
2.3.29.7.1	USB 2.0:	2x Front; 1x Rear
2.3.29.7.2	USB 3.0:	1x Rear
2.3.29.8	Networking:	4x Gigabit Ethernet (1000Base-T) Ports
2.3.29.8.1	Throughput	
2.3.29.9	Dimensions:	36 x 17.5 x 43.5 cm (14.17 x 6.89 x 17.12 in)

2.4 CLIENT APPLICATION (OPS CENTER)

2.4.3 The Client application shall be Windows-based, providing an environment from which authorized users can watch live and recorded video on a computer in which the application has been installed.

2.4.4 The Client shall be comprised of a main control panel, which may be hidden, working in unison with a series of windows (workspaces), each providing a tab based experience.

2.4.5 Workspaces and Tabs

2.4.5.1 The Client interface shall be based upon workspaces and tabs.

2.4.5.1.1 A tab shall be a configurable layout populated with sources of content and plug-ins contained in cells.

2.4.5.1.2 A collection of one or more tabs shall constitute a workspace.

2.4.5.1.3 The Client shall allow configuration and recall of complete workspaces.

2.4.5.1.3.1 An operator with appropriate permissions shall be able to send a saved workspace to other clients, causing their system to launch the saved workspace.

2.4.5.1.4 Any layout of video can be saved as tab to be later recalled by an operator.

2.4.5.1.4.1 An operator with appropriate permissions shall be able to send a saved tab to other clients, causing their system to launch the saved tab.

2.4.5.1.5 Cells shall have the capability for system management, live view, and playback search options.

2.4.5.1.6 Remote Tab Push: an operator with appropriate permissions can choose to send a saved tab one or more operators' clients, causing their system to launch the saved tab.

2.4.6 Live View and Playback

2.4.6.1 A list of video and audio sources which users are authorized to access shall be displayed.

2.4.6.2 Each video source shall indicate a list of current viewers to a user with appropriate permissions.

2.4.6.3 The client computer shall be able to connect to an unlimited number of recorders simultaneously to display live and recorded video.

2.4.6.4 The client shall allow video streams to be selectable from a system tree on an individual camera, individual system, client defined local groups, or from pre-defined recorder based groups.

2.4.6.5 The client shall playback audio associated with video sources for users with the correct permissions.

2.4.6.6 Users shall be able to seamlessly switch between live and recorded video on the fly.

2.4.6.7 Live View

2.4.6.7.1 For live view, cells 1/4 the size of the tab or larger will use the primary stream from a video source, and cells smaller than 1/4 the size the tab shall use the secondary video stream.

2.4.6.8 Pan Tilt Zoom (PTZ)

2.4.6.8.1 Digital Zoom - An operator shall be able to digitally zoom in a video stream in live or playback mode.

2.4.6.8.2 Optical Zoom and Pan Tilt Control: Operators shall be able to use a mouse or joystick to control PTZ cameras.

2.4.6.9 Playback

2.4.6.9.1 The Client application shall enable simultaneous playback for up to (9) synchronized cameras.

2.4.6.9.2 The Client application shall have the capability to playback non-synchronized cameras at one time in different cells.

2.4.6.9.3 For viewing recorded video, cells 1/4 the size of the tab or larger shall display full-frame rate video, and cells smaller than 1/4 the size of the tab shall playback only I-Frames to conserve bandwidth and processing power.

2.4.6.9.4 When hovering over a recorded video time bar, an operator shall see a thumbnail representing the contents of the video stream at that point in time.

2.4.6.9.5 Available playback control functions:

2.4.6.9.5.1 date-time selection

2.4.6.9.5.2 synchronized playback of selected cells within a tab

2.4.6.9.5.3 play video at normal speed

2.4.6.9.5.4 pause video and advance one frame

2.4.6.9.5.5 pause video and rewind one frame

2.4.6.9.5.6 fast forward video at speeds up to 128x

2.4.6.9.5.7 rewind video at speeds up to 128x

2.4.6.9.5.8 rewinds video 30 seconds and initiates playback

2.4.6.9.5.9 forward video to live playback

2.4.6.9.5.10 take snapshot of the current frame

2.4.6.9.6 Hovering over a video playback cell with a mouse shall display the playback control menu.

2.4.6.10 The user shall be able to configure a rotating sequence of cameras, allowing the application to cycle through cameras relevant to the operator without intervention.

2.4.6.11 The user shall be able to configure a sequence of cameras that appear on alarm, allowing the application to cycle cameras when an event or alarm relevant to the user occurs.

2.4.7 Investigations

2.4.7.1 An investigation mode shall be available to provide a 2 x 2 layout with synchronized playback controls, allowing users to fully investigate a scene from multiple angles.

2.4.7.1.1 The investigation mode shall open in a new tab.

2.4.7.2 The investigation mode shall enable operators to synchronize video playback and export investigative playlists covering scenes of interest in forward or reverse at speeds up to 128 times normal playback.

2.4.7.3 Users shall be able to create playlists from multiple video clips encompassing selected scenes from an investigation.

2.4.7.4 Operators shall be able to save a current investigation, preserving the associated device list and any created clips for later recall.

2.4.7.4.1 Saved investigations shall be capable of being shared with other operators' similar tabs.

2.4.7.5 Operators shall be able to export individual video clips or entire playlists to the Core application, storing clips relevant to their investigation independent of the system's network video storage for evidentiary safe-keeping and quick access.

2.4.8 Export

2.4.8.1 An operator shall be able to create and export a JPG snapshot image of the current frame of video in a cell.

2.4.8.2 The Client application shall enable video export to any system-accessible media including locally to HDD, CD/DVD, Flash USB device or to network storage.

2.4.8.2.1 Exported video shall be subject to check sum verification.

2.4.9 Display

2.4.9.1 The Client application shall allow up to 4 1080p, 30 ips streams (or 120 ips total) per monitor.

2.4.10 Events

2.4.10.1 The Client application shall an operator to respond to events.

2.4.10.2 Certain events shall be configurable for acknowledgement.

2.4.10.2.1 Acknowledgement options:

2.4.10.2.1.1 snooze

2.4.10.2.1.2 in process

2.4.10.2.1.3 acknowledged

2.4.10.3 Authorized operators shall have the ability to derive additional information about an event from the server.

2.4.11 Plug-ins – The Client application shall support modular plug-ins for enhanced functionality.

The Specifier may choose to define selected plug-ins here. Pelco offers:

- a mapping plug-in which enables operators to arrange and find cameras on maps
 - the PlateSmart plug-in exposes license plate numbers, to track vehicles
 - the eConnect plug-in displays real-time gaming information as a video overlay
 - the IVA plugin operates in conjunction with IBM's IVA platform to provide real-time analytics
 - more plugins available at partnerfirst.pelco.com
-

2.4.12 System and Device Information

2.4.12.1 Information management

2.4.12.1.1 The Client application shall provide a mechanism to create and assign

2.4.12.1.2 A primary device list shall be apparent in the Client application.

2.4.12.1.2.1 The device list shall be sortable by device name or device ID.

2.4.12.1.2.2 The device list shall be able to be filtered by the following terms:

2.4.12.1.2.2.1 simple text based filter, matching the device name or device ID

2.4.12.1.2.2.2 tag based filtering, showing devices matching the intersection of all assigned tags

2.4.12.1.2.2.3 status based filtering, showing devices with a particular status

2.4.12.2 User Roles, as assigned by a System Administrator, shall define the limits of a user's ability to access live or recorded video and to export video and other standard client operations.

2.4.12.2.1 Authorized users shall be able to share views, including window arrangements and camera selections, with other users, for purposes of collaboration.

2.4.12.3 When using a mouse to hover over a device in a listing, a popup shall appear with the following information:

2.4.12.3.1 Device state

2.4.12.3.2 Device name

2.4.12.3.3 Device ID

2.4.12.3.4 Thumbnail image

2.4.12.3.5 Associated tags

2.4.12.3.6 IP Address

2.4.13 Client Specifications

2.4.13.1 Processor: Intel Core i7-6700

2.4.13.2 Operating System: Microsoft Windows 10 IoT Enterprise 64-bit

2.4.13.3 RAM: 8 GB

2.4.13.4 OS Drive: m.2 256 GB

2.4.13.5 Video

2.4.13.5.1 Outputs:

- 2.4.13.5.1.1 Display Port (2)
- 2.4.13.5.1.2 HDMI
- 2.4.13.6 USB Ports:
 - 2.4.13.6.1 USB 2.0: 2x Front; 4x Rear
 - 2.4.13.6.2 USB 3.0: 2x Front; 4x Rear
- 2.4.13.7 Networking: 1x Gigabit Ethernet (1000Base-T) Ports
 - 2.4.13.7.1 Throughput
- 2.4.13.8 Dimensions: 36 x 17.5 x 43.5 cm (14.17 x 6.89 x 17.12 in)

2.5 VideoXpert 3D Mouse Controller

- 2.5.3 The 3D Mouse must be compatible with all VideoXpert Series distributed, network video management components.
- 2.5.4 Patented six-degrees-of-freedom (6DoF) sensor – Intuitively and precisely navigate digital models or camera positions in 3D space.
- 2.5.5 Advanced ergonomic design – The full-size, soft-coated hand rest positions the hand comfortably, and 15 large, soft-touch, function keys allow quick access to frequently used commands.
- 2.5.6 QuickView Keys – Fingertip access to 12 views makes it easier to switch cameras.
- 2.5.7 Intelligent Function Keys – Easy access to 4 application commands for an optimized workflow.
- 2.5.8 On-Screen Display – Provides a visual reminder of function key assignments on your computer screen.
- 2.5.9 3D Space Mouse Modifiers – Fingertip access to Ctrl, Shift, Alt and Esc keys saves time by reducing the need to move your hand between mouse and 3D Mouse.
- 2.5.10 Virtual NumPad – Allows direct numerical input into your application using your standard mouse rather than the 3D Mouse.
- 2.5.11 The 3D Mouse must be part of an integrated system and shall be configured so any number can be added to the system. When combined with user interfaces (UIs), network storage managers (NSM's), encoders, IP cameras, and video consoles, the 3D Mouse forms an integral part of a complete network-based video control system.
- 2.5.12 Hardware
 - 2.5.12.1 Power Supply
 - 2.5.12.1.1 Input Connector Type Universal, interchangeable
 - 2.5.12.2 Connectivity
 - 2.5.12.2.1 3D Space Mouse Interface USB 2.0
 - 2.5.12.2.2 Cable USB
 - 2.5.12.3 Module Specifications
 - 2.5.12.3.1 3D Space Mouse Keypad
 - 2.5.12.3.2 Joystick Fully proportional PTZ, variable speed; with zoom, iris, and focus controls
 - 2.5.12.4 Physical

2.5.12.4.1	Dimensions	204 x 142 x 58 cm (8.0" D x 5.6" W x 2.3" H)
2.5.12.4.2	Unit Weight	665 g (1.47 lbs)
2.5.12.5 Environmental		
2.5.12.5.1	Ambient Temperature	21° to 23°C (70° to 74°F)
2.5.12.5.2	Operating Temperature	0° to 40°C (32° to 104°F) air intake of unit
2.5.12.5.3	Storage Temperature	-40° to 65°C (-40° to 149°F)
2.5.12.5.4	Operating Humidity	

2.6 VideoXpert Enhanced Keyboard

- 2.6.3 The keyboard must be compatible with all VideoXpert Series distributed network video management systems.
- 2.6.4 The mechanical keys deliver responsiveness and tactile feedback superior to rubber-domed keys. With an actuation force and distance of 45 g and 2 mm, respectively, the keys are optimized for rapid command entry. The keys have been tested for durability to a 50 million cycle life.
- 2.6.5 Whisper-quiet key. Quiet, non-clicking key switches, and a built-in dampening ring underneath each keycap significantly reduce the distracting noise coming from your key presses without sacrificing responsiveness.
- 2.6.6 Adjustable dual-zone backlighting, illuminated to locate keys—even in low light. The entire keyboard is backlit in white LED light and adjustable to one of four brightness levels, plus "Off". For better visibility of the WASD and arrow keys, their brightness can be adjusted independently from the rest of the keyboard.
- 2.6.7 26-key rollover Multi-key input on the Enhanced Keyboard means complex commands can be executed exactly every time. With 26-key rollover, press almost any number of keys plus modifier keys (Control, Alt, Shift) in any order and get exactly what you intended.
- 2.6.8 110 anti-ghosting keys technology on contact. All 110 keys are calibrated to prevent anti-ghosting. Press and hold multiple keys simultaneously without fear of missing or unexpected key presses.
- 2.6.9 USB pass-through to easily connect your mouse or other USB device via the keyboard Hi-Speed USB pass-through for your computer's USB port.
- 2.6.10 Durable tilt legs stand up under keyboard. The durable tilt legs provide stability and comfort even in your most intense gaming sessions.
- 2.6.11 Hardware
- | | | |
|------------------------------|---------------------|---|
| 2.6.11.1 Base Specifications | | |
| 2.6.11.1.1 | Keyboard Interface | USB 2.0 |
| 2.6.11.1.2 | Cable | USB |
| 2.6.11.1.3 | Upstream Port | USB 2.0 (USB type B connector) |
| 2.6.11.1.4 | Downstream Port | 2x USB 2.0 hi/full/low speed (USB type A connector) |
| 2.6.11.2 | System Requirements | Windows 7, 2 USB ports 70 MB of available hard disk space |