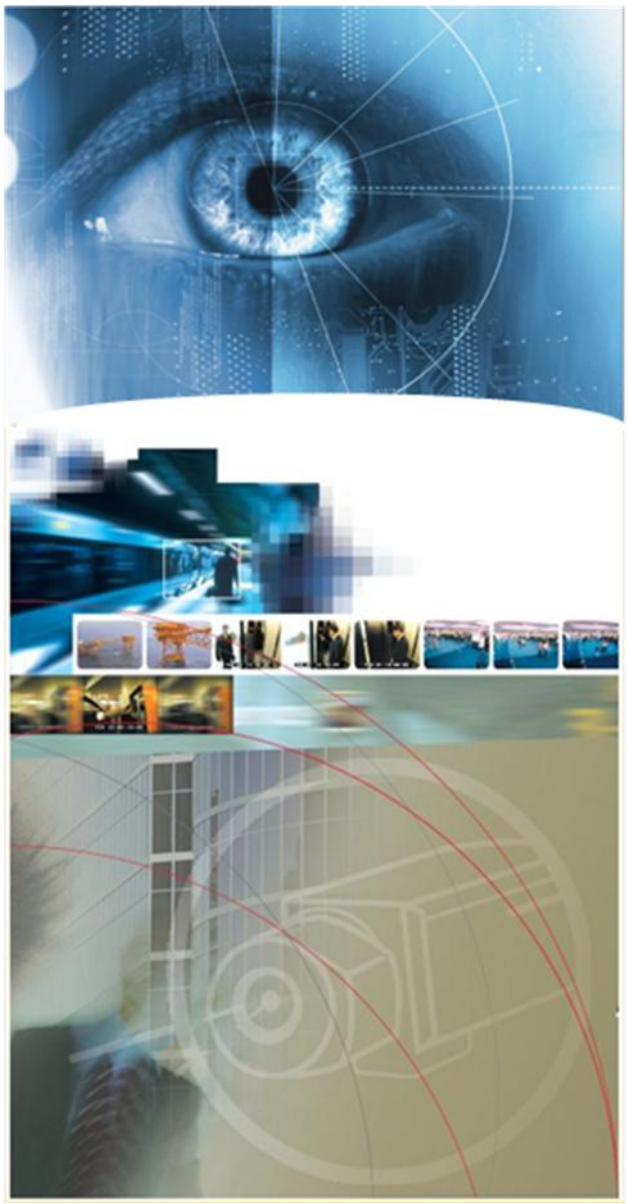
HONEYWELL

Digital Video Manager R400

SPECIFICATION DATA



KEY FEATURES

- **Software-based system architecture that uses off-the-shelf hardware to deliver a non-proprietary digital video solution that maximizes the return on your surveillance investment.**
- **Multiple levels of Redundancy to ensure your surveillance system remains operational.**
- **Flexible, distributed system architecture, leveraging your existing facility's Ethernet network.**
- **Complete integration with Honeywell Enterprise Buildings Integrator™ (EBI) allowing a single, information-rich User Interface with outstanding usability and integrated operator security.**
- **Manage multiple systems from a single location via a simple and intuitive user interface.**
- **Intelligent recording, ensuring you never miss important events – including what occurred prior to an incident – while reducing unnecessary video data.**
- **Efficient video collection, reducing the amount of redundant and irrelevant video.**
- **State-of-the-art video storage, providing fast, convenient access to all important video data, all the time.**
- **Integrated Video Analytics for "Smarter Video" using Honeywell's Intelligent Video Analytics for activation of recordings, and raising of alarms and events in EBI.**
- **Digitally signed video as evidence, with a digitally signed audit trail (log) of all operator actions and system events.**

Note: Some features in this specification are based on the use of Honeywell EBI in conjunction with DVM

OVERVIEW

Shaped by Honeywell's technology and integration expertise, Honeywell Digital Video Manager (DVM) is a scalable, digital closed-circuit television (CCTV) surveillance solution that sets a new standard in cost-effectiveness, flexibility and performance.

The solution addresses head-on the challenges of today's video surveillance, security and enterprise operations. Its architecture takes advantage of your enterprise's network communications structure – eliminating the need for coaxial cables and providing unmatched camera portability and flexibility.

DVM's flexible architecture also allows you to re-use your existing CCTV infrastructure of analog switchers, multiplexers, monitors and coaxial cabling, while extending their functionality through integration to the enterprise network. This protects your existing CCTV investment while taking advantage of the latest digital video technologies.

Your staff won't have to spend valuable time searching through hours of unnecessary recordings looking for a particular incident; the video images are stored in the system and referenced in the DVM database, from where they can be quickly located and viewed using DVM's advanced search capabilities. In addition, DVM is tightly integrated with Honeywell Enterprise Buildings Integrator™, providing alarm and event-activated recording so that you only capture the video you need, when you need it most.

With Digital Video Manager, you receive all the benefits of digital CCTV and much, much more. In an environment where you are continuously seeking ways to optimize your resources, this powerful tool can help enhance the productivity and effectiveness of your surveillance operations, reduce equipment and space needs, provide flexibility, and drive down installation and lifecycle costs.

With Honeywell Digital Video Manager, your surveillance system is always available, always vigilant and always providing a deeper, real-time understanding of what's going on in, at and around your surveilled events and facilities.

SYSTEM ARCHITECTURE

Digital Video Manager is built upon industry standard open networking, PC hardware, and software applications, taking advantage of the most cost-effective, powerful components available.

Using commercial off-the-shelf hardware allows you to use the cameras, PC, storage, and networking hardware of your choice – no need to pay premiums for proprietary hardware. Unlike proprietary digital video recorders (DVRs) and Network Video Recorders (NVR's), DVM allows you to deliver system hardware and software upgrades independently. This lowers your support costs and ensures a "future-proof" upgrade path. Use of off-the-shelf components also ensures that DVM can easily be integrated into your existing enterprise system support strategy, further simplifying support needs and reducing the cost of ownership.

The basic architecture consists of a Database Server and a Camera Server, which can be installed on the same machine. Additional Camera Servers, Backup Camera Servers and Analytics Servers can be added to the architecture to support larger numbers of cameras.

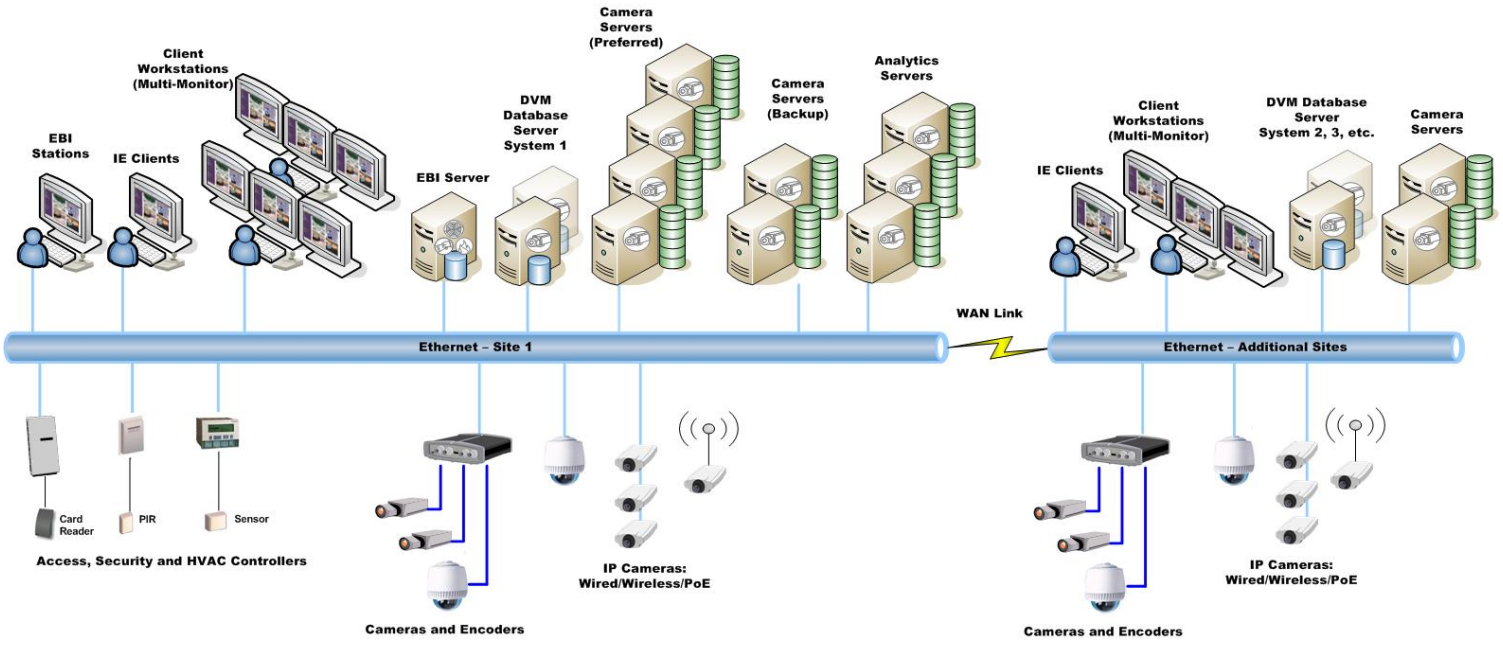
Larger enterprises can link together multiple DVM systems to create an integrated, enterprise-wide surveillance system.

DVM can also integrate your legacy analogue CCTV equipment into a complete, digital solution and take full advantage of open TCP/IP network technologies to deliver software-based camera switching and control, as well as digital recording. In this way the enterprise network becomes a "virtual" matrix switcher. This revolutionary architecture makes it remarkably easy to add or relocate cameras within your building's network without the need for any dedicated coaxial cables. New CCTV monitors simply require a network-connected PC with suitable software. In fact, any PC with a connection (including wireless) to the network and adequate security levels can view and control DVM.

DVM's advanced High Availability architecture makes it one of the most reliable digital surveillance systems on the market today. For most systems the failure of a DVR or NVR requires physical replaced with another unit, which adds hardware and labour lifecycle costs. The loss of the DVR or NVR unit also reduces productivity and increases risk as the cameras attached to the failed device are no longer available for viewing and recording. With Honeywell DVM, Database and Camera Servers are available in redundant configurations; hence a failure in the Preferred Server can be immediately addressed with the system reverting to the Backup Server. Disruption is thus minimised and recordings and live view can be maintained without the need for manual cable swapping or hardware replacement.

All video is digitally stored by DVM on standard IT storage media reducing the space and maintenance required in the past. Since DVM uses off-the-shelf PCs, you can use hardware that meets your IT organization's standards, ensuring that storage, server and client hardware replacement is quick and cost effective. DVM's cameras are connected directly to the network in most cases, so there is only a power cord and network connection to deal with when replacing the server hardware. Devices supporting Power-over-Ethernet further simplify upgrade and replacement. Compare this with the numerous (32 or more) coaxial connections that need to be disconnected and re-connected when replacing a DVR.

The use of RAID-1 (disk mirroring) provides fault tolerance for the DVM Database Server software and database. Additionally, the use of a redundant pair of Database Servers ensures that failure of one of the Database Servers does not stop the DVM system. The DVM Camera Servers may also use RAID-5 (disk striping with parity) or RAID 1+0 (mirrored sets in a striped set), providing a fault-tolerant video storage solution whereby a disk drive failure does not result in loss of video data.



DVM Architecture

INTEGRATION WITH ENTERPRISE BUILDINGS INTEGRATOR (EBI)

Digital Video Manager seamlessly integrates with Enterprise Buildings Integrator (EBI), including the user interface (Station), the alarm and event subsystems, and controllers. Now your security system, building management system and CCTV system are completely integrated, with your operators viewing and controlling all systems from a single Station.

This integration with EBI includes:

- Full control, view and configuration of DVM systems from within EBI Stations.
- Integrated facility segregation, whereby cameras can be assigned to the same areas as points. In this way, operators can only view and control cameras in the areas assigned to them.
- Integrated operator-based security
- Integrated Station-based security
- Alarms and events occurring within EBI can be configured to automatically initiate recordings, and automatically switch Stations (as well as alarm monitors) to show a particular camera.
- Direct access is provided from within the EBI Alarm and Event summary displays to display any recordings initiated by an EBI alarm/event or motion detection dramatically reducing the amount of time operators need to spend searching for recordings related to events.
- View both live and recorded video from within EBI custom displays. HMIWeb Display Builder (the tool used to create custom displays) provides ActiveX controls which can be inserted into custom displays and popup displays to show live and recorded video, as well as pan-tilt-zoom and recording controls.
- All DVM system alarms/events appear within the EBI Alarm and Event summary displays.

Because of this integration with EBI, DVM can respond to EBI alarms and events with automated recordings and video call-up, making the system less dependent on operator observations and enabling real-time decision making. Operators do not have to stare aimlessly at confusing numbers of cameras but rather are only presented with information related to an abnormal event or threat situation. There is no need to watch a video monitor wall, manually call up cameras, or search through dozens of tapes or hours of background recordings to find the associated information.

The ability to view video as well as monitoring and controlling the facility, increases productivity and greatly improves abnormal event management—providing your operators with an advanced operating environment.

SINGLE, INFORMATION RICH USER INTERFACE

Digital Video Manager puts advanced functionality at your fingertips, helping to increase personnel productivity and responsiveness. Your operators can perform all viewing, recording, archiving and retrieval of DVM video from their EBI Station – they do not need to leave their Station to view a separate CCTV system, replace a tape in the video recorder, activate a recording or search for a video tape.

Operators can view and move cameras while simultaneously monitoring and controlling doors, hallways and the facility's air conditioning system. Integrated navigation displays, menus and toolbars are provided to allow operators to quickly navigate to the desired display, which may be EBI-specific, DVM-specific, or an integrated display containing a combination of building management data, security management data and live (or recorded) video.

Operators can control individual camera pan-tilt-zoom functions – via mouse, joystick or CCTV keyboard – enter recording commands, view high-quality live images, as well as record and play stored video. And for maximum ease of use, Station uses Web-style navigation buttons, tab views and intuitive, VCR-style recording controls.

When additional detail is required from live or recorded video, operators can also use DVM's embedded image enhancement capabilities to digitally zoom into scenes or adjust video characteristics to obtain the maximum amount of detail needed for enhanced decision-making.

ADVANCED, INTEGRATED SECURITY

Digital Video Manager delivers the type of advanced security features expected of high-end video surveillance and security management systems. DVM allows you to specify which operators can view which cameras, and even which operators have access to which recordings. This is achieved with no additional configuration because DVM integrates seamlessly with EBI's security model. An operator, once assigned areas of viewing and control within the building, has immediate access to cameras within those areas. The operator's security level and control level within EBI determines what degree of view and control they have within DVM, with all operator and DVM system actions logged and available as evidence.

INTELLIGENT RECORDING

Digital Video Manager helps incident investigation by recording not only the video after an event trigger (post-event recording), but also what happened prior to the event (pre-event recording). This provides a complete picture of the entire event, significantly enhancing investigations, evidence and outcomes. This feature is provided without the need for the expensive continuous background recording provided by many other systems

Digital Video Manager provides multiple options for recording video:

- **Alarm/Event-activated Recordings:** Integration with EBI enables activation of a recording when an alarm or event occurs. Your EBI system determines when recordings should be made on any camera, with video prior to the alarm or event also captured using the pre-record feature.
- **Video Analytics Recordings:** Video is recorded when DVM detects motion or receives notification from the video analytics subsystem of an event of interest. Again, video prior to the event can also be stored with the recording using the pre-record feature.
- **Camera Tamper Recordings:** Video is recorded when DVM detects potential tampering on a camera. Video prior to the event can also be stored with the recording using the pre-record feature – since the tamper event may result in unusable video, the pre-event record feature may be very useful in providing evidence of the actual tampering.
- **Intercom Activated Recordings:** Video and bi-directional audio is recorded (either automatically or manually) when an intercom call is initiated within the DVM system. Video prior to the event can also be stored with the recording using the pre-record feature.
- **Device Input/Output Recordings:** Video is recorded when an input device connected to an IP camera or video encoder is triggered or an output is activated on configured devices. Video prior to the event can also be stored with the recording using the pre-record feature.
- **Operator-initiated Recordings:** These recordings are initiated by an operator during viewing of the camera. An operator, who has noticed an incident, simply clicks the record button to record the video. Video prior to the record button being pressed is also stored in the recording using the pre-record feature. Manual recordings can either run for a pre-determined length of time or can be terminated by the operator.
- **Scheduled Recordings:** Recordings are scheduled on particular cameras at specified times. Each camera has its own schedule, which can be configured for any time in the future. Re-current (repeated) scheduling is also provided on a daily, weekly and monthly basis.
- **Continuous Background Recordings:** Video – and audio if applicable – can be continuously recorded on any camera at configurable frame rates without the need to enable complex schedules. This type of recording is resilient to network communication errors between the Camera and Database Server.

A combination of all these types of recordings is available on every camera in the system, with each one individually configured for maximum flexibility and simplicity. All recordings are stored on the hard drives of the Camera Servers or other network storage locations until they are either deleted or archived. The storage of recordings is managed automatically by DVM but can also be manually administered for any camera.

DVM provides a great deal of flexibility in terms of the quality of recorded video. Using supported devices, it's possible to configure completely separate video streams for live video and recordings individually, per camera. Live view video quality doesn't need to be compromised by the need to save on storage costs.

INTERNET EXPLORER CLIENTS

Digital Video Manager allows any suitable PC (using the appropriate operating system) to be a DVM client, in a similar way to EBI Stations. In such cases, Microsoft Internet Explorer is used to host the DVM user interface.

This provides the following major benefits:

- Any PC that has a TCP/IP connection to DVM can have full view and control (subject to the user's security level). Management, quality assurance, safety and other personnel can view cameras from their own PCs without the need for expensive CCTV monitors and cabling.
- System administrators can configure and maintain DVM (including exporting, archiving, deleting and restoring recordings) without using an EBI Station.

DVM is configured with login accounts for all users that require access to the system using these clients. Each user account is assigned a security level, a control level and accessible areas. This security ensures that users of these clients can only view and control cameras they are authorized to access (in a similar way to EBI's operator-based and Station-based security).

The DVM client software is automatically downloaded from the Database Server and installed during the first request to view the DVM system. This means that no software (other than Internet Explorer) needs to be pre-installed on the computer. Any computer connected to the site network can be used as a DVM client (assuming sufficient client licenses have been purchased).

ADVANCED VIDEO ANALYTICS SOLUTIONS

Historically, video motion detection was widely used as a trigger to record surveillance events of interest and help reduce operator workload and unnecessary video storage. As video surveillance technology has advanced, the requirements for intelligent video have moved beyond simple video motion detection.

DVM R400 provides solutions for both video motion detection (VMD) as well as integration to the advanced suite of analytics solutions provided by the Honeywell Intelligent Video Analytics product range.

The DVM video content analysis options include:

- **Standard Video Motion Detection:** Pixel rate-of-change algorithm, ideal for well-lit indoor area use. Each frame is compared with the previous one and the amount of difference determines whether motion has occurred (based on the sensitivity setting). Standard VMD is included as a standard feature in the product.
- **Advanced (Premium) Video Motion Detection:** Adaptive algorithm which can "learn" the scene and adapt to the environment. This allows the algorithm to ignore environmental changes such as rain, hail, wind, dust, trees swaying and gradual light changes. This algorithm is ideal for both indoor and outdoor use.
- **Honeywell Intelligent Video Analytics:** Provides the means to automatically detect, analyse and classify the behaviours of people and vehicles as they move through a scene. It significantly reduces false alarms by suppressing environmental triggers such as rain, snow, shadows, reflections, flying birds, and waving trees.

DVM's video analysis solutions provide the ability to exclude zones where false alarms – unnecessary security operator distractions – may be generated. Regions of interest can be configured to match the detection area and exclude potential sources of false alarms. Shapes can be drawn with up to 10 vertices thus allowing for regions of interest to be drawn around the actual area where activity needs to be detected. E.g. car parks, fence lines, roadways, etc.

Digital Video Manager's video analytics features do not simply replicate the standard functionality available in today's CCTV systems; they also include:

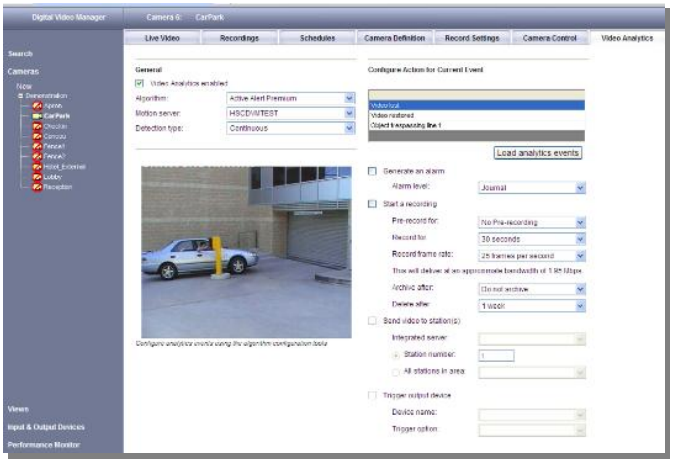
- Continuous (24hrs a day, 7 days a week) or scheduled (run only during certain times) detection.
- Automatically perform any or all of the following actions
  - Raise an alarm (of configurable priority) in EBI
  - Activate a recording – with or without pre-event recording – to record for a fixed amount of time or until the motion has finished (no motion has been detected for a configurable amount of time)
  - Automatically display the camera's live video in a Station or dedicated alarm monitor
- Individual tuning of each region of interest, to minimize false detections.
- Simultaneous tuning and testing of the "regions of interest" by viewing the live video in tuning mode for some algorithms. Engineers can thus finely tune and test algorithms without any real detections occurring.
- Support for some video streamer or camera-based motion detection algorithms.

Honeywell Intelligent Video Analytics

Honeywell Intelligent Video analytics consists of individual software suites tailored to suite different application and cost requirements. This unique, patented software tracks up to 20 targets in each camera view and reports on more than 35 actionable events and behaviours in real time.

The following solutions are available:

- **Active Alert® Base:** Identifies and classifies the most common user-defined events and behaviours, and provides basic perimeter intrusion detection. All Active Alert ® solutions can track up to 20 objects per camera and the Base package identifies 14 different events.
- **Active Alert® Standard:** All the benefits of Active Alert Base, plus automatic alarming on 28 different events, incidents and behaviours.
- **Active Alert® Premium:** All the benefits of Active Alert Standard, plus additional analytics for high risk facilities and locations such as abandoned object, removed object and possible theft functionality covering 36 different events.
- **People Counter:** Powerful traffic flow measurement with real-time or periodic reporting.



- **Smart Impressions®:** Smart video solutions optimize operations by analysing individual customer and vehicular activities and traffic patterns.

Camera Tamper Detection

As surveillance systems grow, it becomes harder to understand whether cameras are still functioning as initially intended or viewing the scenes for which they were configured. Changes in camera view may arise as a result of natural causes such as dirt build up over time or through malicious interference from people who would prefer that their actions are not recorded.

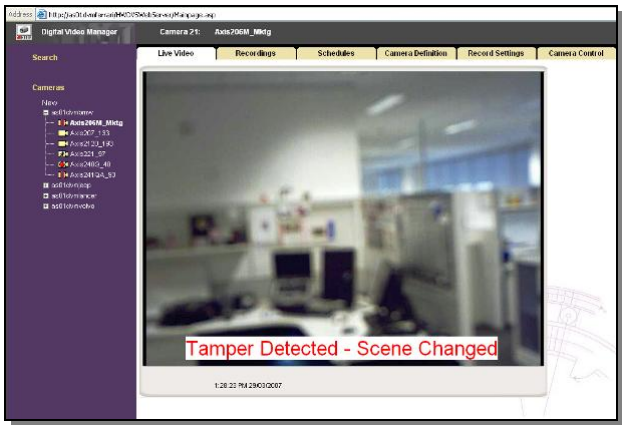
DVM includes the ability to detect whether a camera has been tampered with under the following conditions:

- **Changed Field of View (FOV):** It can be very hard for an operator monitoring many cameras to realise quickly – if at all – that a camera is no longer observing the scene originally intended. This could be because the camera was bumped or intentionally moved to avoid detection. Either way, the changed FOV algorithm will detect and alarm this change.

- **Camera Blurred:** Camera vision may blur over time due to dust build up or through intentional defocus by someone wishing to avoid detection or hoping to degrade recorded evidence to avoid identification. The algorithm provides a means of detecting when the scene is blurred and thus assists in maintaining the integrity of the system though detection of malicious tampering or timely servicing.
- **Camera Blinded:** This algorithm detects whether a camera has either been blinded by a bright light source or had the lens covered. Both scenarios normally involve an attempt to avoid detection or identification from recorded video. DVM is now able to detect and alarm when this occurs.

Camera Tamper Detection can be applied to cameras individually, as required. Each condition listed above can be enabled or disabled and tuned per camera to ensure that it suits the environment and scene being monitored.

Camera Tamper Detection helps ensure that the integrity of the surveillance system is maintained and the investment in security protected. If the system is no longer able to monitor or record the correct scene then its value is greatly reduced.



EFFICIENT VIDEO COLLECTION, STORAGE AND RETRIEVAL

With Digital Video Manager's intelligent recording options, only video you need is recorded. This helps to optimize video archiving and storage usage by reducing the collection of redundant and irrelevant video recordings.

Additionally, users can specify the quality of the recorded video. This could simply be the number of frames per second recorded for each camera and for each recording type per camera. For example, a particular camera can be configured as: 25 frames/sec for viewing, 10 frames/sec for operator-activated recordings and 15 frames/sec for video motion detection recordings. Recordings from cameras using MPEG encoding can be made using the full frame rate video or I-frames only (or 2nd or 3rd I-frame).

However, for devices supporting multiple connections and high video data rates, all settings are configurable including codec, frame rate, resolution and compression. This provides a highly customisable solution allowing you to balance your recording and live view needs with your investment in video storage and bandwidth.

All recordings are viewed using the supplied Recordings display at either a default resolution or the recorded resolution. The Recordings display provides a "quick search" ability by listing all the available recordings for the camera on the chosen day, as well as a wealth of information relating to the recordings.

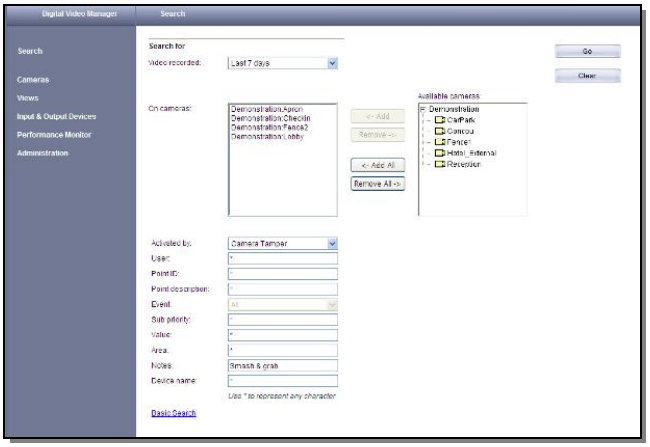
Recordings (or sections of recordings) can be exported as Microsoft Windows Media files and replayed in Microsoft Windows Media Player (or equivalent). These files can then be stored on CD/DVD, e-mailed or used as evidence of an incident.

For maximum efficiency, DVM also supports the leading video encoding formats such as MPEG4 and H.264 which help reduce storage requirements while maintaining video quality.

ADVANCED SEARCH CAPABILITIES

With Digital Video Manger, users have convenient access to all their important video data, all the time.

DVM provides powerful search and retrieval capabilities that free operators from the frustrating task of fast-forwarding and rewinding video tapes to find a particular incident. Operators can search for recorded incidents based on criteria such as date/time, camera, recording type, the activating EBI point, alarm/event type and operator notes. They can then immediately view the retrieved recordings. These advanced search and retrieval capabilities are powered by a Microsoft SQL Server relational database to optimize speed and flexibility.



Even archived recordings can be included in the search, allowing them to be easily located and replayed. Although an archived recording no longer resides on the Camera Server, its details do, including the name of the archived media. When an archived recording is selected for viewing, the system instructs the operator to load the appropriate archival media.

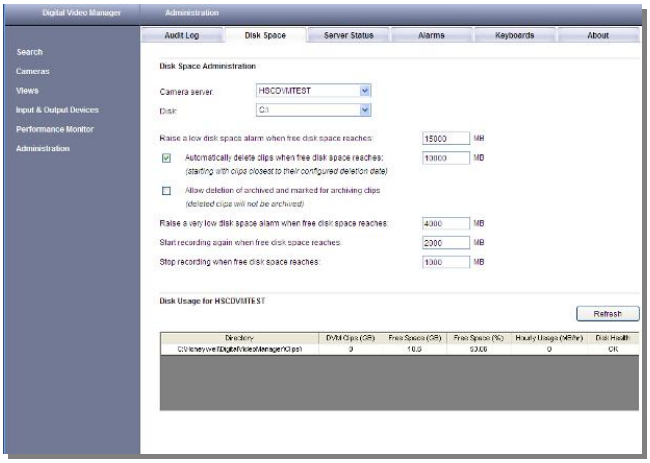
STATE-OF-THE-ART VIDEO STORAGE

Digital Video Manager supports any Windows 2003/XP compatible storage device, providing you with the flexibility needed to meet your storage requirements.

A DVM system consists of two types of storage: online and offline. Online storage is used for video clips which must be readily available for review. Typically this type of storage uses internal or directly attached hard drives or network storage locations. DVM supports all hard drive configurations supported by Windows 2003/XP. For small systems (with low online storage requirements), internal drives with fault tolerant drive controllers may be used. For large systems (with large online storage requirements), high capacity, fault tolerant storage arrays may be used. Irrespective of the storage requirements, DVM is able to makes use of fault tolerant, RAID based storage solutions to ensure the highest levels of system availability.

Where multiple Camera Servers are used, these storage requirements can be split amongst Camera Servers, further reducing storage costs. DVM also provides a flexible means to configure storage behavior. Priority can be given to continue recording even when disk space reaches a pre-configured danger threshold. This is achieved by automatically deleting older clips that are closest to their deletion dates and thus freeing up disk space. Importantly, surveillance footage required as evidence for current events is not lost and the integrity of the surveillance solution maintained.

Offline storage (archiving) is used for video clips that are not regularly required by operators, but which must be kept for a period of time. All relevant information about the archived recordings remains within the DVM database for use in searches. These recordings also appear in the list of recordings for the camera, shown in a different color to indicate that the recording has been archived and needs to be restored before viewing.



Recordings can also be automatically archived at a pre-defined date/time after the recording has completed. This makes the archiving process less prone to errors.

Because recordings are stored digitally, they do not suffer from the aging and deterioration problems historically associated with VCR tapes. In addition, because hard drives and most digital archiving media have significantly greater data density capabilities, the space required for the storage media has significantly reduced and will continue to do so as technology improves.

INTEGRATION WITH ANALOG CCTV SYSTEMS

Digital Video Manager can be installed alongside an existing analog CCTV system. With this approach, DVM is primarily used as a digital video recording management system, providing live and recorded video to EBI Stations and Internet Explorer clients.

The existing analog CCTV system is still used for dedicated viewing of cameras using the CCTV system monitors, keyboards and joysticks.

The DVM system provides digital recording capabilities, (including video motion detection and alarm/event activation), management of recordings, live and recorded view to EBI Stations and Internet Explorer clients, and integration of video into the EBI custom displays.

The ability to use DVM with an existing CCTV system gives you access to DVM's many benefits, while retaining the familiar components of the analog CCTV system.

DIGITALLY SIGNED RECORDINGS AND AUDIT TRAIL (LOG)

Digital Video Manager provides for the ability to export recordings (or segments of recordings) into standard Windows Media files (MPEG4 format). Every exported recording is digitally signed to provide authentication (of the origin of the recording) and integrity (prove that the recording has not been tampered with).

The alternative to Digital Signatures is "Watermarking", which is used by some digital video systems. Digital Signatures provides many inherent advantages over watermarking. A visible watermark may obscure part of an image, whilst an invisible watermark can potentially introduce visual artifacts. In either case, the original file is altered, which could reduce the evidential weight of the digital image. Digital Signatures, on the other hand, do not alter the original files, ensuring that there is no loss of evidential weight.

DVM also provides a complete audit trail (log) of all operator actions and system events. This audit trail provides you with a record of all changes made to the DVM configuration, as well as when and who controlled cameras, viewed cameras, initiated and viewed recordings. It also documents DVM's condition at the time of the recording. As with the exported recordings, the exported audit logs are also digitally signed.

The audit trail can be exported when exporting a recording, and then saved with the recording. When used in conjunction with site chain-of-custody processes and procedures, digital signatures and the audit trail greatly enhance the evidentiary weight of a recording in a legal proceeding.

PRIVACY

Digital Video Manager provides the ability to protect the privacy of people whose actions are recorded by the system. Each camera can be set to allow playback and export of video only after authorisation is received from a manager thus preventing operators from reviewing or exporting recorded video without good reason or permission.

OTHER POWERFUL FEATURES

- Easy system administration via DVM's integrated administration user interface.
- Snapshot, whereby on the click of a button by the operator, DVM captures the current frame of video and saves it as a bitmap image. This is available when viewing both live video and recorded video.
- CCTV Keyboard: DVM supports the UltraKey professional CCTV keyboard from Honeywell Video Systems. The keyboard provides an alternative client to a PC-based client and is ideal for operators more familiar with traditional CCTV keyboards.
- Views, whereby up to 16 cameras can be viewed simultaneously on a single monitor. Each view can be configured to cycle through a selection of cameras on a timed basis.
- Sequencing in Views, whereby the presets of PTZ cameras as well as fixed cameras are cycled on a timed basis, within a single view or within the view port of a multiple camera view.
- Alarm Monitors. If an alarm/event occurs in the EBI system, or video motion is detected, a camera or group of cameras can be automatically displayed on an alarm monitor.
- Surveillance Monitors. An operator may switch cameras, sequence views and multi-camera views on dedicated monitors.
- Combined Alarm and Surveillance Monitors. This provides the ability for monitors to be configured to act as both Alarm and Surveillance monitors. In this case, the monitor behaves as a Surveillance monitor until an alarm occurs, in which case it shall show the alarm video. Once the alarm is acknowledged, the video previously shown (as a surveillance monitor) is displayed again.
- Cycling Alarm Monitors. The basic functionality of the Multi Monitor alarm queue is extended by providing support for a cycling alarm monitor, placed at the end of the alarm queue. This allows each Multi Monitor alarm queue to display a larger number of activated alarm camera views than there are physical Multi Monitor screens. The newest activated alarm camera view will enter an alarm queue at a position appropriate to its alarm priority and the time of the event. Existing activated alarm camera views reshuffle in the queue to accommodate the new view. In the event that all the available Multi Monitor screens are full, the oldest activated alarm camera views with the lowest priority will be added to the cycling alarm monitor.
- Video Loss Alarming. The coax connection to a streamer is a common point of failure in a hybrid solution (system containing some or all analogue CCTV cameras). Loss of video poses a security risk in any surveillance system and may not be discovered until too late. DVM utilizes the video loss feature of the new generation of Axis video servers to provide fast, reliable user notification when such an event occurs thus maintaining the integrity of the surveillance system.
- Bi-directional Audio support: provides a simple and inexpensive solution for Intercoms utilizing the existing network camera or video encoder infrastructure.

PRODUCT DATA SUMMARY

DVM System Architecture

- Client/server architecture
- Redundant Database Servers
- Camera Servers
- EBI Stations and Internet Explorer clients
- Microsoft Windows 2003 Server and Windows XP Professional
- Native 32-bit application
- Scalable from single to distributed camera servers
- Microsoft SQL 2008 Server database

Solution Architecture Schemes

- Single server (combined Database and Camera Servers)
- Distributed Preferred and Redundant Camera Servers
- Distributed Analytics Servers
- Redundant Database Servers
- Distributed Database Servers

Networking

- Uses industry-standard TCP/IP networking over Ethernet or wireless Ethernet
- Internet Explorer clients licensed based on the number of simultaneous connections
- All cameras connected to the Ethernet via video streamers (including cameras with built in streamers)
- Remote clients via WAN (Wide Area Network)

Open Systems Support

- ActiveX video controls
- HTML-based displays
- Commercial, off-the-shelf streamers and cameras
- Direct PTZ interface to cameras supporting “Pelco P” protocol
- Direct PTZ interface to camera supporting “Sensormatic" protocol
- Direct PTZ interface to camera supporting “VCL” protocol
- Support for all PTZ cameras supported by the Video Servers supported within DVM

Operator Interface

- Microsoft Windows XP Professional, Windows Vista Business or 2003 Server
- Internet Explorer 7
- Pre-configured camera configuration and viewing displays
- ActiveX viewing controls for inclusion into EBI and HTML displays, with VB scripting ability
- Scalable screen viewing resolution
- Intuitive Web-style navigation buttons, tab views, PTZ controls and VCR style recording controls

Operator Security (using EBI Station)

- Integrated operator security
- Integrated control level security
- Integrated area security
- Events logged by operator ID in audit log

Operator Security (using Internet Explorer)

- Six levels of access for Internet Explorer clients
  - Level 1, Level 2, Operator, Engineer, Supervisor, Manager
- Up to 255 control levels for operator-initiated actions
- Effective partitioning of facility into different areas
- Events logged by operator ID in audit log

Encoding and Compression

Five video encoding formats (depends on streamer used)

- Motion JPEG (MJPEG)
- MPEG-1
- MPEG-2
- MPEG-4
- H.264
- DivX

- Multiple video resolutions depending on video encoding device used included but not limited to:
  - 160x120
  - QCIF (PAL 192x144, NTSC 176x112)

- 320x240
- CIF (PAL 384x288, NTSC 352x240)
- 640x480
- 2CIF/4CIF Expanded (PAL 768x288, NTSC 704x240)
- 4CIF (PAL 768x576, NTSC 704x480)
- Half-D1 (PAL 720x288, NTSC 720x240)
- D1 (PAL 720x576, NTSC 720x480)
- 1024x768
- 1280x720
- 1280x960
- 1280x1024
- 1600x1200
- 1920x1080 (Full Hi-Definition)
- 2560x1920

- Five levels of video compression (depending on streamer used)

Live View

- Navigation Panel (camera menu) for selection of cameras
- Indication of camera status
  - Enabled, Disabled, Recording, Video Motion Detection/Video Analytics Running
- Camera controls
  - Start Record button
  - Stop record button
  - Snapshot button
  - Preset Positions (combo box)
  - Add/Delete preset positions
  - Camera focus
  - Camera iris
  - Camera zoom
  - Camera pan
  - Camera tilt
  - Enable, disable camera
  - Mouse controlled pan-tilt-zoom
  - Joystick controlled pan-tilt-zoom
  - Initiate Intercom call
- Indicators
  - Current date and time
  - Amount of time remaining until recording is complete
  - Remaining operator reservation period
  - Operator currently controlling camera
  - Recording in progress
  - Video Motion Detection / Video Analytics currently running
  - Motion / Video Analytics event currently being detected
- Image Enhancement:
  - Digital Zoom, Pan and Tilt
  - Brightness, Noise, Contrast and Sharpen adjustment

Multi-camera Views

- Pre-configured layouts supporting up to 16 cameras per screen
- Dedicated support for normal aspect ratio (4:3) and wide screen monitors
- Configurable and saved with View number and name
- Cycle cameras within each view port
- Cycle preset positions of pan-tilt-zoom cameras within view ports
- 1000’s available
- Configurable cycle time
- Unlimited number of cameras per view port

Device Input/Output

- Supported on most Axis and Honeywell devices
- Input/Output status provided to operator
- Required for Intercom application with bi-directional audio
- Recordings can be triggered by changes on monitored inputs or when switching outputs
- Outputs can be triggered by video analytics alarms
- Inputs/Outputs can have multiple associated cameras and thus trigger multiple camera recordings

Bi-directional Audio / Intercom

- Supported on all Axis devices supporting full-duplex bi-directional audio
- Calls trigger from field (via IP camera or video encoder input) or from operator station

- Calls can be recorded automatically, manually or have recording disabled for privacy reasons
- Intercom pop-up remains pinned to screen for duration of call
- Operator provided with Intercom call list in the DVM User Interface.

View from within EBI Custom Displays

- Live view control
  - Embedded into displays
  - Embedded into popup displays
  - Display scripting access
  - Pan-tilt-zoom-focus-iris-preset controls provided
  - Recording controls and snapshot button provided
- Recording viewing control
  - Embedded into displays
  - Embedded into popup displays
  - Display scripting access
  - Play, stop, pause, rewind, fast forward, step forward, step backward, slider controls provided
  - Snapshot button
- Display scripting for Video Controls
  - Switch cameras
  - Switch recordings
  - Enable/disable PTZ buttons and borders
  - Control playback of recording
- Image Enhancement:
  - Digital Zoom, Pan and Tilt
  - Brightness, Noise, Contrast and Sharpen adjustment

Dedicated Monitors

- Surveillance monitors
  - Controlled by operators
  - Numeric keypad shortcuts
  - Single view, multi-camera view, sequence views Alarm monitors
- Alarm monitors
  - Automatically controlled by EBI Alarms/Events and Video Motion Detection
  - Single view
  - Cycling Alarm Monitors
- Combined Surveillance and Alarm monitors
  - Acts as a Surveillance monitor until an alarm occurs, whereby alarm video is displayed
  - Once alarm is acknowledged, surveillance video is re-displayed

Recording

- Operator-activated
  - Pre-configured duration
  - Operator-terminated
  - Pre-record available
- EBI alarm/event-activated
  - Pre-record available
- IP Camera or video encoder Input/Output activated
  - Inputs or outputs configured within DVM
  - Pre-record available
  - Recording can be initiated on multiple cameras by the same input or output
- Scheduled
  - Daily, weekly, monthly, yearly recurrence
- Video motion detection / Video Analytics event activation
  - Pre-record available
- Camera Tamper Detection
  - Automatic or manual – can be disabled for privacy reasons
- Intercom initiated
  - Pre-record available
- Continuous Background Recording
  - Configurable per camera
  - Network communication resilience
- Information stored with recording
  - Date and time recording was initiated
  - Duration
  - Operator or Station ID (operator activation)
  - Frame rate
  - Resolution
  - Compression
  - EBI Point Name (alarm/event activation)
  - Operator or schedule notes

  - Automatic archive date (if applicable)
  - Automatic delete date (if applicable)
- Viewing Recordings
  - Table of all recordings for the camera for the chosen day
  - Video player with recording controls
  - Play, stop, pause, fast forward, rewind, step forward, step backward, slider controls
  - Snapshot button
  - Variable speed, fast forward and rewind
  - Direct view of recordings, initiated by an EBI alarm/event or motion detection, from within the EBI alarm and event summary displays
  - Link to popup a display with embedded video control replaying video at full recorded resolution
- Automatic (configurable) deletion dates
- Image Enhancement:
  - Digital Zoom, Pan and Tilt
  - Brightness, Noise, Contrast and Sharpen adjustment

Export

- Full recording or segment of the recording
- Microsoft Windows Media Video (WMV) file format
- Original recording unaffected
- Video player provided to select required segment
  - Play, stop, pause, fast forward, rewind, step forward, step backward, select start, select end, play selected segment controls provided
  - Directly select start and stop time of segment
- Export audit log with recording
- Both exported recording and audit log can be digitally signed as proof of authentication and integrity
- Exported Honeywell DVM files containing a digital signature can be verified by using the Honeywell DVM Video Export Player application.

Archive

- Recordings moved to an archive folder for archiving
- Information about recording still remains within the DVM database for searching
- Restore recording for viewing
- Automatic archiving of recordings based on recording end-time

Audit Trail

- All operator and system actions are logged including:
  - Start/stop viewing camera or View
  - Enabling/disabling cameras
  - Adding/deleting/modifying camera, view
  - Controlling camera (pan, tilt, zoom, focus, iris, presets)
  - Adding/deleting/modifying schedules
  - Start/stop of recordings and snapshots
  - Export recordings, audit logs
  - Modify Video Analytics or Video Motion Detection settings, tuning
  - System alarms

Digital Signing of Exported Recordings and Audit Trail (Logs)

- Default Honeywell DVM Digital Certificate provided
- Customer may provide their own Digital Certificate

Searching

- Simple search
  - Search on all cameras for a particular date range
  - Today, yesterday, in the last week, in the last month, a particular date, on or before a particular date, between a range of dates
- Advanced search
  - Specify a range of search criteria including
  - Cameras
  - Recording type
  - Operator or Station ID
  - Name, value, description of EBI point
  - EBI alarm/event priority
  - EBI areas of cameras
  - Operator notes
- Online and archived recordings included in the searches

Documentation

- User Documentation in printed and electronic copy:
  - Overview & Planning Guide
  - Installation & Upgrade Guide

- Operators Guide

- User Documentation in electronic copy only:
  - Configuration & Administration Guide
  - Troubleshooting Guide
  - Device Setup Guide
  - Honeywell DVM Application Development Guide

Internationalization

- Fully translatable into any local language
- Database provides tables to convert each string of text in the User Interface
- Stations and Clients may use different languages within the one system

CCTV Keyboard

- Honeywell Video Solutions UltraKey Professional CCTV keyboard
- Ethernet-connected to the system
- Uses Surveillance Monitors as Operator User Interface
- Security provided by Operator sign-on PIN

Supported Streamers and IP/Network Cameras

IP/Network Cameras:

- Axis:
  - M1011 (Network camera)
  - M1011-W (Network camera)
  - M1031-W (Network camera)
  - M3011 (Network camera)
  - P1311 (Network camera)
  - P3301/P3301-V (Network camera)
  - P3343/P3343-V/P3343-VE (Network camera)
  - P3344/P3344-V/P3344-VE (Network camera)
  - Q1755 (Network camera)
  - Q6032E (Network PTZ camera)
  - 207/207W (Network camera)
  - 207M (Megapixel network camera)
  - 209FD/209FD-R (Network camera)
  - 209MFD/209MFD-R (Megapixel network camera)
  - 210/210A (Network camera)
  - 211/211A/211W (Network camera)
  - 211M (Megapixel network camera)
  - 212 PTZ (Network PTZ camera)
  - 213 PTZ (Network PTZ camera)
  - 214 PTZ (Network PTZ camera)
  - 215 PTZ/215 PTZ-E (Network PTZ camera)
  - 216FD/216FD-V (Network camera)
  - 216M/216MFD-R (Megapixel network camera)
  - 221 (Day/Night network camera)
  - 223M (Megapixel network camera)
  - 225FD (Network camera)
  - 231D+/232D+ (Network PTZ camera)
  - 233D (Network PTZ camera)
- Honeywell:
  - EQUIP HCD554IPX (Day/Night network camera)
  - EQUIP HCS554IPX (Day/Night network camera)
  - EQUIP HD4DIPX (Network camera)
  - ACUIX IP Dome Series (Network PTZ camera)
  - HCX13M (Megapixel network camera)
  - HCX3 (Megapixel network camera)
  - HCX5D (Megapixel network camera)
- Sony:
  - SNC-CS50 (network camera)
  - SNC-DF50 (network camera)
  - SNC-RX530 (network PTZ camera)
  - SNC-RX550 (network PTZ camera)
  - SNC-RX570 (network PTZ camera)

Streamers/Video Encoders:

- Axis:
  - M7001 (Single port streamer)
  - Q7401 (Single port streamer)
  - Q7406 (6 port streamer)
  - 240Q (4 port streamer)
  - 241S/SA (single port streamer)
  - 241Q/QA (four port streamer)
  - 243SA (single port streamer)
  - 243Q Blade (four port streamer)

- 247S (single port streamer)

Legacy Devices (discontinued by manufacturer)

- Axis 205 (Network Camera)
- Axis 206 (Network Camera)
- Axis 206W (Network Camera)
- Axis 206M (Megapixel Network Camera)
- Axis 231D/232D (Network PTZ Camera)
- Axis 2100 (Network Camera)
- Axis 2110 (Network Camera)
- Axis 2120 (Network Camera)
- Axis 2130 (Network PTZ camera)
- Axis 2400 and 2400+ (four port streamer)
- Axis 2401 and 2401+ (Single port streamer)
- Axis 2411 (single port streamer)
- Axis 2420 (Network Camera)
- Honeywell HNVE130A (Single port encoder)
- Honeywell KD6i Series High Speed Dome
- MegaChips OpennetView
- MegaChips MD-100 (four port streamer)
- Sunjin CamStation CS100 (MPEG-1)
- Sunjin CamStation CS-3001V (MPEG-4)

Fixed Cameras

- All fixed analog CCTV cameras

Pan-tilt-zoom Protocols

- VCL (Video Controls Limited) Orbiter cameras
- Ademco RapidDome cameras
- Honeywell KD6i Digital Dome camera
- Honeywell KD6 Special Preset support
- Pelco P protocol
- Pelco D protocol
- Sensormatic protocol
- All PTZ cameras (protocols) supported by the AXIS Streamers (2400, 2401, 2400+, 2401+, 240Q, 241S/SA, 241Q/QA) including
  - AXIS EVI-D30/D31
  - Canon VC-C3, VC-C4, VC-C4R
  - Daiwa DMP 15-h1
  - Ernitec ICU-PTZ-S
  - Lilin PIH717
  - Molynx D05RX/L
  - Panasonic WV-CS850(A)/854(A)
  - Pelco DD5-C, Esprit
  - Bosch/Philips Autodome G3A
  - Sensormatic SpeedDome Ultra III
  - Sony EVI-D30/D31, EVI-G20/G21, EVI-D100/100P
  - Ultrak UltraDome KD6
  - Video Control Ltd. MicroSphere
  - Videotronic HDI-5DE
- All PTZ devices supported by the AXIS Streamers including (please see Axis website for a complete list):
  - Basic Telepresence Trippy
  - Kalatel KTD-312
  - Pelco LRD41C21_22
  - Surveyor Corp. TransitRCM
  - Videmech 555RX
  - Videmech 682 Digital
  - Videor Technical VPT42RS

PRODUCT SPECIFICATIONS

Please see the DVM R400 Compatibility Matrix for more complete system hardware specifications.

Database Server

- Processor:
  - Minimum: Pentium IV 2.6GHz (or AMD equivalent)
  - Standard: Dual-Core Intel Xeon® 5130 2.0GHz (or AMD equivalent)
  - High Performance: 2 x Dual-Core Intel® Xeon® 5130 2.0GHz (or AMD equivalent)
- Memory:
  - Minimum: 1GB RAM
  - Recommended: 2GB RAM
  - High Performance: 4GB RAM

- Keyboard: 12 function keys
- Monitor: Super VGA monitor capable of non-interlaced operation at 1280 x 1024 pixel resolution (or 1680 x 1050 for widescreen monitors)
- Graphics card: Super VGA non-interlaced graphics card capable of 1280 x 1024 pixel resolution (or 1680 x 1050) and 24-bit colour (or true colour) with 32MB video memory (Note: if the Database Server is used as a Client then the same minimum requirements for Video memory apply as shown for the Clients below).
- DVD Drive (SCSI or IDE)
- Communications adapter: 8-line serial communications adapter
- Network interface card: Adapter for Ethernet networking compatible with TCP/IP network protocols with a minimum bandwidth of 100Mbps (Gigabit Ethernet recommended).
- Point device: Mouse
- Hard disk: 40 GB (NTFS) for Operating System Paging File and SQL Server. Separate 40 GB (NTFS) for the DVM Software
- Large and/or complex systems or systems with high recording activity require an additional hard drive for Microsoft SQL Server
- Display resolution: 1024 x 768 x 65K colours
- Operating system: Microsoft Windows 2003 Server Service Pack 2, Microsoft Windows XP Professional Service Pack 2
- Network protocols: TCP/IP

Camera Server & Video Analytics Server

- Same basic specification as for Database Server
- 2 x Dual-Core Intel® Xeon® 5140 (3.0GHz or higher) or AMD equivalent recommended for Analytics Servers running 12 or more camera channels of Honeywell Intelligent Video Analytics.
- Additional RAM required for Camera Servers managing cameras configured with pre-record feature
- Additional hard disks: For storage of recordings online
- Archiving storage devices: For archiving recordings
- DVM supports virtualisation of Camera Servers using VMware ESX3.5i

EBI Stations

- Please see the EBI Spec & Tech for details

Internet Explorer Clients

- Processor: Pentium IV, 2.6GHz (entry level client) or higher for performance clients
- Memory: 1GB RAM
- Keyboard: 12 function keys
- Monitor(s): Super VGA monitor capable of non-interlaced operation at 1280 x 1024 pixel resolution (or 1680 x 1050 for widescreen monitors)
- Graphics card: Super VGA non-interlaced graphics card capable of 1280 x 1024 pixel resolution (or 1680 x 1050) and 24-bit colour or higher (or true colour) with 32MB video memory for entry level clients. A dual output graphics card with 64MB or more video memory can be used for display of multiple monitors connected to the same Client. All TV Out PC cards compatible with the Windows Operating System used by the client.
- DVD Drive (SCSI or IDE)
- Communications adapter: 8-line serial communications adapter
- Network interface card: Adapter for Ethernet networking compatible with TCP/IP network protocols (100MB Network Interface Card recommended as a minimum)
- Point device: Mouse, Joystick
- Hard disk: 40 GB (NTFS) for Operating System and Software
- Display resolution: 1024 x 768 x 24-bit colour or higher
- Operating system: Microsoft Windows XP Professional Service Pack 2, Microsoft Windows Vista Business, Microsoft Windows 2003 Server Service Pack 2
- Network protocols: TCP/IP

Network

- 802.3 Ethernet, 802.3u Fast Ethernet, 802.3z Gigabit Ethernet LAN using standard cable types:
  - Unshielded Twisted Pair (UTP)
  - Fiber Optic
- 802.11a, 802.11b, 802.11g Wireless Ethernet

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