

SECTION 28 23 16  
STORAGE SERVER SYSTEM MANAGER  
(Part of the Work for Section 260001)

PART 1 - GENERAL

1.1 GENERAL PROVISIONS

- A. Attention is directed to the GENERAL REQUIREMENTS AND COVENANTS - DIVISION I, and the SPECIAL PROVISIONS - DIVISIONS IIA and IIB, which are hereby made a part of this Specification Section.
- B. Examine all Drawings and all Sections of the Specifications for requirements and provisions affecting the Work of this Section.

1.2 TRADE CONTRACT REQUIREMENTS

- A. Work of this Section is part of the Electrical Trade Contract. Refer to Section 26 00 00 "Electrical Trade Contract Requirements" for additional information about this Trade Contract.

1.3 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.4 SUMMARY

- A. Section includes a software package to continuously monitor the health of digital video storage servers and the cameras connected to them.
- B. Related Sections
  - 1. Section 08 71 00 Door Hardware
  - 2. Division 21 Fire Suppression
  - 3. Division 26 Electrical
  - 4. Division 27 Communications
  - 5. Division 28 Electronic Safety and Security

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

1.6 SYSTEM COORDINATION

- A. The Security Subcontractor shall completely coordinate relevant work of trades/systems including, but not limited to:
  - 1. Electrical Systems(s)
  - 2. Telecommunications System(s)

1.7 REFERENCES

- A. Abbreviations
  - 1. HDD – Hard Disk Drive
  - 2. IP - Internet Protocol
  - 3. LDAP – Lightweight Directory Access Protocol
  - 4. NVR – Network Video Recorder

5. VMS - Video Management System

1.8 DESCRIPTION OF WORK

A. General Requirements

1. Provide labor, materials, tools, equipment, and services for a complete security system as indicated and in accordance with provisions of the contract documents.
2. Although such work is not specifically indicated, provide supplementary or miscellaneous items, and devices incidental to or necessary for a sound, secure and complete installation.
3. System devices and components included shall be compatible.
4. Units of the same type of equipment shall be products of a single manufacturer. Material and equipment shall be new and currently in production. Each major component of equipment shall have the manufacturer's model and serial number in a conspicuous place.

1.9 QUALITY ASSURANCE

- A. Installer Qualifications: Minimum 2 years experience installing similar equipment.
- B. Units of the same type of equipment will be products of a single manufacturer. Material and equipment will be new and currently in production. Each major component of equipment will have the manufacturer's model and serial number in a conspicuous place.
- C. Installation, configuration, setup, programming and related work shall be performed by technicians thoroughly trained by the manufacturer in the installation and service of the equipment.

1.10 WARRANTY

- A. Manufacturer's Warranty: Submit manufacturer's standard warranty.

1.11 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in manufacturer's labeled packages. Store and handle in accordance with manufacturer's requirements, in a facility with environmental conditions within recommended limits.

1.12 PROJECT CONDITIONS

- A. Inspect locations where installation work will be performed and verify that conditions found are in accordance with the Contract Drawings and are acceptable for installation work. Report discrepancies in writing to the Engineer requesting clarification.
- B. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.13 MAINTENANCE AND SERVICE

- A. The VMS system manufacturer shall offer online, self-paced training for installers, system administrators and users. Online training shall be accessible from VMS system manufacturer's website.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Storage Server System Manager
  1. exacqVision

- B. The Storage Server System Manager (“storage manager”) shall be a software package installed on a dedicated server and providing the following functionality for compatible storage servers reachable via Internet Protocol:
1. The system shall provide a browser-based dashboard to view and monitor health and events related to storage servers and the cameras connected to them, including:
    - a. Camera Events
      - i. Video loss – Analog or IP video signal lost.
      - ii. Video Motion – Camera has detected motion.
      - iii. Camera Disconnected – Network cannot connect to analog or IP camera.
      - iv. Camera Analytics – An analytics event defined on the camera has been detected.
      - v. Recording Alarm – An event that triggers when the system writes the video from a stream to disk.
    - b. Storage Server Events
      - i. Security Integration Connection Alarm – An error in connecting to the Security Integration panel.
      - ii. Archive Alarm – Failure on archiving target, such as bad mount point.
      - iii. Archive Task Alarm – Archive task failed.
      - iv. Auto Export – A user exported video from the server using the exacqVision client.
      - v. Button Press – Button input on server pressed.
      - vi. Content Age Alarm – Video deleted before configured retention period
      - vii. Core Throttling – Server load requires that video frames be discarded to compensate.
      - viii. Device Failure – Capture card malfunctioned.
      - ix. Device Temperature - Capture card temperature not within recommended range
      - x. Fan Alarm – Fan has failed on capture board.
      - xi. Fan Speed Sensor Alarm – System fan not operating at recommended speed.
      - xii. Input Trigger – Discrete input on a hybrid server (or IP camera with alarm input) activated.
      - xiii. Login Failure – Login attempt failed on server.
      - xiv. Network Activity – Any unexpected network activity on the server’s network.
      - xv. Power Supply Alarm – Alarm on a server with redundant power supply.
      - xvi. Server Disconnected – Connection to server lost
      - xvii. Server License Error – Invalid license on server
      - xviii. Server License Warning – License will expire in less than 30 days
      - xix. Soft Trigger – Signal sent from Client to server
      - xx. Storage Alarm – Drive capacity threshold reached
      - xxi. Storage Hardware Alarm – Server storage malfunctioned

- xxii. Temperature Sensor Alarm – System temperature not within recommended range
  - xxiii. UART Serial Disconnected – A UART serial port is disconnected.
  - xxiv. Update Downloading – Software update download in progress.
  - xxv. Update Failure – Server software update failed.
  - xxvi. Update Installing – Server software update installing.
  - xxvii. Update Pending – Server restarting after software update.
  - xxviii. Update Success – Server software update completed.
  - xxix. Voltage Sensor Alarm – System voltage not in recommended range.
  - xxx. Security Integration Health – An intrusion panel that has a health condition active for the device.
2. Provides e-mail notifications of user selected system events and conditions in real time or batch fashion.
    - a. System provides e-mail verification to an e-mail address.
  3. Provides a configurable schedule to perform server tasks.
    - a. Schedule server software updates.
    - b. Schedule server configuration backup from a single server or in bulk.
    - c. Schedule server configuration restoration from a single server or in bulk.
    - d. Schedule maintenance for a server or multiple servers.
    - e. Import a license to a server or multiple servers.
  4. The system shall allow the configuration of servers for failover.
    - a. Server may be configured as a spare.
    - b. Spare server may be added to a Failover Group.
    - c. Failover Group will include servers covered by the spare to failover to in the case of failure.
    - d. On server recovery, the spare shall failback and return to spare status.
  5. The system shall allow the configuration of user and server groups, consisting of monitored systems with identical settings of monitored features.
    - a. Servers may be discovered on the network.
    - b. Servers may be added in bulk.
  6. The system shall allow the configuration of users and user groups from an Active Directory or LDAP source.
  7. The system shall allow for camera inspection.
    - a. The system shall allow an image from a camera connected to a monitored server to be stored as the reference image.
    - b. The system shall compare a reference image to a current image on demand.
    - c. The system shall allow images that are dissimilar to the reference image to be marked as “bad” until changed and marked as “good”.

8. The system shall allow for password strengthening.
  9. Provides color coded status of servers, cameras, and unacknowledged events in the following categories in list or chart format:
    - a. Critical
      - i. Server or camera device not detected.
      - ii. Event occurring and unacknowledged.
    - b. Warning
      - i. Health warning on server (such as temperature, storage alarm, archive alarm, CPU fan)
      - ii. Server license subscription expiring soon
      - iii. Event unacknowledged but open
      - iv. Event unacknowledged but closed
    - c. Normal
      - i. Server or camera connected and operating
      - ii. Event acknowledged and closed
  10. Allows creation of reports to:
    - a. View and manage a list of unacknowledged events.
    - b. View a list of open events.
    - c. Search for specific events based on various criteria.
  11. Allows events to be searched based on various criteria, including event time, event type, and associated cameras and servers.
  12. Permits viewing of server licenses.
- C. Database compatibility
1. Postgre
  2. Microsoft SQL
- D. The system shall support the following browsers:
1. Microsoft Edge 44 and later
  2. Chrome 83 and later
  3. Safari 13 and later
  4. Mozilla Firefox 76 and later
- E. The system shall operate on all the following operating systems:
1. Windows 10
  2. Windows Server 2016
  3. Ubuntu Linux 18.04
- F. The system shall run as a service. The system manager shall not require any application to be running to operate.
1. The system shall run on a mobile application at no additional cost.

### 3.2 HARDWARE REQUIREMENTS

- A. Storage Manager Server

1. The storage manager shall operate on the following minimum requirements:
  - a. Processor: Gen 7 Intel® Core i5
  - b. RAM: 8GB
  - c. Hard drive: 128GB SSD
  - d. Network: 2 x 1 Gbps
  - e. Operating system: Windows 10 or Server 2016 or Ubuntu Linux 18.04
- B. Client PC
  1. Minimum requirements
    - a. Processor: Gen 7 Intel® Core i3
    - b. RAM: 4 GB
    - c. Network: 1 x 1 Gbps
    - d. Browser: Microsoft Edge 44, Chrome 83, Safari 13, Mozilla Firefox 76

### PART 3 - EXECUTION

#### 3.1 INSTALLATION

- A. The Security Subcontractor shall carefully follow instructions in documentation provided by the manufacturer to ensure steps have been taken to provide a reliable, easy-to-operate system.
- B. Equipment shall be tested and configured in accordance with instructions provided by the manufacturer prior to installation.

#### 3.2 ADJUSTING

- A. Make proper adjustment to video system devices for correct operation in accordance with manufacturer's instructions.

#### 3.3 PROTECTION

- A. Protect installed system from damage during construction.
- B. Hardware shall be stored in an environment where temperature and humidity are in the range specified by the hardware manufacturer.

END OF SECTION 28 23 12