



Video Surveillance for Retail

Genius Vision Digital

Market Trends

During the 1980s, the businesses prone to theft started to install CCTV to deter crimes, and video surveillance spread quickly across the United States. Later, in the 1990s, DVRs were introduced to the public. So the market trend gradually transited to HDD-based digital video recorders. Then came the

innovation of digital video and broadband network. The focus of video surveillance then shifted to IP video and led to the overall pervasion of IP cameras, mainly because of the far better video quality. Today, retailers choose these network video recorders: **1** Standalone NVRs for high-resolution IP cameras, and **2** NVRs that can fully integrate with large-scale video management systems (VMS).





What is a powerful solution for retail?

The retail industry loses billions of dollars per year to employee theft and shoplifting, not including credit card fraud and robbery. Hence, a right security system is vital to your retail stores. To answer this need, GVD keeps an ample lineup of products ranging from large-scale centralized monitor to capable standalone to cope with the most challenging security jobs.

A prospective video system for a retail chain should include:

Robust & powerful branch NVRs

As it is often the case that no IT staff is available at a branch store, the NVR for a branch store must be robust and healthy for 24 x 7 service. It should have rich hardware redundancy to ensure non-stop service in unexpected situations and better with “self-recovery” to a user-mistake or an interrupt by the environment.

If the branch NVR is to be installed in a machine room, it should be effective in handling video data. The NVR should have excellent read/write at high speed on a 24 x 7 basis, and it should be provided with abundant storage space with RAID to safeguard video data from unexpected loss. Besides, the branch NVR should also be expandable through flexible add-ons of system components.

Maximum HD/MP IP cam support

For the overall security of the business, a retail chain needs as many HD/megapixel IP cameras as possible to monitor their franchises and to keep the security aware. They want an NVR to record and stream live video by at least 25 fps. They also want to view as many videos as they have on an NVR.

Full integration with POS

Bricks-and-mortar retail stores rely on point-of-sale to get payment, issue receipts, and collect the data needed for sale analysis. Hence, a video system that can combine POS transaction data will broaden the dimensions of video surveillance. If users can view video with synchronous POS transaction data, they can analyze data more efficiently. Data retrieval is easier as well. IT staff should be able to define a text or a number in transaction data to launch an alarm. Painless POS integration is also a must.



Control center at headquarters

A control center allows the retail corporation to remotely and real-time monitor what is going on in its real estate and be instantly alerted when any abnormality comes up. A control center at the corporate building also lets IT staff access any of a networked NVR at any time once management or maintenance is required.



Remote Access Clients



3rd-party System



Alarm Management



Video Wall

3rd-party system integration

A competent video system for a retail chain should support the most popular serial-communication protocols such as Modbus and Canbus. No extra cost and effort in engineering work to take in a 3rd-party system such as an access control system or points-of-sale is a must.

Video walls

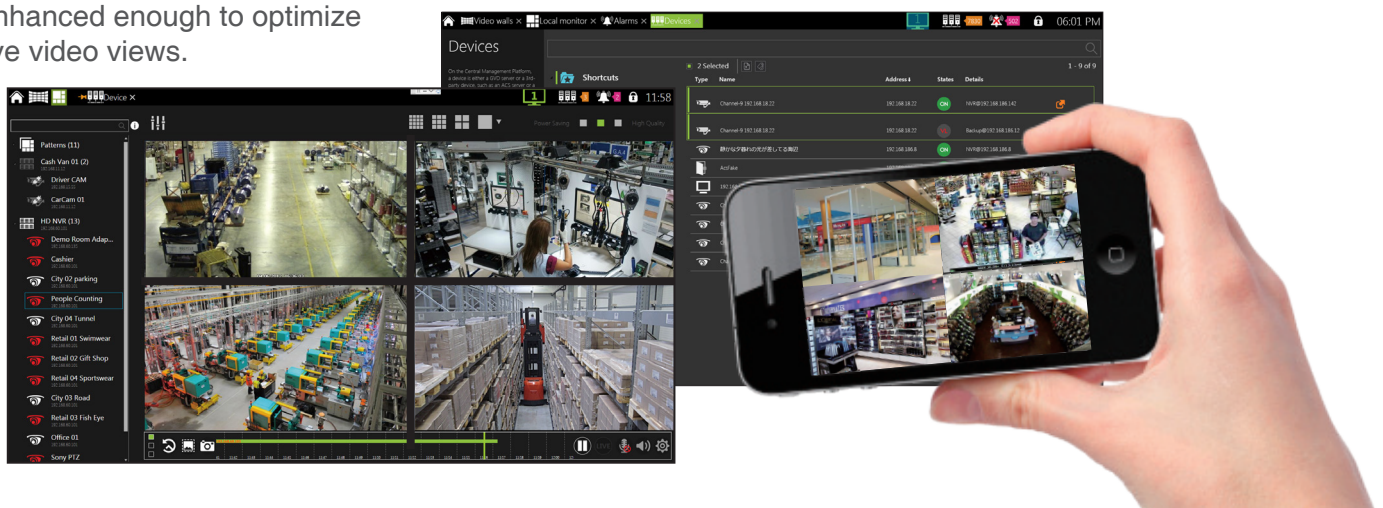
A video wall with synchronous live videos on multiple monitors can help the control center of a retail chain quickly cover as many conditions and situations as possible in its franchises. The video quality needs not to be compromised if the video system is enhanced enough to optimize live video views.

Powerful alarm management

Powerful alarm management should feature highly definable condition to launch an alarm, such as hardware health alarm like CPU overheat or channel alarm such as video loss. Powerful alarm management should also provide users with diverse options to launch an alarm, for example, users can choose to launch an alarm by a pop-up video pattern or by a pop-up text message.

Remote access clients

The system should provide software clients, web clients and iOS/Android clients to allow mobile and flexible operation for users.





GVD Retail Solution

Video Management System

The "Video Management System" is GVD's large-scale VMS based on enterprise multi-site design. It converges different types of servers and a large number of cameras and sensors onto one management platform to process massive video, with high throughput, redundancy, and fault-tolerance.

Hardware-wise, the platform stacks up several highly robust physical servers including the following:

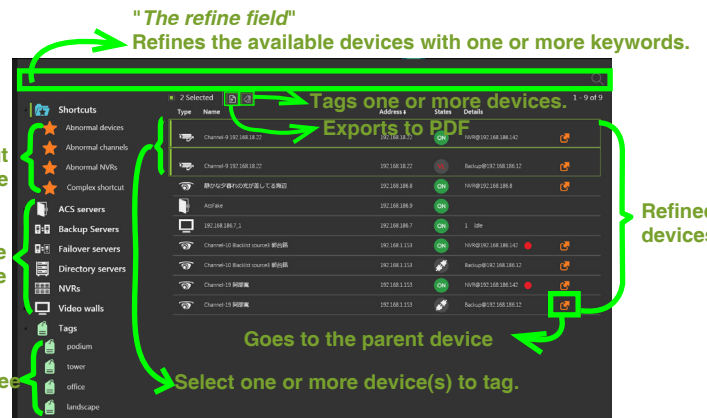
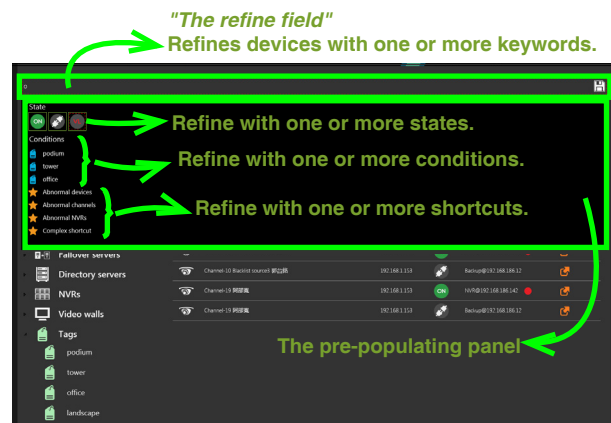
Component	Model	Description
VMS Workstation	E4200	The control and input/output unit for the whole system.
NVR	M3/M4/M6	Streams, records, and archives video for up to 128 channels.
VMS Database Server	C5002	Stores the configuration data and the logs of all system components and holds them together to work for the system.
VMS Videowall	D4200	Delivers high-quality video walls for the system.
Archive Server	X8024	Uses RAID 5 to get video data directly from IP cameras on a 24 x 7 basis.
Failover Server	X5016	Assumes the jobs of an overloaded or failed NVR..
AppPack Server	C5201	Helps the system cooperate with a sophisticated 3rd-party application, such as TechnoAware Vtrack and NEC NeoFace® .
Integration Gateway	C5001	Helps the system take in a 3rd-party system without much trouble.

Central Management Software- VMS Manager

GVD "VMS Manager" is the central management software, to control each aspect of the system. For example, one can change what to output on a video wall, which NVR to watch over, or which video to back up.

Brilliant device refiner

To ease the complexity of large system management, the software features a brilliant device refiner to narrow down a large group of devices to a tiny one to quickly retrieve a particular device.



Shortcut tree
Device tree
Tag tree

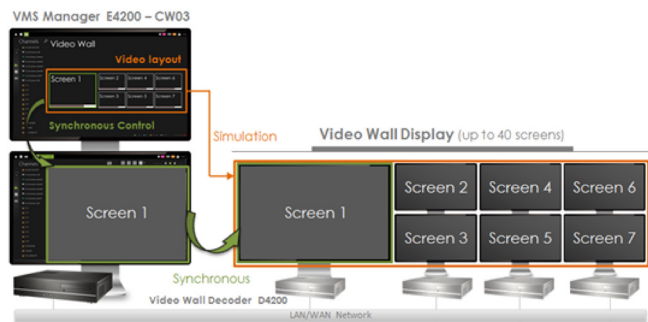


Software features of GVD VMS

Synchronous video-wall control



For video walls, GVD features "*Synchronous video-wall control*", which means your operation at the VMS Workstation is directly and promptly applied to a remote video wall, for example, you can drag-and-drop a video to output it on a remote video wall, whether live or playback, and you can drag-and-drop a video pattern to change the video layout on a remote video wall. All video walls on the UI can be freely relocated onscreen to reflect their real location on-site so you can quickly tell which video wall to manage by the relative location shown onscreen.



Smart Keeper



To better control a large project, GVD's central management software **VMS Manager** features a dedicated page to show how many devices are there in the system and how these devices are working at the moment.

The information is shown on an efficient overview page in a organized and classified way. 11 types of devices are supported on such an overview page including camera channels, NVRs, DIO modules, doors, video wall displays, VMS Database Servers, failover servers, archive servers, station servers, etc. A "*Smart Keeper*" is there to detect any available device and add it to the system, such as an NVR, camera, decoder, or failover/backup server. Such a "*Smart Keeper*" also auto-updates the change of information of an existing NVR. The "*Smart Keeper*" is a innovative design that lessens the complexity of the setup and configuration of a large-scale video

system.

Case Builder

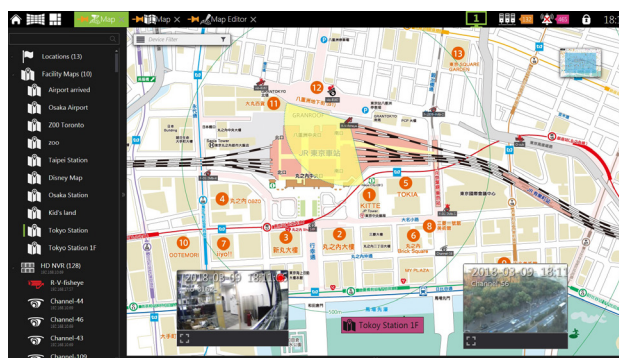


GVD's central management software **VMS Manager** features a tool to let you systematically inquire into a suspicious event on your business floors. You can record each your investigation act with an "*Investigation Note*", with text description, video clip and screenshot attached, and these notes can further be stored in an "*Investigation List*", which then forms an organized documentation of your investigation on an a case. In some worst conditions, the document can provide you with the evidence required for criminal investigation.

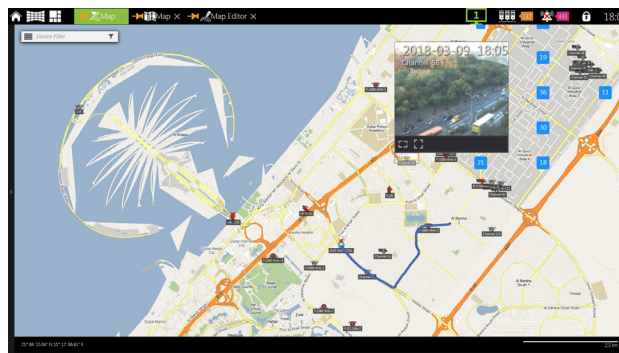


Facility map & GIS map support

The central management software **VMS Manager** supports "*facility maps*" and **GIS Maps** to truly mitigate the complexity of large-scale IP video surveillance across wide area of lands such as a city.



A facility map



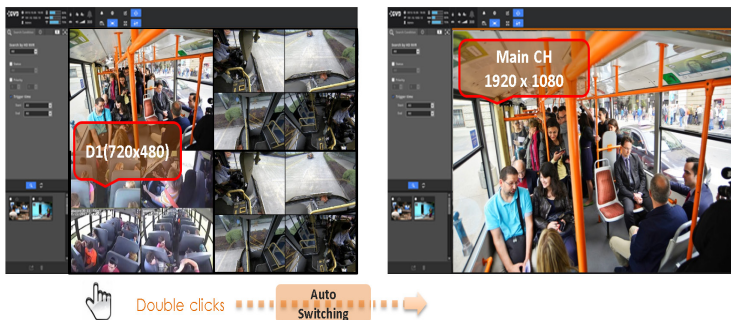
GIS map



Software features of GVD Video Management System

Adaptive Video Streams

Adaptive Video Streams is a technology for a viewer to stream not necessarily the high-profile main stream but possibly the low-profile sub stream as long as the size of the viewer is small enough to compensate for the low-profile video quality, which poses a great help for video display in poor network conditions. The central management **VMS Manager** lets users enable/disable this feature for an individual viewer and lets users define a platform-wide limit on the viewer size to give up this feature to make *the feature* more flexible.



Nonstop video live-streams & playback



GVD Video Management System not only includes redundancy such as failover and backup but also breaks through the limit of failover with "*Edge recording*", in that a GVD NVR automatically reduplicates the video data stored in the SD or memory of a camera after video recording task fails back onto the NVR. Video live-streams and playback won't be interrupted with such "*Edge recording*". This feature is much helpful for a broken network and also better protection of video data.

Tag management



The central management **VMS Manager** comes with a unique and very useful "*Tag Management*" to let you efficiently spot one particular channel among a large group of them. The "*Tag Management*" relies on a virtual label attached to a channel to be quickly screened from a big group of online ones.

Panoramic fish-eye dewarp



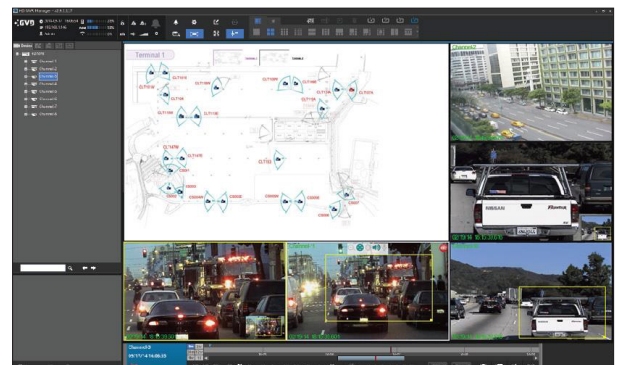
The central management **VMS Manager** lets you dewarp a distorted video from a panoramic fish-eye camera when you are managing a video wall, video-documenting an investigation, or conducting local monitor if the video doesn't get dewarped by GVD HD NVR.



Dewarp a distorted video with panoramic filters

Powerful SW-E2200-CW03 bundled

A software program **SW-E2200-CW03**, i.e. "*CMS Manager*", is pre-installed with the central management software **VMS Manager** to bring a full remote configuration tool of NVRs and cameras. This "*CMS Manager*" also enables advanced video operations including synchronous playback and optimized video display, as well as sophisticated video computing such as **Video Content Analysis** and advanced metadata search.



"CMS Manager"

Highlights of GVD Video Management System

Small fanless NVRs for checkout counters

GVD has a Fanless NVR with small footprints to fit into constraint checkout counters. The NVR supports four licenses of cameras and comes with four POE ports, and it allows two pieces of 2.5" HDD/SSD.



Rugged design that fits all environment needs

Full POS integration

To integrate with POS, GVD NVR only needs a tiny protocol box to work with all kinds of cash registers, and each NVR supports up to eight protocol boxes. GVD's POS solution features a powerful POS pattern to synchronously show transaction data and relevant videos in separate viewers instead of showing transaction data overlaid on video. GVD NVRs also feature some powerful tools, including easy retrieval of transaction data. Users can define a text, number, or alphanumeric string to search a massive transaction data. Also featured are PDF-based data export, data export with relevant video, data alarms, and data filters.

Extra robust NVRs

Typically, there is no IT staff stationing at a branch store. GVD made the NVRs extra robust for 24 X 7 running. They have dual watchdogs and hardware redundancy, such as dual power units, LAN ports, and RAID. A chip-based hardware watchdog is built on the motherboard to handle any of these situations of an NVR: Memory-overrun, CPU-overload, or system hang-up. Besides, the hardware watchdog can also wake up the system by restarting it.

Enterprise multi-site design

Retail chains usually use hundreds of cameras and sensors to safeguard their property. GVD NVRs can easily scale up to GVD Video Management System, a centralized video system for 100,000 channels. Supporting the most popular serial-communication protocols, it is also easy for the Video Management System to take in a 3rd-party system, such as POS, alarm, or access control system.

Easy expansion

A system improperly designed can result in a significant effect in overall performance, such as video loss, slow performance, or the likes. GVD Video Management System allows easy project scale-up through flexible add-ons of GVD products, such as VMS Videowalls, NVRs, failover servers, and so on.

Better user experience

The central management software, **VMS Manager**, uses a variety of enlarged graphics on its UI to present a modern look. The software also features a system **Taskbar** unseen before to streamline user's navigation in the system. The **Notification Area** on the **Taskbar** not only gives a quick overview of all system notices but also lets you lock out accesses to the system.



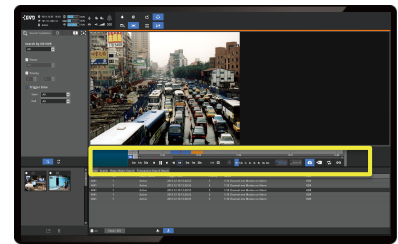
Modern looking UI

Disk)

GVD loads an NVR with a "virtual hard disk" (VHD), a Windows-based system image tool to take a snapshot of system status and software settings that can be used to recover your system within 5 minutes if a severe system failure or software corruption should occur. This tool can reduce not only RMA but also the need for on-site support. For users, everything just falls back into place so soon.

Powerful read/write engine of NVRs

Unlike a conventional NVR with a central database, GVD NVR features an exclusive **TSE (Time Sector Engine)** to control high bandwidth throughput up to 600 Mbit/s over 1G LAN port, up to 128 IP cameras at 3Mb/s, and processes video at high speeds, such as real-time PTZ control. Such powerful engine allows the Video Management System to support as many HD / MP IP cameras as possible to meet a retailer's need for security.



High speed video processing

Bandwidth clever & handy within reach

For a large project, the NVR uses a variety of techniques to minimize the impact of limited bandwidth, including **TSE (Time Sector Engine)**, **ROI**, **Turbo Mode**, **Adaptive Video Streams**, **Playout Control**, and **Live Multicast**. Users not only get fluent video streams, but also get to access an NVR or receive alarms in poor network conditions. And, by the multiple clients featured, the NVR is mighty handy. Clients are available on PC, web browsers, and handheld devices, such as iPhone, iPad, and Android phones/tablets.

VHD (Virtual Hard

System Architecture

