exacqVision® Enterprise Video Management System Software

TECHNICAL SPECIFICATIONS SECURITY SYSTEM

DIVISION – 28 ELECTRONIC SAFETY AND SECURITY

LEVEL 1\_\_28 20 00 ELECTRONIC SURVEILLANCE

LEVEL 2\_\_28 23 00 VIDEO SURVEILLANCE

LEVEL 3\_\_28 23 19 DIGITAL VIDEO RECORDERS AND ANALOG RECORDING DEVICES

PART 2 – PRODUCTS

2.01 VIDEO MANAGEMENT SYSTEM DESCRIPTION

1. The Video Management System (VMS) software shall be used to view live and recorded video from capture cards and IP devices connected to local and wide area networks. The VMS software shall have a client/server-based architecture that can be configured as a standalone VMS system with the client software running on the server hardware and/or the client running on any network-connected TCP/IP workstation. Multiple client workstations shall be capable of simultaneously viewing live and/or recorded video from one or more servers. Multiple servers shall also be able to simultaneously provide live and/or recorded video to one or more workstations. The VMS server software shall also have the ability to be installed on an IP edge device—such as an IP camera or encoder that allows for 3rd party applications—allowing the device to serve as both a server and IP video recording device.
2. The VMS shall not charge for the number of concurrent clients.
3. The VMS system shall utilize manufacturer built servers, commercial-off-the-shelf (COTS) computer workstations, servers, IP edge devices that allow for third-party application installation, networking devices and storage equipment.
4. Recording of all video transmitted to the VMS shall be continuous, uninterrupted and unattended.
5. The VMS system shall offer the capability of video motion detection recording, such that video is recorded when the NVRMS detects motion within a region of interest of the camera’s view. Video prior to the detection of the motion shall also be stored with recording using the pre-recorded feature.
6. The VMS system shall manage the video it has been configured to monitor. Loss of video signal shall be configured to annunciate on VMS client by an on-screen visual indication alerting operators of video loss.
7. The VMS software shall have an open architecture supporting IP cameras and encoders from multiple manufacturers providing best-of-breed solutions ranging from low-cost, entry-level features to high-resolution, megapixel features.
8. The VMS client software shall be able to view live video and audio, recorded video and audio and be able to configure the complete system all from a single application.
9. The VMS shall continue to record video and audio at all times during the administration and configuration of any feature.
10. The VMS client software shall have the same functionality when connected remotely as it does when it is run locally on the same computer as the server software.
11. The VMS client software shall add and remove features based on the permissions of the user and the licensed functionality.
12. The VMS client software shall operate on all of the following operating systems:
	1. Microsoft Windows Server 2003/2008
	2. Microsoft Windows XP (all versions)
	3. Microsoft Windows Vista (all versions)
	4. Microsoft Windows 7 (all versions)
	5. Linux Ubuntu 8.04/10.04 Debian Package
	6. Mac OSX (operating on Intel CPU)
13. The VMS software shall allow the user to have any combination of VMS client applications running on any of the supported operating systems and be able to connect to any of the VMS servers running on any of the supported operating systems. For example, a VMS client running on Microsoft Windows 7 shall be able to simultaneously connect to four (4) different VMS servers all running on different operating systems, such as Windows Server 2003, Windows XP, Vista and Linux.
14. The VMS software shall have the capability to run multiple client applications simultaneously on one workstation with multiple monitors. Up to 12 monitors shall be configured on a single workstation with one (1) client application running on each monitor. Because decompressing video is CPU-intensive, the PC workstation shall have multiple core processors with a recommendation of one core for each VMS client application.
15. The VMS shall also allow an authorized user to view video through a web client interface. The web client interface shall allow authorized users to view live video, view recorded video, control pan-tilt zoom (PTZ) cameras and activate triggers. The web client interface shall allow connections to multiple VMS servers simultaneously.
16. The web client interface shall operate without requiring installation of any software.
17. When using the web client interface, the VMS server shall transcode the video into a JPEG file of the size as the browser screen before sending it to the browser.
18. The web client interface shall support the following browsers:
	* 1. Internet Explorer 6 and later
		2. Firefox 2 and later
		3. Opera 9 and later
		4. Safari and later
		5. Chrome
		6. The web client interface shall also connect with non-JavaScript browsers and shall be compliant with HTML 4.0 (www.w3.org).
19. The VMS server software shall record and retrieve video, audio and alarm data and provide it to the VMS clients upon request.
20. The VMS software shall provide at no additional charge a purpose built mobile application capable of viewing multiple simultaneous live video streams and playing a recorded video stream. Application shall be provided for both iOS and Android operating systems (including Kindle Fire).
21. The VMS server software shall operate on any of the following operating systems:
	* 1. Microsoft Windows Server 2003/2008
		2. Microsoft Windows XP (all versions)
		3. Microsoft Windows Vista (all versions)
		4. Microsoft Windows 7 (all versions)
		5. Linux Ubuntu 8.04/10.04 Debian Package
22. The VMS server shall not decode video for the purpose of motion detection.
23. The VMS server shall not decode video for the purpose of repacking it for transmission to clients.
24. The VMS server software shall record video based on metadata generated by an edge network device. The edge network devices shall generate the metadata and transmit it with the video stream to the VMS server software.
25. The VMS shall license the total number of cameras on the system. This license shall be based on the MAC address of a single network card that is present on the system. The VMS shall only require that this network card be enabled and does not require that data is actually sent through it.
26. The VMS shall not require the manufacturer to be contacted when a camera fails.
27. The VMS server software shall run as a service. The VMS shall not require any application to be running in order to operate.
28. The VMS shall be able to use the Active Directory or LDAP features of a network to authenticate users and determine which permissions they will have on each server.
29. The VMS shall allow for a user’s permissions to be configured across multiple servers from a single screen.
30. The VMS shall allow the use of maps. The maps will be accessible to users with the appropriate permission levels and display video sources and their status.
31. The VMS shall allow maps to be embedded inside of maps (i.e. hierarchical or nested maps). When an event happens on a map that is embedded inside of a map, it shall transmit the alert to all parent maps and change the color of the icon on the parent map and all subsequent parent maps.
32. The VMS allows soft triggers to be placed, viewed and triggered from a map.
33. The VMS shall have a single page that displays the status of all servers and cameras currently connected. This page shall display any alarms, events, MAC addresses, camera configuration, format and frame rate from each individual camera.
34. The VMS shall support the use of a panoramic lens on an analog or IP camera. The VMS client shall de-warp the image on both live and recorded video.
35. The VMS software shall have three methods of allowing third-party integration: command line, API and web SDK. The command line shall allow for the most basic of interfaces, calling up the appropriate video when requested using command line functionality. The API shall allow for a deeper interface, allowing video to be transmitted from the VMS software into the party software interface. The web SDK shall use the web server to transcode the video and send it to the third-party software interface. The web SDK method shall use standard HTML, XML, CGI and JavaScript commands.

**2.02 VIDEO MANAGEMENT SYSTEM SOFTWARE FEATURES**

1. When in live display mode, the user shall be able to view live video, live audio, point of sale (POS) data and alarm information.
2. The VMS shall be able to organize the camera video view panel in the following patterns:
	1. 1-camera (full-screen) layout
	2. 4-camera (2x2) layout
	3. 8-camera (3 large views and 4 small views) layout
	4. 10-camera (2 large views and 8 small views) layout
	5. 13-camera (1 large view and 12 small views) layout
	6. 16-camera (4x4) layout
	7. 8-camera (1 very large view and 7 small views) layout
	8. 9-camera (3x3) layout
	9. 6-camera (2x3) widescreen layout
	10. 12-camera (4x3) widescreen layout
	11. 20-camera (5x4) widescreen layout
	12. 30-camera (6x5) widescreen layout
	13. 48-camera (8x6) widescreen layout
3. The VMS shall allow the customization of the user interface to allow software triggers to be shown. This shall allow them to activate events through the push of a button, which could trigger recording, PTZ presets, output triggers or email.
4. The VMS shall allow the user to pick their own icon and select the software triggers to display in the client. The VMS shall also display the status of any soft triggers on connected VMS servers.
5. The VMS software shall allow control of PTZ cameras to authorized users and be used to maneuver a PTZ camera. When used on a non-PTZ camera, it shall allow you to digitally pan, tilt and zoom on any video whether in live or recorded mode.
6. The VMS shall allow following methods of controlling a PTZ camera to be available:
	1. PTZ graphics control windows
	2. Live graphic overlay PTZ control icons
	3. Keyboard control (up, down, left, right arrows; page up, page down for zoom)
	4. PTZ presets
	5. Digital PTZ
	6. USB joystick to control PTZ cameras
	7. Proportional PTZ control by clicking the mouse in the center and moving it
7. The VMS software shall allow virtual matrix functionality by designating a cell to do so. This video cell shall automatically show video as it is triggered.
8. The VMS software shall have a feature for viewing logical groups of cameras. This shall allow efficient viewing of cameras in a logical order.
9. The VMS software shall have a feature to organize your cameras into preset views. Views are preconfigured arrangements of the video panels so that they may be easily recalled later. A view can save the location of the video streams, audio streams, POS data, maps and event views. These views shall be accessible in both live and recorded video modes.
10. The VMS software shall have the capability to automatically cycle through two or more saved views to create a video tour. The VMS shall allow the configuration of the dwell time and the different views it shall use.
11. The VMS client software shall be used to search for and play back recorded video, audio and events from VMS servers.
12. The VMS software shall have the capability to search for and play back video from multiple cameras simultaneously. All recorded video shall be played back and displayed in a synchronized multi-camera layout.
13. The VMS software shall support searching through recorded video based on time, date, video source and image region and have the results displayed as both a clickable timeline and a series of thumbnail images.
14. The VMS software shall allow search and play back of audio in synchronization with video.
15. The VMS software shall allow you to search on a specific area of recorded video and only display the frames where motion happened in that area.
16. The VMS software shall have the capability to export video, maps, POS data and audio files.
17. The VMS software shall provide the option of exporting the file in the following formats:
	1. Standalone Exe (\*.exe) – includes an executable player with the video and audio data
	2. AVI File (\*.avi) – a multimedia container format
	3. PS File (\*.ps) – a format for multiplexing video and audio
	4. QuickTime File (\*.mov) – native for Macintosh computers
18. The VMS standalone player shall package all of the exported video into a single executable. The VMS standalone player shall be able to authenticate that the video has not been tampered with using a keyed Hash Message Authentication Code (HMAC).
19. The VMS client software shall be able to connect to multiple systems simultaneously. Each of the systems could have individual permissions, thereby limiting the client’s configuration or viewing abilities for that system, but not affecting the abilities on the other systems.
20. The VMS system shall be able to display system information about users that are currently logged into the system, plug-in file version information number and status, and a system log that contains a detailed history of the processes that occur on the system.
21. The VMS system shall have the ability to record an audit trail of when users log in that shows what changes they have made, what video they have viewed and what they have exported.
22. The VMS system shall allow the configuration of the video devices to be performed in the client and pushed out to the devices. The configuration itself is stored both on the camera and on the VMS.

1. The VMS shall allow monitoring of the inputs on both network devices and on manufacturer provided hardware. The VMS shall also allow triggering of outputs on the network devices and manufacturer provided hardware.
2. The VMS shall allow for the configuration of what drives to use for recording video. Those drives may be local drives, direct attached storage drives or iSCSI drives.
3. The VMS shall allow for the configuration of rules of how to record the video. These rules shall allow you to set a maximum number of days or minimum number of days on a per video stream basis.
4. The VMS shall not require a database when recording video.
5. The VMS shall use the operating systems native file system for recording the video. For example, if there was video that was recording on March 1, 2012 from 10:00 AM to 10:35 AM. Files for that day would be in the data drive, in the path 2012 for year, subfolder 03 for the month, with a sub folder 1st for the day, and then the 10 sub-folder for the hour. So when the client sends a request to search for video, the VMS shall look in the D:\2012\03\01\10 directory. Each video stream shall be kept in 5-minute increments in a paired video and index file. The video file shall contain the data of the video, audio, and include meta data. The index file shall contain the index of the metadata from the network device. So when the VMS searches for the video, it shall gather up the information in the index files and display those results. When the client then requests to display the video, the VMS will then transmit the video file data from the server to the client.
6. The VMS shall have the ability to receive ASCII data through the COM port on the server or over the network.
7. The VMS shall have the ability to look for keywords in the ASCII data and use these to execute various events such as PTZ presets, recording video, recording audio and sending email notifications.
8. The VMS software shall be able to send a predefined email based on an event trigger. The VMS software shall also support SSL and TLS connections for transmissions of the mail.
9. The VMS software shall have a feature to export a video segment from specific cameras or audio inputs to a CD or DVD upon an input trigger or other event being activated.
10. The VMS software shall be used to connect different types of events, such as input triggers, to a desired action such as recording video or triggering an alarm. The VMS software shall recognize the following event types:
	1. Video Motion
	2. Video Loss
	3. Input Trigger
	4. POS Port
	5. POS Profile
	6. Health
	7. IP Camera Connection
	8. Software Trigger
	9. Analytics
11. The VMS software shall be able to execute the following action types:
	1. Record Video
	2. Output Trigger
	3. Output Video
	4. Send an email
	5. Burn a CD/DVD
	6. Call a PTZ Preset
12. The VMS software shall have the ability to configure each video input’s recording time on an hourly basis. This shall allow the user to schedule when to record on motion, when to record on event and when to not record.
13. The VMS shall use a combination of a user name and a password to authenticate the user’s permission level.
14. The VMS shall allow granularity of permissions by creating custom user groups. The members of these custom user groups shall all have the same permissions.
15. The VMS client shall be able to use OpenGL and Direct 3D to decompress and render video.
16. The VMS shall allow the user to perform a visual thumbnail search. The user can select one camera to see one image per set time period. The user shall be able to play video from that image or zoom in to a time range.
17. The VMS client can be configured to automatically switch views on any trigger within the event monitoring function.

**2.03 VIDEO MANAGEMENT SYSTEM HARDWARE**

1. Server Requirements.
2. The VMS server software shall operate on the following minimum requirements:
	* + - 1. Processor: Intel® Atom® D525, 1.8 GHz or higher
				2. Graphics: 1280x1024x32 bits
				3. RAM: 1 GB
				4. NIC: 1x100 mbps (minimum)
				5. Hard Disk:

Western Digital Enterprise Drives, WD RE4 SATA or WD RE SATA (or)

Seagate Barracuda ES.2 SATA

30GB shall be reserved for the operating system and VMS server software

* + - * 1. Operating System:

I. Microsoft® Windows 2003 Server (or)

IV. Microsoft® Windows 7 (all versions) (or)

V. Linux Ubuntu 8.04 or higher

1. Client Workstation Requirements.
2. The VMS client software shall operate on the following minimum requirements:

Windows platform:

I. Processor: Intel® Atom® D525 at 1.8 GHz or higher

II. Graphics: 1280x1024x32 bits

III. RAM: 1GB

IV. NIC: 10/100/1000BASE-T Ethernet

V. Hard Disk: 40 GB

VI. Operating Systems:

 Microsoft® Windows XP (all versions) (or)

Linux Ubuntu 8.04 or higher

Mac OSX 10.4 or higher

1. Multi-Monitor Client Workstation Requirements (4 VGA monitors at up to 1920x1200 resolution).
	1. The VMS client software shall operate on the following minimum requirements:
		* + 1. Processor: Intel® Core i7 or higher
				2. Graphics: Multi-Output Display Adapter
				3. RAM: 4GB
				4. NIC: 10/100/1000BASE-T Ethernet
				5. Hard Disk: 40 GB
				6. Operating Systems:

I. Microsoft® Windows 2003 Server (or)

II. Microsoft® Windows XP (all versions) (or)

III. Microsoft® Windows Vista (all versions) (or)

IV. Microsoft® Windows 7 (all versions) or higher

Mac OSX 10.6

Linux Ubuntu 10.04