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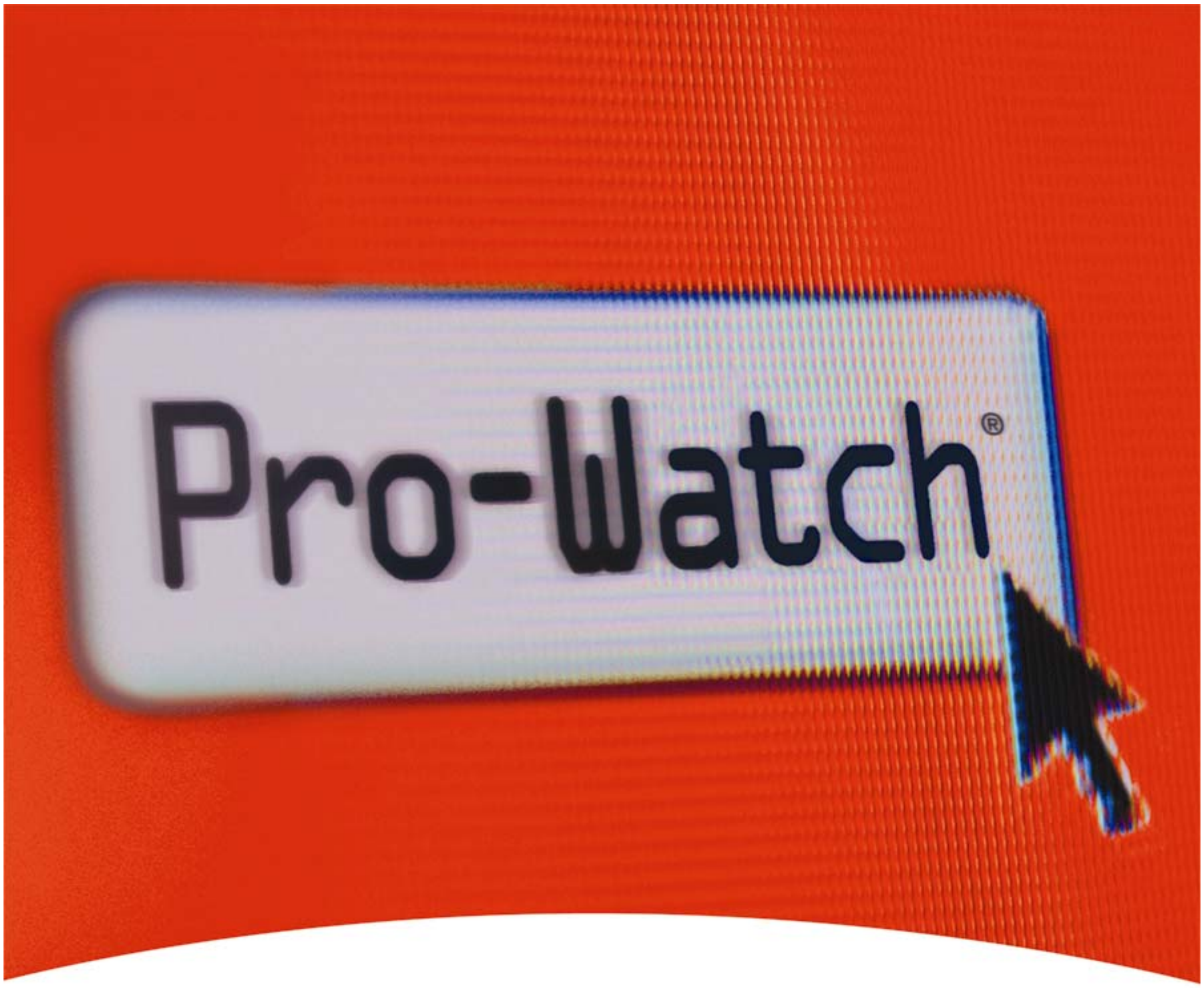

Pro-Watch Software Suite

Architect and Engineering Specifications

Revision 3.7.0

Ed. July 16, 2008

Contents

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1 General

1.1 Summary

The intent of this document is to specify the minimum criteria for the design, supply, installation, and activation of the Security Management System, hereinafter referred to as the System, which shall be a modular and network enabled access control system. The System shall be capable of handling large proprietary corporations with multiple remote sites, alarm monitoring, video imaging and badging, paging, digital video control and CCTV switching that allows for easy expansion or modification of inputs and remote control stations.

1.1.1 References

1.1.1.1 Federal Communications Commission (FCC):

- FCC Part 15 – Radio Frequency Devices
- FCC Part 68 – Connection of Terminal Equipment to the Telephone Network

1.1.1.2 Underwriters Laboratories (UL):

- UL294 – Access Control System Units
- UL1076 – Proprietary Burglar Alarm Units and Systems

1.1.1.3 National Fire Protection Association (NFPA):

- NFPA70 – National Electrical Code

1.1.1.4 Electronic Industries Alliance (EIA):

- RS232C – Interface between Data Terminal Equipment and Data Communications Equipment Employing Serial Binary Data Interchange
- RS485 – Electrical Characteristics of Generators and Receivers for use in Balanced Digital Multi-Point Systems

1.1.1.5. Federal Information Processing Standard (FIPS):

- Advanced Encryption Standard (AES) (FIPS 197)
- FIPS 201: Personal Identity Verification (PIV) of Federal Employees and Contractors

1.1.2 System Overview

The Security Management System shall integrate access control, alarm monitoring, CCTV, digital video, video badging, and database management. A modular and network enabled architecture shall allow maximum versatility for tailoring secure and dependable access and alarm monitoring solutions for medium and large facilities. The System shall at a minimum include the following capabilities:

- Direct wire operation, local area network (LAN) (Ethernet) or wide area network (WAN) operation, or remote operation via modem. When configured for dialup, any one port can support multi dialup locations.
- A flexible and modular design shall provide ease of installation, robustness, reliability, and expansion.
- Distributed architecture shall allow controllers to operate independently of the host. The architecture shall place key access decisions, event/action processing, and alarm monitoring functions within the controllers, eliminating degraded mode operation.
- Communication between the server/workstations, controllers, and other hardware shall be via the Security Management System software.
- Proprietary software programs and control logic information used to coordinate and drive system hardware shall be stored in read-only memory (PROM).
- Upgrades to the hardware and software shall occur seamlessly without the loss of database, configurations, or historical report data.
- Flash memory shall support firmware updates and revisions to be downloaded to the system via modem or system communication.
- Both supervised and non-supervised alarm point monitoring shall be provided. Upon recognition of an alarm, the system shall be capable of switching CCTV cameras that are associated with the alarm point.
- Manual or automatic arming or disarming alarm points shall be performed by time of day and day of week.

- Database partitioning shall provide the option to restrict access to sensitive information by user ID.

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2.1 System Software Requirements

The system shall be a modular and network enabled access control system. The System shall be capable of controlling multiple remote sites, alarm monitoring, video imaging, video badging, paging, digital video and CCTV switching and control that allows for easy expansion or modification of inputs and remote control stations. The System control at a central computer location shall be under the control of a single software program and shall provide full integration of all components. It shall be alterable at any time depending upon facility requirements. System reconfiguration shall be accomplished online through system programming. The System shall include the following:

2.1.1 Multi-User/Network Capabilities

The System shall support multiple operator workstations via local area network/wide area network (LAN/WAN). The communications between the workstations and the server computer shall utilize the TCP/IP standard over industry standard IEEE 802.3 (Ethernet). The communications between the server and workstations shall be supervised, and shall automatically generate alarm messages when the server is unable to communicate with a workstation. The operators on the network server shall have the capability to log on to workstations and remotely configure devices for the workstation. Standard operator permission levels shall be enforced, with full operator audit.

2.1.2 Concurrent Licensing

The System shall support concurrent client workstation licensing. The System application shall be installed on any number of client workstations, and shall provide the ability for any of the client workstations to connect to the database server as long as the maximum number of concurrent connections purchased has not been exceeded.

2.1.3 Microsoft® Certifications

- A Microsoft® Gold Certified Partner shall develop the System software. Microsoft Gold Certified Partners meet a higher set of criteria for each category, including enhanced certification and a portfolio of real-world customer references, and are thus identified as the most skilled partners in specific solution areas. Microsoft Gold Certified Partners encompass a broad range of technical expertise, including specialized disciplines such as e-commerce, networking, collaboration, commitment to emerging technology and providing excellence in customer solutions.
- The System shall be certified for both Windows 2000 Server as well as Windows 2000 Professional. Systems that are not certified for BOTH operating systems shall be unacceptable.

2.1.3.1 Microsoft Windows 2000 Certification Common Requirements:

The System shall:

- Perform primary functionality and maintain stability
- Provide 32-bit components and document any 16-bit code
- Support Long File Names and UNC paths
- Support printers with long names and UNC paths
- Not read from or write to WIN.INI, SYSTEM.INI, AUTOEXEC.BAT or CONFIG.SYS
- Ensure non-hidden files outside of your application directory have associated file types, and all file types have associated icons, descriptions and actions
- Perform Windows version checking correctly
- Hardware drivers must pass WHQL testing
- Install using a Windows installer-based package that passes validation testing
- Install to Program Files by default
- Support Add/Remove Programs properly
- Ensure correct uninstall support
- Not attempt to replace files that are protected by Windows File Protection
- Support standard system size, color, font and input settings

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- Ensure compatibility with the High Contrast option
- Provide documented keyboard access to all features
- Expose the location of the keyboard focus
- Not place shortcuts to documents, help or uninstall in the Start Menu

2.1.3.2 Microsoft Windows 2000 Professional Unique Certification requirements:

In addition to the common requirements, the System shall:

- Support AutoPlay of compact disks
- Observe rules in componentization
- Identify shared components
- Component producers: Build side-by-side components
- Application developers: Consume and install side-by-side components
- Install any non side-by-side shared files to the correct locations
- Classify and store application data correctly
- Degrade gracefully on access denied:
    - Run in a secure Windows environment
    - Adhere to system-level Group Policy settings
    - Applications that create ADM files shall properly store their ADM file settings in the registry
    - Not rely exclusively on sound
    - Support multiple monitors

2.1.3.3 Microsoft Windows 2000 Server Unique Certification requirements:

In addition to the common requirements, the System shall:

- Not overwrite non-proprietary files with older versions
- Install shared files to the correct locations
- Recount all shared application files during installation
- Decrement the count on shared application files during uninstall
- Document services that require more than User level privileges to run

- Win32 clients running in the context of a trusted domain account must support Single Sign-On.

2.1.4 Security Key

The System shall only require a single security key dongle to be present on the database server for the System to operate. Security keys shall not be required at the client workstations. The System shall allow a user to read the information that is programmed on the server security key dongle. The System shall support export of the information using the 'Export Dongle information' button, which shall allow the user to forward to the integrator when upgrading new dongle features.

2.1.5 Access Control Software Suite

The System shall offer a premier security management software suite available in three scalable versions: Lite, Professional, Corporate, and Enterprise Editions. The System platform shall offer a complete access control solution; alarm monitoring, video imaging, badging and CCTV control. All four editions of software shall provide a convenient growth path from small to midsized applications to global enterprise solutions.

2.1.5.1 Lite Edition

Pro-Watch® Lite Edition shall provide a security management solution for entry level applications. The System shall be designed to maximize value and decrease installation time including enhanced ease-of-use features Built-in software wizards shall enhance system uniformity across sites, reduce installation time, and improve the overall learning curve for new users. The System shall utilize the Microsoft Data Engine (MSDE) to provide a powerful solution for applications with one to four users and up to 32 entrances. Pro-Watch Lite sites shall be easily upgraded to Professional, Corporate or Enterprise Edition. The Lite platform shall include the following features and benefits:

- Ease-of-use features accelerate system setup, configuration and deployment.
- Powerful integration to Honeywell's Rapid Eye™ platform and built-in video MUX.
- Seamless growth from a two-door system to a 20,000-door Enterprise system without ever having to change user interfaces or learn a new application.
- Seamless integration with other third party facility management subsystems including video, pagers, intercoms, biometric devices, and digital storage devices. Pro-Watch

supports a “generic channel” capability that allows customized interfaces to previously unsupported third-party devices.

- Integrated badge, hardware and permission wizards reduce the number of clicks required to configure and deploy a system.
- Hand geometry template storage and administration through application.
- Multiple database partitioning provides a higher level of security by allowing the system administrator to restrict access to sensitive information by user ID.
- Direct import of select versions of AutoCAD drawings with layer views reducing commissioning costs and time.
- Global search utility allows information to be easily accessed and recalled.
- Integrated badging and video functions with a single user interface eliminate the need for multiple software/hardware packages and redundant data entry.
- Search templates are available for quick lookup of all system parameters.
- Macros combine multiple operations into a single keystroke or mouse click.
- Integrated real-point status monitor allows for quick evaluation of point status.
- 128-bit data encryption between host and PW-5000/6000 access control panels.
- The System shall support 1 to 4 users and up to 32 doors.
- The System shall use Microsoft SQL-based Data Engine (MSDE 2000 or later).
- The System shall operate on Windows XP Professional Edition Operating System.

2.1.5.2 Professional Edition

Professional Edition shall provide an economical solution for small to midsized applications. Professional Edition shall operate efficiently without the requirement of a server-based operating system. The System shall utilize Microsoft Data Engine (MSDE 2000 or later) for smaller applications from 1 to 5 users and up to 64 doors.

The System shall provide a complete set of MSDE database tools designed to easily backup, restore, and maintain the System database. The System shall allow for expansion to Corporate and/or Enterprise Edition without changing the user interface or database structure. The common platform shall include the following features and benefits:

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- Certified for Microsoft Windows 2000 Professional and Server
- Leverages existing network infrastructure by using standard network protocols to communicate to all system hardware
- CHIP hardware protocol support (communicates to existing Honeywell's Star II series controllers)
- PW series hardware protocol support (communicates to existing Honeywell's PW-2000, PW-3000, and PW-6000 series controllers)
- SEEP hardware protocol support (communicates to existing Honeywell's Star I, 4100, and 800 series controllers)
- Comprehensive database-partitioning scheme shall allow extensive flexibility in managing operator permissions
- Real-time status monitor shall provide "at a glance" status of the entire System and the ability to quickly evaluate the details of any point in the System
- Report Manager shall provide savable report templates, exporting options, and a scheduler for added user convenience
- Integrated digital video solutions from Honeywell including Rapid Eye series, Fusion series recorders, as well as IP-based solutions from the Honeywell Video Management System (HVMS) series
- Database Import/Export utility shall allow information to be transferred dynamically to and from third party databases, enabling a convenient interface to HR or Active Directory controlled systems
- Integrated Precise Biometric Smart Card enrollment allows for fingerprint capture and programming shall be done within the System application
- Direct import of AutoCAD drawings with layer views
- Integrated badging and CCTV functions in a single user interface shall eliminate the need for multiple software systems and reduces data entry time
- The System shall provide support for hardware protocols from a variety of manufacturers
- The System shall support up to 5 users and 64 doors
- The System shall use SQL-based Microsoft Data Engine (MSDE 2000 or later)
- The System shall operate on Windows 2000, Vista, and XP Professional as well as Windows 2000 or 2003 Server

2.1.5.3 Corporate Edition

Corporate Edition shall be provided for more demanding security management applications. The System shall operate in the Windows 2000 server environment and utilize SQL 2005 as the database engine.

In addition to the features listed for the Professional Edition, Corporate Edition shall also include the following features and benefits:

- Flexible software licensing packages and hardware components shall allow the System to be tailored to individual application needs.
- E-mail capability to assign an e-mail address that the System shall notify should the alarm originate from the designated point. This process shall be a function of SQL 2005 Server, which shall negotiate e-mail transfer to the Microsoft Exchange Server.
- The System shall support 2 users and 96 readers as a standard, and will be upgradeable to unlimited users and readers
- The System shall utilize Microsoft SQL Server 2005 Standard Edition Data Engine
- The System shall utilize Windows 2000 or 2003 Server as primary operating system

2.1.5.4 Enterprise Edition

Enterprise Edition shall incorporate regional server architecture to meet the needs of global business. Regional sites shall operate autonomously with all information required to maintain security locally.

The enterprise server shall maintain any critical system information via synchronization with each regional site. This system of synchronization shall ensure the integrity of data throughout the enterprise.

The regional server architecture shall provide an unparalleled degree of reliability and flexibility through the use of multiple regional Windows PCs sharing a common master cardholder and photo ID badging database.

One Enterprise Server shall provide global management of all regional servers and shall act as a central collecting point for all hardware configurations, cardholder and clearance code data and transaction history. The Enterprise Edition includes the following features and benefits:

- Shall provide the ability to activate or deactivate a card from anywhere in the Enterprise, while having the card's status updated at all of the regions and the associated controllers.

- Existing Corporate Edition system shall be easily integrated into an Enterprise Edition without loss of data or history.
- The System shall provide one central cardholder and badging file so that an operator in any region in an Enterprise shall have the capability to view and modify cardholder data and grant or deny access enterprise-wide.
- A single uniform application program shall be used to install and configure the Enterprise server, regional server, and all client workstations
- The System shall provide the ability to service alarms and report on their status from any region, covering the entire Enterprise.
- The System shall provide database reporting capability on the central cardholder database.
- The System shall support unlimited users and readers.
- The System shall utilize Microsoft SQL Server 2005 Standard Edition Data Engine.
- The System shall utilize Windows 2000 or 2003 Server as primary operating system.
- The System shall incorporate regional server architecture to meet the needs of global business.

2.1.6 Terminal Services

The System shall support Windows 2000 Terminal Services. Terminal Services shall allow the System server application to reside on the Windows Terminal Server while client access shall be obtained via a standard Web browser interface. Operating systems supporting a standard Web browser shall be capable of utilizing the thin client architecture. The System shall support unlimited connections, based on concurrent licensing, to the System software. Full functionality shall be obtained through the intranet connection allowing full administration and monitoring without the need for a local installation. This functionality also allows video badging and image capture to occur remotely without the need to install the application locally.

2.1.7 Operating System

The System shall support Windows 2000 Server and Windows 2003 Server for the Corporate and Enterprise Editions as well as Windows 2000 Professional Edition and Windows XP Professional Edition as the host operating system for the Professional Edition product. It shall also support Windows 2000, Vista, and XP Professional as a client operating system for all three versions of software in the Pro-Watch software suite.

2.1.8 Relational Database Management System

The System shall support industry standard relational database management systems. This shall include relational database management system Microsoft SQL Server 2005.

2.1.9 LDAP/ Microsoft Active Directory Services

The System shall provide support of Lightweight Directory Access Protocol (LDAP) for enabling the user to locate organizations, individuals, and other resources such as files and devices in a network, whether on the public internet or on a corporate intranet. The System shall provide a direct link to Microsoft Active Directory Services. This integration shall allow for a centralized data repository that can be utilized by systems throughout a corporate enterprise. The System shall allow the transfer of Active Directory users via the Data Transfer Utility. Active Directory users may be imported into the System database. Conversely, System users shall be capable of being exported to the Active Directory.

2.1.10 OLE-DB

The System shall utilize Microsoft’s OLE-DB object-oriented, database access method. Microsoft’s OLE-DB method shall provide support of not only relational databases, but also to “hierarchical data sets” such as Microsoft Exchange stores and XML record sets. OLE-DB shall allow easier integration of disparate data sources.

2.1.11 Unicode

The System shall utilize Unicode worldwide character set standard. Unicode shall enable a single software product to be targeted across multiple platforms, languages and countries. The System shall support double-byte character sets to facilitate adaptation of the System user interface and documentation to new international markets. This enhanced flexibility shall allow the System to expand its multilingual portfolio, which includes at a minimum English, French, and German.

2.1.12 Encryption

The System shall provide true 128-bit data encryption between the host and PW-6000 intelligent controllers. The encryption shall ensure data integrity that is compliant with the requirements of FIPS and SCIF environments. Master keys shall be downloaded to the intelligent controller, which shall then be authenticated through the System based on a successful match.

2.1.13 Compliance and Validation

The System shall incorporate signature authentication where modifications to System resources will require either a single or dual signature authentication. Administrators will have the ability to select specified devices in the System where data manipulation will be audited and signatures will be required to account for the data modification. Upon resource modification, the user will be required to enter a reason for change or select from a list a predefined reason. All data will be securely stored and maintained in the database and can be viewed using the reporting tool. This functionality will meet the general requirements of Validation and Compliance through Digital Signatures with special attention to the case of CFR 11 Part B compliance.

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2.1.14 Clean Room Solution

2.1.14.1 Overview

The System shall provide a clean room solution which enables users to manage their “Clean Environments” or other areas requiring special restricted access through a process oriented graphical user interface.

The clean room solution shall provide tools that enable security directors and technical review boards to audit and implement complex human work flows in ultra clean environments or other areas. The System shall enforce contamination level-based access control based on a numerical value system. Contamination levels can be adjusted dynamically to parallel the evolution of complex chemical or biological processes by the staff. The clean room solution shall enable the user to assign a contamination level (number from 1 to 100) to each room. Numbers shall ascend in the order of un-cleanliness; that is, 1 is the cleanest room and 100 is the least clean room, and a cardholder can only travel from “clean” to “less clean.” Access shall be granted from a lower contamination room to a higher contamination room, but shall be denied from a higher contamination room to a lower contamination room.

For example, a valid cardholder shall enter the common lobby, which is not configured as a clean room. If the cardholder enters Laboratory 1 with a contamination level of 10 (least contaminated), he may subsequently be granted access to Laboratory 2 (contamination level of 20) or Laboratory 3 (contamination level of 30) because his path ascends in contamination level from least to most contaminated. Therefore, if the user first enters Laboratory 3, he shall not thereafter be granted access to Laboratories 2 and 1 until the contamination levels are reset.

2.1.14.2 Configuration

The user shall have the capability of adding, editing, or deleting clean rooms. The System shall provide a Description field allowing the user to enter the Logical Device name that corresponds to the clean room’s door or reader. The user shall have the capability to select a default time zone for the room from the Default time zone drop-down list. This time zone shall define the hours during which access is possible. The user shall select a reader for the room door utilizing the Logical Device field icon to display the list of available readers. The System shall also provide the capability to assign an alternate Time Zone to assign to a secondary reader when the door is configured with two readers, (one entry and one exit reader). The user shall select a Time Zone from the dropdown list next to the Alternate Time Zone field. Access to clean

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rooms shall be defined through cardholder Clearance Codes. The System shall provide a “Cards” tab which shall display the Access Allowed column. This column shall indicate which valid cardholders currently have access to the clean room selected at the top of the screen.

The System shall provide two methods to manage the Access Allowed column (select or de-select the checkboxes):

• Manual—The user shall have the capability to click the checkbox to select and de-select. Additionally, the toolbar at the top of the Clean Room Configuration screen shall allow the user to reset all cards or reset card (resets the selected cardholder). This method shall be used when selecting or deselecting only some of the cards.

• Event procedure—The user shall have the capability to create a trigger and procedure that will run automatically according to a set schedule. This method shall reset every valid card for the clean room to give all valid cardholders access. The Time checkbox shall set the time of day at which the stored procedure will reset all clean rooms.

2.2 Operational Requirements

2.2.1 System Operations

2.2.1.1 Password

The System shall use an integrated authentication method which utilizes Windows user accounts and policies. Client stations will function under the Microsoft recommended default user rights. Passwords must support scheduled expiration and be capable of prompting the user for a password change automatically as a part of the Windows login process. Additionally, passwords will support complexity rules such as length of password and required number of alphanumeric characters as established by the Windows policies regarding user accounts.

2.2.1.2 Information Access

The System shall be capable of limiting operator access to sensitive information. Operators shall have proper authorization to edit the information.

2.2.1.3 Shadow Login

The System shall allow users to login over a currently logged-on user without having the current user log off the System or Windows 2000. For example, the System shall allow an

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administrator to login over a restricted class user to perform a function on the System that the current user does not have permission to perform. This provides a level of security in that the user's workstation shall never need to go offline or be unattended.

2.2.1.4 User Friendly Graphical User Interface

The System shall be fully compliant with Microsoft graphical user interface (GUI) standards, with the look and feel of the software being that of a standard Windows application, including hardware tree based system configuration.

The System shall provide user definable "drag and drop" hardware templates in order to simplify system setup and maintenance. The user interface shall be designed such that the ability to add resources such as time zones, clearance codes, alarm types, etc. shall be available within the functions in which they are used rather that requiring the user to close the function and navigate to another section of the application to add the resource.

The System shall provide a dependency search to allow the user to determine all the dependencies of hardware devices in the configuration trees. The search function shall display the list of assignments at the logical device level to assist the user to select all appropriate devices when removing an object from the configuration.

The System shall support of graphical user manager utilities (wizards) to ease the enrollment process for users, controllers, communication channels, badgeholders, and logical devices. The wizards will be made available through a Welcome screen at main application entry as well as at the individual resource creation point.

2.2.1.5 Help

The main System user interface shall include a help icon which shall require only one click to activate. The standard special function key "F1" shall have the capability to be programmed to provide access to the help system.

2.2.1.6 Guard Tour

- The System shall include a guard tour module, which shall allow the user to program guard tours for their facility. The tours shall not require the need for independent or dedicated readers.
- The System shall provide the ability to use the same logical device more than once in a guard tour. The logical device shall be selected from a resource box located on the left

side of the screen. Selecting this box shall bring all system readers to view for tour selection.

- Once a logical device has been selected, a dialog requesting the ‘Time’ required reaching designation shall appear. This entry shall be in military format (00:00) and represents the amount of time required to reach each checkpoint.
- After the ‘Time’ has been entered, the tolerance needs to be entered, the ‘+’ and ‘-’ values shall be defined. A text box shall allow the user to enter the time tolerated for early and late arrivals.
- The user shall be able to ‘Start Guard Tour’ in the Guard Tour screen and bring up a ‘Select Guard’ dialog box. Selecting a Guard from this list shall assign that user (guard) to that tour. The listing of guards that appear in the dialog box shall be pulled from the cardholder screen. The cardholder screen includes a ‘Guard’ checkbox. Selecting this box shall register the badgeholder/cardholder as a ‘Guard’ with the capability to run tours.
- If the times defined in the tour are not met within the time allotted, an alarm shall be sent to the monitor.
- The user shall have the capability to run multiple tours simultaneously.

2.2.1.7 Secure Mode Verification

- The System shall provide ‘Secure Mode’ control from the verification viewer. This shall allow a user or guard to decide the access of an individual who presents his/her card at a designated secure mode reader. Readers shall be flagged as secure mode readers from the logical device. Reader definition shall include a check box for Secure Mode time zone definition. Standard access rules shall apply to any reader designated as secure mode until the verification window has been opened and the specified reader has been selected. In the event that a secure mode reader is enabled, the System shall display the cardholder’s stored image, as well as any binary large object (BLOB) associated with the user, including but not limited to, signature, documents, secondary photo, and the user shall have the capability to either grant or deny access to the logical device via ‘Accept’ or ‘Deny’ buttons on the viewer box.
- The System shall provide the ability to print the log from the verification window.

2.2.1.8 Database Partitioning

- The System shall support dynamic partitioning. Systems in which partitions are set up at installation and cannot be easily changed shall be unacceptable. The System shall support the addition and deletion of items to the partitioning scheme as required. The System shall be capable of limiting an operator's access to one, or multiple partitions. Information which can be separated into partitions shall include: Alarm Pages, Areas, Badge Profiles, Badge Ranges, Badge Statuses, Badge Types, BLOB Types, Brass Keys, Card Formats, Users, User Classes, Clearance Codes, Companies, Dial Up Schedules, Event Types, Event Triggers, Event Procedures, Groups, Holidays, Keyboard Accelerators, Maps, Modem Pools, Alarm Pathways, Routing Groups, Status Groups, Time Zones, Workstations, Device Types, Hardware Classes, Hardware Templates, Logical Devices, Panels, Channels, Sites, CCTV Camera Views, CCTV Monitor Views, Reports, and Badge Records.

- Each item shall be capable of being assigned, or being available to, multiple partitions. Partitioned items shall not be visible to operators that have not been assigned access to at least one of those same partitions. The System shall allow partitioning to be turned on or off for each table as required. Systems that do not support assigning of individual items to multiple partitions shall be unacceptable.

2.2.1.9 Status Groups

The System shall support a real-time system status monitor that graphically depicts all logical devices. The Status Groups window shall be a split window with logical device icons displayed in the upper portion and the Device Types associated with a selected logical device displayed in the lower portion. The Status Groups shall be available in the hardware configuration view and the alarm monitor view.

2.2.1.9.1 Upper view

The icons representing each logical device within this view shall change based upon the status of that logical device. Different icons shall be available to indicate:

- Normal State
- Indeterminate State
- Reader Off-Normal State
- Input Off-Normal State
- Output Off-Normal State
- Reader and Input Off-Normal State
- Reader and Output Off-Normal State
- Input and Output Off-Normal State
- Total Alarm State

2.2.1.9.2 Lower view

- Individual device types (readers, inputs, outputs which are further defined as door position switches, request-to-exit devices, enunciators, etc.), which make up the selected logical device, shall be displayed in the lower view. This lower view shall include an icon for each device type and indicate the category (input point, output point, reader) and the status of the individual device types that make up the logical device (normal, energized, locked, unlocked, in-alarm). Note that when a reader device type is not in an off-normal status, the reader mode is displayed (card-only, PIN-only, card and PIN, card or PIN).

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2.2.1.9.3 Status Group Filter

- The Status Groups window shall be filterable to show only logical devices which are currently in an off-normal condition based on the following:
    - Reader Filters
        - Unknown
        - Disabled
        - Locked/Unlocked
        - Facility Code
        - Timed Override
    - Input Filters
        - Alarm
        - Trouble
        - Held Open
        - Forced Open
        - Open Circuit
        - Short Circuit
        - Exit Warning
        - Hardware Masked
        - Software Masked
        - Offline
    - Output Filters
        - Energized
        - Trouble
        - Hardware Masked
        - Software Masked
        - Offline

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2.2.1.10 Keyboard Accelerators

The System shall allow the user to use a shortcut key to enable designated system commands. The System operator shall have the capability to set up accelerators for two options: Commands and Event Procedures.

The operator shall have the capability to add, edit, and delete accelerators for commands and event procedures, as well as grant or revoke user access to these options. The keyboard accelerator dialog box shall include a user definable description, the New Shortcut Key Combination (for example, Ctrl+Shift+T), Checkboxes for Command Procedure and Event Procedure with drop down lists. The Keyboard Accelerator icon shall be displayed in the right System pane, for single mouse click execution.

2.2.1.11 Void Card upon Lack of Use

The System shall allow system operators to set a predefined time period in which cardholders must swipe their card through a card reader in the System. The System shall automatically void the card if the defined timeframe has elapsed without a card read since the card was created.

2.2.1.12 User Functions and ADA Ability

The System shall provide User Functions and ADA ability that provides the capability to trigger an event at the System Intelligent Controller when a defined card is presented. The Extended Strike Time and Extended Held Time for a reader shall be utilized when a card with ADA checked is presented. Triggers set off by a card read shall include a given user level. This functionality shall allow only certain users, based on their access privileges, to trigger events at the door. The user shall have the capability to approach a PIN pad and enter a command digit followed by up to eight numeric digits. The intelligent controller shall interpret this as a user function and report that event to the host. A trigger in the System intelligent controller shall fire based on the PIN entered to perform a panel procedure. The PIN user functions shall exist only in the trigger definition in the System intelligent controller.

2.2.1.13 Pathways

The System shall support the capability of programming Pathways. A Pathway shall be an object that combines input points to be masked (shunted) for a set duration, and an output point to be activated, when a particular card receives a local grant at a reader. For example, a Pathway shall provide the capability to contain the motion detector inputs along the hallway path to the user’s office. It shall have the capability to contain the output point for a green light above the door to the office. When the user presents his valid card to enter the building, the

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input points along the pathway to the office will be masked and the output point activated. If the user attempts to access any areas other than the Pathway, an alarm will be generated. After a set number of minutes have elapsed, the input points shall be un-masked and the output point deactivated. The Pathway shall have the capability to be deactivated before the elapsed time if another card is configured to “stop” a Pathway in progress. Systems that do not provide Pathway programming shall be unacceptable.

2.2.1.14 Database Audit Log

The System shall be capable of creating an audit log in the history file following any change made to the System database by an operator. Each database item shall be selectable to audit the “add,” “update” or “delete” activities of related to that item. The System shall record:

- The date and time of the activity
- The type of activity (add, update, or delete)
- The user who performed the activity
- The workstation at which the activity took place
- What information was modified
- What the old value was
- What the new value is

2.2.1.15 Operator Log

The System shall be capable of creating an action log in the history file following actions performed by an operator. The System shall record:

- The date and time of the activity
- The user who performed the activity
- The workstation at which the activity took place
- What activity was performed
- What database item on which the activity was performed
- What database group to which the item belongs

2.2.1.16 Alarm Routing

The System shall be capable of defining routing groups that determine what event information shall be routed to a user or class of users. The System shall support routing group rules to be

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assigned to users or user classes, including single or multiple groups. Each item in the routing group shall be associated with a time zone, which shall control when the routing group is valid. For example, a specific workstation shall be a valid target for routing after 6:00 pm. Events from a specific facility (channel) shall be routed to a different set of operators during the day and certain kinds of events shall be routed to a different set of operators on the weekend. The System shall support alarm rollover, which shall forward an event to another workstation if it has not been acknowledged within a specified timeframe. Systems that do not support alarm rollover shall be unacceptable. Routing of events shall be separated via the following classifications:

- The communication channels on which the event originates
- The type of event that is generated
- The workstations to which the event should be routed

2.2.1.17 Global and Nested Anti-passback

The System shall support the use of an optional anti-passback mode, in which cardholders are required to follow a proper in/out sequence within the assigned area. Cards shall be used at a designated “in” reader then at a designated “out” reader within the area before the card can be properly used at an “in” reader again. Both hard and soft anti-passback options shall be available. Hard anti-passback shall not allow a cardholder access when anti-passback rules are not followed. Soft anti-passback shall allow a cardholder access when anti-passback rules are not followed but shall create an alarm. In nested anti-passback applications the System shall prevent user access to an inner area unless the user has properly entered the adjacent outer area.

The System shall support both global and local anti-passback:

- Local: This feature must allow anti-passback areas to be configured within the areas that are configured on a single intelligent controller.
- Global: This feature must allow anti-passback areas to be configured across multiple intelligent controllers.

2.2.1.18 Two Person Rule

The System shall support a “Two Person Rule” to restrict access to specific access areas unless two cardholders present two different valid cards to the reader one after the other within a period time defined by the door unlock time multiplied by a factor of 2. For average doors with

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a door unlock time of 10 seconds, this produces a 20 second window of opportunity. If only one valid card is presented or if too much time elapses between swipes, the door shall not unlock and an access denied message shall be generated. The “Two Person Rule” feature shall be selected for all doors controlling entry to and exit from the specified area.

2.2.1.19 Occupancy Restrictions

The System shall allow the user to define the minimum and maximum occupancy allowed in a designated area. If the occupancy falls below this minimum amount or the occupancy goes above this maximum amount, the System shall designate the selected procedure.

2.2.1.20 Hardware Templates

The System shall include the ability to define hardware templates (door templates) in order to simplify the process of creating an access control system. Hardware templates shall allow a user to define a “typical” door configuration and then use that template over and over in the process of defining doors.

Hardware templates shall allow the user to create device types and device property settings which are specifically designed for the special requirements of each type of access point or alarm input on each project. The hardware template shall allow the System operator to define a template for multiple separate doors made up of the same parts. For example, a typical door may include a card reader, a lock, a door position switch, a request-to-exit device, and a local sounder for “Door Held Open” alarms. The System operator shall have the capability to create a template defining the 5 different categories of components that make up the door (device types), set the default values for each of the components, define any interlocks and/or guard tour parameters, and then use that template to create the multiple separate doors. By defining the component types and their default values within the template, the user shall greatly reduce the overall amount of time necessary to add a door to the System.

An unlimited number of templates shall be supported, allowing a user to pre-define every type of door configuration within a particular facility. Once the templates have been defined, the process of building doors shall be quick and simple. All inputs and outputs shall have no pre-defined or fixed functionality and shall be programmable for any functionality the user desires. For example, an input point normally reserved for use as a request to exit should be capable of being reprogrammed for any other desired functionality if a request to exit device is not required. Systems that do not provide this capability shall be unacceptable.

Modifications can be made to templates after creation, where users will have the ability to select if the changes are to be applied to existing logical devices using the resource buttons Yes, Yes to All, No, and No to All.

2.2.2 Access Control Functional Requirements

Functions shall include validation based on time of day, day of week, holiday scheduling, site code verification, automatic or manual retrieval of cardholder photographs, and access validation based on positive verification of card/PIN, card, and video.

The following features shall be programmable and shall be capable of being modified by a user with the proper authorization:

2.2.2.1 Time Zones

Shall define the period during which a reader, card, alarm point, door, or other system feature is active or inactive. In addition to Monday-Sunday, there shall be at least one day of the week called holiday. The following requirements shall apply:

- Time zone name: Shall be at least 24 characters.
- Time zone description: Shall be at least 40 characters.
- Start time: Shall define when the time zone becomes active.
- Stop time: Shall define when the time zone becomes inactive.
- In use box: Shall be used to activate the defined time period.
- Check off boxes: Shall be provided for each day of the week including at least one holiday.

2.2.2.2 Holidays

The application shall allow holidays to be entered into the System. Holidays shall have a start date plus duration defining multiple days. Holidays shall have a holiday type of 1, 2, or 3, which may be defined by the user. For example, Type 1 may be standard holidays, Type 2 may be half-day holidays, and Type 3 may be holidays for factory facilities only. The time zones defined for the holiday type shall be used in place of the normal time zone for the day on which the holiday falls.

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The following requirements shall apply:

- Holiday name: Shall be at least 24 characters.
- Holiday description: Shall be at least 40 characters.
- Date: Shall be the date on which the holiday falls.
- Type: Shall define holiday type 1, 2, or 3.

2.2.2.3 Response Codes

The System shall allow the user to enter a predefined code to represent a response to an alarm occurring in the facility. The following requirements shall apply:

- Response code name: Shall be at least 10 characters.
- Response code message window: Shall allow “free flowing” text to be entered, up to 255 characters.

2.2.2.4 Clearance Codes

The System shall allow the user to establish groups of readers at a facility for the purpose of granting or denying access to badgeholders. Clearance codes shall be assigned to companies and individuals employed by the company, and may be modified for individual users in the Badgeholder Maintenance application. The following requirements shall apply:

- Clearance code name: Shall be at least 12 characters.
- Clearance code description: Shall be at least 40 characters.
- Default time zone: Shall be selectable for a reader when added to this clearance code.
- Select time zone: Shall be selectable for the reader from a combo box if the default time zone is not desired.
- Search: The System shall be capable of searching by a reader description or location and have the ability to define search criteria.
- Clearance code reader list window: Shall display the selected readers and time zones.
- Added or deleted readers: The System shall provide a window indicating the number of cards that must be downloaded when a reader has been added to or deleted from a clearance code. This window shall also have provisions to download the cards immediately, later, or not at all. The download later function shall provide a means to schedule the time and date the download should occur.

- Clearance code download schedule: Shall allow the user to download the data at a later time and schedule a date and time. The dialog box shall include the date, time, and number of cards. It shall also be possible to edit or remove the date and time.
- The System shall provide the ability to create clearance codes that can have predetermined automatic expiration. The Clearance Code screen shall provide a checkbox to select “Never Expires” if the selected time zone will always remain in effect. The “Expires In” checkbox shall be selected to define the amount of time in which the clearance code time zone will expire. The System shall provide two text boxes which define the expiration designations. The first text box shall define the number and the second text box shall define the time increment from a drop down list including Days, Hours, or Minutes. For example, if the number 2 is entered in the first text box and Days in the second text box, the clearance code time zone will expire in 2 days.

2.2.2.5 Companies

Each badgeholder entered into the System shall be assigned a company code identifying the individual's employer. The Company Information dialog box displays and maintains information related to companies having access to the facility. The following requirements shall apply:

- The user will have the ability to search by a Company Code name and to define search criteria. The desired Company name may then be selected for editing from the "short" list.
- Company code: Shall be up to 40 characters.
- Company name: Shall be up to 40 characters.
- Address lines: Shall be at least 2 lines including up to 40 characters.
- City name: Shall be up to 40 characters.
- State: Shall be a 2 letter abbreviation.
- Zip Code
- Primary contact: Shall be up to 40 characters.
- First contact's title: Shall be up to 40 characters.
- First contact's phone number.
- Secondary contact: Shall be up to 40 characters.
- Second contact's title: Shall be up to 40 characters.
- Second contact's phone number.
- Definable captions: A minimum of 20 definable captions shall be able to be identified. The captions shall be up to 40 characters in length and shall supply customized information about the cardholders employed by a company based on the company's own needs. The field captions shall appear in the Badgeholder Maintenance application.
- Add clearance codes: The user shall be able to give access to groups of readers that are defined to a clearance code to individuals employed by the company.

2.2.2.6 Group Access

The System shall allow a user or group of users via Company selection, a temporary GRANT or DENIAL of access to specific readers or areas based on a pre-configured event. The group

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access function shall limit access to a group of cardholders, overriding all other access criteria. The group access shall have a start and stop time/date along with the assigned logical devices (Type Door).

The System shall support Multiple Logical Devices (Type Door) to be assigned to one Group Access Project. A Group Access Project shall be assigned to a card on the Card Information Screen of the Badge Viewer.

2.2.2.7 Events

The Event Maintenance application shall control processing done at the host computer that allows the user to associate nearly any input (trigger) with almost any sequence of outputs (actions) that the System is capable of executing. A trigger may be a single "input" or any number of "inputs" that need to occur before an action is executed. Actions shall be executed in the order of their user programmed sequence number. The following requirements shall apply:

- Within the Event Maintenance application, the user shall be able to:
    - Add event names: Names shall be up to 40 characters.
    - Select event type: Shall be selectable from the Event Type Maintenance application along with an event description of up to 40 characters.
    - Define event triggers: Event triggers shall be defined to indicate when the required trigger input must be used. Drop boxes shall provide information from previously defined fields.
        - *Trigger Type*: Shall indicate how often the trigger may occur in order to cause the event to happen. Choices shall be "repeatable," "once only," or "disabled." A once only event shall revert to "disabled" upon event execution.
        - *Reader ID*: Shall indicate the reader that must be affected to cause the trigger to occur.
        - *Alarm Type*: Shall indicate the alarm type that would trigger this event.
        - *Alarm Number*: Shall indicate the alarm number associated with the alarm that would trigger this event.
        - *Card Number*: Shall indicate the card number that would trigger this event.
        - *Date*: Shall indicate the date this trigger would have to occur for the event to happen.

- *Time*: Shall indicate the time this trigger would have to occur for the event to happen.
- *Group Code*: Shall display the group code associated with the group of doors or alarms that will trigger the event.
- *Clearance Code Cards*: Shall display the cards assigned this clearance code that will trigger this event.
- *Type of Transaction*: Shall display the type of transaction that would cause the event to occur.
- *Time Zone*: Shall indicate the time zone during which the trigger is enabled. No time zone shall imply that the trigger can occur at any time.
- *Company Code*: Shall indicate the company code that would cause the event to occur.
- *PIN Code*: Shall indicate the PIN code that would cause the event to occur.

o Define actions for the event: This function shall be used to define the following: a) A sequence number for the action to be executed upon this event being triggered. Actions will be executed in the order of their sequence numbers. A list of valid actions shall be provided. Choices shall include, but not be limited to:

- Override; unlock a reader or a group of readers.
- Arm alarm, software level, or a group of alarms.
- Arm input point or a group of input points.
- Arm output point or a group of output points.
- Shunt an alarm or a group of alarms.
- Shunt an input point of a group of input points.
- Shunt an output or a group of outputs.
- Void a card.
- Local grant or pop a door open.
- Issue alarm.
- Run a program.
- Issue a CCTV command.
- Activate output point.

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        - De-activate output point.
    - The command issued for the System to perform Parameters 1 and 2 shall be from the event processor parameters.

2.2.2.8 Alarm Pages

Application shall include the capability to create an unlimited number of customized alarm pages for the alarm monitor and each shall be assignable to users and user classes. The following information shall be individually configured for each alarm page:

- Alarm description: Shall provide a brief description of the alarm type.
- Default window state:
    - Normal: Alarm Page window shall be sized to fit available area.
    - Maximize: Alarm Page window shall be maximized within the alarm monitor.
    - Minimize: Alarm Page window shall be minimized within the alarm monitor.
- Default Map: Shall provide the capability to include a default map in the alarm page.
- Event Types: Shall provide the ability to select the individual event types that are to be indicated as alarms. Physical events from the hardware (default events) shall be associated with real-world events (event types), which can be tailored. The System shall allow an alarm state on an input point to be associated with the event type, which is appropriate for the particular device to which the input point is actually attached.
- Alarm Columns: Shall provide the ability to select the columns that will appear on the alarm page as well as the order in which they appear.

2.2.2.9 Event Types

The following requirements shall apply:

- Event type definitions: Definitions shall be shipped with system software but shall be capable, upon installation, of being modified, added to, or deleted from the System.
- Event type maintenance application: Shall allow the user to customize alarm color appearance, enter alarm text, or partition alarm types.
- Event type information: The following information shall be included: a) Alarm name: Shall indicate the name given to the alarm. b) Alarm description: Shall provide a brief description of the alarm type.

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- Re-issuance frequency: Shall indicate (in minutes), how often alarms shall re-issue if the alarm state continues.
- Global shunt status: Shall indicate whether alarms are shunted, overriding the individual alarm shunt status, or are armed or shunted on an alarm-by-alarm basis.
- Auto clear field: Shall indicate whether an alarm will be automatically cleared from the alarm monitor or “normal” operation for this alarm type shall occur.
- Force note field: Shall provide an indication to the user whether or not he or she entered an operator log comment when an alarm is received.
- Return separate alarm box: Shall indicate whether or not to treat the return to normal alarms as a separate alarm.
- Default alarm message window: This message shall be displayed on the alarm monitor if an alarm of this type occurs that does not have a custom alarm message.

2.2.2.10 Dynamic Graphical Maps

- The System shall provide the user with the means to add maps and indicator icons to maps that shall represent input/output points, logical devices, or cameras located throughout the System. System maps shall display the state and condition of alarm points. The System shall also provide the ability to monitor the channels or panels.
- The System Map Builder shall allow the user to graphically represent various resources such as logical devices on engineering floor plan drawings (maps). The drawings shall be in DWG (Vector), WMF, or BMP (Raster) format to represent a map with a corresponding indicator icon detailing the input/output points, logical devices, or cameras. When an alarm occurs, the associated map shall appear on the alarm monitor as a graphical interface and shall indicate the state and condition of the alarm point. The System shall allow multiple maps to be displayed at any single time.
- The System shall display maps created in AutoCAD. These AutoCAD drawings have defined layers for the separate elements within the enterprise map, which the user shall be capable of viewing from the Layers dialog box. Layers shall be able to be “frozen” or “thawed.”
- The Layers dialog box shall consist of three sections: a Layers List, Edit section, and Filters section. The Layers List shall identify the layers within the selected AutoCAD drawing. The Edit section shall include commands used in selecting and further defining layers. The Filters portion of the dialog box shall provide options to determine filtering properties. Each map created in the Map Builder shall contain icons that

represent the resources associated with the System devices. The icons available for positioning on the alarm map shall include logical devices, groups, maps, and CCTV cameras.

- The user shall have the capability to add and edit a resource, display resource text, and clean up a resource. The lower portion of the Map Resource dialog box shall allow for the definition of the icon position within the selected map.
- The horizontal placement shall be defined by entering values in the Starting X and Ending X boxes. The vertical placement shall be defined by entering values in the Starting Y and Ending Y boxes.

2.2.2.11 Brass Keys

Shall maintain information related to brass keys that are issued in the facility. The following requirements shall apply:

- Brass Keys Maintenance application: Shall allow the user to view any existing information in the Brass Keys dialog box. A user, with proper authority, shall be able to modify, add, delete, or partition brass keys from the system software.
- Brass Keys Maintenance shall include, but not be limited to:
    - ID number assigned to the brass key: Shall be up to 40 characters.
    - Type of brass key: Shall be up to 40 characters.
    - A description of the type of brass key: Shall be up to 40 characters.
- The ability to prevent the duplication of keys will be made available where users can disallow a key from being assigned to multiple users.

2.2.2.12 Badgeholders

Shall maintain information related to a badgeholder’s card access privileges in the System. Upon entering this application, a window shall appear on the screen. All actions (add, modify, or delete) involving badges and cards shall be initiated from this window. Access privileges shall be as defined for the company that employs the badgeholder. Access privileges shall be linked to the cards used to gain access to doors in the facility. Modifications shall be made by adding or deleting clearance codes, or by door types assigned to the cards or to a badgeholder. The following requirements shall apply:

- Badge Information window: This window shall allow the user to search for badgeholders in the System that meet certain search key information. The badge information window shall be divided into three sections:
    - Top (Search Field) section: Shall select the fields that will be returned in the search results area.
    - Middle (Search Key) section: Shall initiate a search for badge or card records.
    - Bottom section: Shall list the results of a search.
- In the Badgeholder Maintenance application, the following shall be minimum requirements:
    - Add new badges: Information shall be entered onto the Badge Info property sheet, displayed on the Badge Maintenance dialog box. The fields displayed on the Badge Info property sheet shall be related to general Badgeholder information and shall include:
        - Badge Number: The unique badge number shall be up to 15 digits.
        - Issue Date: Shall be the date the badge was issued.
        - Expiration Date: Shall be the date the badge expires.
        - Badge Type: Shall be as defined by System Administrator.
        - Badgeholder Last Name: Shall be a minimum of 40 characters.
        - Badgeholder First Name: Shall be a minimum of 20 characters.
        - Badgeholder Middle Initial.
        - Company: The Badgeholder's company shall be selected via the search mechanism.
        - Photo ID Enrollment and Image View.
        - Signature Capture and Signature View.
    - The System shall also be capable of accepting up to 10 user-defined fields containing at least 25 characters to the property sheet.
    - User Defined property sheet: A tab shall be definable and contain up to 20 definable fields containing up to 40 characters. The property sheet label and the data fields shall be defined in the control record under System hardware.
    - Assigning cards: Each card that is assigned shall be defined to a badge, and shall possess the access privileges of the company to which it is assigned. Card information dialog box shall include, but not be limited to, the following:

  - Unique card number between 1–15 digits in length.
  - Badge type as defined in the Badge Maintenance application.
  - The company code associated with this particular card. The card shall take on the default access/clearance codes for this company.
  - Date the card was issued.
  - Date the card will expire shall including month, day, and year.
  - Last date and time the card attempted access.
  - Door ID of the last door the cardholder attempted to access with this card.
  - The status of this card, which may be selected from a drop box. Selection shall include at a minimum active, disabled, expired, lost, stolen, terminated, unaccounted, or void.
  - It shall be possible to grant executive privilege for this card and allow it to:
    - Obtain a valid access at any reader on the node.
    - Override doors.
    - Download this card information to the panel.
    - Issue a trace alarm whenever the subject card is used; however, access shall not be denied.
  - Issue level (0-15): For systems using a magnetic stripe card with an issue number field, the issue number of the card shall indicate how many times this card has been issued.
  - In, out, or undefined (In-X-It status): Shall provide a status indicator of a card utilized on specific hardware.
  - PIN code: Shall be provided if card and keypad number are required for high security. The PIN code shall support up to 8 digits. The System shall also support checkbox to issue random PIN codes.
- Card Information property sheet: Shall display information related to the cards assigned to a badgeholder. The badge number and badgeholders name shall appear in the section labeled cards, and any cards that are defined shall appear below the badge number, forming a hierarchical list below the badgeholder’s name. The information included on this hierarchical tree shall appear in the following order:

  - Badge number – Badgeholder's name
  - Card one – Clearance codes and door codes
  - Card two – Clearance codes and door codes
- Brass Keys: Shall be assigned to badgeholders on the Brass Keys property sheet on the Badge Maintenance dialog box. When added, they shall appear on the brass key list on the property sheet. Brass Key property sheet shall include, but not be limited to the following:
  - Issue date
  - Due date
  - Return date
- Company Information: Each badge defined in the System shall be associated with a company.

2.2.2.12.1 Badge Manager

The Badge Manager will allow users to quickly assign an access card and badge record in Pro-Watch. This wizard will not be an all-encompassing wizard as only the basic required fields will be taken into account when using this wizard. The wizard will allow users to add a card to the System based on company-driven clearance codes with four entry field and less than 7 total clicks. The overall goal from a time to program standpoint is to offer a solution where a new badgeholder and card record can be completed down to less than 30 seconds by using this wizard.

The wizard will be made available from the main Welcome Wizard as well as by right clicking on the listing of active badge records in the main listing on the left hand side of the badge window. When performing a right-click, the user will see a selection window appear that will state "Create New Record." When selecting this option, the Badge Manager Wizard will appear and guide the user through a record entry.

2.2.2.13 Video Image / ID Badging System

The System shall include seamlessly integrated ID badging system/video image system.

2.2.2.13.1 Badge Fields

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- The System shall provide a minimum of 37 default badge fields. Each field shall be displayed in a grid in which the each of the attributes of the field is displayed in a separate column.
- Fields marked as “true” in the user-defined field shall have the capability to be deleted as desired; those marked “false” shall be system fields that shall not have the capability to be deleted. The System operator who has been granted proper System permissions shall have the capability to view, add, edit, and delete badge fields.
- Badge Field Properties:
    - Column Name - Descriptive column name.
    - User Defined - Will display True when adding a new field. This is not user definable.
    - Display Name - Name applied to field when it is assigned to a Badge Page.
    - Allow Nulls - This check box is only activated if Date, Date Time, or Time Data Types are selected. When checked it allows the field to contain null values.
    - Data Type - Select the data type appropriate to the data the field is intended to capture the choices are:
        - Auto-increment - When selected this field is automatically incremented to the next highest integer, it starts with the number entered into the “Auto Increment Start” Field under Auto Increment Options.
        - BLOB - Select to display an associated BLOB type. Note - This data type will be displayed only if there exists on the system a BLOB type, which is not already assigned to a badge field and the resource type assigned to that BLOB Type is not Badge Type.
        - Bool – The bool (Boolean) is a Data Type checkbox, which the user shall be able to choose to indicate a true or false (yes or no, “1” or “0”) condition for a badge field.
        - Date - Select to create a date field.
        - Date time - Select to create a date/time field.
        - Int - Select to create an integer field.
        - Money - Select to create a field, which shall display and store monetary values.
        - Resource - Select to create a field to hold a resource. A resource can be any item represented by an icon under the Database Viewer.

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    - Short - Select to create a field, which can hold an integer from 0 to 67,535.
    - Time - Select to create a time field.
    - User defined - Selection of this datatype shall create a pick list from which the badging user can select predefined values. The System shall support Badge Field pick-list definitions. For example: Badge eye color pick-list may be user defined to include brown, blue, green, hazel, gray, etc. The values are defined by selecting the “Edit User Defined Values” button.
    - Varchar - Select this option to define a text data field.
  - Indexed - Select true to create an index on the selected field. This may be desirable if searches are conducted on the selected field. This is not available on Boolean fields.
    - Unique - Select true to require all entries into the selected field to be unique.
    - Data Size - This can only be set for Varchar fields, values can range from 1 to 4000.
    - Resource Type - If the resource data type is selected this field is activated allowing the user to select from the available resource types.
    - BLOB Type - Found under BLOB Options, this field is activated when BLOB is the selected data type. Select the desired BLOB Type from the drop down list.
    - BLOB Text - Also found under BLOB Options, controls the display of the label on the select BLOB Type. The choices are - Don’t display, Display on Top or Display on Bottom.
    - Auto Increment Start - Found under Auto Increment Options, this is activated when the auto-increment data type is selected. Defines the starting point for the newly defined automatically incrementing field.

2.2.2.13.2 Badge Designer

The Badge Designer shall allow the user to edit or create new front and back badge design layouts. The System shall be provided with default “Contractor” or “Standard Employee” badge designs. The user shall be able to add several types of Badge Designer items by clicking the appropriate button from the corresponding toolbar.

- The toolbar buttons shall include:
  - Save: Saves Badge Designer settings.
  - Exit: Exits from Badge Designer.
  - Idle: Selects one or more Badge Designer items.
  - Place Text: Inserts text into Badge Designer.
  - Place Bitmap: Inserts bitmap image into Badge Designer.
  - Place Photo: Inserts photograph into Badge Designer.
  - Place Barcode: Inserts bar code into Badge Designer.
  - Place Shape: Places shape into Badge Designer layout.
  - Place Signature button—use this button to place a signature into the Badge Designer layout.
  - Change Layering button—choose this button to open the Badge Item Layering dialog box.
  - Select Next Item—click this option to select the next Badge Designer item Badge Designer layout.
- Badge Designer Measurement Properties: This option shall allow the user to define the Badge Designer ruler to use inches or millimeters.
- Badge Designer Zoom Factor: This option shall allow the user to zoom to 200%, 100%, 75%, 50%, 25%, Fit to Window, and Custom.
- Grid Settings: The System shall allow the user to display a grid on any badge design, determine the density of the badge design grid, and align selected badge objects to align to a grid.
- Badge Designer Block-outs: The System shall allow the user to define an area of a badge that is “blocked” from the print area. A block-out shall be utilized to prevent the printing onto a certain section of a card, such as the magnetic stripe or smart card chip.
- Badge Designer Properties: The user shall have the capability to define all the properties of each Badge Designer item. The user shall have the capability to establish the color properties of signatures and bitmaps or choose the types of shapes to add, such as lines or rectangles.

2.2.2.13.3 Bar Codes

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- The System shall support data from the badge field database to be linked directly to the record holder and visible in a barcode output. The barcode shall have the ability to span multiple fields and shall allow support for the following types of barcode formats:
    - 2of 5
    - 2 of 5 Interleaved
    - 3 of 9
    - Codebar
    - Code 39
    - Code 93
    - Code 128
    - EAN 128
    - EAN 13
    - ITF
    - MSI
    - Code 11
    - Code B
    - Telepen
    - UPC A
    - UPC E
    - Code 128A
    - Code 128B
- The System shall provide a dialog box allowing the user to select all that apply:
    - Show Text: this option shows the barcode data in text, below the bar code.
    - W Bearer Bar: this option shall display the width bearer bars (top and bottom borders).
    - H Bearer Bar: this option shall display the height bearer bars (left and right borders).
    - Check Digit: this option shall provide for error checking.

- Show Spacer: this option shall display the space before and after the barcode data.
- Switch Text: this option shall switch the top and bottom text.
- Check Digit 2: this option shall provide for error checking.
- Arial: this option shall designate the text font type.
- Courier New: this option shall designate the text font type.
- Bold: this option shall designate the text font type.
- Italic: this option shall designate the text font type.

2.2.2.13.4 Photograph Properties

The System shall allow the user to define the Photo Index and enter a value between 1 and 99. This value shall correspond to the index setting of the photograph BLOB type. This value shall determine which photograph shall be printed on the badge if the badgeholder has more than one photograph associated with his record.

The System shall allow the user to "Stretch Width" to automatically stretch the width of the photograph to fill the display box on the badge.

The System shall allow the user to "Stretch Height" to automatically stretch the height of the photograph to fill the display box on the badge.

The System shall allow the user to select "Keep Aspect Ratio" to keep the ratio of the width of an image to its height, thus avoiding distortions.

The System shall provide a Ghosting section of the dialog box and shall allow the user to move the scroll bar indicator to the desired effect.

The System shall allow the user to choose the badge orientation for portrait or landscape. The System shall allow the user to choose the option to print both sides if the printer supports duplex printing (printing on both sides of the card).

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2.2.2.13.5 Layering Badge Items

The System shall allow the user to properly layer badge layout items within a selected layout.

2.2.2.13.6 Badge Profiles

The System shall allow the user to add, edit and delete Profiles that establish control information for the access page, partition page, assets, and searchable card fields. Profiles shall include an Auto Disable Card function, which automatically voids a card if a defined timeframe has elapsed without a card read. The System shall allow the user to design the layout of personnel record views, with the capability of creating multiple views for assignment to operator classes, for display of selected fields in the database. Badge fields shall be user definable and shall not be limited in the number or type of fields, providing the user flexibility to create and delete fields as the requirements change for each location. Multiple graphic fields shall be supported to display photos of the badgeholder, cars, and/or assets as well as scanned documents. The System shall provide programmable defaults for badge profiles allowing the user the ability to set a default value for each field placed on a page when building a badge profile. The user shall have the capability to program required fields to make badge profile creation consistent throughout the System, automating the data entry for common types of badge information.

2.2.2.13.7 Copy Card Function

The Copy Card function shall provide the user the ability to automatically recreate clearance codes and all other data (user level, expiration, special access, etc.) on the card record to a new card. The user shall have the capability to choose copy, and all significant card information shall be ‘memorized’ and is used later during the paste operation. The paste function shall work from the state of the card at the time of the copy, not at the time of the paste.

2.2.2.13.8 Progressive Search Engine

The System badging module shall include progressive search engine that shall allow the operator to quickly pinpoint any information in the badge record. This search shall provide the capability to be performed on any user-defined field that exists in the badge record. The System shall utilize .NET technology and full text indexing; the search criteria shall efficiently target the required data while using a minimal amount of system resources.

2.2.2.13.9 Trace Functionality

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The System shall provide “live trace” functionality which provides the ability to select an event defined as the “selected event.” The System shall invoke and visualize all live events associated with the “selected event,” specifically providing a streaming event capability.

Live trace functionally shall be available only if the “selected event” has an associated logical device or badgeholder. Events shall be visualized in a separate window dedicated to displaying the live transaction associated with the selected logical device or cardholder.

Badgeholder trace shall include event:

Date

Time

Description

Card number

Badgeholder

Logical device

The Badgeholder trace shall be based in the System alarm monitor, which after priority, events will be sorted by the time they are received at the host as provided in the standard alarm monitor functionality.

The trace-on feature shall have the ability to have multiple trace windows open simultaneously. A user shall be able to print events displayed in the Trace-on Window to a printer. The System Live Trace-on Window shall display events in a single pane. Specifically, the Live Trace-on pane shall visualize all events including the ack/unack/cleared alarm subset. The System Live Trace window shall exclusively display events that occur after the Live Trace window is opened.

Live Trace information shall be visualized on a standard alarm monitor type window. The alarm monitor window shall include heading information including the label Live Trace and shall include type and date range of the historical trace.

The Live Trace alarm screen shall include an option to define the maximum number of events visualized at one given time. The default visualization shall be 100 events. A maximum of 10,000 and a minimum of 10 events shall be included.

Live trace events shall continually stream at the bottom of the Live Trace Window.

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The Trace-on feature shall be accessible from a drop-down menu item. The System shall present a window where the user can enter a card number or select a logical device.

The System shall provide Historical Trace functionality with the ability to select an event defined as the selected event. The System shall invoke historical events associated with the selected event.

The Historical Trace function shall provide options to define a historical trace range selected from time A to time B with second granularity and optional geographic time zone information. The default time zone shall be designated as the time zone of the client workstation.

The Historical Trace function shall provide predefined options for:

One day back

One week back

Two weeks back

One month back

One year back

The Historical Trace feature shall operate with information available in the active database. Historical Trace functionally shall be available only if the selected event has an associated logical device or badgeholder.

Historical Trace information shall be visualized on a standard alarm monitor type windows. The alarm monitor window shall include heading information including the label Historical Trace and shall include type and date range of the historical trace.

2.2.2.14 Users

Shall maintain information related to the users of the System software, i.e., the individuals who have access to the database. Users entered into the System shall take in the access privileges of the class to which they are assigned. The following requirements shall apply:

- Defining users information: When defining users, it shall not be necessary to modify information related to alarm types, programs/functions, workstations, alarm pages, alarm toolbar, and partitions unless it is necessary that the user’s privileges be different from those of the user’s class.

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- Modifying user information: Information related to a user shall be modified on dialog boxes, which are accessed from the Main User Maintenance dialog box.
- User Maintenance application: Shall allow a user to be added, modified, partitioned, or deleted. User information shall be in addition to that defined for the user's class. This information shall include, but not be limited to, the following:
    - ID name: Shall be at least 10 characters.
    - Class: Selection of the class assigned to the user.
    - User's last name: Shall be at least 40 characters.
    - User's first name: Shall be at least 40 characters.
    - Badge number: Valid badge number assigned to the user.
    - Expiration date: Date the user ID expires.
    - Alarm types: Shall indicate a user's alarm.
    - Add programs/functions: Shall allow additional programs and functions to be added to a user.
    - Add workstations: Shall allow additional workstations to be added to a user.
    - Add alarm page: Shall allow additional alarm pages to be added to a user.
    - Modify alarm toolbar: Shall allow the toolbar to be modified for a user.

All inaccessible resources shall be hidden from the user's view. Users who have limited permission sets shall not be able to see resource selections they have not been assigned permission to access in the Database Configuration viewer.

The System shall incorporate the use of a Permission Manager. This will be used for the creation and assignment new users to the System. The Permission Manager will take advantage of the existing permission classes. It shall be made available to users through either the shell entry manager or by right-clicking in the User workspace and selecting "New." When new is selected the user will be prompted if they would like to utilize the Permission Manager. If the user answers "Yes," they will be shown the windows outlined below. If the user answers "No," they will be given a standard unpopulated class record for user entry.

2.2.2.15 Elevator Control

The elevator control shall be of the System intelligent controller-based line of devices. The elevator control shall include the following functional features:

- Standard Relay Output Selection: The ability to program predefined readers and relay outputs through device templates which will allow assignment of devices for floor control.
- Relay Output Selection with Floor Select: The ability to program predefined readers, inputs, and relay outputs through device templates which will allow assignment of devices for floor control with selection lockout abilities.
- Any unused Inputs or Outputs on a sub-panel board utilized for elevator control shall be usable for non-elevator control related devices. Example, if the first 8 outputs on a 16-output board are used for elevator control, the remaining 8 outputs shall be usable for non-elevator control functions.

2.2.2.16 Reports

The reporting module shall provide an HTML style of operation and be self-contained within the System application. The reporting module shall provide a split screen where the upper portion will display the standard report, while the lower section will show the search criteria. The report preview shall be provided in a separate viewer window and allow for scheduling, exporting, and printing of reports. The System operator shall be allowed to save reports to their profile and have them available through Quick Tasks. The Quick Tasks shall be displayed on the right side of the screen at all times and will be customizable per user/user group. The Reports toolbar shall provide icons which enable the System operator to preview a report, print a report, export a report, add to “My Reports” folder, schedule a report, add a custom report, and clear selection criteria data. The Export Report button shall enable the System operator to export any report as delimited text, an Excel spreadsheet, an Adobe PDF, rich text format, and HTML.

The standard reports that shall be included with the System:

2.2.2.16.1 Access Reports:

- Badgeholder Access to a Logical Device
- Card Status
- Clearance Code/Badge Access
- Last Access at a Logical Device
- Last Access by a Badgeholder
- Logical Device Access by a Badgeholder

- Mustering

2.2.2.16.2 Badge holder Reports

- Area Attendance
- Badgeholder Detail
- Badgeholder Summary
- Key Assignment List

2.2.2.16.3 Company Reports

- Company Clearance Code
- Company Summary

2.2.2.16.4 Configuration Reports

- Badge Profiles
- Badge Types
- Brass Key List
- Channel Configuration
- Classes
- Clearance Codes
- Database Tables
- Device Types
- Dialup Schedules
- Event Points
- Event Procedures
- Event Types
- Guard Tours
- Hardware Classes
- Hardware Templates
- Logical Devices
- Modem Pools

- Panel Types
- Partitions
- Printers
- Response Codes
- Routing Groups
- Time Zones
- Workstations

2.2.2.16.5 Logging Reports

- Database Audit Log
- Compliance and Validation
- Event Log
- Operator Log

2.2.2.16. User Reports

- User Detail Report
- User Summary Report
- User Group Report
- User Group Summary Report

The System shall provide reporting capability for printing of selected system transactions from the disk files by specific time and date selection, range from time and date to time and date, or from start time to end time each day of the selected date range.

Provide feature to generate a history report for an alarm point(s) state. An alarm point state shall be defined as Normal, Alarm, Trouble, or Ajar.

Provide feature to generate a history report of system alarms. A system alarm state shall be defined by panel and include any of the following information: communication, ground fault, power, panel reset, low voltage, panel tamper, and loop communication.

Provide feature to generate a history report for a card(s) state. A card state shall be defined as Normal, Trace, Not Found, Anti-Passback Violation, PIN Violation, Time Zone Violation, Site Code Violation, or Expired Card. Additional search criteria shall include cardholders who meet up to at least 3-note field restriction and filter the report with defined reader location(s).

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Provide feature to generate a history report for system operator activities. Activities shall be at least, but not limited to, acknowledged transactions, database file modification, and comments made to alarm events. Provide complete database reporting of all data programmed into the System data files.

2.2.3 System Administration

2.2.3.1 Tape Backup

The System server(s) shall utilize a tape backup system for backup and archiving capabilities. The System shall allow the user to perform backups at predetermined times including hourly, daily, weekly, and monthly intervals. The System shall also support differential database backup. A differential database backup shall record only those data changes made to the database since the last full database backup.

2.2.3.2 Archiving

The System shall allow System operators to archive information to a backup source. The System shall provide table maximum alerts, which shall notify users of the size of their database. The System shall provide an archive feature, which supports a start date and end date of information to be archived with the following options:

- Archive only — this option shall archive the designated event records defined by start and end times.
- Archive and Purge — this option shall archive the designated event records and the purge them from the System.
- Purge only — this option shall remove the event records from the System.
- Restore — this option shall restore previously archived event records.
- Abort — this option shall abort a restore/archive action.

2.2.3.3 Data Transfer Utility

The System shall provide a data transfer utility that shall make the importation of information to the System database efficient and accurate. Each data source shall be defined as a profile in the Data Transfer Utility. A profile shall define all aspects regarding how the data will be loaded to the System, including the type of data load, where the data comes from, the type of logging, and the mapping between the System and the data source.

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- The System shall provide option buttons to specify a data source:
  - Delimited: Data in a text file, individual fields separated by I-vertical bars, commas or tabs.
  - Fixed: Data with a fixed length shall allow import but cannot export fixed length data.
  - SQL server native database driver
  - ODBC (Open Data Base Connectivity): An Application Programming Interface (API) that allows import from and export to a database.
  - LDAP (Lightweight Direct Access Protocol): An Internet protocol that shall allow import from and export to a database.
  - Images: Allows export but cannot import images as data.
- The Profile Description tab shall allow at a minimum, definition of:
  - Profile ID, which includes unique profile ID used to identify the profile.
  - Profile Description
  - File Delimiter, which defines the text character that separates the data fields in the delimited data file. The System shall provide a drop-down list:
    - I-Vertical Bar
    - Comma
    - Tab
  - Text Qualifier. The System shall provide a drop-down list for delimited database text qualifiers:
    - <None>
    - Double Quote { " }
    - Single Quote { ' }
  - Download access changes to Panels. The user shall select this check box to download the changes to the respective panels, only if access has changed.
  - Data File Key Column #. This shall be the delimited field number in the delimited file that is used to determine whether a record shall be an Update or an Insertion or the Start and End column numbers of the fixed-length key field.

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- System Key Identifier. This is the System data field that maintains the keys of the external system. This shall be used to determine if a record shall be an Update or Insertion.
- System Database Location. This shall display the read-only fields that shall be enabled when a System Key Identifier is entered. The first field shall display the name of the database table and the second field shall display the name of the database column in that table to which the data shall be transferred by DTU.
- File Transactions. The type of transactions this profile shall contain. The System shall provide the following option buttons:
    - Insert Only: If a "Data File Key Column #" shall be provided, the DTU will only insert a new badge record if the key column value is not found. An error shall be displayed in the log file if an existing badge record is found. If no "Data File Key Column #" is provided, every record will be inserted into the System.
    - Updates Only: The DTU shall use the "Data File Key Column #" to look for the matching System record. An error shall be logged in the log file if the badgeholder is not found in the System database.
    - Inserts, Updates: The DTU shall use the "Data File Key Column #" to look for the matching System record. If a matching record is not found, the DTU shall insert the data. If a matching record is found, the record shall be updated.
- Communications Server. This shall be the name of the System server to which the data will be loaded.
- Database Server. This shall be the name of the System database to which the data will be loaded.
- Database Name. This shall be the name of the database.

- In addition, depending upon the data source type, additional tabs shall be provided to configure the import procedure:
  - Data files tab shall provide the location of the data source and option buttons for which files are desired to be loaded, including: Load all files in Directory, Load only the file with the following name, Load all files that match the following naming pattern. Selecting this option will load all the files that match the specified naming pattern. Wildcard "*" and single character wildcard "?" shall be used to specify a naming pattern.
  - Logging tab shall allow the System to generate a log file for scheduled data transfer sessions, including e-mail configuration.
  - Data Mapping tab shall allow the configuration of mapping rules. Mapping rules determine how each column value in the external database will be converted into a System column value. For example, one mapping rule could be "whenever you see the value '123' for Department_ID, map it as 'Human Resources' when importing the record into the System."
  - Remote Data Tab shall define where the data source is located and defining the Key Locator to determine if a record is an Update or Insertion.
  - Images tab shall allow for JPEG photo import and defining location and image naming sequence.
  - Manual Load tab shall allow the user to load a sample data file to the System. After a sample data file is loaded, the icon for all rows shall display as a black arrow. The icons shall change to a green circle if the sample data is loaded successfully to the System or a red circle if there was an error in loading the data. The System shall display the reason for the failure by double-clicking on a row with a red circle.
- The System shall also support data exports to synchronize the System with other systems that it needs to interact with. Such synchronization shall be easily accomplished by making the necessary edits in the System and then exporting the edited data to the external database.

2.2.3.4 Generic Channel Interface

- The System shall provide the ability to define generic communications channels over serial port or TCP/IP network socket including IP address and port/socket, to support custom integration of external foreign devices. The System shall generate events based on data received from the channel matching operator pre-defined instructions.
- The System shall allow the user to define a Channel Description and provide an Installed checkbox.
- The System shall allow Channel Definition as follows:
    - Channel Type drop down list shall include Generic.
    - A Generic channel shall have no sub-hardware.
    - A Generic channel shall support serial ports and TCP connection methods.
    - A Generic channel shall provide the following tabs:
        - Define Channel Information
        - Communications
        - Parameters
        - Events
        - Partitions
- The user shall have the capability to define:
    - Geographic time zone from a drop down list.
    - Attempts - which shall define the number of times the server will try to communicate with this channel before an alarm is generated.
    - Poll Delay (ms), which shall define the number of milliseconds between each poll cycle.
    - Communications Break, which shall define the number of poll cycles that will occur between each communication break test. A communication break shall be a random sequence of characters sent across the channel to test the line connecting the device and the server.
    - Spool Directory, which shall be enabled only after a Log Printer Channel is configured. Path shall be displayed when the Log Printer Channel is edited.

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  - Poll String shall be enabled to poll an unsupported hardware device. The required Poll String for the unsupported hardware device shall be found in the associated Technical Manual.
- The user shall have the capability to define inbound messages in the standard event definition screen to define the translation string from the generic device.

  The translation string shall be a string of ASCII and control characters, which acts as triggers for the event when detected in the input stream. The user shall utilize a standard event procedure to define outbound messages such as an acknowledgment back to the generic device.

2.2.4 Application Localization

The System shall support at least 7 languages including English. The languages available must include German, French, Spanish, Italian, Chinese (simplified), Portuguese, and Norwegian, All database resources will be localized, and will include a standard U.S. English help file.

2.2.5 Event Manager

The System shall utilize an event manager as a component of system administration and offer the ability to have users control the amount of data stored as well as a quick snapshot of the logged data in the system. Using the various logs in Event Manager, the user will be able to gather information about events, auditing, and operator actions. The logs are defined as follows:

2.2.5.1 Event Log

The event log contains events logged by the application and events from within Pro-Watch.

2.2.5.2 Audit Log

The security log can record security events such as valid and invalid logon attempts, as well as events related to resource use, such as creating, opening, or deleting files. An administrator can specify what events are recorded in the security log. For example, if you have enabled logon auditing, attempts to log on to the system are recorded in the security log.

2.2.5.3 Unacknowledged Alarms

The unacknowledged alarms log will allow users to control items that are currently being dumped into the UNACK_AL. The ability to control what data is being inserted is important as a large majority of customers are not utilizing the alarm monitoring functionality. The ability to have the information easily truncated will be advantageous for smaller MSDE systems where database size limitations exist.

A new resource will be placed on the left pane of the Administration Viewer. When clicking on the Event Manager dialog (or icon), the tree will expand to show the various logs within the Event Monitor. The logs that will be available initially will include Audit, Event, and Operator. Highlighting any of the three options will result in a listing of data for the appropriate log in the right pane viewer. Right clicking on any of the resources will allow the following options:

2.2.5.3.1 Save Log

This will allow the user to save the information in the log as a text (txt) file and the path for the file save will be user definable.

2.2.5.3.2 Clear All Events

This will allow the user to clear all of the events that are in the view, prior to executing the clear, a dialog box needs to warn the user that this action will remove the events from the database, as well as recommend that the data should be archived prior to deletion. If the user wishes to acknowledge the message and clear the log, a secondary box will appear re-confirming the deletion.

2.2.5.3.3 Properties

This option will allow the user to program the size for the log size as well as program auto purging of events. The log size will be user definable selection, which will act as a trigger for purge options. The purge options available are defined as follows:

- Overwrite when needed
- Overwrite events older than ‘x’ days. The number of days will be user selectable.
- Do not overwrite; this will require the user to manually purge the events.

2.3 Hardware Requirements

2.3.1 Hardware Support

The System shall support, at a minimum, three separate manufacturer's hardware panel platforms simultaneously. System hardware shall support:

- 10Base-T and 100Base-T head end communication
- Up to 255 time zones per IC
- Up to 255 holidays with up to 3 types per IC
- Up to 512 inputs per IC with custom EOL resistance values
- Up to 512 outputs per IC
- Over 300,000 cardholders per IC
- Up to 64 doors/card readers per IC
- Timed anti-passback
- Up to 8 custom card formats per reader
- Customized ladder logic utilizing triggers and procedures
- Elevator control up to 128 floors including floor select monitoring

2.3.2 Server/Workstation Hardware Configuration

2.3.2.1 Lite Edition

- System server shall support Microsoft Windows 2003 Server or Windows 2000 Server, Windows XP Professional or Windows 2000 Professional with MSDE. Refer to Section 4 for minimum CPU requirements.

2.3.2.2 Professional Edition

- System server shall support Microsoft Windows 2000 Professional, Windows 2000 Server, Windows XP Professional, and Windows Server 2003 with MSDE. Refer to Section 4 for minimum CPU requirements.

2.3.2.3 Corporate Edition

- System server shall support Microsoft Windows 2000, 2003, and XP and SQL Server 2005 MSDE.
- Corporate Edition server activity levels:
  - LCS - Low Activity Corporate Site (less than 10,000 transactions per day)
  - MCS - Medium Activity Corporate Site (less than 50,000 transactions per day)
  - HCS - High Activity Corporate Site (more than 50,000 transactions per day)
- Refer to Section 4 for minimum CPU requirements.

2.3.2.4 Enterprise Edition – Regional Servers

- System server shall support Microsoft Windows 2000 and SQL data engine. The System shall provide at least three levels of regional server configurations based on activity.
- Regional Server activity levels:
  - LRS - Low Activity Regional Site (less than 10,000 transactions per day)
  - MRS - Medium Activity Regional Site (less than 50,000 transactions per day)
  - HRS - High Activity Regional Site (more than 50,000 transactions per day)
- Refer to Section 4 for minimum CPU requirements.

2.3.2.5 Enterprise Edition – Enterprise Servers

- System server shall support Microsoft Windows 2000 and SQL data engine. The System shall provide at least three levels of Enterprise server configurations based on activity and regional servers required.
- Enterprise Server activity levels and regional server support:
  - LES - Low Activity Enterprise (1-2 Regional Servers, less than 40,000 transactions per day)
  - MES - Medium Activity Enterprise (3-5 Regional Servers, less than 100,000 transactions per day)
  - HES - High Activity Enterprise (6+ Regional Servers, more than 100,000 transactions per day)
- Refer to Section 4 for minimum CPU requirements.

2.4 Field Controllers

2.4.1 System Controllers

The security management system shall be equipped with access control field hardware required to receive alarms and administer all access granted/denied decisions. All field hardware shall meet UL requirements. The supported field hardware will include, but not be limited to, the following components:

2.4.1.1 Intelligent Controller (IC)

The IC shall link the security management system software to all other field hardware components (card reader modules and input and output control modules). The IC shall provide full distributed processing of access control and alarm monitoring operations.

Access levels, hardware configurations, and programmed alarm outputs assigned at the administration workstation shall be downloaded to the IC, which shall store the information, and function using its high-speed, local Freescale ColdFire 5282 processor. All access granted/denied decisions shall be made at the IC to provide fast responses to card reader transaction. The System shall provide the user the capability to query the IC to get a snapshot of memory availability, stored transactions and events, etc.

- IC Networking - The IC shall include a network-based interface module. The module shall be 10/100 MBPS Ethernet-based and capable of residing on a LAN or WAN without connectivity to a PC serial port. The IC network interface module shall be able to communicate back to the database server though industry standard switches and routers.
- Off-line operation - In the event that the IC loses communication with System software, it shall continue to function normally (standalone). While in this off-line state, the IC shall make access granted/denied decisions and maintain a log of the events that occur. Events shall be stored in local memory and uploaded to the System software after communications are restored.

- IC Features
  - Integrated Ethernet—The IC shall include integrated Ethernet providing for fast downloads.

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- o Embedded Web Server—The IC shall include embedded Web Server for ease of configuring key hardware attributes.

  - Web Server shall be password protected with specific user account.

  - User names and passwords for Web Server access shall be downloadable from the host.

  - Web Server shall optionally be disabled. On by default, off by option.

- o Communications—The IC shall include a primary and a secondary port for the purpose of communication to the host computer. The following communication formats shall be supported:
  - RS232 at a speed of 38.4 KBPS
  - RS485 at a speed of 38.4 KBPS
  - Ethernet at a speed of 10 MBPS or 100 MBPS (10baseT, RJ45)
- Ethernet—IC device shall appear as a SNMP compatible device on the Ethernet network, reporting status, name and address. It shall have the option of disabling this support.
- IP Addressing—The IC shall support static and dynamic IP addressing models.
- FIPS—The IC shall provide FIPS support of 128-bit credentials
- Encryption—The IC shall support FIPS 197 encryption.
- o Memory—The IC shall include 32 MB RAM and 16 MB Flash. Real time program updates and overall host communications shall utilize flash memory. The standard IC shall accommodate a card database of up to 300,000 cards and a transaction buffer capable of storing 50,000 transactions.
- o Additional ports—Shall be provided for connecting card readers and data gathering panels via RS485 multi-drop wiring configuration. The IC shall have 2 logical and 2 physical RS485 ports supporting 4000’ in two directions. Additional ports shall be supported utilizing the MX8 multiplexer. Each IC shall support up to a combined total of 32 boards connected in any combination.
- o Devices—Up to 32 devices consisting of reader interface modules, alarm input modules (AIM), and relay output modules (ROM) shall be supported. The devices shall be connected in any combination.
- o Processor—The IC shall include a Freescale ColdFire 5282 Processor.

- o Readers Capacities—Reader functionality and connectivity will be achieved through reader modules, and not directly to the IC. The IC will, however, support at a minimum the following:
  - Up to 8 card formats and facility codes
  - Multiple card technologies
  - Biometrics interface support
  - Smart card interface support
  - Integration with other manufacturers' card readers
  - Issue code support for both magnetic and Wiegand card readers
  - Up to 8 digit PIN codes.
- Real-Time Clock—The IC shall include real-time clock supporting:
  - Geographic Time Zones
  - Daylight Saving Time
  - Leap Year
  - 4-bit parallel accurate to 50 ppm
- o Redundant Communication—The System shall provide a redundant or secondary means of communications with System intelligent controllers configured on a communication channel. A channel provides the connection between a regional/local server and a panel or hardware device. The System shall support various types of channels to support numerous hardware devices, however, only a System intelligent controller shall be configurable for redundant communications support.

  If the primary method of communications fails, the System shall automatically switch over to the secondary method. The possible primary/secondary combinations shall include:

  - TCP/Dial Out
  - TCP/TCP
  - TCP/Hardwired
  - Hardwired/Dial Out
  - Hardwired/TCP
  - Hardwired/Hardwired

- o Electrical Power—Primary input power shall be 12 VDC +/- 10% @ 400 mA with an operating range of 10 VDC to 16 VDC. The IC shall be equipped with an uninterruptible power supply (UPS) and backup battery.

2.4.1.2 Single Reader Module (SRM)

The SRM shall provide an interface between the IC and the card readers. The SRM shall operate with any card reader that produces a standard Wiegand (Data 1/Data 0 or Clock and Data) communication output. A single IC shall be able to multi-drop up to 32 SRMs on four separate RS485 ports. The following requirements shall also apply:

- Up to 32 SRMs shall be connected to each IC, distributed across the four RS485 ports.
- Each SRM shall include 2 supervised inputs and 2 relay outputs.
- Up to 8 unique card formats shall be supported.
- The SRM shall support an integrated card reader/keypad.
- The SRM shall support 3 access modes upon loss of communication with the IC. These modes shall be locked, unlocked, or facility code.
- Input power shall be 12 VDC +/- 10% @ 400 mA with an operating range of 10 VDC to 16 VDC.

2.4.1.3 Dual Reader Module (DRM)

The DRM shall provide an interface between the IC and the card readers. The DRM shall operate with any card reader that produces a standard Wiegand (Data 1/Data 0 or Clock and Data) communication output. A single IC shall be able to multi-drop up to 32 DRMs on four separate RS485 ports. The following requirements shall also apply:

- Each DRM shall support 2 card readers, each of which may be up to 500 feet from the DRM.
- Up to 32 DRMs shall be connected to each IC, distributed across the 4 RS485 ports.
- Each DRM shall include 8 supervised inputs and 6 relay outputs.
- Up to 8 unique card formats shall be supported.
- The DRM shall support an integrated card reader/keypad.
- The DRM shall support 3 access modes upon loss of communication with the IC. These modes shall be locked, unlocked, or facility code.

- Input power shall be 12 VDC +/- 10% @ 400 mA with an operating range of 10 VDC to 16 VDC.

2.4.1.4 Alarm Input Module (AIM)

The AIM shall monitor all System alarm inputs. The following requirements shall apply:

- The AIM shall provide up to 16 supervised alarm inputs to monitor and report fault conditions (open, short, ground, or circuit fault) alarm conditions, power faults, and tampers. Upon alarm activation, the associated alarm condition shall be reported to the IC and subsequently to the System alarm monitoring workstation.
- Light emitting diodes (LED) shall indicate the status of the 16 alarm zones, cabinet tamper, and power fault.
- The alarm input modules (AIM) shall operate independently and in conjunction with the relay output modules (ROM), which shall send an output signal to a corresponding output device upon alarm activation. Upon alarm activation, the AIM shall activate any or all alarm outputs within the ROM. The OM shall provide 16 Form C outputs rated at 5A @ 30 VDC. Upon receipt of an alarm input from the AIM, the ROM shall transmit an activating signal to a corresponding output device.
- Up to 32 AIMs shall be connected to an available IC via RS485 cabling.
- Diagnostic light emitting diodes (LED) shall indicate IC communication, input zone scanning, and AIM heartbeat.
- The AIM shall contain the following features:
    - Alarm contact status scanning at up to 180 times per second for each zone.
    - Eight configuration DIP switches to assign unit addresses and communications speed.
    - A low power CMOS microprocessor.
    - Filtered data for noise rejection to prevent false alarms.
    - Two form C, 2A @ 28 VDC contacts for load switching.
    - Two dedicated inputs for tamper and power status.
    - Individual shunt times (ADA requirement).
    - Input power shall be 12 VDC +/- 10% @ 350mA with an operating range of 10 VDC to 16 VDC.
- All inputs shall be completely configurable by the System operator for inclusion in logical device definition. Inputs shall not be defaulted by the System for unalterable designation. For example, input #1 defaults as door contact for door #1, input #2

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defaults as request-to-exit device for door #1, etc. Systems that do not allow for user definition of all input points shall be unacceptable.

2.4.1.5 Relay Output Module (ROM)

The ROM shall incorporate 16 output relays that are capable of controlling a corresponding output device upon any input activation or on command from the System. Relay outputs shall be capable of responding to:

- Input alarms from within the same IC.
- Commands from a System operator.
- Time zone control commands for automatic operation.
- Output relays shall be capable of:
  - Pulsing for a predetermined duration that shall be programmable for each relay individually.
  - Following any input point an AIM attached to the same IC (ON with alarm, OFF when clear, or as required).
  - Responding on command from the System operator to pulse, command on, command off, or reset to normal state.
  - Each ROM shall provide 16 Form C relays rated at 2A @ 28 VDC. The ROM shall control the relays via digital communication. Upon receipt of input from the AIM or command from the System operator, the AIM will transmit an activating signal to the corresponding relay.
  - Input power shall be 12 VDC +/- 10% @ 400 mA with an operating range of 10 VDC to 16 VDC.
- All outputs shall be completely configurable by the System operator for inclusion in logical device definition. Outputs shall not be defaulted by the System for unalterable designation.

2.4.1.6 Card Readers

Card readers and/or keypads shall be provided at the specified locations. These shall be installed at the height shown on the drawings. The cabling to the readers shall be shielded and grounded as per the manufacturer's instructions. Care should be taken to avoid errant contact between the shield and doorframe. Any one, or a combination of the following components, shall be provided:

2.4.1.6.1 Contactless Smart Access Control Readers

Provide OmniAssure™ Contactless Smart Card readers as shown on the drawings. Card readers shall be “single-package” type, combining controller, electronics and antenna in one ROHS compliant package in the following configurations:

2.4.1.6.1.1 OT30 – 13.56 MHz ISO14443-4, DESFire, FIPS 201/PIV II (end-point), FRAC, TWIC, CAC Contactless Reader

a. Provide mullion or single-gang mounting style contactless reader/writers for door frame mounting, non-metal wall mounting, non-metal vehicle stanchions and non-metal pedestals, and where shown on plans.

b. The reader/writer optional single-gang mounting kit shall be designed for U.S., European and Asian electrical back boxes having a mounting hole spacing of 52-60 mm.

c. Contactless smart card readers shall meet the following physical specifications:

1) Dimensions mullion: 5.59” x 1.81” x 0.98” (14.2 x 4.62 x 2.5 cm)

2) Dimensions with U.S. gangbox mounting kit: 5.59” x 2.87” x 1.1” (14.2 x 7.32 x 2.8 cm)

3) Color: Silver gray

4) The reader/writer shall be of potted, ABS material, sealed to a rating of IP67.

5) The reader/writer shall have separate terminal control points for the green and red LEDs, and for the audible indicator.

6) The reader/writer shall have an audio transducer capable of producing tone sequences for various status conditions.

d. The reader/writer shall conform to UL 294, and shall be FCC and CE certified, and shall conform to the following ISO Standards: ISO 14443 parts 1 thru 4 type A and B (read/write).

e. The reader/writer shall support the HSPD-12/FIPS 201/PIV II, TWIC, and FRAC card ISO14443 platforms.

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f. Read/write compatibilities:

1) The reader/writer shall comply fully with ISO14443 parts 1, 2, 3, and 4 open card standards to fully enable interoperability among suppliers of similar products.

2) The reader/writer shall conform fully to ISO14443 Part 3 - Anti-collision and Transmission Protocol and must be capable of identifying multiple credentials in a single field and defining a common command set.

3) The reader/writer shall operate in the 13.56 MHz high frequency band only.

4) The reader/writer shall have an approximate read range of 0.5-1" when used with ISO14443 access control badges that are ISO7816 credit card size.

5) The reader/writer shall require that a card, once read, must be removed from the RF field for two seconds before it will be read again, to prevent multiple reads from a single card presentation and anti-passback errors.

6) The reader/writer shall be capable of reading access control data from any ISO14443 part 4 type A or B compliant contactless credential, and transmitting that data in SIA standard Wiegand format.

7) The contactless interface of the reader shall support bit rates of fc/128 (~106 kbits/s), fc/64 (~212 kbits/s), fc/32 (~424 kbits/s) and fc/16 (~847 kbits/s) as defined in ISO/IEC 14443-3:2001/Amd.1:2005.

8) The reader/writer shall support MAD (Mifare™ Applications Directory) for ISO14443 Mifare credentials.

g. Security keys in the credentials and reader/writers shall be required to match, and may be customized for individual sites.

h. The reader/writer shall provide the functionality of the following communication ports:

1) Wiegand port, for connection to standard access control panels

2) RS232, RS422, or RS485 Port, for connection to PCs or access control systems, either individually or on a multi-drop bus.

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3) ISO7811 Clock & Data ABA track 2 emulation port, for connection to standard control panels requiring mag stripe interface.

i. The reader/writer shall provide the functionality of the following operational modes:

1) Internal control: Read-only access control applications, transmitting Wiegand Data or Clock & Data

j. Reader updates:

1) The contactless smart card reader shall provide the ability to change operational features in the field through the use of a factory-programmed CONFIG card.

CONFIG card operational programming options shall include reader output configurations, LED configurations, reader keys, card memory locations and keypad configurations.

2) The reader shall have flash memory to allow future feature enhancements to be added in the field. Additionally, firmware may be updated in the reader using a special application card wherein the reader does not need to be removed from the wall.

k. Contactless smart card readers shall meet the following electrical specifications:

1) Operating voltage: 4.5-16V UL approved regulated linear power supply recommended.

2) Current requirements: (average/peak) 125/167 mA @ 12 VDC

l. Contactless smart card readers shall meet the following environmental specifications:

1) Operating temperature: -4 to 140° F (-20 to 60°C)

2) Operating humidity: 5% to 95% relative humidity non-condensing

3) Weatherized design suitable to withstand harsh environments to a rating of IP67

m. Contactless smart card reader cabling requirements shall be:

1) Cable distance: (Wiegand): 500 feet (150m) at AWG 18 or 200 feet at AWG 22

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2) Cable type: 5-conductor (with overall shield).

3) Standard reader termination: terminal block

n. Warranty of contactless smart card readers shall be lifetime against defects in materials and workmanship.

o. Contactless smart card reader shall be Honeywell OT30 with optional IEMOUNT U.S. gangbox mounting kit and optional IETAMPER tamper kit.

2.4.1.6.1.2 OT31 – 13.56 MHz ISO14443-4, DESFire, FIPS 201/PIV II (end-point), FRAC, TWIC, CAC Contactless Reader + 125 kHz Prox Reader (SmartTRANS)

a. Provide mullion or “single-gang” mounting style contactless reader/writers for door frame mounting, non-metal wall mounting, non-metal vehicle stanchions and non-metal pedestals, and where shown on plans.

b. The reader/writer optional single gang mounting kit shall be designed for U.S., European and Asian electrical back boxes having a mounting hole spacing of 52-60 mm.

c. Contactless smart card readers shall meet the following physical specifications:

1) Dimensions mullion: 5.59” x 1.81” x 0.98” (14.2 x 4.62 x 2.5 cm)

2) Dimensions with U.S. gangbox mounting kit: 5.59” x 2.87” x 1.1” (14.2 x 7.32 x 2.8 cm)

3) Color: Silver gray

4) The reader/writer shall be of potted, ABS material, sealed to a rating of (IP67).

5) The reader/writer shall have separate terminal control points for the green and red LEDs, and for the audible indicator.

6) The reader/writer shall have an audio transducer capable of producing tone sequences for various status conditions.

d. The reader/writer shall conform to UL 294, and shall be FCC and CE certified, and shall conform to the following ISO Standards: ISO14443 parts 1 thru 4 type A and B (read/write).

e. The reader/writer shall support the HSPD-12/FIPS 201/PIV II, TWIC, and FRAC card ISO14443 platforms.

f. Read/write compatibilities:

1) The reader/writer shall comply fully with ISO14443 parts 1, 2, 3, and 4 open card standards to fully enable interoperability among suppliers of similar products.

2) The reader/writer shall conform fully to ISO14443 Part 3 - Anti-collision and Transmission Protocol and must be capable of identifying multiple credentials in a single field and defining a common command set.

3) The reader/writer shall operate in the 13.56 MHz high frequency band and the 125 KHz lower frequency proximity band.

4) The reader/writer shall have an approximate read range of 0.4” when used with ISO14443 access control badges that are ISO7816 credit card size cards and 1.5” when used with 125 KHz proximity badges.

5) The reader/writer shall require that a card, once read, must be removed from the RF field for two seconds before it will be read again, to prevent multiple reads from a single card presentation and anti-passback errors.

6) The reader/writer shall be capable of reading access control data from any ISO14443 part 4 type A or B compliant contactless credential, and transmitting that data in SIA standard Wiegand format.

7) The contactless interface of the reader shall support bit rates of fc/128 (~106 kbits/s), fc/64 (~212 kbits/s), fc/32 (~424 kbits/s) and fc/16 (~847 kbits/s) as defined in ISO/IEC 14443-3:2001/Amd.1:2005.

8) The reader/writer shall support MAD (Mifare Applications Directory) for ISO14443 Mifare credentials.

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g. Security keys in the credentials and reader/writers shall be required to match, and may be customized for individual sites.

h. The reader/writer shall provide the functionality of the following communication ports:

1) Wiegand port, for connection to standard access control panels

2) RS232, RS422, or RS485 port, for connection to PCs or access control systems, either individually or on a multi-drop bus.

3) ISO7811 Clock & Data ABA track 2 emulation port, for connection to standard control panels requiring mag stripe interface.

i. The reader/writer shall provide the functionality of the following operational modes:

1) Internal control: Read-only access control applications, transmitting Wiegand Data or Clock & Data

j. Reader updates:

1) The contactless smart card reader shall provide the ability to change operational features in the field through the use of a factory-programmed CONFIG card. CONFIG card operational programming options shall include reader output configurations, LED configurations, reader keys, card memory locations and keypad configurations.

2) The reader shall have flash memory to allow future feature enhancements to be added in the field. Additionally, firmware may be updated in the reader using a special application card wherein the reader does not need to be removed from the wall.

k. Contactless smart card readers shall meet the following electrical specifications:

1) Operating voltage: 4.5-16V UL approved regulated linear power supply recommended.

2) Current requirements: (average/peak) 84/100 mA @ 12 VDC

l. Contactless smart card readers shall meet the following environmental specifications:

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1) Operating temperature: -4 to 140°F (-20 to 60°C)

2) Operating humidity: 5% to 95% relative humidity non-condensing

3) Weatherized design suitable to withstand harsh environments

m. Contactless smart card reader cabling requirements shall be:

1) Cable distance: (Wiegand): 500 feet (150m) at AWG 18 or 200 ft #22 AWG

2) Cable type: 5-conductor (with overall shield).

3) Standard reader termination: terminal block

n. Warranty of contactless smart card readers shall be lifetime against defects in materials and workmanship.

o. Contactless smart card reader shall be Honeywell OT31 with optional IEMOUNT U.S. gangbox mounting kit and optional IETAMPER tamper kit.

2.4.1.6.1.3 OT35 – 13.56 MHz ISO14443-4, DESFire, FIPS 201/PIV II (end-point), FRAC, TWIC, CAC Contactless + Keypad Reader (end-point PIN)

a. Provide mullion or single-gang mounting style contactless reader/writers for door frame mounting, non-metal wall mounting, non-metal vehicle stanchions and non-metal pedestals, and where shown on plans.

b. The reader/writer optional single-gang mounting kit shall be designed for U.S., European and Asian electrical back boxes having a mounting hole spacing of 52-60 mm.

c. Contactless smart card readers shall meet the following physical specifications:

1) Dimensions mullion: 5.59” x 1.81” x 0.98” (14.2 x 4.62 x 2.5 cm)

2) Dimensions with U.S. gangbox mounting kit: 5.59” x 2.87” x 1.1” (14.2 x 7.32 x 2.8 cm)

3) Color: Silver gray

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4) The reader/writer shall be of potted ABS material, sealed to a rating of IP67.

5) The reader/writer shall have separate terminal control points for the green and red LEDs, and for the audible indicator.

6) The reader/writer shall have an audio transducer capable of producing tone sequences for various status conditions.

d. The reader/writer shall conform to UL 294, and shall be FCC and CE certified, and shall conform to the following ISO Standards: ISO14443 parts 1 thru 4 type A or B (read/write).

e. The reader/writer shall support the HSPD-12/FIPS 201/PIV II, TWIC, and FRAC card ISO14443 platforms.

f. Read/write compatibilities:

1) The reader/writer shall comply fully with ISO14443 parts 1, 2, 3, and 4 open card standards to fully enable interoperability among suppliers of similar products.

2) The reader/writer shall conform fully to ISO14443 Part 3 - Anti-collision and Transmission Protocol and must be capable of identifying multiple credentials in a single field and defining a common command set.

3) The reader/writer shall operate in the 13.56 MHz high frequency band only.

4) The reader/writer shall have an approximate read range of 0.5”- 1” when used with ISO14443 access control badges that are ISO7816 credit card size.

5) The reader/writer shall require that a card, once read, must be removed from the RF field for two seconds before it will be read again, to prevent multiple reads from a single card presentation and anti-passback errors.

6) The reader/writer shall be capable of reading access control data from any ISO14443 part 4 type A or B compliant contactless credential, and transmitting that data in SIA standard Wiegand format.

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7) The contactless interface of the reader shall support bit rates of fc/128 (~106 kbits/s), fc/64 (~212 kbits/s), fc/32 (~424 kbits/s) and fc/16 (~847 kbits/s) as defined in ISO/IEC 14443-3:2001/Amd.1:2005

8) The reader/writer shall support MAD (Mifare Applications Directory) for ISO14443 Mifare credentials.

g. Security keys in the credentials and reader/writers shall be required to match, and may be customized for individual sites.

h. The reader shall have a 12-button keypad which outputs keyed-in data in 4-bit burst, 8-bit burst, Wiegand format, Clock & Data format, or RS232/RS422/RS485 format.

i. The reader/writer shall provide the functionality of the following communication ports:

1) Wiegand port, for connection to standard access control panels

2) RS232, RS422, or RS485 port, for connection to PCs or access control systems, either individually or on a multi-drop bus.

3) ISO7811 Clock & Data ABA track 2 emulation port, for connection to standard control panels requiring mag stripe interface.

j. The reader/writer shall provide the functionality of the following operational modes:

1) Internal control: Read-only access control applications, transmitting Wiegand Data or Clock & Data

k. Reader updates:

1) The contactless smart card reader shall provide the ability to change operational features in the field through the use of a factory-programmed CONFIG card. CONFIG card operational programming options shall include reader output configurations, LED configurations, reader keys, card memory locations and keypad configurations.

2) The reader shall have flash memory to allow future feature enhancements to be added in the field. Additionally, firmware may be updated in the reader using a special application card wherein the reader does not need to be removed from the wall.

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l. Contactless smart card readers shall meet the following electrical specifications:

1) Operating voltage: 4.5-16V UL approved regulated linear power supply recommended.

2) Current requirements: (average/peak) 125/167 mA @ 12 VDC

m. Contactless smart card readers shall meet the following environmental specifications:

1) Operating temperature: -4 to 140°F (-20 to 60°C)

2) Operating humidity: 5% to 95% relative humidity non-condensing

3) Weatherized design suitable to withstand harsh environments

n. Contactless smart card reader cabling requirements shall be:

1) Cable distance: (Wiegand): 500 feet (150m) at AWG 18 or #22 AWG 200 ft

2) Cable type: 5-conductor (with overall shield).

3) Standard reader termination: terminal block

o. Warranty of contactless smart card readers shall be lifetime against defects in materials and workmanship.

p. Contactless smart card reader shall be Honeywell OT35 with optional IEMOUNT U.S. gangbox mounting kit and optional IETAMPER tamper kit.

2.4.1.6.1.4 OT36 – 13.56 MHz ISO14443-4, DESFire, FIPS 201/PIV II (end-point), FRAC, TWIC, CAC Contactless + 125 kHz + Keypad Reader (SmartTRANS PIN)

a. Provide mullion or single-gang mounting style contactless reader/writers for door frame mounting, non-metal wall mounting, non-metal vehicle stanchions and non-metal pedestals, and where shown on plans.

b. The reader/writer optional single-gang mounting kit shall be designed for U.S., European and Asian electrical back boxes having a mounting hole spacing of 52-60 mm.

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c. Contactless smart card readers shall meet the following physical specifications:

1) Dimensions mullion: 5.59” x 1.81” x 0.98” (14.2 x 4.62 x 2.5 cm)

2) Dimensions with U.S. gangbox mounting kit: 5.59” x 2.87” x 1.1” (14.2 x 7.32 x 2.8 cm)

3) Color: Silver gray

4) The reader/writer shall be of potted ABS material, sealed to a rating of IP67.

5) The reader/writer shall have separate terminal control points for the green and red LEDs, and for the audible indicator.

6) The reader/writer shall have an audio transducer capable of producing tone sequences for various status conditions.

d. The reader/writer shall conform to UL 294, shall be FCC and CE certified, and shall conform to the following ISO Standards: ISO14443 parts 1 thru 4 type A or B (read/write).

e. The reader/writer shall support the HSPD-12/FIPS 201/PIV II, TWIC, and FRAC card ISO14443 platforms

f. Read/write compatibilities:

1) The reader/writer shall comply fully with ISO14443 parts 1, 2, 3, and 4 open card standards to fully enable interoperability among suppliers of similar products.

2) The reader/writer shall conform fully to ISO14443 Part 3 - Anti-collision and Transmission Protocol and must be capable of identifying multiple credentials in a single field and defining a common command set.

3) The reader/writer shall operate in the 13.56 MHz high frequency band and the 125 KHz lower frequency proximity band.

4) The reader/writer shall have an approximate read range of 0.5-1” when used with ISO14443 access control badges that are ISO7816 credit card size.

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5) The reader/writer shall require that a card, once read, must be removed from the RF field for two seconds before it will be read again, to prevent multiple reads from a single card presentation and anti-passback errors.

6) The reader/writer shall be capable of reading access control data from any ISO14443 part 4 type A or B compliant contactless credential, and transmitting that data in SIA standard Wiegand format.

7) The contactless interface of the reader shall support bit rates of fc/128 (~106 kbits/s), fc/64 (~212 kbits/s), fc/32 (~424 kbits/s) and fc/16 (~847 kbits/s) as defined in ISO/IEC 14443-3:2001/Amd.1:2005.

8) The reader/writer shall support MAD (Mifare Applications Directory) for ISO14443 Mifare credentials.

g. Security keys in the credentials and reader/writers shall be required to match, and may be customized for individual sites.

h. The reader shall have a 12-button keypad which outputs keyed-in data in 4-bit burst, 8-bit burst, Wiegand format, Clock & Data format, or RS232/RS422/RS485 format.

i. The reader/writer shall provide the functionality of the following communication ports:

1) Wiegand port, for connection to standard access control panels

2) RS232, RS422, or RS485 Port, for connection to PCs or access control systems, either individually or on a multi-drop bus.

3) ISO7811 Clock & Data ABA track 2 emulation port, for connection to standard control panels requiring mag stripe interface.

j. The reader/writer shall provide the functionality of the following operational modes:

1) Internal control: Read-only access control applications, transmitting Wiegand Data or Clock & Data

k. Reader updates:

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1) The contactless smart card reader shall provide the ability to change operational features in the field through the use of a factory-programmed CONFIG card. CONFIG card operational programming options shall include reader output configurations, LED configurations, reader keys, card memory locations and keypad configurations.

2) The reader shall have flash memory to allow future feature enhancements to be added in the field. Additionally, firmware may be updated in the reader using a special application card wherein the reader does not need to be removed from the wall.

l. Contactless smart card readers shall meet the following electrical specifications:

1) Operating voltage: 4.5-16V UL approved regulated linear power supply recommended.

2) Current requirements: (average/peak) 84/100 mA @ 12 VDC

m. Contactless smart card readers shall meet the following environmental specifications:

1) Operating temperature: -4 to 140°F (-20 to 60°C)

2) Operating humidity: 5% to 95% relative humidity non-condensing

3) Weatherized design suitable to withstand harsh environments

n. Contactless smart card reader cabling requirements shall be:

1) Cable distance: (Wiegand): 500 feet (150m) at AWG 18 or #22 AWG 200 ft

2) Cable type: 5-conductor (with overall shield).

3) Standard reader termination: terminal block

o. Warranty of contactless smart card readers shall be lifetime against defects in materials and workmanship.

p. Contactless smart card reader shall be Honeywell OT36 with optional IEMOUNT U.S. gangbox mounting kit and optional IETAMPER tamper kit.

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2.4.1.6.1.5 OT70 – 13.56 MHz ISO14443, FIPS 201, FRAC, TWIC Reader (SmartTOUCH)

a. Provide mullion or single-gang mounting style contactless reader/writers for door frame mounting, non-metal wall mounting, non-metal vehicle stanchions and non-metal pedestals, and where shown on plans.

b. The reader/writer optional single-gang mounting kit shall be designed for U.S., European and Asian electrical back boxes having a mounting hole spacing of 52-60 mm.

c. Contactless smart card readers shall meet the following physical specifications:

1) Dimensions mullion: 7.58" x 1.99" x 1.69" (19.25 x 5.05 x 4.3 cm)

2) Dimensions with U.S. gangbox mounting kit: 8.58" x 2.99" x 0.31" (21.8 x 7.6 x 0.8 cm)

3) Color: Silver gray

4) The reader/writer shall be IP42 for indoor use only.

5) The reader/writer shall have separate terminal control points for the green and red LEDs, and for the audible indicator.

6) The reader/writer shall have an audio transducer capable of producing tone sequences for various status conditions.

d. The reader/writer shall conform to UL 294, and shall be FCC and CE certified, and shall conform to the following ISO Standards: ISO14443 parts 1 thru 4 type A or B (read/write).

e. The reader/writer shall support the HSPD-12/FIPS 201/PIV II, TWIC, and FRAC card ISO14443 platforms.

f. The reader/writer shall support the storage of biometric templates on smart cards for Mifare Classic and DESFire.

g. Read/write compatibilities:

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1) The reader/writer shall comply fully with ISO14443 parts 1, 2, 3, and 4 open card standards to fully enable interoperability among suppliers of similar products.

2) The reader/writer shall conform fully to ISO14443 Part 3 - Anti-collision and Transmission Protocol and must be capable of identifying multiple credentials in a single field and defining a common command set.

3) The reader/writer shall operate in the 13.56 MHz high frequency band only.

4) The reader/writer shall have an approximate read range of 0.5-1" when used with ISO14443 access control badges that are ISO7816 credit card size.

5) The reader/writer shall require that a card, once read, must be removed from the RF field for two seconds before it will be read again, to prevent multiple reads from a single card presentation and anti-pass back errors.

6) The reader/writer shall be capable of reading access control data from any ISO14443 part 4-type A or B compliant contactless credential, and transmitting that data in SIA standard Wiegand format.

7) The contactless interface of the reader shall support bit rates of fc/128 (~106 kbits/s), fc/64 (~212 kbits/s), fc/32 (~424 kbits/s) and fc/16 (~847 kbits/s) as defined in ISO/IEC 14443-3:2001/Amd.1:2005

8) The reader/writer shall support MAD (Mifare Applications Directory) for ISO14443 Mifare credentials.

h. Security keys in the credentials and reader/writers shall be required to match, and may be customized for individual sites.

i. The reader/writer shall provide the functionality of the following communication ports:

1) Wiegand port, for connection to standard access control panels

2) RS232, RS422, or RS485 Port, for connection to PCs or access control systems, either individually or on a multi-drop bus.

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3) ISO7811 Clock & Data ABA track 2 emulation port, for connection to standard control panels requiring mag stripe interface.

j. The reader/writer shall provide the functionality of the following operational modes:

1) Internal control: Read-only access control applications, transmitting Wiegand Data or Clock & Data

k. Reader updates:

1) The contactless smart card reader shall provide the ability to change operational features in the field through the use of a factory-programmed CONFIG card. CONFIG card operational programming options shall include reader output configurations, LED configurations, reader keys, card memory locations and keypad configurations.

2) The reader shall have flash memory to allow future feature enhancements to be added in the field. Additionally, firmware may be updated in the reader using a special application card wherein the reader does not need to be removed from the wall.

l. Contactless smart card readers shall meet the following electrical specifications:

1) Operating voltage: 8-24 VDC. Linear power supply recommended.

2) Current requirements: (average/peak) 208/417 mA @ 12 VDC

m. Contactless smart card readers shall meet the following environmental specifications:

1) Operating temperature: 32 to 140°F (0 to 60°C)

2) Operating humidity: 30% to 80% relative humidity non-condensing

3) Weatherized design suitable to withstand harsh environments

n. Contactless smart card reader cabling requirements shall be:

1) Cable distance: (Wiegand): 500 ft (150m) at AWG 18 or #22 AWG 200 ft

2) Cable type: 5-conductor (with overall shield).

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3) Standard reader termination: terminal block

o. Warranty of contactless smart card readers shall be lifetime against defects in materials and workmanship.

p. Contactless smart card reader shall be Honeywell OT70 with optional IEMOUNT2 U.S. gangbox mounting kit and optional IETAMPER tamper kit.

2.4.1.6.1.6 OT75 – 13.56 MHz ISO14443-4, DESFire, FIPS 201/PIV II (end-point), FRAC, TWIC, CAC Contactless + Keypad Reader (SmartTOUCH PIN)

a. Provide mullion or single-gang mounting style contactless reader/writers for door frame mounting, non-metal wall mounting, non-metal vehicle stanchions and non-metal pedestals, and where shown on plans.

b. The reader/writer optional single-gang mounting kit shall be designed for U.S., European and Asian electrical back boxes having a mounting hole spacing of 52-60 mm.

c. Contactless smart card readers shall meet the following physical specifications:

1) Dimensions mullion: 7.58” x 1.99” x 1.69” (19.25 x 5.05 x 4.3 cm)

2) Dimensions with U.S. gangbox mounting kit: 8.58” x 2.99” x 0.31” (21.8 x 7.6 x 0.8 cm)

3) Color: Silver gray

4) The reader/writer shall be IP42 for indoor use only.

5) The reader/writer shall have separate terminal control points for the green and red LEDs, and for the audible indicator.

6) The reader/writer shall have an audio transducer capable of producing tone sequences for various status conditions.

d. The reader/writer shall conform to UL 294, and shall be FCC and CE certified, and shall conform to the following ISO Standards: ISO14443 parts 1 thru 4 A/B (read/write).

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e. The reader/writer shall support the HSPD-12/FIPS 201/PIV II, TWIC, and FRAC card ISO14443 platforms.

f. The reader/writer shall support the storage of biometric templates on smart cards for Mifare Classic and DESFire.

g. Read/write compatibilities:

1) The reader/writer shall comply fully with ISO14443 parts 1, 2, 3, and 4 open card standards to fully enable interoperability among suppliers of similar products.

2) The reader/writer shall conform fully to ISO14443 Part 3 - Anti-collision and Transmission Protocol and must be capable of identifying multiple credentials in a single field and defining a common command set.

3) The reader/writer shall operate in the 13.56 MHz high frequency band only.

4) The reader/writer shall have an approximate read range of 0.5-1" when used with ISO14443 access control badges that are ISO7816 credit card size.

5) The reader/writer shall require that a card, once read, must be removed from the RF field for two seconds before it will be read again, to prevent multiple reads from a single card presentation and anti-pass back errors.

6) The reader/writer shall be capable of reading access control data from any ISO14443 part 4-compliant contactless credential, and transmitting that data in SIA standard Wiegand format.

7) The contactless interface of the reader shall support bit rates of fc/128 (~106 kbits/s), fc/64 (~212 kbits/s), fc/32 (~424 kbits/s) and fc/16 (~847 kbits/s) as defined in ISO/IEC 14443-3:2001/Amd.1:2005

8) The reader/writer shall support MAD (Mifare Applications Directory) for ISO14443 Mifare credentials.

h. The reader shall have a 12-button keypad which outputs keyed-in data in 4-bit burst, 8-bit burst, Wiegand format, Clock & Data format, or RS232/RS422/RS485 format.

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i. Security keys in the credentials and reader/writers shall be required to match, and may be customized for individual sites.

j. The reader/writer shall provide the functionality of the following communication ports:

1) Wiegand port, for connection to standard access control panels

2) RS232, RS422, or RS485 port, for connection to PCs or access control systems, either individually or on a multi-drop bus.

3) ISO7811 Clock & Data ABA track 2 emulation port, for connection to standard control panels requiring mag stripe interface.

k. The reader/writer shall provide the functionality of the following operational modes:

1) Internal control: Read-only access control applications, transmitting Wiegand Data or Clock & Data

l. Reader updates:

1) The contactless smart card reader shall provide the ability to change operational features in the field through the use of a factory-programmed CONFIG card. CONFIG card operational programming options shall include: reader output configurations, LED configurations, reader keys, card memory locations and keypad configurations.

2) The reader shall have flash memory to allow future feature enhancements to be added in the field. Additionally, firmware may be updated in the reader using a special application card wherein the reader does not need to be removed from the wall.

m. Contactless smart card readers shall meet the following electrical specifications:

1) Operating voltage: 8-24 VDC. Linear power supply recommended.

2) Current requirements: (average/peak) 208/417 mA @ 12 VDC

n. Contactless smart card readers shall meet the following environmental specifications:

1) Operating temperature: 32 to 140°F (0 to 60°C)

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2) Operating humidity: 30% to 80% relative humidity non-condensing

3) Weatherized design suitable to withstand harsh environments

o. Contactless smart card reader cabling requirements shall be:

1) Cable distance: (Wiegand): 500 ft (150m) at AWG 18 or 200 ft at AWG 22.

2) Cable type: 5-conductor (with overall shield).

3) Standard reader termination: terminal block

p. Warranty of contactless smart card readers shall be lifetime against defects in materials and workmanship.

q. Contactless smart card reader shall be Honeywell OT75 with optional IEMOUNT2 U.S. gangbox mounting kit and optional IETAMPER tamper kit.

2.4.1.6.2 Wiegand card swipe readers

The reader style and finish shall be selected from the manufacturer's product list as shown on the installation documents.

- Power: 5 VDC supplied by the controller shall power the reader.
- Electronics: The reader electronics shall be encapsulated for environmental security.

2.4.1.6.3 Proximity card readers

The reader style and finish shall be selected from the manufacturer's product list as shown on the installation documents.

- Power: The reader shall be powered by 5 VDC or by the controller's internal 12 VDC regulated power supply.
- Mounting: The reader shall be capable of being mounted against metal door or window frames.
- Range: The reader shall be capable of reading cards at a range of five to eight inches.

2.4.1.6.4 Magnetic stripe readers

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The reader style and finish shall be selected from the manufacturer's product list as shown on the installation documents.

- Power: 5 VDC supplied by the controller shall power the reader.
- Electronics: The reader electronics shall be encapsulated for environmental security.
- Encoding: The reader shall recognize several encoding formats.

2.4.1.6.5 Barcode readers

Barcode readers shall be provided. The reader style and finish shall be selected from the manufacturer's product list as shown on the installation documents.

- Communications: The communications shall be Wiegand format with standard 5-wire interface. The reader shall read in both directions and be compatible with most masking films.
- Symbols: The reader shall read all common barcode symbols including Code 39, Interleaved 2 of 5, UPC/EAN and Codebar. The reader shall also be capable of decoding Code 93, Code 11, Code 128, and MSI. The reader shall be capable of reading visible as well as discreet "invisible" barcode labels.
- Power: 5 VDC supplied by the controller shall power the reader.
- Housing: The reader housing shall be aluminum alloy with a polyester powder coat finish.

2.4.1.6.6 Smart Card readers

The System shall support the Honeywell OmniClass™ Smart Card reader. The OmniClass readers shall utilize cards that conform to ISO14443A, 14443B or 15693 standards. The contactless smart cards shall provide card read distances similar to 125 KHz proximity readers and provide large data storage densities from 2K up to 64K bits, extremely high security, and the ability to support multiple applications on each card at the same time. The reader shall support the following key features:

- Typical read range: 4" (10 cm)
- Mullion size
- ADA-compliant built-in audible buzzer
- Host LED control
- Tamper detect output (can erase security keys)

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- Hidden mounting screws deter vandalism
- Potted for superior weather resistance
- Selectable Wiegand, Clock & Data, or serial output
- The reader shall include three covers included with every reader; black, charcoal and ivory

2.4.1.6.7 Fingerprint Reader

The System shall support the Precise BioAccess™ plug and play fingerprint reader for areas that require heightened security. The unique Precise BioMatch technology provides reliable one-to-one matches to verify that people are who they claim to be. Precise BioAccess uses templates stored on the smart card and provides multiple models for contactless and contact smart cards. The reader shall support at a minimum the following key features:

- Sound On/Off
- External LED control
- Contactless reader technique
- Encrypted template storage
- Easy installation
- No new wiring
- No new software upgrades for access control system
- Matching technique: Precise BioMatch
- Up to 40 mm read range
- Verification in less than 1 second
- Enrollment Time: < 10 seconds

2.4.1.6.8 Recognition Systems Handkey Reader

The System shall provide true security and the convenience of biometric technology. The Handkey integration shall utilize field-proven hand geometry technology that shall map and verify the size and shape of a person’s hand all in less than one second. The biometric Handkey reader shall verify people; not card, key, or PIN that can easily be transferred to someone else. Recognition Systems Handkey readers shall provide a fail-safe method to ensure that the person who gains entry is not simply carrying someone else’s access card or using another’s PIN. The System shall have the ability to seamlessly capture biometric information (hand geometry) and

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create biometric templates during the cardholder enrolment process. The System shall support reader template storage at the intelligent controller gateway module.

2.4.1.6.9 Keypads (5 wire type)

The keypad shall be of piezoelectric construction. The reader style and finish shall be selected from the manufacturer’s product list as shown on the installation documents. The reader shall support at a minimum the following key features:

- LEDs shall provide a visual acknowledgment of a valid code.
- Audio tone generator: A tone generator shall provide an audio acknowledgment of each input entry.
- Power: 5 VDC supplied by the controller shall power the reader.
- Electronics: The reader electronics shall be encapsulated for environmental security.

2.4.2 Cardkey Controllers:

The System software suite shall provide functionality to Cardkey Controllers using Nodal Protocol B, the Cardkey Controllers D620 (Firmware revision PS-143D or PS143-E), and the Cardkey D600AP (Firmware Revisions PS-155A or PS-155B). Supported interface is currently, but not limited to, standard STI and STIE devices.

- Minimum functionality to be supported:
    - Controller to Host Communications: The System shall be able to upload and store history messages as reported from the D620 or D600AP controller.
    - Downloading of cards
        - Host Grant Functionality
        - Momentary Access to a Door
        - Issue Level

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    - Event Privilege Level
    - InXit Status
    - Executive Privilege
    - User-defined PIN codes
- Downloading of System Parameters
    - Facility Code
    - Upload Enable
    - Time Zone Enable Flags
    - Card Events, Time Zones, and Holidays
    - Controller Time and Date
- Downloading of reader parameters
    - Reader type
    - Card Type
    - Reader Time Zone
    - Access Times
    - Warning Times
    - Input/Output Linkage
- Downloading of input point parameters
    - Soft Alarm Parameters
    - Arming/Shunting of Alarm Input Points
    - Point Type
    - Enabled Flag
    - Suppression Time Zone
    - Input/Output Linkage
- Downloading of relay output point parameters
    - Activation/Deactivation of Relay Output Points
    - Point Type
    - Active State

- Output Groups

2.5 Enclosure

- Cabinet: The controller enclosure shall be a NEMA Type 1 cabinet suitable for wall mounting, with knockouts. The cabinet shall have a hinged cover, tamper switch, and key lock.
- Dimensions: The dimensions shall not exceed 15” (35.56 cm) in height, 14.2” (40.64 cm) in width, and 7.6” (10.16 cm) in depth.
- Capacity: The enclosure shall hold up to 9 control modules, a 4 A power supply and a self-contained replaceable backup battery.

2.6 Electrical Power Requirements

- System Power: The System shall operate using standard 120 VAC, 50/60 Hz power. The connection to the main building power supply shall be performed in accordance with the general terms and conditions of this contract. This shall include connection to and provision of Uninterrupted Power Systems (UPS) when specified.
- Enclosure Power: A separate power supply enclosure shall be directly connected to a convenient dIConnect panel, preferably connected to the building emergency power supply. The dIConnect breaker shall be clearly marked.
    - An inline transformer, rated at 12 VDC, 4 A continuous power shall provide power.
    - The power enclosure shall be provided with LED indicators showing normal operating conditions, loss of AC power-standby battery supplying power, loss of AC power, discharged or no standby battery, and no DC output.
    - The enclosure shall include a 12 VDC, 7 A hour battery securely fastened to the enclosure to prevent the accidental removal of the battery. It shall be capable of providing backup from 1 to 5 hours depending on module configuration.

2.7 Environmental Conditions

- The System shall be designed to meet the following environmental conditions:
    - Storage Temperature: The System shall be designed for a storage temperature of 14° to 158°F (-10° to 70°C).

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- Operating Temperature: The System shall be designed for an operating temperature of 36° to 109°F (2° to 43°C).
- Humidity: The System shall be designed for normal operation in an 85% relative humidity, non-condensing environment.
- Electromagnetic Interference: The System shall meet or exceed the requirements of FCC Part 15, Class B devices, FCC Part 68, IEC EMC directive.

2.8 System Interfaces

2.8.1 Analog CCTV Switchers

The System shall include CCTV integration. The matrix switcher capability support of the System shall include camera call up, monitor switching, CCTV command support, and PTZ support. The CCTV subsystem shall be the controller device for CCTV cameras, monitors, and videocassette recorders (VCRs), and shall associate camera inputs with monitor outputs. The System shall allow users to program CCTV monitors and CCTV cameras to execute commands upon recognition of an alarm or any other condition within the System. The user shall be able to add, edit, delete, and partition CCTV subsystems.

2.8.1.1 CCTV Subsystems

CCTV subsystems shall be displayed and maintained on the property sheets on the CCTV subsystem definition dialog box. Information shall include, but not be limited to, the following:

- CCTV controller ID name: Shall be at least 40 characters.
- CCTV controller description: Shall be at least 40 characters.
- CCTV controller identity: Shall be a number assigned to identify the CCTV controller.
- Check box to indicate that the subsystem will detect a camera cable cut, causing a lost video signal.
- CCTV subsystem type definition shall include, but not be limited to:
    - Honeywell’s VideoBloX/VideoBloX Lite Series
    - Honeywell’s MAXPRO Series
    - Phillips/Burle TC8500, 8600, and 8800 Series
    - Pelco 9750 Series
    - Vicon VPS1300 Series
    - American Dynamics MegaPower 2050 Series.
- Path name: Shall be the pathname of the serial port the CCTV controller is connected to.

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- Characters: Shall be the minimum number of characters to be read from a CCTV subsystem at one time.
- Time: Shall be the amount of time, in tenths of a second, allowed to read a message from the node.
- Communications break tests: Shall be the number of seconds between communication break tests on the line to which the CCTV device is connected with the server.
- Acknowledge message: Shall be the number of seconds the server will wait for an acknowledge message from the CCTV subsystem when sending a CCTV command.
- Response: Shall be the number of seconds the server will wait for a response from the CCTV substation before registering a timeout.
- Data transfer speed: Shall be the speed, in bits per second, which data is transferred between the CCTV controller device and the server.
- Communications parameters: Shall be the parameters required for the CCTV subsystem to communicate with the server (Data Bits, Parity, and Stop Bits).

2.8.1.2 CCTV Camera Views

The System shall allow users to create and assign CCTV camera views to be used in conjunction with logical devices. The user shall be able to add, edit, delete, and partition CCTV cameras. The user shall have the capability to right click on the camera view in either the hardware tree, or status monitor and select either Switch To or Go Live. The Switch To functionality shall allow the user to select the monitor to switch the camera view to, this functionality shall be provided for Matrix switcher-assigned camera and monitor views. The Go Live selection shall open a screen viewer of the digital CCTV camera view. Information regarding CCTV cameras shall contain, but not be limited to, the following fields:

- Camera ID name: Shall be at least 40 characters.
- Primary reader ID: Shall be the reader this camera shall monitor.
- CCTV camera description: Shall be at least 40 characters.
- Alternate reader ID: Shall be the reader this camera monitors if it is unable to monitor the primary reader.
- CCTV subsystem ID: Shall be the name of the subsystem to which this camera is assigned.
- CCTV subsystem port number: Shall be the port number on the CCTV subsystem to which this camera is attached.

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- Map identification number: Shall be the number of the map to be displayed in the Map Manager application should this camera be activated.

2.8.1.3 CCTV Monitor Views

The System shall allow the user to create and assign CCTV monitors for switching purposes. The user shall be able to add, edit, delete, and partition CCTV monitors. Information regarding CCTV monitors shall be displayed and maintained on the property sheets in the CCTV monitor definition dialog box, which shall display, but not be limited to, the following fields:

- CCTV monitor ID name: Shall be at least 40 characters.
- CCTV monitor description: Shall be at least 40 characters.
- Text: At least 20 characters shall be provided.
- CCTV subsystem ID: Shall be the subsystem to which this monitor shall be assigned.
- CCTV subsystem port number: Shall be the port number on the CCTV subsystem to which this monitor is attached.
- Check boxes shall be provided to indicate the following:
    - The monitor is available for automatic alarm switching.
    - There is a VCR associated with the monitor.
    - The VCR is currently recording.
- The command string field shall be used to indicate the start/stop the VCR from recording.

2.8.2 Digital Video Recording Systems (DVRS)

2.8.2.1 General

The System shall include a seamlessly integrated DVRS.

The System shall support, but not be limited to the following digital CCTV recorders:

- Honeywell Video Management System (HVMS)
- Honeywell's Fusion Series digital recorders
- Honeywell's Rapid Eye Multi-Media Series digital recorders
- Integral Technologies DVXi Series digital recorders

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- Integral Technologies DSXpress Series digital recorders

The System shall provide fully integrated support for a powerful digital video recording and transmission system. The DVRS shall be an extremely secure and flexible digital storage management tool. The System shall record, search and transmit video, and shall provide users with both live and post event assessment capabilities. The DVRS shall be seamlessly integrated with existing video equipment and incorporated into any TCP/IP network. The DVRS shall provide multiple levels of integration with the System software, providing control of the digital video system from the access control application, making this a convenient and powerful solution. Video capabilities available in the System include:

o Alarm Playback Viewer – Used when an event has video associated to it. The alarm playback shall be available in either the Alarm Monitor or Event Log Viewer.

o Live View - This shall be available from the main hardware viewer by right-clicking on a defined camera and selecting Go Live. Additionally, the user shall have the capability to Go Live when viewing a playback event, which shall allow the user to revert to live video.

o Matrix View - This shall be available from the main viewer in the System. This shall allow the user to select which cameras are desired to view as well as the position. The options shall include viewing full screen, 2x2, 3x3, or 4x4 configuration. Additionally, the user shall have full control of PTZ cameras from this screen if the camera used offers PTZ support.

o Verification Secure Mode Viewer - Allows the user to match up the image of the individual attempting to open a door (badgeholder image held in the System badge database) with that of a live view from the door. This secure mode verification shall allow the user to either allow or deny access to a specific area based on an image match.

o Historical Query - All single video windows shall allow the user to perform a quick historical query of stored events for the specified view by selecting the appropriate clip from the listing, or by entering a specific time and date range from the query option.

2.8.2.2 HONEYWELL VIDEO MANAGEMENT SYSTEM (HVMS)

A. SYSTEM OVERVIEW

The HVMS is a fully digital IP-based video surveillance system that brings together in one system a network video recorder (NVR) with unlimited storage capacity and integrations onto various DVRs/NVRs, and analog video switchers. It provides tight integration onto the Pro-Watch access control system. It also provides integration

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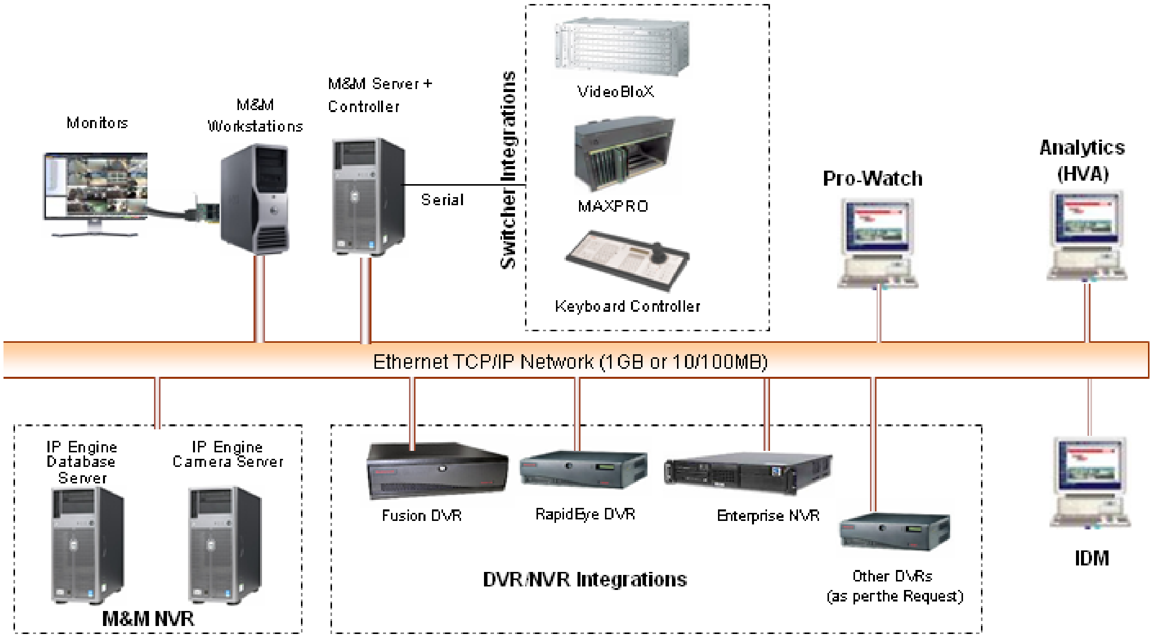
with Honeywell's video analytics and IDM (Integrated Data Manager) applications. As a software-based enterprise-level video, and data management system, HVMS provides a single GUI that monitors, records, and offers analysis functionality to deliver the timely, accurate information required for effectively responding to any challenge. HVMS is a fully scaleable enterprise-class media management system. This advanced network-based system architecture enables simultaneous live monitoring from multiple stations and is easily configurable for storage both on and off site. The software can be configured to store and to view images captured by one camera or thousands of cameras and monitor connections across an unlimited number of servers. HVMS is designed to effectively integrate with existing access control and video equipment including analog matrices, keyboards and cameras to leverage and protect investments in legacy infrastructure and equipment.

The following diagram explains the relationship of various system and integration components:



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B. SYSTEM (APPLICATION) PERFORMANCE

HVMS shall include, as a minimum, the following features, functions and specifications:

1. HVMS must be protected by the most extensive support services in the industry, including customer service, pre-sales applications assistance, after-sales technical assistance, access to technical online support, and online training using Web conferencing. The manufacturer shall provide 24/7 technical assistance and support via a toll-free telephone number at no extra charge.

2. HVMS and its components shall be thoroughly tested before shipping from the integrator's facility.

3. HVMS shall be an enterprise level video, audio and data management system for recording and monitoring.

4. HVMS shall utilize off-the-shelf computer workstations, servers, networking and storage equipment.

5. HVMS shall be capable of pentaplex user operations simultaneously. This includes live viewing, recording, playback, archiving of video data to an external storage device, and handling the exchange of data between the HVMS server and a remote workstation.

6. The HVMS shall consist of the major components listed below:

HVMS Server, Controller – This shall contain a database of all network-connected cameras and their configurations.
Workstations (HVMS Shell) – This shall render video and act as a main human/machine interface.
Honeywell or OEM or Third Party DVRs or NVRs – These will receive, store, and serve back recorded or live digital video to HVMS.

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Matrix Switcher – These are analog matrix switchers.

7. There shall be more than one IP engine/DVR connected to HVMS. One IP engine shall have more than one camera server depending on the number of cameras in the System. On an average with video motion detection disabled, one camera server shall cater to 25-32 cameras based on end user configuration requirements.

8. There shall be more than one switcher connected to HVMS.

9. System Interfaces – HVMS shall have the capability to integrate with Honeywell's digital video systems and analog video switchers.

a. Recorders

The System shall include a seamlessly integrated digital video recording system. The System shall support, but not be limited to, the following DVRs/NVRs:

Honeywell IP Engine
Honeywell's Rapid Eye Multi-Media Series digital recorders
Honeywell's Fusion Series digital recorders
Honeywell's Enterprise Series digital/network recorders

b. Analog video switchers

HVMS shall include video integration. The matrix switcher capability support of the System shall include camera call up, monitor switching, video command support and PTZ support. The video subsystem shall be the controller device for video cameras, monitors, and VCRs, and shall associate camera inputs with monitor outputs. The System shall allow users to program video monitors and video cameras to execute commands upon recognition of an alarm or any other condition within the System. The user shall be able to add, edit, delete, and partition video subsystems. The System shall support, but not be limited to, the following video switchers:

Honeywell's VideoBloX Series
Honeywell's MAXPRO Series

10. The number of recorders and switchers shall be scalable within a network to handle any size installation.

11. The HVMS application shall have the following major capabilities:

    a. Live viewing of up to 64 cameras on a single workstation with up to 4 monitors set up at CIF resolution. For D1 resolution, the number of live streams needs to be benchmarked based on client hardware configuration deployed.
    b. Integration with existing legacy video matrix switchers and matrix keyboards provides a hybrid system solution with 100% digital expansion capabilities
    c. Integration with access control system (Pro-Watch)
    d. Integration with Honeywell's video analytics and IDM (in the future)
    e. Failover and redundant capabilities for the IP engine
    f. Powerful investigation and video archive search tools
    g. Post recording motion detection and advanced search
    h. Motion detection-based recording and advanced search
    i. Multi-level user access rights
    j. Continuous, scheduled, manual, event-based and alarm-based recording
    k. Supports both Multicast and Unicast network topologies and communication protocols
    l. Powerful macro capability allows for custom scripts and provides both customization and third party integration
    m. Video analytics-enabled platform
    n. Supports both centralized and distributed architectures
    o. Simultaneous use of multiple video compression including MPEG-4 and M-JPEG

12. This document details the specifications only for the Honeywell IP engine. For other recording systems (i.e., Rapid Eye, Fusion, Enterprise, etc.), please refer to the respective A&E specs

    The Honeywell IP engine NVR system shall include:

    Redundant database servers
    Camera servers
    Network connected cameras or network connected camera encoders

13. Database Server - The database server contains a database of all network-connected cameras and their configurations. The database server shall manage the IP engine database, containing details such as:
    System configuration
    Camera configuration and settings
    Recording configuration and settings
    Details of recordings
    Schedules
    Configuration of video analytics

    The database server shall be able to be used in a redundant configuration, using two separate database servers (being executed on separate computers). The backup database server shall be continuously synchronized with the master database server to ensure that it is always up to date and ready for a failover when required. There shall only be one database server or redundant database server pair in the System.

14. Camera Servers - The camera servers must be capable of supporting a large amount of disk space for online video storage and access to high capacity archiving mechanisms for the removal of stored video to off-line media. The camera server shall:
    Manage live video from camera encoders
    Transmit live video to HVMS workstations

Receive camera control commands from HVMS workstations and then send the commands to cameras
Store live video to hard disk
Transmit previously stored video to HVMS workstations
Archive previously stored video to off-line storage media
Retrieve archived video from off-line storage media

The camera servers shall rely on the database server for all camera database information. The IP engine shall support multiple camera servers, with no limit to the number of camera servers.

15. Cameras and Camera Encoders - Each IP engine database server shall be expandable to support a maximum of 500 cameras. The HVMS server shall have the ability to concurrently connect to multiple IP engine database servers. As a minimum, the IP engine must support the following network cameras and camera encoders:
    a. Honeywell's KD6i Digital Dome PTZ Camera
    b. Honeywell's Network Video Adapter HNVE130A
    c.Honeywell's Rapid Eye Multi-Media LT
    d. Honeywell's Rapid Eye Multi-Media
    e. MegaChips OpennetView
    f. MegaChips MD-100
    g. AXIS Communications 205
    h. AXIS Communications 206
    i. AXIS Communications 206M
    j. AXIS Communications 210
    k. AXIS Communications 211
    l. AXIS Communications 211A
    m. AXIS Communications 213
    n. AXIS Communications 2100
    o. AXIS Communications 2110
    p. AXIS Communications 2120
    q. AXIS Communications 2130
    r. AXIS Communications 231D

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s. AXIS Communications 232D
t. AXIS Communications 2400
u. AXIS Communications 2400+
v. AXIS Communications 2400+ Blade
w. AXIS Communications 2401
x. AXIS Communications 2401+
y. AXIS Communications 2400+ Blade
z. AXIS Communications 240Q
aa. AXIS Communications 2411
bb. AXIS Communications 241S
cc. AXIS Communications 241SA
dd. AXIS Communications 241S Blade
ee. AXIS Communications 241Q
ff. AXIS Communications 241QA
gg. AXIS Communications 241Q Blade
hh. AXIS Communications 2420
ii. Sunjin CamStation CS100
jj. Sunjin CamStation CS-3001V

16. The HVMS shell shall have the option of two modes of user logins:

    - Windows authentication – Uses Windows logged-in user name
    - User DB authentication - Uses preconfigured user name and password

17. Workstation (HVMS shell) shall provide the following options to the operator:

    - Configuration
    - Viewer
    - Search
    - Reports

18. Configuration - The operator (with Admin privileges) shall have the option to configure HVMS. The following configuration shall be possible:

Recorders Configuration – This shall provide an option to add/edit/delete recorders such as IP engine, Rapid Eye, Fusion, Enterprise, etc.

Camera Configuration – This shall provide an option to add/edit/delete cameras and associate to a particular recorder or switcher and map to a particular site, partition or event group. Cameras need to be added manually for IP engine, whereas for other recorders cameras are automatically discovered.

Monitor Configuration – This shall provide an option to add/edit/delete monitors and map to a particular site, partition, event group or keyboard. It shall provide an option to add a digital monitor and associate with a particular recorder and workstation. It shall provide an option to add an analog monitor and associate with a particular switcher.

Switcher Configuration – This shall provide an option to add/edit/delete switchers such as MAXPRO, VideoBloX, Pelco, Vicon, etc.

Keyboard Configuration – This shall provide an option to add/edit/delete keyboard controllers.

User Management (Users and Roles) – This shall provide an option to add/edit/delete roles and associate to predefined privileges and then add/edit/delete users and associate users with roles.

Site Configuration – This shall provide an option to add/edit/delete a site which is a group of cameras.

Workstation Configuration – This shall provide an option to add/edit/delete a workstation.

Event Group Configuration – This shall provide an option to add/edit/delete event groups.

Partition Configuration – This shall provide an option to add/edit/delete partitions.

Sequence Configuration – This shall provide an option to add/edit/delete scan sequence.

Intercept Key Configuration – This shall provide an option to add/edit/delete intercept keys.

System Macro Configuration – This shall provide an option to add/edit/delete macros.

Port Configuration – This shall provide an option to add/edit/delete devices to the ports available on the controller. These devices shall be keyboard controllers, switchers, etc.

19. The following configuration shall be possible with cameras mapped to IP engine:

a. Camera Details - The user shall be able to configure the following parameters for each IP engine camera:

- Name
- Location
- Description
- Camera Number
- Camera Encoder Type
- Resolution. The following resolutions shall be supported (depending on the functionality of the camera and camera encoder):

  160x120

  QCIF (PAL 192x144, NTSC 176x112)

  240x180

  320x240

  CIF (PAL 384x288, NTSC 352x240)

  480x360

  640x480

  2CIF (PAL 768x288, NTSC 704x240)

  4CIF (PAL 768x576, NTSC 704x480)

  Half-D1 (PAL 720x288, NTSC 720x240)

  D1 (PAL 720x576, NTSC 720x480)
- Video Frame Rate. The supported frame rates (in frames per second) shall be as follows:

For Motion JPEG encoding: 30, 25, 20, 15, 10, 5, 3, 2 and 1. Slower frame rates of 1 frame every 2, 3, 5, or 10 seconds shall also be available.

For MPEG encoding: 30, 25, 15, 12.5, 7.5, 6.25, 3.75 and 1.

- Choice of five levels of video compression, equally distributed from minimum to maximum compression.
- Encoder IP address.
- Encoder camera number (when connected to a multiple port camera encoder).
- Choice of frame rate or bandwidth limited streaming.
- Unicast or Multicast transmission of video.
- PAL or NTSC camera format.

b. Camera Control - The user shall be able to configure any appropriate camera to be PTZ controllable. The following camera types must be supported as a minimum:

- Video Controls Limited (VCL) Orbiter cameras
- Honeywell's RapidDome cameras
- Cameras supporting the Pelco P protocol
- American Dynamics Speed Dome
- Hernis Scan System's Cameras
- Axis Encoder supported PTZ cameras and devices

The following PTZ characteristics shall be tunable on a camera-by-camera basis from the camera definition pages:

- Pan speed
- Tilt speed
- Zoom speed

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- Focus speed
- Iris speed
- Increment step size

For the VCL Orbiter and Honeywell's RapidDome camera ranges, the following additional functionality shall be provided:

Configuration of Privacy Zones. The IP engine shall allow the user to select the regions for privacy zones and automatically download the configuration to the camera.

Configuration of Camera Tours. The IP engine shall allow the user to fully configure all required camera tours, automatically downloading the configuration to the camera. The user shall be able to select the required camera tour in a similar way as presets are selected. A camera tour may be configured to be a "home" camera tour, similar to a home preset.

For the Pelco "P" and Hernis cameras, ability to control the washer and wiper shall be provided from within the IP engine.

c. Recording - The following methods of recording live video shall be supported:

- User activated
- Event activated
- Scheduled
- Continuous background recording
- Video motion detection
- Snapshot

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User Activated - The user shall be able to configure the following parameters for each camera:

- Pre-record Duration: The amount of pre-recorded video that will be associated with a user request for recorded video. This will allow the camera server to capture video prior to the user request, as well as after the request. Shall be selectable from a list of values ranging between 0 seconds and 5 minutes.
- Frame Rate: Video quality required for user activated recording. It shall be possible to have different frame rates for user and event-activated recordings. Shall be selectable from the entire range of frame rates supported for the camera. For MPEG encoding, support shall be provided to record only the index frames, or a subset of the index frames.
- Record Duration: User activated recordings shall terminate after this period. Shall be selectable from a list of predefined manufacturer default values ranging between 0 seconds and 5 minutes
- Retention Period: The default period that the camera server shall retain user-activated recordings before being deleted. The retention period of individual recordings shall be able to be changed on a per-recording basis. Shall be selectable from a list of predefined manufacturer default values ranging between one hour and forever.

Event Activated - There shall be at least four priorities of alarms/events:

- Event (journal priority)
- Low priority
- High priority
- Urgent priority

The following settings shall be individually configurable for each alarm and each camera:

- Pre-record Duration: The amount of pre-recorded video that will be associated with an alarm/event. This shall allow the camera server to capture video prior to the alarm/event, as well as after the alarm/event. Shall be selectable from a list of predefined manufacturer default values ranging between 0 seconds and 5 minutes.
- Post-record Duration: Event activated recordings shall terminate after this period. Shall be selectable from a list of predefined manufacturer default values ranging between 0 seconds and 5 minutes.
- Frame Rate. Video quality required for event activated recording. It shall be possible to have different frame rates for user, event-activated, scheduled and motion detection activated recordings. Shall be selectable from the entire range of frame rates supported for the camera/encoder. For MPEG encoding, support shall be provided to record only the index frames, or a subset of the index frames.
- Retention period. The default period the camera server will retain event-activated recordings before being deleted. The retention period of individual recordings shall be able to be changed as necessary. Shall be selectable from a list of predefined manufacturer default values ranging between one hour and forever.

The pre-record and post-record durations in the paragraph above define the maximum allowable limits for each camera. They shall be configured on a camera-by-camera basis. However each alarm or event causing video to be recorded shall also be capable of individual configuration with pre- and post-alarm periods being selected from a range defined by the maximum settings for the camera.

DVRMS systems requiring a single pre- and post-record event period to be defined for all alarms and events on an individual camera are not acceptable. DVRMS systems requiring a single pre- and post-event period to be defined for all alarms and events on all cameras are also not acceptable.

In the case of multiple alarms/events relating to the same camera, a video clip shall be created for each alarm/event.

For cameras that support PTZ presets, a specified preset location shall be selected automatically when the alarm/event occurs prior to the event activated recording commencing. For example, when an alarm is detected on a security door, the alarm shall trigger a PTZ camera to move to a preset position, which is pointing at the door prior to the DVRMS commencing recording.

Scheduled – The System shall support the ability to schedule recordings for each individual camera for times in the future. For each scheduled recording the user shall be able to configure:

- Start time
- Stop time
- Frame rate for the recording
- Retention period before the recording will be deleted
- Recurrence (if this is to be a recurring schedule)
- Description (at least 255 characters)

There shall be no limit on the number of schedules that can be entered for the System. There shall be no limit to the number of schedules per camera.

Continuous background recording - The System shall support the ability to provide continuous background recording from any cameras managed by the System. Background recordings will be stored as a discrete series of clips and will continue to operate in the event that communication between the camera server and the database server is lost. Once communication is restored, all relevant information will be updated to the database server.

For each camera the user shall be able to configure:

- Enable/disable background recording
- Duration of the recorded clip
- Frame rate for the recording

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- Enable/disable archiving of the clip and the period after which to archive
- Retention period before the recording will be deleted
- Enable or disable audio recording (if available)

Systems that require the configuration of multiple time periods to manage background recordings shall not be accepted.

d. Video analytics - The IP engine system must be able to activate recordings automatically based on events generated by the real-time analysis of video from any camera on the System that has video analytics enabled. The real time analysis comprises several algorithms as follows:

- Video motion detection
- Object tracking
- Object classification (and tracking)

Video motion detection - The IP engine system must be able to support video motion detection algorithms, which can be executed by the video encoder or the camera server. The enabling of video motion detection shall be either:

- On a continuous basis
- Scheduled for particular times, dates, days, months, and so on

The camera server-based algorithm must be able to provide the following functionality:

- Detect and track objects
- Learn the scene
- Adapt to a changing outdoor environment
- Ignore environmental changes including rain, hail, wind, swaying trees and gradual light changes

The user shall be able to configure the following parameters for each camera:

- Detection type: Continuous or scheduled
- Actions to perform when motion is detected: When motion is detected, the following actions shall be performed automatically:

  Start a recording, with the following configurable settings:

  Pre-record Duration: The amount of pre-recorded video, allowing the camera server to capture video prior to the detection of motion, as well as after the detection of motion. Shall be selectable from a list of predefined manufacturer default values ranging between 0 seconds and 5 minutes.

  Post-record Duration: Motion detection activated recordings will terminate after this period. Shall be selectable from a list of predefined manufacturer default values ranging between 0 seconds and 5 minutes or until motion has stopped.

  Frame Rate: Video quality required for motion detection activated recordings. Shall be selectable from the entire range of frame rates supported for the camera/encoder. For MPEG encoding, support shall be provided to record only the index frames, or a subset of the index frames.

  Retention period. The default period that motion detection activated recordings will be retained by the camera server before being deleted. The retention period of individual recordings shall be able to be changed as necessary. Shall be selectable from a list of predefined manufacturer default values ranging between one hour and forever.

  Send video to an operator station or alarm monitor:

  Automatically switch an operator station or alarm monitor to view the camera which has motion detected.

- Motion Finished Time: The amount of time where no motion (inactivity) is detected before the previous motion is classified as completed. This shall be used for allowing recordings to continue until motion has finished.

The IP engine must provide a means of automatic and manual tuning of the video motion detection for each camera. Incorporated within this tuning are the following:

- Selection of the frame rate used for detection
- Optimization for directions of movement:
  In any direction
  Across the camera view
  Towards and away from the camera
- Sensitivity level to fine tune the motion detection algorithm
- Specification of a minimum object size to allow noise filtering in the System to reduce false detections and alarms

The IP engine must also provide the ability to only detect motion in particular regions of the camera view. The ability to graphically select these regions using the mouse must be provided, with an unlimited number of regions permitted per camera. The regions of interest will be multi-vertical shapes with a minimum of six vertices to allow the region to be properly matched to the scene being detected. It shall be possible to add and remove vertices from the defined region of interest as needed. Solutions providing only rectangular regions of interest will not be accepted. Each region must be able to be individually tuned and have separate tuning parameters. This method of tuning must also provide a live tuning window whereby these settings and regions can be altered and tested prior to be being used. This live tuning window shall show the live video as well as the regions of interest. During the time that motion is detected within a region, the border of the region shall change to a different color. In this way, tuning can be performed to achieve the desired performance. Text shall also be provided in the window to alert the user that motion has been detected.

Object Tracking – The IP engine must provide the ability to acquire and track an object within a predefined field of view on selected cameras.

The camera server-based algorithm must be able to provide the following functionality:

- Detect and track objects
- Learn the scene
- Adapt to a changing outdoor environment
- Ignore environmental changes including rain, hail, wind, swaying trees and gradual light changes

The user shall be able to configure the following parameters for each camera:

- Actions to perform when an object is detected and tracked: When the event/alarm is raised, the following actions shall be performed automatically:
  Start a recording, with the following configurable settings:
  - Pre-record Duration: The amount of pre-recorded video, allowing the camera server to capture video prior to the alarm/event, as well as after the alarm/event, shall be selectable from a list of predefined manufacturer default values ranging between 0 seconds and 5 minutes.
  - Record Duration: The period that the recording is active relating to the period of activity in the region of interest. Activated recordings will terminate after this period. Shall be selectable from a list of predefined manufacturer default values ranging between 0 seconds and 5 minutes or the object is no longer in the region of interest.
  - Frame Rate: Video quality required for object tracking activated recordings. Shall be selectable from the entire range of frame rates supported for the camera/encoder. For MPEG encoding, support shall be provided to record only the index frames, or a subset of the index frames.
  - Retention period. The default period that object tracking activated recordings will be retained by the camera

server before being deleted. The retention period of individual recordings shall be able to be changed as necessary. Shall be selectable from a list of predefined manufacturer default values ranging between one hour and forever.

- Archive data: Enable/disable archiving and set the period after which the recording will be automatically archived.
- Deletion data: Set the period after which the recording will be automatically deleted.

Send video to an operator station or alarm monitor:

Automatically switch an operator station or alarm monitor to view the camera which has motion detected.

The IP engine shall provide a means of automatic and manual tuning of the object tracking for each camera. Incorporated within this tuning are the following:

- Selection of the frame rate used for detection
- Optimization for directions of movement:
  In any direction
  Motion to left, right, top, bottom or any direction into a region
  Motion to left, right, top, bottom or any direction out of a region
- Sensitivity levels to fine tune the detection algorithm
- Specification of a minimum object size to allow noise filtering in the System to reduce false detections and alarms

The IP engine shall also provide the ability to only track objects in particular regions of the camera view. The ability to graphically select these regions using the mouse must be provided, with an unlimited number of regions permitted per camera. The regions of interest will be multi-verticed shapes with a minimum of six vertices to allow the region to be properly matched to the scene being detected. It shall be possible to add and remove vertices from the defined region of interest as needed. Solutions providing only rectangular regions of interest will not be accepted.

Each region shall be able to be individually tuned and have separate tuning parameters. This method of tuning must also provide a live tuning window whereby these settings and regions can be altered and tested prior to use.

This live tuning window shall show the live video as well as the regions of interest. During the time that motion is detected within a region, the border of the region shall change to a different color. In this way, tuning can be performed to achieve the desired performance. Text shall also be provided in the window to alert the user that motion has been detected.

<u>Object Tracking and Classification</u>—The IP engine must provide the ability to acquire and track an object within a predefined field of view on selected cameras. The camera server-based algorithm must be able to provide the following functionality:

- Detect and classify objects
- Learn the scene
- Adapt to a changing outdoor environment
- Ignore environmental changes including rain, hail, wind, swaying trees and gradual light changes

Object classification will be grouped as follows:

- Person
- Vehicle
- Other
- Any

It shall be possible to combine object tracking with object classification to allow the detection of specific objects in a region of interest while ignoring other object types. The user shall be able to configure the following parameters for each camera:

- Actions to perform when an object is detected, classified and tracked: When the event/alarm is raised, the following actions shall be performed automatically:
  Start a recording, with the following configurable settings:
  - Pre-record Duration: The amount of pre-recorded video, allowing the camera server to capture video prior to the alarm/event, as well as after the alarm/event, shall be selectable from a list of predefined manufacturer default values ranging between 0 seconds and 5 minutes.
  - Record Duration: The period that the recording is active relating to the period of activity in the region of interest.

Activated recordings will terminate after this period. Shall be selectable from a list of predefined manufacturer default values ranging between 0 seconds and 5 minutes or the object is no longer in the region of interest.

- Frame Rate. Video quality required for object tracking and classification-activated recordings. Shall be selectable from the entire range of frame rates supported for the camera/encoder. For MPEG encoding, support shall be provided to record only the index frames, or a subset of the index frames.
- Retention period. The default period that object tracking and classification-activated recordings will be retained by the camera server before being deleted. The retention period of individual recordings shall be able to be changed as necessary. Shall be selectable from a list of predefined manufacturer default values ranging between one hour and forever.
- Archive data: enable/disable archiving and set the period after which the recording will be automatically archived.
- Deletion data: Set the period after which the recording will be automatically deleted.

Send video to an operator station or alarm monitor:

Automatically switch an operator station or alarm monitor to view the camera which has motion detected.

The IP engine shall provide a means of automatic and manual tuning of the object tracking and classification for each camera. Incorporated within this tuning are the following:

- Selection of the frame rate used for detection
- Optimization for directions of movement:
  In any direction
  Motion to left, right, top, bottom or any direction into a region
  Motion to left, right, top, bottom or any direction out of a region
- Sensitivity level to fine tune the detection algorithm

- Specification of a minimum object size to allow noise filtering in the System to reduce false detections and alarms

The IP engine shall also provide the ability to only track objects in particular regions of the camera view. The ability to graphically select these regions using the mouse must be provided, with an unlimited number of regions permitted per camera. The regions of interest will be multi-vertical shapes with a minimum of six vertices to allow the region to be properly matched to the scene being detected. It shall be possible to add and remove vertices from the defined region of interest as needed. Solutions providing only rectangular regions of interest will not be accepted.

Each region shall be able to be individually tuned and have separate tuning parameters. This method of tuning must also provide a live tuning window whereby these settings and regions can be altered and tested prior to use. This live tuning window shall show the live video as well as the regions of interest. During the time that motion is detected within a region, the border of the region shall change to a different color. In this way, tuning can be performed to achieve the desired performance. Text shall also be provided in the window to alert the user that motion has been detected.

20. Configuration – Live update of the configuration shall be possible

21. Viewer - The Viewer shall include, as a minimum, the following features/functions/specifications:
    a. The Viewer main video viewing screen shall be capable of showing 1, 4, 9, 16 and other customized split salvos of live or recorded video. These are standard presets, but can be customized to the user’s preferences.

    b. The Viewer shall be capable of saving current salvo as a view and shall allow the user to drag this view at any later point of time.

    c. The Viewer shall be capable of dragging a particular monitor onto a video panel and take control of that monitor.

d. The Viewer shall have the option to send command to the controller to switch particular analog camera onto the analog monitor through drag operation.

e. The Viewer shall be capable of configuring and running scan sequences.

f. The Viewer shall be capable of adjusting the contrast, brightness, and saturation settings for each camera independently

g. The Viewer shall support both analog and digital PTZ through GUI or through the keyboard.

h. The Viewer shall be capable of exporting user selected image or video clips. A digital signature shall be attached to every clip being exported.

i. The Viewer shall have the capability to playback the video clips exported.

j. Each video channel that is being recorded by the recording system shall be overlaid with text and a time stamp that is customizable by the user.

k. The Viewer shall allow the user to initiate recording through GUI or controller.

l. The Viewer shall have capability of complete alarm management for the alarms coming from recorders or switchers.

m. The Viewer shall have the facility of operator messaging which allows operators to communicate with each other. Operators can exchange text, images and annotated video sources. Operators can hand over a video source to another operator using messaging.

n. The Viewer shall have the facility of surrounding camera view.

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o. The Viewer shall have the option to perform various operations through context menu on a particular video (live/recorded/sequence). These operations include:

Full Screen
Point and Drag
Enable Square Select
Maintain Aspect Ratio
Toggle Text
Digital PTZ
Add Bookmark
Send Message
Start Recording
Stop Recording
Mark In
Mark Out
Save Image
Save Image As
Show Surrounding Cameras

p. The Viewer shall have the facility of timeline control (currently supported for IP engine) which provides camera recording statistics. Timeline control shall have following features:

Mark in/out (with looping facility)
Bookmark
Snapshot
Time Slider
Time Jump
Play Controls

q. The Viewer shall be controlled by a keyboard controller connected to the HVMS server/controller and shall have following major features:

Selecting salvos
Sending monitor commands
Switching operations
PTZ control operations

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r. The Viewer shall have the facility of configuring the preferences which shall include:

FPS of unselected panels
Rendered type
Preview pane
Text display format

22. Search - The Search facility in the HVMS shell shall include, as a minimum, the following features/functions/specifications:

    a. Search based on date and time for IP engine

23. Reports - The Report facility in the HVMS shell shall include, as a minimum, the following features/functions/specifications:

    a. Event History Report
    b. Audit Log Report

C. HARDWARE

1. HVMS Server

Refer to Section 4 for minimum requirements.

2. HVMS Workstation

Refer to Section 4 for minimum requirements.

3. IP Engine Database Server

Refer to Section 4 for minimum requirements.

4. IP Engine Camera Server

Refer to Section 4 for minimum requirements

5. Multiprocessor Support

The database server and camera server software shall be able to run on both multiple and single processor computers. Where a multiple processor system is used, the IP engine software shall be able to make optimal use of that configuration.

6. System Fault Tolerance

A failure of any one of the database servers or camera servers shall NOT cause the IP engine to cease operation. As a worst case, only the cameras controlled by the failed camera server will be temporarily unavailable until reallocated to other camera servers. No physical changes to hardware, cabling or connections shall be required.

D. ELECTRICAL POWER REQUIREMENTS

The HVMS components must have the following electrical specifications:

a. Power Requirement………………… 100-240 VAC (50/60 Hz)

E. ENVIRONMENTAL CONDITIONS

HVMS shall be designed to meet the following environmental conditions:

a. Operating Temperature………………40°-104°F (5° - 40° C) non- condensing

b. Emissions…………………………….CFR 47 Part 15 Subpart B EN55022, EN610000-3-2, EN610000-3-3V-3, CISPR 22

c. Immunity……………………………..EN55024

d. Safety…………………………………UL60950, NWGQ(7), IEC60950, IEC 60825-1:2001

2.8.2.3 FUSION III SERIES DIGITAL RECORDING AND TRANSMISSION SYSTEM

2.8.2.3.1 SYSTEM DESCRIPTION

A. The digital recording and transmission system shall offer the latest in digital technology, providing unparalleled stability, security, and ease of use, with advanced algorithms, fast capture rates, and a unique, flexible GUI. Available in 8, 16, and 32 channel configurations with recording capability up to 480/400 IPS (NTSC/PAL). The system is a complete analog digital video recording solution that can also be configured as a comprehensive hybrid network digital video recorder. The hybrid configuration will support up to 16 channels of analog video simultaneously with up to 16 channels of IP video and display them in the familiar 32 channel user interface. The combination of multiplexing, motion detection, audio, text insertion, image rates, mapping capabilities, and remote notification technologies shall provide an extremely flexible and reliable system.

2.8.2.3.2 SYSTEM PERFORMANCE

A. The digital recording and transmission system shall include, as a minimum, the following features/functions/specifications:

1. The digital recording and transmission system must be protected by the most extensive support services in the industry, including customer service, pre-sales applications assistance, after-sales technical assistance, access to technical online support, and online training using Web conferencing. The manufacturer shall provide 24/7 technical assistance and support via a toll-free telephone number at no extra charge.

2. The digital recording and transmission system and its components shall be thoroughly tested before shipping from the manufacturer's facility.

3. The digital recording and transmission system shall utilize the same user interface, regardless of platform, offering compatibility across the entire series.

4. The digital recording and transmission system shall be designed not only as a security tool, but also as a tool to prevent Point of Sale (POS) fraud, theft, and general abuse. The system shall have the ability to overlay text from POS systems directly onto the video (additional hardware required), and the operator must have the ability to search a segment of video based upon numerous variables (e.g., type of sale, register, clerk, hour, amount of refund, etc.). The user must have the ability to view the recorded details both locally and remotely.

5. The digital recording and transmission system shall also interface with ATM machines, recording both the video and ATM transaction details. The user must have the ability to view the recorded details both locally and remotely.

6. The digital recording and transmission system shall consist of 3 major components:

a. Digital recorder

b. Remote video software (HFRVS)

c. Video management software (HFVMS)

B. The digital recorder shall include, as a minimum, the following features, functions and specifications:

1. The digital recorder shall be compatible with LANs such as Ethernet, Token Ring, cable modems, DSL, FDDI, IP over ATM, IrDA (infrared), wireless, and ATM-emulated LANs.

2. The digital recorder shall be optimized and designed for Microsoft Windows Embedded XP, offering unparalleled stability, security, and ease of use, and shall allow the user to fully create and edit all network settings available with Windows Embedded XP.

3. The digital recorder shall come preconfigured with a DHCP enabled IP address and subnet mask to allow for installation in many IP settings without the need to reconfigure TCP/IP settings.

4. The digital recorder shall be available with 8, 16, or 32 BNC composite video inputs. All models must include corresponding BNC looping video outputs, with selectable termination via a DIP switch setting. The factory default setting of the DIP switches shall be termination on.

5. The 8 input digital recorder shall record at a rate of 240 images per second (ips), with real-time viewing of 30 ips per camera for live video.

6. The 16 input digital recorder shall offer recording options of 120, 240, or 480 ips, with real-time live video viewing option available, each with 30 ips per camera.

7. The 32 input digital recorder shall offer recording options of 240 or 480 ips, with real-time live video viewing of up to 16 images, each with 30 ips per camera.

8. The digital recorder shall utilize Differential Motion JPEG (M-JPEG) image compression, and offer the following resolutions (depending on model) available on a per camera basis:

a. 360x240 (NTSC), with an average file size of 2~5K per image.

b. 360x288 (PAL), with an average file size of 2~5K per image.

c. 640x240 (NTSC), with an average file size of 4~8K per image.

d. 640x480 (NTSC), with an average file size of 4~8K per image.

e. 720x240 (NTSC), with an average file size of 4~8K per image.

f. 720x288 (PAL), with an average file size of 4~8K per image.

g. 720x480 (NTSC), with an average file size of 7~11K per image.

h. 720x576 (PAL), with an average file size of 7~11K per image.

9. The digital recorder shall allow the user to adjust the resolution, quality, sensitivity, and number of images per second each camera will record. These adjustments shall be configurable per video input.

10. The digital recorder, regardless of number of inputs, shall offer the following on-board storage hard drive capacity options with four removable drive bays:

a. 2.0 Terabytes

b. 1.5 Terabytes

c. 1.0 Terabytes

d. 750 Gigabytes

e. 500 Gigabytes

f. 250 Gigabytes

11. The digital recorder must be housed in a high-performance metal case. The case shall be no higher than 4 rack units (4U) and be designed to fit into a 19" EIA rack.

12. The digital recorder shall have 512 MB of system memory, and the processor shall be a minimum of an Intel® Pentium IV. An internal 10/100 Network Interface Card (NIC) and a 64 MB video card shall be standard.

13. The digital recorder shall be capable of capturing transaction data from a POS system utilizing a register interface, which then must translate the POS data from its proprietary format into a standard format which the digital recorder stores in the database.

14. The digital recorder shall have the ability to record transaction data from POS systems and store the data in a database where it can be accessed by a virtually unlimited number of custom searches.

15. The digital recorder shall have the ability to easily backup important video to an internal or external media location, or an attached network storage device. The unit must not stop recording during the backup process. To ensure the integrity of data, the digital recorder shall use a proprietary compression format that can only be read by the digital recorder's backup program; no other viewer can read the video.

16. The operator shall be able to monitor the status of the recording process by viewing a backup progress bar displayed on the main display screen. The backup progress bar must automatically disappear from the main screen when the backup function has been completed successfully. The unit must feature a scheduled backup option, allowing the operator to schedule the backup of video by date and time.

17. When backing up the video to a CD, the unit shall include the ability to record the video on to multiple CDs, automatically prompting the user to insert the next CD when the previous CD is full.

18. The digital recorder shall include backup viewer software, allowing the user to playback the exported video in its proprietary format on a PC. The backup viewer must have essentially the same search features as the digital recorder's software.

19. The digital recorder must include a CD-RW recorder and 2 front accessible USB inputs as standard.

20. An optional DVD-R/RW recordable drive must be available from the manufacturer of the digital recorder allowing for up to 8+ Gigabytes of video data to be stored on each DVD.

21.The digital recorder shall include a minimum of the following front panel controls, devices, and LEDs:

a. Hard Drive Activity LED

b. Power LED

c. CD-RW Drive

d. CD-RW Open Tray Button

e. On/Off Power Switch

f. Two USB Inputs

g. Fan Indicator LED

h. One Hard Disk Drive Activity LED

i. Four Hard Disk Drive Power LEDs

22. The digital recorder shall include a minimum of the following rear-panel connectors:

a. BNC Connectors for Camera Inputs and Looping Outputs

b. 75-Ohm termination DIP switches

c. Sensor/Alarm Inputs

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d. Control Outputs

e. 110V/220V auto-switching power-supply

f. PS/2 Mouse Input

g. PS/2 Keyboard Input

h. USB Ports

i. DB9 Serial Input

j. LPT Parallel Printer Port

k. Audio Line In

l. Audio Microphone In

m. S-Video Output (on Real Time models)

n. SVGA Monitor Output

o. RS422/485 Interface (with RX, TX, and Operation LEDs)

p. RCA Video Out

q. RCA Audio Inputs

r. RJ-45 Network Jack (with Activity and Link LEDs)

23. An optional TV Out card must be available from the manufacturer of the digital recorder to provide 4 analog video outputs on the back of the unit. The outputs shall be programmable to sequence through any number of cameras, and the operator shall have the ability to temporarily stop the defined sequence and manually select a camera to the output. The sequence must be easily reactivated by simply enabling the sequence again.

24. All digital recorders shall include the following components from the manufacturer:

a. PS/2 Mouse

b. PS/2 Keyboard

c. DVR Repair Disc

d. Remote Video Software Disc

e. Power Adapter

f. PTZ Adapter

g. Rack Mount Attachments with Screws

h. DVR Key

i. User Manual

25. The digital recorder shall come pre-configured for fast and seamless integration within existing IT infrastructures. The unit must offer the following network setup options:

a. The ability to enable or disable access to the digital recorder from remote locations.

b. A designated time-out period that the connection will be terminated after unsuccessful user attempts to connect to the digital recorder.

c. An emergency port used to connect with the alarm monitor software.

d. A primary port used to connect to remote software.

e. An image port used to transfer video to the remote software.

f. A search port used to transfer search information to the remote software.

g. The ability to enable or disable access by the Web Viewer Software, allowing a user to view live video using a Microsoft Internet Explorer browser.

h. The ability to adjust the resolution setting when sending video to remote clients.

i. The ability to throttle the bandwidth of the digital recorder to ensure that images and system messages are delivered as quickly as possible within the capabilities of the network's available bandwidth.

j. The ability to define the modem and PPP information to dial to a remote client when an alarm event is activated.

k. The ability to view the IP configuration of the digital recorder.

26. The digital recorder must include an alarm log to record and display information pertaining to alarm events, an event log to record and display information pertaining to user logins, digital recorder reboots, and other related information, and a system log to record/display hardware information pertaining to scan disks, system recording successes and failures, and other related information. The user shall have the ability to export the log information in increments of 1 week.

27. The digital recorder shall include a user management console that allows the user to create, edit, and delete user accounts. Each account can be assigned different privileges that limit the usage of the system. Privileges shall include, but not be limited to, the following functions:

   a. Search

   b. Setup

   c. Pan/Tilt

   d. Backup

   e. Shutdown

   f. Intensive

   g. Forbidden Cameras

   h. User Ranking

   i. Auto Log Off

28. To make managing a large amount of units easy and organized, the digital recorder must allow the option of utilizing a central user management system. This option shall allow the creation, deletion, and management of user accounts on multiple units from one location. The user accounts can be modified from any digital recorder as well as the management station.

Any changes made on a unit must be sent to the management station for broadcast to all units.

29. The digital recorder shall include a hidden camera feature, which allows an administrator to hide certain cameras from a user. The camera must still be recorded, but the user will not be able to view the cameras in live or search mode.

30. The digital recorder shall allow the user to view the following system information:

   a. Video format of the digital recorder (NTSC or PAL).

   b. Software version of the digital recorder.

   c. The user specified unique identification name used by other software to connect to the digital recorder.

   d. The serial number of the digital recorder.

e. A user specified contact number.

f. Digital recorder manufacturer’s technical support number.

g. A note space for the user to type in any details about the system.

31. A Gigabit 10/100/1000 network interface adapter shall be available as an option from the manufacturer, P/N HF3GBNIC.

32. The 8 input digital recorder shall include 8 sensor inputs for use with devices such as motion detectors, glass breakage alarms, door and window sensors, etc., and the inputs must be configurable via software for Normally Open (NO) or Normally Closed (NC). The user must have the option of setting a delay period of time (in seconds) before the alarm is activated, and shall have the option of displaying a sensor status bar on the main display screen, and when the operator places the mouse pointer directly over a sensor, the associated sensor title must be displayed on the screen.

33. The 16 and 32 input digital recorder shall include 16 sensor inputs for use with devices such as motion detectors, glass breakage alarms, door and window sensors, etc., and the inputs must be configurable via software for Normally Open (NO) or Normally Closed (NC). The operator shall have the option of displaying a sensor status bar on the main display screen, and when the operator places the mouse pointer directly over a sensor, the associated sensor title must be displayed on the screen.

34. The digital recorder shall include the capability of recording either 2 , 4, 8 or 16 of channels “Line-In” type audio (depending on model). The data size (per channel) shall be no more than 1,625 bytes per second.

35. During power-up, the digital recorder shall run a series of self-tests and display messages as the various hardware and software subsystems are activated. After power-up, the digital recorder’s software must load automatically and display the main screen.

36. The digital recorder’s main video display screen shall include a minimum of the following buttons and features:

a. Loop/Full Screen: Allows the operator to view the video display area using the entire viewing area of the monitor. The operator may also sequence through selectable screen division’s sets, with an adjustable dwell time to specify the amount of time that elapsed before switching to the next screen division group.

b. Second 16: On 32 channel units, displays the second set of 16 cameras.

c. First 16: On 32 channel units, displays the first set of 16 cameras.

d. Date/Time: Displays the current date and time. This date/time shall also be "stamped" into the recorded video and displayed whenever the video is played back.

e. Search: Displays the search features that allow the operator to search previously recorded video.

f. PTZ: Opens the options for controlling PTZ enabled cameras.

g. Setup: Accesses the setup menu from which all customizable settings can be edited.

h. Backup: Opens the backup options.

i. Login: Allows the login of a different user.

j. Exit: Allows shut down, restart, log on, log off and restart in Windows mode.

k. Current User: Displays the name of the user currently logged in to the digital recorder.

l. Remote Client Status: Displays if anyone is connected remotely to the digital recorder.

m. Sensor Status Bar: Displays the sensor status for each camera set up to use sensors.

n. Control Output Status and Activation Bar: Displays the output status and allows the user to activate an output relay.

o. Screen Division Buttons: Allows the user to select the desired screen division to the video display area.

37. The camera status for each camera shall be displayed next to the camera number (or name) in the video display area. The information must include:

a. Camera number and custom name.

b. Recording status, which must show whether a camera is currently being recorded, whether a camera that has been set up for motion only recording is currently being recorded, or whether a camera is NOT currently being recorded.

c. Special recording status, which must indicate whether a camera's associated sensor has been activated, and/or when the user activates the instant recording option for the selected camera.

38. The following screen division sets shall be available to the operator of the digital recorder:

a. Display the first four videos (1-4) in the video display area.

b. Display the next four videos (5-8) in the video display area.

c. Display the next four videos (9-12) in the video display area.

d. Display the next four videos (13-16) in the video display area.

e. Display videos 1-9 in the video display area.

f. Display videos 8, 9, 10-16 in the video display area.

g. Display all 16 videos in the video display area.

39. The digital recorder shall allow for user definable, descriptive camera names of up to 14 alpha-numeric characters. The font size must be adjustable, and the option to bold the characters must be available.

40. To optimize the clarity and detail of recorded video, the digital recorder shall have the ability to adjust each video input's brightness, contrast, and hue. The user must be able to easily return the video settings to the system's default, either individually or all at once, with a simple mouse click.

41. The digital recorder shall incorporate advanced video motion detection, including the ability to create 5 motion detection regions, with adjustable sensitivity, per video input, utilizing "click and drag" of the system mouse.

Each region must be resizable by dragging the sides and/or corners, and the operator shall have the ability to move each region anywhere within the setup area. The user must be able to easily remove all motion regions from the setup area with a simple mouse click.

42. When motion occurs in programmed detection region, a colored box shall be displayed on the main screen around the region where the motion occurred.

43. The digital recorder shall include the option of displaying the associated video full screen upon a motion or sensor event, and enabling an audio alarm. The audio alarm shall be either a default beep, or a custom created sound file (.wav), unique to the application. The sound file shall be played through speakers attached to the digital recorder.

44. The digital recorder shall include the ability for pre-alarm and post-alarm recording, which must record video for a specified time before and/or after a motion or sensor alarm has occurred. The time period must be selectable from 1 to 60 seconds.

45. The digital recorder shall incorporate a “Regular Interval Recording” feature, allowing the unit to record a single frame every few seconds, every few minutes, every few hours, etc., to show that the unit is still functioning even when motion is not taking place. The amount of time must be user programmable. This option shall only work when motion recording or sensor recording is selected.

46. The digital recorder shall include intensive recording, which allows the programmer to increase the pictures per second of any camera when a sensor or motion alarm event occurs.

47. The digital recorder must include a video loss alarm function to allow an alarm event to occur when a camera loses signal for any reason (e.g., power failure, cable being cut, camera damage, etc.). When a video loss event occurs, the operator shall have the option to enable an alarm beep utilizing the internal speaker of the digital recorder and/or activate an alarm output.

48. The digital recorder must include alarm monitor software to stream video across a LAN to a client PC when an alarm is detected on the unit. The operator shall have the ability to stop, play forward and backward, frame by frame or real speed, the video that streams across. The program shall automatically load at startup and appear in the taskbar. It must constantly monitor for a signal from the digital recorder, and when an alarm signal is detected the alarm monitor must notify the operator of an event via a pop-up message window. An alarm beep must also be activated to alert the user. The alarm monitor image viewer shall also allow the user to search through past events that have been recorded on the client PC.

49. To increase the amount of pertinent video that is saved by the digital recorder and to keep it for a longer period of time, the operator must have the ability to utilize recording schedules. For general installations, predefined schedules with basic configurations shall be standard.

Up to 32 user-definable recording schedules to maximize the recording efficiency of the digital recorder must also be available. Schedules may be defined by the following:

a. Day of week

b. Time of day

c. Camera number

d. None, continuous, sensor input, or motion recording

e. Relay output(s) activation

50. Each of the digital recorder's 32 detailed customized schedules shall allow the operator to "link" camera(s) and relay output(s) activation to particular sensor input(s). The schedules can be activated by date/time, motion alarms, and/or sensor inputs. Advanced options must also be available that allows the user to send alarm events, either motion or sensor activated, to the remote emergency agent software or the video management software.

51. Instant recording must be available to manually start a camera recording, superseding the current schedule. This recording shall be started with a simple double right-click of the mouse on the desired video image, and the label "INSTANT" shall be placed on the upper right corner of the video. When this manual recording is activated, it must automatically flag the specific video so that an index search can be performed at a later date for easy retrieval.

52. The digital recorder shall have the ability to export single images in the JPG file format, save video clips in the AVI format, or output to a VCR using the S-Video port. A digital signature must be attached to every JPG and AVI file exported by the unit for use with the bundled digital verifier application. This function must be unique to the unit and its verification software and shall not interfere with viewing files using other applications.

53. The digital recorder shall incorporate an internal RS422/RS485 adapter with the ability to control multiple PTZ cameras. Depending on the model, control must include multiple pan, tilt, zoom, and focus speeds, iris control (including return to auto-iris), focus control (including return to auto-focus), programming presets, and viewing presets. When an operator places the mouse pointer directly over a preset, the associated preset title must be displayed on the screen.

54. The digital recorder shall support most of the feature set and programming functions of Honeywell's RapidDome series and KD6 series high-speed domes.

55. The digital recorder shall support a minimum of 35 different protocols, to include the following, with additional protocols added frequently:

a. Honeywell's RapidDome

b. American Dynamics (RS422)

c. CBC

d. C-BEL

e. Chiper CPT (V9KR Series)

.

f. CNB-AN102

g. CNB-PTZ100

h. Computar

i. Dong Yang Unitech (DRX-502A)

j. Dynacolor

k. Ernitec

l. Fine System (CRR-1600)

m. Focusvision (KD1602)

n. Honeywell (HSD-250)

o. Inter-M (VRX-2101)

p. Kalatel (Cyberdome)

q. KDC

r. LG (LVC-A70x's)

s. LG (LPT-A100L)

t. Merit LI-LIN

u. Panasonic

v. Pelco D

w. Pelco P (4800 baud)

x. Philips (TC8560 & TC700)

y. SAE

z. Samsung (DRX-502A)

aa. Samsung (SCC-641)

bb. SANTACHI

cc. Sensormatic SpeedDome (RS-422)

dd. SungJin (SJ2819RX)

ee. Toshiba P (4800 baud)

ff. Ultrak (KD6) or Honeywell (HD6)

gg VCL

hh. Vicon

ii.Vicon SpeedDome

jj.WonWoo

56. The digital recorder shall include on-screen play controls to playback the recorded video frame by frame (either forward or reverse), or play at normal speed (either forward or reverse). An on-screen hour/minute slide control bar must also be available to allow the operator to select the hour and minute of the desired video. The slide bar must be controlled either by clicking and dragging the slider, or using the wheel on the manufacturer supplied mouse.

57. The digital recorder shall offer on-screen brightness controls to brighten up an image to get more detail, zoom controls to allow the user to digitally zoom in on an image, and speed controls to increase or decrease the playback speed. When recording images with extensive motion using 720x480 resolution, the unit shall offer the option of interweaving two frames to create a smooth detailed image, alleviating the “digital blur” that can interfere with the quality of the video when recording high speed moving images. This feature shall be activated with a simple mouse click.

58. The digital recorder shall include a time synchronization option, allowing a single channel of video to playback in real-time.

59. The digital recorder shall allow the operator to perform an index search based upon motion detection, sensor activation, instant record events, and/or ATM/POS transactions, greatly reducing the amount of time required to search through saved video.

When searching ATM/POS events, the user must have the option of searching for a specific transaction number, or searching for all transactions. A simple double-click on any one of the search results shall retrieve the associated segment of video.

60. The digital recorder shall include the ability to provide a 24-hour visual overview of a single camera by separating a 24-hour period into 24 images, each representing the first

second of each hour. The operator must then have the ability to further narrow the search down to 10 minute and 1 minute increments by simply double-clicking a displayed image.

61. The digital recorder must allow the operator to specify a region on an image and perform a search based upon any motion that had occurred in that region. To indicate the progress of the search being performed, a status bar shall be displayed on the screen. The search results must be displayed in a separate column, listed by date and time. A simple double-click on any one of the search results shall retrieve the associated segment of video.

62. The digital recorder shall automatically adjust for Daylight Saving Time changes, with no loss of video when the hour jumps forward. When the hour falls back, the unit shall record both duplicated hours, and allow the operator to select which duplicated hour to play back.

63. The digital recorder shall allow the user to print a recorded image to a local or network printer, utilizing the printing options of the available printer.

64. The digital recorder shall allow for exporting single images in the JPEG file format, and saving video clips in an AVI format. This shall allow compatibility with any PC that supports these file formats. The AVI setup must allow the user to enter a record duration and image quality setting as well as the desired codec from a predefined list.

65. JPEG images exported from the digital recorder must be automatically digitally signed to verify the authenticity of the image, and ensure they have not been tampered with or edited in any way. A digital signature verification program must be supplied with the digital recorder for installation on any computer. Using this program, the operator shall simply input the site code of the digital recorder that the image was originally extracted from, and press verify. If the image has not been tampered with, the program shall display the message “original image file.” If the image has been tampered with, the program must draw a red square around the image and display the message “entire image changed” or “wrong site code.”

66. The digital recorder shall incorporate advanced hardware watchdog circuitry for unsurpassed system reliability.

A. The remote video software shall include, as a minimum, the following features/functions/specifications:

1. The remote viewing software shall allow a user to fully operate and maintain the digital recorder remotely, and must connect using standard TCP/IP protocol through connection types such as DSL, cable modems, T1, ISDN, LAN, or 56K dial-up connections.

2. The remote software shall provide the user with most of the features and functions available at the local digital recorder. The remote features and functions must include viewing live video, searching through archived video, exporting images and video clips, and virtually all setup functions.

3. The remote video software shall allow up to 5 users to simultaneously connect to a single digital recorder. Each user can perform functions on the unit and not affect the other users. The unit shall only allow one user to access the setup and PTZ functions at any given time.

4. To ensure that only authorized personnel are allowed to log in to the digital recorder, the remote video software shall utilize user accounts with assigned privileges, allowing or denying access to different functions.

5. The remote video software must be included with each unit, with the following minimum requirements:

a. Pentium IV2.0 GHz or equivalent

b. 256 MB system memory

c. DirectX 9 or higher

d. Compatible video card

e. Internet or LAN connection

f. TCP/IP installed

g. Microsoft Windows 2000, or XP OS

h. 1024x768 display resolution

i. 32-bit color depth or better

B. The video management software shall include, as a minimum, the following features/functions/specifications:

1. The video management software shall be a powerful utility that allows as many as 100 digital recorders to be connected simultaneously and controlled using 1 computer.

2. The video management software shall incorporate multiple screen divisions, allowing the operator to create several groups of cameras and customize the organization of the cameras. Each screen shall contain up to 36 different cameras.

3. The video management software shall include the ability to have multiple windows open at any given time. The organization of these windows shall be done using tabs, and the operator must have the ability to jump from one window to another by simply clicking on a given tab. The video management software shall also support the use of multiple monitors, allowing the user to view multiple windows simultaneously.

4. The video management software must allow remote audio in both live and retrieval modes.

5. To allow users to quickly identify alarm zones and view the associated video, the video management software shall be capable of importing maps and associating cameras and sensors to locations on the maps. The software shall allow for importing an unlimited number of maps.

6. The video management software shall allow the user to view different types of alarms that are coming from the unit, including video signal loss and sensor alarms. The software shall incorporate a filter button to filter through the different types of alarms. By simply double-clicking an alarm entry, the search window must open with the associated unit, camera, and time related to the selected event.

7. The video management software shall log all alarm events with the available associated video. Up to 50 of the most recent events shall be viewable as on-screen thumbnail images. The operator must have the ability to set the number of thumbnails and the display size. Up to 9 display sizes must be available.

8. The video management software shall include a health information window to view the health of units connected to the software. The window shall provide all the collected information related to the health of a unit at a given point in time. This information can be used to track data usage or monitor the stability of a unit over time to determine if components are in need of replacing before a critical failure.

9. The following must be available in the health information window:

a. Total Status: Indicates if the unit is healthy and running correctly.

b. Network Status: Indicates if the network component of the unit is running correctly and error free.

c. Disk Status: Indicates if the hard drives of the unit are running correctly and have available storage space.

d. Video Status: Indicates if the video component of the unit is running correctly and error free.

e. Recording Status: Indicates if the recording component of the unit is running correctly and error free.

f. DVR Information: Displays pertinent information on the unit.

g. Video/Recording: Displays the recording status of cameras connected to the unit.

h. Memo: Space to input notes on the health check event.

i. Disk Usage: Indicates disk usage and remaining available space.

j. Export: Exports the unit's health information as an HTML document.

10. Upon a warning or failure of any of health attributes on the unit, the video management software must display an icon indicating the type of error that occurred. The unit must also include the option of sounding a voice warning if a failure is detected.

11. The video management software's network backup feature shall allow the operator to select the video to be saved and the location of where to save it. The software must include a status bar to indicate the progress of the backup.

12. The video management software shall have several options to allow the operator to search through and find a particular section of video. The options must include preview search, a search option that allows the user to narrow down recorded video in a 24-hour period, displaying one image for each hour of the day. When the image is selected, the hour chosen must then be broken down into 6 images, one image for every 10 minute increment. When an image is again selected, 10 images are displayed, one for every minute within the 10 minute period. The selected image can then be applied to the main search.

13. The video management software must allow the operator to export single images in the JPEG file format and save video clips in the AVI file format. This shall allow compatibility with any PC that supports these file formats.

14. The video management software shall incorporate a log to keep track of when the software was opened and closed and who logged in and out. The software must also utilize an alarm log to allow the user to view different types of alarms coming into the system. Double-clicking an entry must open a search window with the associated digital recorder, camera, and time related to the event.

15. The digital recording and transmission system shall be the Honeywell Fusion series or equivalent.

2.8.2.3.3 MECHANICAL SPECIFICATIONS

A. The digital recorder must have the following mechanical specifications:

1. Unit Dimensions (H x W x D)	7.0" x 17.3" x 21.75"
	180 mm x 440 mm x 552 mm
2. Unit Weight	64 lbs.
	29.5 kg

2.8.2.3.4 ELECTRICAL POWER REQUIREMENTS

A. The digital recorder must have the following electrical specifications:

1. Power Requirement	100-240 VAC (50/60 Hz), 10/7A

2.8.2.3.5 ENVIRONMENTAL CONDITIONS

A. The digital recorder shall be designed to meet the following environmental conditions:

1.Operating Temperature	40° - 104° F (5° - 40° C) non-condensing
2. Emissions	FCC Part 15, Subpart B, Class A

	EN55022 + A1: 1995 and A2: 1997
	EN61000-3-2, EN61000-3-3
3. Immunity	EN55024:1998 + A1:2001 and A2:2003
4. Safety	UL, cUL 60950-1:2003
	IEC/EN 60950-1:2001
	CB report and certificate

2.8.2.4 RAPID EYE MULTI-MEDIA, DIGITAL RECORDING AND TRANSMISSION SYSTEM

2.8.2.4.1 SYSTEM DESCRIPTION

A. The digital recording and transmission system shall provide a powerful, intelligent enterprise-class digital storage management tool that combines video, audio, and data capabilities in a single recorder unit (RU). The system shall be designed to record, search, and transmit video, audio, and data transactions, providing users with both live and post-event assessment options. The digital recording and transmission system must be available in a minimum of 36 different configurations, allowing the user to select the right RU for every application.

2.8.2.4.2 SYSTEM PERFORMANCE

A. The digital recording and transmission System shall include, as a minimum, the following features/functions/specifications:

1. The digital recording and transmission system manufacturer must be the world's largest and most experienced manufacturer of electronic security systems, with over 70 years of experience in the security industry.

2. The digital recording and transmission system must be protected by the most extensive support services in the industry, including customer service, pre-sales applications assistance, after-sales technical assistance, access to technical online support, and online training using Web conferencing. The digital recording and transmission system must be manufactured in the U.S., and the manufacturer shall provide 24/7 technical assistance and support via a toll-free telephone number at no extra charge.

3. The digital recording and transmission system shall provide a powerful, intelligent enterprise-class digital storage management tool that combines video, audio, and data capabilities in a single RU. This system must be designed to record, search, and transmit video, audio, and data transactions, both live and post-event.

4. The digital recording and transmission system's default priority shall be to capture and store video, audio, data, and alarms. The system must be configurable to prioritize live viewing and retrieval of video if required.

5. The digital recording and transmission system shall be compatible with most existing and new video equipment and incorporate into any TCP/IP or dialup network. Communication options shall include LAN, WAN, Internet, and PSTN (PSTN model dependent), all utilizing the system's standard equipment, without the need for additional hardware. Compatibility with ISDN and DSL must be supported using additional hardware.

The system shall allow for retrieval of system files, and remote software upgrades, utilizing any of the communication options. Simultaneous multiple connections utilizing different network and/or communication types shall be supported.

6. The digital recording and transmission system shall utilize an authenticated proprietary file format (REM) for integrity of evidence.

7. The digital recording and transmission system shall allow the user to regulate the data rate, defining the size, frequency, and threshold. This shall allow smaller blocks of data to pass unhindered by larger blocks of data, and ensure that images and system messages are delivered as quickly as possible within the capabilities of the network's available bandwidth.

8. The digital recording and transmission system and its components shall be thoroughly tested before shipping from the manufacturer's facility.

9. The system shall consist of 3 major components:

a. Recorder unit

b. Software for administrating operators on a multiple site database (ADMIN).

c. Software to view video (VIEW) from a recorder unit.

B. The RU shall include, as a minimum, the following features/functions/specifications:

1. The RU's operating system shall be VxWorks™, a secure, stable, and multi-tasking networked real-time operating system designed to be used in a distributed environment. Windows and other non real-time based operating systems are not acceptable.

2. The system's RU must be offered in a minimum of 36 standard configurations, allowing the choice of length of time for storage of video, video capture rate (ips), and the option to record incident clips to a CD at the RU site. The same RU must operate on either NTSC or PAL utilizing the identical software, at either 115 VAC or 230 VAC.

3. The RU must be engineered for durability and expandability, and be of a rugged, modular design, suited for desktop or rack-mount installations. It shall be designed to fit into a 19" EIA rack without additional hardware, or in an optional slide rack-mount kit for convenient servicing and installation.

4. The RU shall record in a continuous mode (circular buffer), offering a choice of 6 different resolutions (NTSC) selectable on a per camera basis; 160x120, 320x192 (legacy), 320x240, 640x240, 648x480 or 704x480. The recording format shall feature 24-bit true color with over 16 million colors, in YCrCb 4:2:0, in a modified H.261/263 Discrete Cosine Transformation (DCT) format, with proprietary dual threshold processing, yielding high quality with low bit rate.

5. The RU shall offer long-term digital storage for recorded video, audio, and data. The RU must be available in 500, 750, 1000, 2000, 3000, 4500, or 6250 camera day versions. The manufacturer's Web site shall include a storage calculator for estimating the typical number of days the RU will record, based upon RU capacity, desired update rate (ips), and the number of cameras being recorded.

6. The RU shall be available with maximum system update rates of 20, 40, 60, or 80 images per second (ips), shared between recording and live transmission. The individual camera rates shall be selectable from 1 image every 4 seconds, to 30 images per second.

7. A minimum of ten video quality settings shall be available (10-1), with 10 being the highest quality (shortest record duration) and 1 being the lowest quality (longest record duration). The quality settings shall be set independently for recording and transmission.

8. For data handling, the RU shall have the capability to monitor, record, retrieve, search, and filter data obtained from connected devices for Point-Of-Sale (POS), such as cash registers and Automatic Teller Machines (ATMs). The messages from these devices shall be treated as events, with the option of logging the occurrence of a message, or of having it trigger an alarm. A search engine for data shall be standard, allowing operators to

search and review recorded data and video streams associated with the time at which the data is obtained. An operator shall have the option of designating serial data from POS/ATM to automatically initiate an action (alarm) and/or report (log). A post-event search of a specific recorded data stream qualifier must be available. Support for data handling includes: the manufacturer's multi-port protocol interface translator connected to a single serial port on the RU, allowing for up to 4 separate data sources, with each data stream displayed as an individual window within the VIEW software.

9. The RU shall support at a minimum, the following simultaneous capabilities:

a.	Live Video Sessions (all users):	32 streams
b.	Video Retrieval Sessions (all users):	32 streams
c.	Users Viewing Live Video:	10 sessions
d.	Users Retrieving Video:	10 sessions
e.	Users Accessing Alarms:	10 sessions
f.	Users Accessing Events:	10 sessions
g.	Users Accessing Data:	10 sessions
h.	Users Accessing Maintenance	1 session

10. The RU shall provide an interface for onsite operation (LocalView) without a computer or additional software. LocalView is displayed on a monitor connected directly to the RU. LocalView must enable onsite operators to manage video settings for each camera and other basic system configurations. LocalView must start automatically when the RU is powered. An online help facility must also be included in LocalView. To access LocalView, the manufacturer shall supply a mouse for connection to the RU. The functions shall include, but not necessarily be limited to, the following:

a. Basic system set-up functions such as configuring network settings, including the RU's IP address.

b. Camera setup including name, type, recording rate, recording quality and AGC.

c. Configure the system clock.

d. Review and search system log.

e. Monitor live video, audio, and POS data.

f. View recorded video, audio, and POS data.

g. View a video clip.

h. Copy a video clip to the local CD-RW drive. Depends on model of RU.

i. Set up a camera tour.

11. The local user interface shall include the ability to review and play back recorded video in its own Clip Builder. The Clip Builder shall include 8 live video tabs that are individually configurable by selecting from one of the 15 pre-defined grids, allowing up to 16 video streams to be displayed. Clip Builder must also provide a utility to create a video clip using Start and Stop times. The user shall have the ability to store the clip to the RU’s hard drive indefinitely without fear of loss or overriding the clip, or directly to a CD if the unit is equipped with the optional CD-RW drive. A Clip Player tab must also be available to review a pre-recorded clip from the RU’s hard drive, or from a previously recorded CD loaded in the CD-RW drive. The Clip Player must be loaded onto the CD automatically when storing the clip using Clip Builder. Both the Clip Builder and Clip Player shall provide mouse-selectable, VCR-like controls, such as play, pause, fast forward, and rewind.

12. The local user interface shall feature the following three levels of password protected security:

a. Setup

b. Live

c. Live Cycle

13. The RU must offer 4 field-upgradeable hard drive bays, with all drives mounted on field serviceable carrier sleds. This shall allow for convenient upgrading of local storage utilizing the manufacturer’s hard drive expansion kits.

14. The addition or replacement of hard drives shall not require access to internal components or assemblies and must be accomplished without the removal or dismantling of the RU’s chassis or enclosure.

15. An optional CD-RW drive must be available for creating evidence clips of security data locally at the RU, for event backup, and archiving. If the RU is not initially ordered

with a manufacturer-installed CD-RW drive, a field upgradeable CD-RW bay to support a future upgrade to the CD-RW drive must be included.

16. The RU must include a removable front panel with key lock to conceal the 4 field-upgradeable/replaceable hard drive bays and the optional CD-RW drive.

Also secured behind the lockable front panel shall be the front panel control and display module, which shall include the following:

a. Power Switch (low voltage control)

b. System Ready LED

c. Alarm State LED

d. Hard Drive Activity LED

e. 2x16 alphanumeric system status LCD readout to indicate operational status and system health monitoring.

17. All physical connections shall be made directly to the RU, without the need for additional hardware.

18. Sixteen BNC composite video inputs, each with a corresponding BNC looping video output, shall be provided. The input BNCs shall be auto-terminating, so that no terminating resistors are required if not looping to other devices in the system, and each input must have the ability to auto-detect camera inputs, detecting whether the input is color or monochrome. The looping video output BNCs must be shipped “capped” from the manufacturer.

19. The RU must include 2 BNC composite monitor outputs, one used as a spot or sequential real-time switcher, the other for generating a color bar test pattern, shall be present.

20. All video inputs and video outputs must be on an easily detachable sub-panel, allowing for servicing or replacement of the unit while preserving the camera wiring.

21. The RU must be equipped with 2 independent, bi-directional audio channels that offer users the ability to monitor and record synchronized audio streams. The audio channels must synchronize with the video and data streams. The audio inputs and audio outputs shall utilize 3.5 mm stereo mini jack connections.

22. The RU shall include 16 5V TTL alarm/control inputs on removable 5mm terminal block plugs. The inputs must be configurable via software as Normally Closed (NC), Normally Open (NO), or 2K End-of-Line (EOL) resistor sense.

23. The RU shall incorporate a fault relay to interface with an external alarm panel. The RU must have the ability to signal failure to operate or failure to report alarms.

24. Eight 5V TTL general purpose outputs on removable 5 mm terminal block plugs to interface with devices such as lights, warning sirens, locks, etc., shall be present. Each control output shall be rated 50 mA maximum @ 5V.

25. The RU shall include 2 RS232 serial ports:

a. COM 1: DB9 (M) external modem, PTZ control or POS/ATM connections.

b. COM 2: DB9 (M) PTZ control or hyper terminal configuration.

The manufacturer must provide cables and adapters for connections to these serial ports.

26. Utilizing an RS232/485 converter (where required) on either serial port, support for the following PTZ domes shall be standard in all RUs:

a. Honeywell's RapidDome/Orbiter

b. Honeywell's KD6 using MAXPRO

c. Honeywell's KD6 using VCL

d. Javelin 308 Series

e. Kalatel

f. Pelco P or D

g. Sensormatic RS422

27. One V.90 Multi-Protocol Internal Modem shall be included in the RU (model dependent), with a standard RJ11 handset cable interface cable provided by the manufacturer as standard equipment.

28. One 10/100 Base T Fast Ethernet internal Network Interface Card (NIC) shall be included in the RU, with a standard RJ45 supporting CAT5 cable provided by the manufacturer as standard equipment.

29. The RU shall work with either a 115 VAC or 230 VAC 50/60 Hz input, 6A or 3A and shall automatically select the correct supply.

30. The RU shall have the ability to connect to a designated PC, using either a telephone connection or network connection, when an alarm is triggered by an event.

31. The RU shall automatically adjust for Daylight Saving Time changes, with no loss of video. When the hour falls back, the unit shall record both duplicated hours, and allow the operator to select which duplicated hour to play back.

32. The RU shall have the ability to be configured as a SNTP client (Simple Network Time Protocol), allowing the unit to automatically synchronize to a SNTP server.

33. The RU shall have the ability to be configured as a client of Dynamic Host Configuration Protocol (DHCP), allowing the RU to be automatically assigned an IP address on networks utilizing Dynamic Network Service (DNS) to resolve host names and IP addresses.

C. The Administrative software (ADMIN) shall include, as a minimum, the following features/functions/specifications:

1. The ADMIN software shall be a workstation/server based administration tool capable of enterprise-wide site, user, tour, and alarm station management.

2. The administration software shall be Windows-based, must be compatible with Microsoft Windows 98, NT, ME, 2000, or XP, and must provide a user-friendly GUI for creating the digital recording and transmission system's database.

3. Utilizing the manufacturer's standard administration software (ADMIN), support of both of the following must be available:

a. A database that can be as small as a single site, with a sole user, based on a single computer, using Microsoft Access as the default database. This Microsoft Access database shall be included with the administration software.

b. A database serving thousands of sites and thousands of users, hosted on a network server using common networked database protocols, including Microsoft Access or Microsoft SQL-Server/MSDE.

4. The administration software shall allow the administrator to generate a database template, upon which subsequent operator accounts or Administrator accounts can be

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based. This template shall make it easy to set up operator accounts with a predefined set of rights.

5. A record of each event shall be entered in the alarm log of the central database during an alarm session. The unit must have the ability to sort the alarms in true chronological order. The alarm log must contain a minimum of the following information for each event:

a. Name of user logged on to alarm station or using alarm session

b. Name of site

c. Alarm action taken (e.g., new, acknowledge, rearm)

d. Time and date action taken

e. Time and date of alarm

f. Sensor input of alarm

g. Name of alarm event

6. The administrative software shall allow for definable user names and privileges. The administrator must have the ability to restrict any, or all, of the following:

a. The right to use the administration software

b. The right to use maintenance functions, including modifying configuration settings, modifying security settings, and modifying system settings

c. The right to obtain live video from a site

d. The right to obtain recorded video from a site

e. The right to listen and/or talk utilizing the audio feature

f. The right to use PTZ commands on cameras that have the capability, during a live session

g. The right to operate outputs (for controlling gates, lights, etc.) during a live session

h. The right to process alarms using an alarm session to acknowledge and reset alarms

i. The right to access certain sites

j. The right to access certain camera at a specific site, while allowing access to other cameras

7. The administrative software shall feature encrypted password protection. Passwords can be up to 50 alphanumeric characters, and the system administrator shall have the option of assigning individual unique passwords or assigning the same password to a group of users. The password must block access to unauthorized users, regardless of whether they have access to the administration or viewing software, and/or the dial-up or IP address.

D. The Viewing software (VIEW) shall include, as a minimum, the following features/functions/specifications:

1. The viewing software shall be a feature rich, workstation-based operator program that provides a user-friendly GUI for complete operation and configuration of one or many different RUs simultaneously. The user must have the ability to observe and monitor live or recorded video, audio and data from any RU. The user shall also have the ability to connect to multiple sites simultaneously using multiple connection methods from the same or multiple workstations and connect to the same RU site using multiple connection methods for live and/or recorded information.

2. The viewing software shall be Windows-based and must be compatible with Microsoft Windows 98, NT, ME, 2000, or XP.

3. The viewing software must be able to interpret the display of time in reference to Universal Coordinated Time (UTC), the RU's time zone (RTZ), or the operator's own local time zone (LTZ).

4. Individual camera configuration shall be available within the viewing software. The configuration shall include camera name, camera type, brightness, contrast, hue, saturation, AGC, recording resolution, recording quality, and recording image rate, all configurable on a per-camera basis. Automatic changeover of camera type from color to monochrome in low light conditions shall be available when using color/monochrome cameras.

5. The operator shall be able to dynamically move, size, and tile individual camera and/or text windows, either during a live or retrieval session, within the viewing software. The viewing windows shall be detachable and scaleable without preset limitations.

6. During a retrieval session, the operator must have the ability to access the recordings from many cameras, and/or many RUs simultaneously. A playback control toolbar shall

be available, with many of the controls designed to mimic the controls on VCRs. The controls must include:

a. Print image

b. Print preview

c. Copy one image

d. Start/stop record

e. Detailed seek

f. Jump-to-time

g. Pause

h. Next image

i. Play

j. Fast forward (2x, 3x, 5x, 10x)

k. Playback speed slider

l. Best fit image

m. Tile image

7. Simply by double-clicking the title bar of the camera window, the operator shall have the ability to quadruple the size of the video displayed.

8. The viewing software shall include video smoothing to significantly improve the display of enlarged video images on the PC monitor. This feature must be available for both live and retrieved video.

9. The viewing software shall be able to copy live or recorded video into a clip. Clips shall allow the user to view portions of video without having to connect to a site, retrieve video for review at a later time, and store and/or copy video on other computers. The software shall allow the operator to specify folders for storage of clips.

10. Separate software must also be available free of charge on the manufacturer's Web site that can play back clips on personal computers that are not part of the digital recording and transmission system. This software shall use standard Windows techniques to install to a workstation.

11. The viewing software shall allow bitmaps to be saved from the video, at a rate that equals the camera frame rate. The size of each bitmap file shall not exceed 180 KB. Producing bitmaps must be available when running either a live, retrieval, or clip session. The user shall have the ability to view and print bitmaps using any bitmap reading software (e.g., Corel Paint Studio, Adobe PhotoShop, Microsoft Paintbrush, etc.). The user must also be able to copy/paste or import images directly into e-mail, word processing, or presentation applications.

12. The viewing software shall have the ability to control multiple PTZ cameras, control to include multiple pan/tilt speeds, zoom control, iris control (including return to auto-iris), focus control (including return to auto-focus), programming presets, and calling presets. The software shall also have the installer programmable option of automatically returning the PTZ to preset position #1 when the PTZ is no longer part of a live session.

13. The viewing software shall allow an operator to listen to live audio, broadcast audio from the operator's PC to the remote site, and review recorded audio.

14. The viewing software shall include the ability to monitor and/or search up to 4 streams of POS or ATM generated data, such as from cash registers, door access sensors, and guest registration systems. The 4 streams must be viewed in separate viewing windows, not as an overlay on the video, so as not to obstruct the video. The operator shall have the ability to search for specific strings of text, (such as "no sale") and be able to either view video for the time of the event, print the details of the event, or save the event details to a *.txt file.

15. The viewing software shall have the option of receiving and processing alarms/events automatically from multiple RUs, either by LAN/WAN, dial-up, or both. The view operator must have the ability to receive, view, acknowledge, and rearm alarms.

A notification of an alarm occurrence can either be immediate, within the minute, or deferred. An alarm bell icon must appear to vibrate, and the operators PC must produce an electronic bell tone, even if the PC does not have speakers or a sound card. The following video delivery options must be available during an alarm.

a. Run live alarm session on alarm: An alarm causes live video of all cameras at a site to be displayed full screen, as soon as the alarm reaches the operator's PC.

b. Launch a retrieval on selection from alarm list: During an alarm, the operator retrieves the video from the time of the event by selecting an alarm from the alarm list.

c. Automatic record for live alarm: Recording of a clip starts immediately and automatically when an alarm is received at the operator's PC.

16. The following alarm/events shall be recorded and/or reported and/or ignored by the view operator:

a. Session request

b. Session rejection

c. Session disconnect

d. Run-time failure

e. Self restart

f. Reboot

g. Synchronize time

h. System configuration

i. Security modification

j. System file modification

k. Clear storage

l. Input sensor activation/deactivation

m. Output sensor activation/deactivation

n. Video loss/restore

o. Video motion detection

p. POS/ATM data

17. The viewing software shall include RapidSearch™, an industry leading search tool that allows the operator to search for events, logs, and data strings and instantly review the associated video, audio, and data. The search shall be either by event, data, motion, or time/date.

18. The viewing software must have the ability to control 8 auxiliary outputs, to remotely control onsite devices such as lights, door locks, warning sirens, or gates. These general

purpose outputs shall be automatically displayed to the operator on the PC during a live video session.

19. The viewing software shall incorporate advanced video motion detection, allowing the operator to set motion detection parameters, such as region-of-interest, mass, and motion intensity on a per-camera basis. The following motion detection features/parameters must be available:

a. Enable: Enables motion detection on selected camera.

b. Sensitivity: Adjusts the sensitivity to motion.

c. Motion Preview: Allows the operator to see the motion that the unit will detect. The color of objects change to red, green, or blue as they move to indicate the level of detection that would trigger an alarm or log entry.

d. Log: When enabled, the motion will trigger a log entry.

e. Alarm: When enabled, the motion will trigger an alarm.

f. Delay: Time, in seconds, before motion triggers another alarm. When motion continues to occur within the delay period, it is reported as a single motion event.

g. Edit motion mask: Enables the “show gridlines” button.

h. Show gridlines: Enables a grid overlaying the video image to toggle masking. Masking allows the operator to “hide” areas of no concern from motion detection.

i. Invert mask: Unmasks masked areas and masks unmasked areas.

j. Clear mask: Removes all masking from the image area.

k. Fill mask: Adds masking to entire image area. Useful as a first step when most of the image area needs masking.

l. Undo: Cancels the last mouse click.

m. Undo all: Returns the mask to its state before any edits were performed.

20. The viewing software shall have the ability to simultaneously connect to as many as 16 RUs as the memory and CPU of the PC running the software will allow.

21. The viewing software shall have the ability to run site tours, viewing all of the available video and data from a series of sites, one at a time, automatically. The operator

may close, add, and adjust camera settings while the site tour is in progress. The order in which sites are toured, the time spent at each site, and the connection to be used to reach the site must be selectable during programming of the site tour with the administration software. The operator shall have the ability to temporarily suspend the tour if required, such as to investigate an event. The operator must then have the ability to resume the tour, at the point the tour was suspended, when the event is resolved.

22. Utilizing the viewing software, the operator shall have the ability to view an RU's storage statistics. The statistics must include, but not necessarily be limited to, the following:

a. The system's nominal storage capacity in camera days.

b. The system's average daily usage, averaged over the last 7 days of activity, and shown as a percentage of the total storage amount.

c. The effective amount of storage in days based on the RU's actual configuration settings such as number of cameras, resolution, capture rate and quality settings.

d. The amount of time since configuration or reboot of the RU.

e. The amount of storage in use, shown as a percentage of storage amount.

f. The devices connected to a RU.

g. The RU's start time, the time of earliest data.

h. The RU's end time, the time of the latest data.

i. The portion of storage used by an individual device, shown as a percentage of storage.

23. The viewing software must have the ability to "trace" events, caused by natural causes, operator error, or misuse of the system, which may be compromising the effectiveness of the digital recording and transmission system.

24. The view operator shall have the ability to obtain a report on the RU's hardware. It must include the serial number of the RU, the version of software running on the RU, the date of manufacture, and internal hardware used by the unit.

2.8.2.4.3 MECHANICAL SPECIFICATIONS

A. The RU must have the following mechanical specifications:

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1. Unit Dimensions (H x W x D)	5.23” (3U) x 17.3” x 18.8” (133 mm x 440 mm x 478 mm)
2. Unit Weight	32-42 lbs. (14.5-19 kg.)
3. Shipping Weight	38-48 lbs. (17.5-22 kg.)

2.8.2.4.4 ELECTRICAL POWER REQUIREMENTS

A. The RU must have the following electrical specifications:

1. Power Requirement	115-23 VAC, 60-50 Hz, 6-3A
2. Auto Sensing	120V/240V Operation

2.8.2.4.5 ENVIRONMENTAL CONDITIONS

A. The RU shall be designed to meet the following environmental conditions:

1. Operating Temperature	40° to 104°F (5° to 40°C) non-condensing
2. Emissions	FCC: Part 15, Class B CE: EN50081-1, Class B CE: EN61000-3-2 (Harmonics)
3. Immunity	CE: EN50130-4, with use of an Uninterruptible Power Supply (UPS)
4. Safety	UL: 1950, CAN/CSA-C22.2 No. 60950-00 CE: EN60950RapidEye

2.8.3 E-Mail

Upon recognition of an event or alarm, the system shall be capable of sending user defined data via e-mail.

The user shall have the capability to assign an e-mail address that the system shall notify should the designated alarm originate from this point. This process shall be a function of SQL 2000 server, which shall negotiate e-mail transfer to the Microsoft Exchange Server.

The user shall have the capability to assign an e-mail address that the system shall notify should the designated alarm originate from this point. This process will utilize SMTP which shall negotiate the e-mail transfer.

2.8.4 Stentonfon Intercom Interface

The system shall support integration to the Stentofon/Zenitel Alphacom series intercoms.

- The interface shall provide control of both remote and master intercom stations from within the system application. The system shall allow the user to define the site, channel, description, and address as well as provide checkbox for master station.
- Administrators shall have the capability to program a list of intercom functions that report to the alarm-monitoring module as events. These functions shall coincide with the intercom functions provided with the Stentofon/Zenitel system. For each intercom function, system administrators shall be able to define the function with a logical name of up to 32 alphanumeric characters and shall also be able to set the parameter value of that function.
- The intercom interface shall allow for secondary annunciation of intercom calls, events, and alarms in the alarm-monitoring window. Intercom reporting to the alarm monitoring window shall report as any other access control alarm and shall have the same annunciation and display properties as access control alarms.
- All intercom calls, events, and alarms that report into the system shall be stored in the system database for future audit trail and reporting capabilities. Intercom events shall include but not be limited to:
    - Station Busy
    - Station Free
    - Intercom Call to Busy Station
    - Intercom Call to Private Station

- Station Disconnected
- Function Dialed Outside Connection
- Intelligent Station ID
- Station Reset
- Station Lamp Test
- Audio Program Changed
- Group Hunt Occurred
- Mail Message
- Digit Dialed During Connection
- Direct Access Key Pressed
- Handset Off Hook
- M-key Pressed
- C-key Pressed

2.8.5 VISTA-128FBP and VISTA-250FBP Controllers

The system shall integrate access control, digital video and intrusion integration utilizing Honeywell's advanced DVM (Digital Video Manager) R200, Rapid Eye Multi-Media Series, Fusion DVRs, and VISTA-128FBP and VISTA-250FBP controllers.

The VISTA-128FBP/VISTA-250FBP is an 8-partition, UL Listed commercial fire and burglary control panel with the following features:

- Up to 128 zones for VISTA-128FBP; 250 zones for VISTA-250FBP
- Event log capacity of 512 events for the VISTA-128FBP; 1000 events for the VISTA-250FBP

2.8.5.1 General Requirements:

- VISTA support shall be protected by the system dongle
- The system shall be designed for easy translation of the English text
- The VISTA panel shall have a similar look and feel to other panels implemented in the system. While editing the panel, the user shall have the capability to apply, cancel or

confirm (i.e., the OK button). No data shall be written to the database until the user hits apply or OK

- Communications with the VISTA panel shall be efficient and provide for no unnecessary deleting and re-inserting data.

2.8.5.2 Software requirements for VISTA configuration

- The system shall support hardwired and TCP/IP communication for the VISTA panel
- Each panel shall have 8 partitions and 15 zone lists
- Zones, partitions, and the top-level panel shall have an events page, with all supported events present.

2.8.5.2.1 The panel screen shall include the following information:

- Description
- Location
- Address
- User code
- A button to manually update the partition list and zone descriptors
- A checkbox that will enable automatic hourly updates of the panel's partitions, associated properties, and zone descriptors
- Installed flag, which indicates whether the system views the panel as being online
- A button to display the event log for this panel.

2.8.5.2.2 The partition screen shall include the following information:

- Description
- Location
- A list of associated zones, with zone numbers (Read only)
- Logical device of which it is a member (Read only)
- Check box indicating whether it should be put into or taken out of a logical device
- Partition number (Read only)

2.8.5.2.3 The zone list screen will include the following information:

- Description
- Location
- Logical device of which it is a member (Read only)
- Check box indicating whether it should be put into or taken out of a logical device
- Zone list number (Read only)

2.8.5.2.4 The zone screen will include the following information:

- Description (Pro-Watch purposes)

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    - Location (Pro-Watch purposes)
    - Descriptor uploaded from panel (Read only)
    - Logical device of which it is a member (Read only)
    - Checkbox indicating whether it should be put into or taken out of a logical device
    - Zone number (Read only)
    - Zone type (See VISTA-128FBP and VISTA-250FBP Installation and Setup Guide, Pages 4-6)
    - Input type (See VISTA-128FBP and VISTA-250FBP Installation and Setup Guide, Pages 4-7)
    - Partition of which it is a member (Read only.)
- Zones, partitions, and zone lists shall all be editable/viewable
- Users shall have the capability to search for zones, partition and zone lists by name and panel
- The VISTA panel must be partitionable and have a system partition property page
- The system shall have a panel status page; however, if the firmware version number can not be retrieved from the panel, the version number field should be removed
- Upon request by the user, the system shall upload the event log from the panel and display it in a separate dialog box
- The event log display dialog box shall have the option to save the event log to a file either text, or comma delimited form
- The system shall provide the capability to program the real-time clock in the VISTA panel, which is used to tag system events and execute time-driven events.

2.8.5.3 Configuration

The system shall:

- Provide the ability to arm a VISTA panel partition providing a choice of type: Arm Away, Arm Home, Arm Instant, Arm Maximum, Force Arm Away, and Force Arm Home.
- Provide the ability to disarm a VISTA panel partition
- Support auto bypass of faulted zones
- Support automatic un-bypass when a bypassed zone is restored
- Be able to upload the partition list and zone descriptors for a VISTA panel and save the information to the database
- Support device types for hardware templates: zones, zone lists, and partitions

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- Provide the capability to delete a VISTA logical device. All dependencies must be appropriately updated
- Provide a context menu of manual commands for partition logical devices. The choices must be Arm Away, Arm Home, Arm Instant, Arm Maximum, Force Arm Away, and Force Arm Home
- Provide a context menu of manual commands for zone list logical devices. The choices will be auto bypass and auto un-bypass
- Provide the capability to place zones, partitions and zone lists on a map. The context menu choices above shall be present on maps as well
- Allow VISTA panels to be placed on a map
- Display the status of zones and partitions in status groups, via their associated logical devices

2.8.5.4 Events

- The system shall provide a choice to perform arming actions on the partition associated with the VISTA events when they arrive in the alarm monitor.
- The system shall provide a choice to perform auto-bypass and auto un-bypass actions on any of the zone lists associated with the panel when they arrive in the alarm monitor.

2.8.5.5 Features:

- Arm a partition and lock a door on a card swipe
- Disarm a partition and unlock a door on a card swipe
- Arm and disarm a common area supporting the following arm modes:

  A= Armed Away

  H= Armed Home

  D= Disarmed

  N= Not Ready
- Deny access if a partition is in “alarm” or armed states
- Monitor and log intrusion events
- Record and playback access or intrusion events and alarms
- Multiple camera control, including PTZ
- Programmable camera presets
- Synchronized video playback
- Alarm video pop up and user verification
- Synchronized video playback with access or intrusion alarms or events

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- Unified access and intrusion tracking and compliance feature
- Real-time alarm/event monitoring
  - Receive and integrate intrusion events.
  - Control and response, including acknowledge, clear, annotate, live video, recorded video
  - Manual override, lock and unlock doors, shunt/unshunt zones and input points
  - Manual override of system functions
  - Lock and unlock doors
  - Arm/disarm partitions and zone lists including context sensitive arming behaviors (arm, arm away, arm immediate, etc.)
  - Bypass/un-bypass zone lists
  - Retrieve the intrusion panel status and configuration
  - Generate predefined or customized reports using easy templates
  - Schedule e-mail or printed reports
- Video control interface to most popular matrix switchers
- Schedule guard tours
- Enhanced elevator control
- Global anti-passback processing
- Dynamic floor plans
  - Control devices
  - Floorplan linking
  - Acknowledge/clear alarms
  - Visual feedback
- Operating systems supported: Windows XP Professional SP2 and Windows 2003 Server

2.8.5.5.1 Key Integration Features

- Grant access and disarm system on valid card read
- Arm system on valid double card read
- View live video from up to 16 cameras simultaneously
- Valid/invalid cardholder verification
- Arm/disarm video verification

- Pop-up video on access or intrusion function
- Live system control
  - – Arm/disarm intrusion system
  - – Multiple partition control
  - – Bypass/un-bypass doors
  - – Live camera view, including PTZ
- Logical devices automatically created during panel configuration

2.8.6 Visitor Management System (VMS)

2.8.6.1 Overview

The system shall support integration to the LobbyWorks™ Visitor Management System to allow the user to track visitors, employees, assets and deliveries as they enter and exit the facilities. The system shall reduce visitor queues by automatically processing multiple visitors simultaneously at one station. The system shall support printing of custom-designed visitor passes with expiration date; visit area, host being visited, and visit purpose.

In addition, LobbyWorks shall allow the user to keep track of contractors and consultant time sheets, track which employees have regular personal visitors, secure visitor log, Clearly identify visitors by category to restrict access to vulnerable goods and information. Designate special areas for visitors with custom badges, Process most visitors in 20 seconds or less, Label information packets with personalized customer information, Track and print temporary parking passes, Print vehicle window stickers. Use TEMP badge self-expiring badges to tighten security, Generate end-of-day reports to ensure regulatory compliance.

2.8.6.2 Visitor Pre-Registration

The system shall support visitor pre-registration to include security level and access areas, length of stay, and maximum entries. Pre-registration shall be accomplished from Microsoft Outlook® or Lotus Notes® Calendar or through Web-based pre-registration. The system shall support group/event pre-registration, pre-loading of visitor picture, badge pre-printing, and arrival instructions/greeting. The system shall provide visitor registration within 10-15 seconds per visitor.

2.8.6.3 Visitor Information Capture

The system shall support quick and complete capture of visitor information as an essential component for proper record keeping and security checks. The system shall support various hardware devices in order to capture visitor information, including but not limited to scanning business cards, scanning driver licenses, capturing visitor photo, capturing visitor signature, and 2-D barcode scanning of driver licenses. The system shall support quick processing of large groups of visitors through queuing of captured data.

2.8.6.4 Visitor Authentication

The system shall be capable of authenticating a person as having proper identification and determining that he or she is who they claim to be. The system shall support the recall of returning visitor information, including pictures. The system shall detect each attempted visit and deter potential security breaches before they impact the user facilities. The names of unwanted guests, ranging from disgruntled ex-employees to known felons, shall be capable of being imported into the Watch List, including cross-matching for alias names, to alert personnel of a potential threat to the organization. The system shall provide challenge questions for pre-authorized visitors and authenticate driver license.

2.8.6.5 Visitor Authorization

The System shall enforce visitor authorization prior to printing a badge and entering the premises. The system shall authorize visits at reception, security lobby, or remotely by the host employee. The system shall support delegation of authorization responsibility to specific individuals. The system shall also provide host-specific pre-authorize and deny list.

2.8.6.6 Visitor Badges Generation

The system shall provide quick, cost-effective and individualized badging as an essential component of proper visitor identification. The system shall allow for printing of individualized visitor badges containing: name, picture, expiration date, and valid access areas. The system shall support customize badge templates for visitors, VIPs, contractors and any other types of visitors. The system shall support printing of badges on:

- Thermal label printers: Dymo 330 and 330 Turbo – thermal paper labels
- Dye Sublimation – PVC cards
- Ink/Laser printer – Regular card stock

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2.8.6.7 Host Notification

The system shall notify host of a visitor's arrival by e-mail, office phone, mobile phone, or real-time network messaging. Delegated notification and customizable announcement shall also be provided. The system shall notify host when a visitor does not sign out.

2.8.6.8 Visitor Tracking

The system shall keep an accurate log by automatically tracking events as they relate to the visitor's activities on site. The system shall track visitor sign in and sign out times. The system shall also support quick sign in and out using a barcode scanner. The system shall provide proactive checking for expired visits and network notification to hosts and visitors of expired visits. The system shall provide Web access to the visitor manifest including emergency roll-call procedure support through eManifest. Web-based checkpoint stations shall be supported to check the validity of badges and quickly sign them in and out through eCheckpoint.

2.8.6.9 Security Policies

The system shall allow for accurate and consistent application of security policies. The system shall check each visitor against the host employee's personal pre-authorized and denied visitors list, including a watchlist of barred visitors. The watchlist shall provide viewing of picture and person's attributes, reason for being on the watchlist, and action to perform upon arrival. The system shall check each visitor against his/her previous visit information. The system shall ensure that visitors sign out by tracking expired visits and informing their hosts. A host shall be allowed to extend a visit or assign host responsibilities to another employee.

2.8.6.10 Host Management

The system administrator shall have full controls over what capabilities are available to which employees. The system administrator shall be allowed to differentiate permanent and temporary employees, control which employees can have visitors, limit the number of daily and concurrent visitors per host, pre-authorized visitor list and personal denied visitor list.

2.8.6.11 Traffic Reporting

Visitor traffic reports shall be available to plan resource allocation and measure productivity and facility utilization. The system shall generate:

- Traffic reports – per station, per building, per company, per employee, and per department

- Detailed visit reports
- Time and attendance reports for contractors and other visitors
- Reports on demand or schedule reports for regular generation and email delivery

2.8.6.12 Assets and Deliveries

The system shall track assets and deliveries as they enter and leave premises. The system shall have the capability to generate asset and delivery tags and to scan assets and deliveries in and out with a barcode scanner. The system shall provide e-mail notification of delivery recipient and for unreturned assets.

2.8.6.13 Self-registration Kiosk

The system shall provide a fully-featured visitor kiosk to handle the visitor registration needs in a busy or unattended lobby including One-Touch visitor registration using a visitor’s business card or driver license. The system shall have the capability to quickly sign visitors in and out and greet visitors with voice agent scripted behavior, voice and text message prompts. The kiosk shall take the visitor’s photo for true visitor identification, as well as display visitation rules/non-disclosure agreement and capture the visitor’s signature. The system shall print a visitor badge at the self-registration station or at a remote front desk and allow for remote authorization of the visit by either the host employee or security desk. The self-registration kiosk shall notify the hosting employee when their visitor arrives. The kiosk shall have the ability to provide visitors with location-specific visitor information such as ordering taxis, reserving hotels and restaurants in the area, traffic and weather, etc.

2.8.6.14 Security Audit Compliance

The system shall provide the necessary tools to perform security and compliance audits including:

- Secure database
- Audit log
- Tamper proof visitor records
- Audit reports
- Backup and restore capabilities

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2.8.6.15 Installation

The system shall provide a simple installation process, including wizard-based installation, attended and unattended installation support, and batch import of employee data.

2.8.6.16 Flexibility

The system shall be designed to meet the needs of large and small companies in many industries. The system shall support configuration as a standalone or networked solution, single or multi-tenant facility, or single or multiple facility company. The system shall support tailored badge templates, notification rules, and security policies for each visitor category. The system shall provide customization of what data is being tracked for each visitor category and customized report templates. The system shall support synchronization with online employee list through automated file import, active directory, or MAPI address book. The system shall support configurable user interface including, but not limited to data views, actions, field names /types/default values, custom categories, visit types, required or read-only fields.

2.8.6.17 Extensibility

The system shall provide the necessary tools to easily integrate with other security and enterprise solutions. These tools shall include, but not be limited to, programmable Web interface for integration with Web-based conference solutions and open API to integrate with other enterprise systems.

2.8.6.18 Advanced Features

The system shall support the following advanced features:

- System Login - The system shall support two modes of login
    - The system shall support explicit user ID and password. The system shall store all passwords in an encrypted format.
    - The system shall support integrated single sign on.
- Multiple Language Support
    - Users shall have the capability to access the system utilizing different languages on the same installation.
    - The self-registration kiosk shall also allow visitors to choose their preferred language.

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- Commercial Scalable Database
  - The system shall utilize a commercial scalable database including Microsoft MSDE or Microsoft SQL Server.
  - Full SQL Server licenses shall not be required for database storage of 100,000 visit records or less.
- Traffic Control
  - The system shall provide the capability to limit the number of simultaneous visitors per host, as well as the maximum number of visitors per host, per day.
- ID Authentication
  - The system shall support a comparison of driver license printed data against the data in the 2-D barcode or magnetic stripe to ensure that the ID is authentic
- Temporary Host
  - The system shall provide the capability to enroll temporary employees with automatic inactivation after a predetermined period of time. This shall allow, for example, contractors to act as hosts for other visitors while working on site for a certain period of time.

3 Execution

3.1 Examination

Submission of a proposal confirms that the contract documents and site conditions are accepted without qualifications unless exceptions are specifically noted. The site shall be visited on a regular basis to appraise ongoing progress of other trades and contracts, make allowances for all ongoing work, and coordinate the requirements of this contract in a timely manner.

3.2 Installation

The access control, alarm monitoring, CCTV and video badging system shall be installed in accordance with the manufacturer's installation instructions.

3.3 Testing and Certification

The access control, alarm monitoring, CCTV, and video badging system shall be tested in accordance with the following:

- The contractor shall conduct a complete inspection and test of all installed access control and security monitoring equipment. This includes testing and verifying connection to equipment of other divisions such as life safety and elevators.
- The contractor shall provide staff to test all devices and all operational features of the system for witness by the owner's representative and the authority having jurisdiction. The owner's representative prior to acceptance must witness all testing.
- The testing and certification shall take place as follows:
    - System shall be tested in conjunction with the manufacturer's representative.
    - All deficiencies noted in the above test shall be corrected.
    - Test results shall be submitted to the consultant or owner's representative.
    - System test witnessed by owner's representative and correction of any deficiencies noted.
    - The owner's representative shall accept the system.
    - The authority having jurisdiction shall witness system test. Any deficiencies noted shall be corrected.

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4 CPU Minimum Requirements

4.1 Pro-Watch Lite Edition

- File server CPU Requirements
    - Microsoft Windows 2003 Server or Windows 2000 Server
    - CPU - Xeon 2.66 with 1 GB RAM or better (4 GB recommended)
- Workstation CPU Requirements
    - Microsoft Windows XP Professional or Windows 2000 Professional
    - Xeon 900 MHz and 512 MB RAM or better (1 GB recommended)

4.2 Pro-Watch Professional Edition

- Professional Edition System Server CPU Requirements:
    - Pentium IV with 1.8 GHz
    - 2 GB RAM
    - One (1) USB Port
    - Mouse and Keyboard
    - 4 GB Minimum Hard Disk
    - 17" SVGA Monitor with 1024x768 Resolution
    - 2 Communication Ports
    - 10/100 Network interface Card
    - 16 X CD-ROM Minimum
    - Backup media (SCSI Recommended)
    - 56K-V.90 modem and Remote Emulation Software
    - Optional:
        - Data Transfer Utility

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    - Video Badging
    - Laser printer for reports
    - Sound card with speakers
    - CCTV Interface
  - Operating System support:
    - Microsoft Windows 2000 Server
    - Microsoft Windows 2000 Professional
    - Microsoft Windows 2003 Server
    - Microsoft Windows XP Professional Edition
- Professional Edition System Client Workstation CPU Requirements:
  - Pentium IV with 1.0 GHz
  - 1 GB RAM
  - One (1) USB Port
  - Mouse and Keyboard
  - 4 GB Minimum Hard Disk
  - 17" SVGA Monitor with 1024x768 Resolution
  - 2 Communication Ports
  - 10/100 Network interface Card
  - 16 X CD-ROM Minimum
  - Operating System support:
    - Microsoft Windows 2000 Professional
    - Microsoft Windows XP Professional Edition
- Professional Edition System Badging Client Workstation CPU Requirements:
  - Pentium IV with 1.0 GHz
  - 1 GB RAM
  - One (1) USB Port
  - Mouse and Keyboard
  - 4 GB Minimum Hard Disk
  - 17" SVGA Monitor with 1024x768 Resolution

- 2 Communication Ports
- 10/100 Network interface Card
- 16 X CD-ROM Minimum
- Operating System support:
    - Microsoft Windows 2000 Professional
    - Microsoft Windows XP Professional Edition

The badging client workstation shall support the following badge printers:

- **Magicard Rio™**
    - Print speed: Rio, single-sided: 20 seconds
    - Security Features: HoloKote® anti-forgery protection preconfigured with UltraSecure® logo plus custom security mark when used with the optional HoloKote Custom Key™. Use of HoloPatch™ cards produces high visibility security seal.
    - Printer Interface: IEEE standard 1284-1994 compatible (Centronics) parallel port and Universal Serial Bus (USB rev 1.1) port (user choice).
    - Software: Supplied with Windows 98, ME, NT4 and 2000, XP driver
    - Power Source: Auto-ranging 90 to 265 VAC 47-63 Hz. 100 watts max. load.
    - Lamination: The optional Sicura™ (PBVP35LAM) standalone laminating station can be used to apply a tough, 1 mil (0.0254 mm) thick polyester overlaminate.
    - Dimensions: 7.5"W x 8.0"H x 17.5"L (190 mm W x 200 mm H x 445 mm L).
    - Card Stock: ISO Standard CR80 Card Thickness 0.015-0.063" (0.38-1.6 mm).
    - Card Capacity: 100 card feed hopper, 50 output stacker.
    - Safety: CE certified - UL listed (USA & Canada).

- **Magicard Tango™**
    - Print speed: Tango, double-sided: 40 seconds.

  - Security Features: HoloKote anti-forgery protection preconfigured with UltraSecure logo plus custom security mark when used with the optional HoloKote Custom Key. Use of HoloPatch cards produces high visibility security seal.
  - Printer Interface: IEEE standard 1284-1994 compatible (Centronics) parallel port and Universal Serial Bus (USB rev 1.1) port (user choice).
  - Software: Supplied with Windows 98, ME, NT4 and 2000, XP driver
  - Power Source: Auto-ranging 90 to 265 VAC 47-63 Hz. 100 watts max. load.
  - Lamination: The optional Sicura (PBVP35LAM) standalone laminating station can be used to apply a tough, 1 mil (0.0254 mm) thick polyester overlaminate.
  - Dimensions: 7.5"W x 8.0"H x 21.5"L (190 mm x 200 mm x 545 mm).
  - Card Stock: ISO Standard CR80 Card Thickness 0.015-0.063" (0.38-1.6 mm).
  - Card Capacity: 100 card feed hopper, 50 output stacker.
  - Safety: CE certified - UL listed (USA & Canada).

- **Magicard Alto™**
  - Print speed: Downloads and prints a full color edge-to-edge image in 30 seconds.
  - Security Features: HoloKote anti forgery mark across face of card. Custom security mark with optional Custom Key. Use of HoloPatch cards produces high visibility security seal. Key controlled printing option with Custom Key.
  - Printer Interface: USB rev.1.1 (USB 2.0 compatible).
  - Software: Supplied with Windows 98, ME, 2000, XP driver software
  - Power Source: External power "brick" for 90-265V 40-60 Hz (auto-ranging).
  - Lamination: The optional Sicura (PBVP35LAM) standalone laminating station can be used to apply a tough, 1 mil (0.0254 mm) thick polyester overlaminate.
  - Dimensions: 6.9"W x 8.86"H x 8.27"L (175 mm x 225 mm x 210 mm). Alto M: 6.9"W x 8.86"H x 10.04"L (175 mm x 225 mm x 255 mm).

- Card Stock: 50 30 mil (0.76 mm) PVC cards in sealed one shot dispenser. Plain, HoloPatch and HiCo™ magstripe cards available.
- Card Capacity: 50 cards in external dispenser.
- Safety: CE certified - UL listing pending (USA & Canada).

- **Magicard Prima 2e™**
  - Print speed: YMCKO About 30 seconds per full color (YMCK) side. Prints both sides in YMCK in about 60 seconds.
  - Security Features: Built-in re-transfer laminate protection. Image is printed on rear of re-transfer film. Holographic laminates can be applied with optional in-line laminator.
  - Printer Interface: USB 2.0.
  - Software: Windows 2000 & XP compatible driver software.
  - Dimensions: 13.4"W x 15.0"H x 13.4"L (340 mm x 381 mm x 340 mm). Weight 48.5 lbs (22 kg).
  - Card Stock: 10 mil to 100 mil thickness
  - Card Capacity: Card Capacity 300 cards feed tray, 100 cards output stacker.
- Options:
  - In-line Laminator Compact, single-sided in-line laminator. Thin, 0.5 mil and 1 mil laminates available. Clear and holographic laminates. 8.2" /207 mm W x 12.2" /308 mm H x 12.2" /310 mm D.Weight 18 lbs /8 kg. Double-sided lamination also available.
  - Magstripe Encoder Prima 2e with HiCo/LoCo Magstripe encoder.
  - Contactless Card Optional encoder. Contactless cards supported: Encoder Philips: MIFARE, DESFire®, MIFARE ProX® and i.code. HID: iCLASS®. Texas Instruments: TagIT®. ST Micro: x-ident, SR 176, SR 1X 4K. Infineon: My-d (in secure mode UID only). Atmel: AT088RF020. KSW MicroTech: KSW TempSens.

4.3 Pro-Watch Corporate Edition

- Corporate Edition System Server CPU Requirements – Low Activity (LRS):
  - Xeon Processor (1+ GHz)
  - 2 GB Ram
  - 36 GB SCSI HD
  - One (1) USB Port
  - Mouse and Keyboard
  - 17" SVGA Monitor with 1024x768 Resolution
  - 2 Com Ports Minimum
  - 10/100 Network interface Card
  - 16 X CD-ROM Minimum
  - Backup media (SCSI Recommended)
  - 56K-V.90 modem and Remote Emulation Software
  - Operating System support:
    - Microsoft Windows 2000 Server
    - Microsoft Windows 2003 Server

- Corporate Edition System Server CPU Requirements – Medium Activity (MRS):
  - Dual Xeon Processor (1+ GHz)
  - 4 GB Ram
  - 72 GB SCSI HD in Array
  - One (1) USB Port
  - Mouse and Keyboard
  - 17" SVGA Monitor with 1024x768 Resolution
  - 2 Com Ports Minimum
  - 10/100 Network interface Card
  - 16 X CD-ROM Minimum
  - Backup media (SCSI Recommended)
  - 56K-V.90 modem & Remote Emulation Software

- Operating System support:
  - Microsoft Windows 2000 Server
  - Microsoft Windows 2003 Server

- Corporate Edition System Server CPU Requirements – High Activity (HRS):
  - Quad Xeon Processor (1+ GHz)
  - 4+ GB Ram
  - 72 GB SCSI HD in Array
  - One (1) USB Port
  - Mouse and Keyboard
  - 17" SVGA Monitor with 1024x768 Resolution
  - 2 Com Ports Minimum
  - 10/100 Network interface Card
  - 16 X CD-ROM Minimum
  - Backup media (SCSI Recommended)
  - 56K-V.90 modem & Remote Emulation Software
  - Operating System support:
    - Microsoft Windows 2000 Server
    - Microsoft Windows 2003 Server

- Corporate Edition System Client Workstation CPU Requirements:
  - Pentium IV with 1.0 GHz
  - 1 GB RAM
  - One (1) USB Port
  - Mouse and Keyboard
  - 4 GB Minimum Hard Disk
  - 17" SVGA Monitor with 1024x768 Resolution
  - 2 Communication Ports
  - 10/100 Network interface Card

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  - 16 X CD-ROM Minimum
  - Operating System support:
    - Microsoft Windows 2000 Professional
    - Microsoft Windows XP Professional Edition
- Corporate Edition System Badging Client Workstation CPU Requirements:
  - Pentium IV with 1.0 GHz
  - 1 GB RAM
  - One (1) USB Port
  - Mouse and Keyboard
  - 4 GB Minimum Hard Disk
  - 17" SVGA Monitor with 1024x768 Resolution
  - 2 Communication Ports
  - 10/100 Network Interface Card
  - 16 X CD-ROM Minimum
  - Operating System support:
    - Microsoft Windows 2000 Professional
    - Microsoft Windows XP Professional Edition

The Badging Client Workstation shall support the following badge printers:

- **Magicard Rio**
  - Print speed: Rio, single-sided: 20 seconds
  - Security Features: HoloKote anti-forgery protection preconfigured with UltraSecure logo plus custom security mark when used with the optional HoloKote Custom Key.
  - Use of HoloPatch cards produces high visibility security seal.
  - Printer Interface: IEEE standard 1284-1994 compatible (Centronics) parallel port and Universal Serial Bus (USB rev 1.1) port (user choice).
  - Software: Supplied with Windows 98, ME, NT4 and 2000, XP driver
  - Power Source: Auto-ranging 90 to 265 VAC 47-63 Hz. 100 watts max. load.

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  - Lamination: The optional Sicura (PBVP35LAM) standalone laminating station can be used to apply a tough, 1 mil (0.0254 mm) thick polyester overlaminate.
  - Dimensions: 7.5”W x 8.0”H x 17.5”L (190 mm x 200 mm x 445 mm).
  - Card Stock: ISO Standard CR80 Card Thickness 0.015-0.063” (0.38-1.6 mm).
  - Card Capacity: 100 card feed hopper, 50 output stacker.
  - Safety: CE certified - UL listed (U.S. & Canada).

- **Magicard Tango**
  - Print speed: Tango, double-sided: 40 seconds.
  - Security Features: HoloKote anti-forgery protection preconfigured with UltraSecure logo plus custom security mark when used with the optional HoloKote Custom Key. Use of HoloPatch cards produces high visibility security seal.
  - Printer Interface: IEEE standard 1284-1994 compatible (Centronics) parallel port and Universal Serial Bus (USB rev 1.1) port (user choice).
  - Software: Supplied with Windows 98, ME, NT4 and 2000, XP driver
  - Power Source: Auto-ranging 90 to 265 VAC 47-63 Hz. 100 watts max. load.
  - Lamination: The optional Sicura (PBVP35LAM) standalone laminating station can be used to apply a tough, 1 mil (0.0254 mm) thick polyester overlaminate.
  - Dimensions: 7.5”W x 8.0”H x 21.5”L (190 mm x 200 mm x 545 mm).
  - Card Stock: ISO Standard CR80 Card Thickness 0.015-0.063” (0.38-1.6 mm).
  - Card Capacity: 100 card feed hopper, 50 output stacker.
  - Safety: CE certified - UL listed (U.S. & Canada).

- **Magicard Alto**
  - Print speed: Downloads and prints a full color edge-to-edge image in 30 seconds.

  - Security Features: HoloKote anti forgery mark across face of card. Custom security mark with optional Custom Key. Use of HoloPatch cards produces high visibility security seal. Key controlled printing option with Custom Key.
  - Printer Interface: USB rev.1.1 (USB 2.0 compatible).
  - Software: Supplied with Windows 98, ME, 2000, XP driver software
  - Power Source: External power “brick” for 90-265V 40-60 Hz (auto-ranging).
  - Lamination: The optional Sicura (PBVP35LAM) standalone laminating station can be used to apply a tough, 1 mil (0.0254 mm) thick polyester overlaminate.
  - Dimensions: 6.9”W x 8.86”H x 8.27”L (175 mm x 225 mm x 210 mm). Alto M: 6.9”W x 8.86”H x 10.04”L (175 mm x 225 mm x 255 mm).
  - Card Stock: 50 30 mil (0.76 mm) PVC cards in sealed one shot dispenser. Plain, HoloPatch and HiCo magstripe cards available.
  - Card Capacity: 50 cards in external dispenser.
  - Safety: CE certified - UL listing pending (U.S. & Canada).

- **Magicard Prima 2e**
  - Print speed: YMCKO About 30 seconds per full color (YMCK) side. Prints both sides in YMCK in about 60 seconds.
  - Security features: Built-in re-transfer laminate protection. Image is printed on rear of re-transfer film. Holographic laminates can be applied with optional in-line laminator.
  - Printer Interface: USB 2.0.
  - Software: Windows 2000 & XP compatible driver software.
  - Dimensions: 13.4”W x 15.0”H x 13.4”L (340 mm x 381 mm x 340 mm). Weight 48.5 lbs (22 kg).
  - Card Stock: 10 mil to 100 mil thickness
  - Card Capacity: Card Capacity 300 cards feed tray, 100 cards output stacker.
  - Options:

- In-line Laminator Compact, single-sided in-line laminator. Thin, 0.5 mil and 1 mil laminates available. Clear and holographic laminates. 8.2" /207 mm W x 12.2" /308 mm H x 12.2" /310 mm D. Weight 18 lbs/8kg. Double-sided lamination also available.
- Magstripe Encoder Prima 2e with HiCo/LoCo Magstripe encoder.
- Contactless Card Optional encoder. Contactless cards supported: Encoder Philips: MIFARE, DESFire, MIFARE ProX and i.code. HID: iCLASS. Texas Instruments: TagIT. ST Micro: x-ident, SR 176, SR 1X 4K. Infineon: My-d (in secure mode UID only). Atmel: AT088RF020. KSW MicroTech: KSW TempSens.

4.4 Pro-Watch Enterprise Edition

- Enterprise Edition - Enterprise Server CPU Requirements – Low Activity (LES):
  - Xeon Processor (1+ GHz)
  - 2 GB Ram
  - 36 GB SCSI HD
  - One (1) USB Port
  - Mouse and Keyboard
  - 17" SVGA Monitor with 1024x768 Resolution
  - 2 Com Ports Minimum
  - 10/100 Network interface Card
  - 16 X CD-ROM Minimum
  - Backup media (SCSI Recommended)
  - 56K-V.90 modem & Remote Emulation Software
  - Operating System support:
    - Microsoft Windows 2000 Server
    - Microsoft Windows 2003 Server
- Enterprise Edition – Enterprise Server CPU Requirements – Medium Activity (MES):
  - Dual Xeon Processor (1+ GHz)
  - 4 GB Ram
  - 72 GB SCSI HD in Array

- One (1) USB Port
- Mouse and Keyboard
- 17" SVGA Monitor with 1024x768 Resolution
- 2 Com Ports Minimum
- 10/100 Network interface Card
- 16 X CD-ROM Minimum
- Backup media (SCSI Recommended)
- 56K-V.90 modem & Remote Emulation Software
- Operating System support:
  - Microsoft Windows 2000 Server
  - Microsoft Windows 2003 Server

- Enterprise Edition – Enterprise Server CPU Requirements – High Activity (HES):
  - Quad Xeon Processor (1+ GHz)
  - 4+ GB Ram
  - 72 GB SCSI HD in Array
  - One (1) USB Port
  - Mouse and Keyboard
  - 17" SVGA Monitor with 1024x768 Resolution
  - 2 Com Ports Minimum
  - 10/100 Network interface Card
  - 16 X CD-ROM Minimum
  - Backup media (SCSI Recommended)
  - 56K-V.90 modem & Remote Emulation Software
  - Operating System support:
    - Microsoft Windows 2000 Server
    - Microsoft Windows 2003 Server

NOTE: Server sizing is dependent on many variables. Please consult Honeywell Integrated Security for application specific server sizing.

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4.4 HONEYWELL VIDEO MANAGEMENT SYSTEM (HVMS)

A. HVMS Server (HVMS Core Server and Controller)

The HVMS server shall be able to operate with no performance degradation using the following hardware and operating system configuration:

- Dual Core Intel Xeon 5160 3.00. These are minimum clock speeds; Faster GHz clock speeds are optional
- System memory (RAM) 4 GB of RAM minimum
- DVD-R drive and a 3.5" 1.44 MB floppy disk drive
- Two separate hard drives or two sets of RAID arrays
- Disk/RAID set 1 utilizes 10K-15K RPM SCSI 146 GB for Windows operating system, HVMS Server Software, Microsoft SQL Server software
- Disk/RAID set 2 utilizes 10K-15K RPM SCSI 146 GB for HVMS database files Microsoft SQL Server database files. Note: if fault tolerance is required RAID set one is RAID 1 or 10 and RAID set two is RAID 10 or 0 + 1.
- Dual Network Interface Card (NIC) or compatible pair of NICs. Must be 1 Gbps.
- 12 function-key keyboard and a mouse pointing device
- Graphics adapter which supports 32-bit color or higher
- Video resolution 1024x768 pixels; 65K colors non-interlaced
- Windows Server 2003 (32-bit only), the original software CDs and start up installation diskettes
- Windows Media Player Version 9 or 10

Note: For installations where the HVMS system is integrated with analog switchers with more than 500 cameras, it is recommended to install the HVMS controller on a separate server. The specification of this server needs to be determined based on end user deployment requirements.

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B. HVMS Workstation

The HVMS workstation shall be able to operate with no performance degradation using the following hardware and operating system configuration:

- Intel Core 2 Duo Processor E6750 2.66 GHz or Quad Core Intel Xeon E5405 2.0 GHz. These are minimum clock speeds; Faster GHz clock speeds are optional.
- Standard and Performance Workstation System memory (RAM) 4 GB of RAM minimum for Microsoft Windows XP Professional 32-bit only.
- DVD-RW drive and a 3.5” 1.44 MB floppy disk drive
- Single disk or RAID 10K SATA 80 GB or 10K to 15K SCSI 73 GB: Windows Operating System RAID 0 or 0+1
- Network Interface Card (NIC) or compatible pair of NICs. Must be 1 Gbps.
- 12 function-key keyboard and a mouse pointing device
- Graphic card - 2 x 256MB PCIe x16 NVIDIA Quadro NVS 285, Dual DVI or Dual VGA or DVI+VGA. This is for a four monitor setup with each monitor requiring 128 MB.
- Video resolution 1280x1024 pixels, 32-bit
- Windows Media Player Version 9 or 10

C. IP Engine Database Server

The database server shall be able to operate with no performance degradation using the following hardware and operating system configuration:

- Pentium IV or Xeon 2.8 GHz These are minimum clock speeds; faster GHz clock speeds are optional
- 2 GB RAM minimum
- Hard disk storage to meet Section 4 requirements

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- 1000 Mbps NIC or compatible pair for network connection to the other components of the DVRMS
- Windows 2000 Server and Windows 2003 Server

The database server must provide the following system fault tolerance:

- Support RAID 0+1 or 1 for the operating system
- Support RAID 0+1 or 1 for the database (SQL Server 2005)

D. IP Engine Camera Server

The camera server shall be able to operate with no performance degradation using the following hardware and operating system configuration:

- Pentium IV or Xeon 2.8 GHz These are minimum clock speeds; faster GHz clock speeds are optional
- 2 GB RAM minimum
- Hard disk storage to meet Section 4 requirements
- 1 Gbps NIC or compatible pair for video transmission to operator stations
- 1 Gbps NIC or compatible pair for video transmission from camera encoders
- Windows 2000 Server and Windows 2003 Server

Each camera server must provide the following system fault tolerance:

- Support RAID 0+1, 1, or 5 for video recordings (clips)
- Support RAID 0+1, 1, for the operating system

For the failure of a camera server, all cameras which were managed by that camera server shall be able to be dynamically reallocated to other camera servers. This shall only be done through the IP engine software without requiring changes to cabling or the network.

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