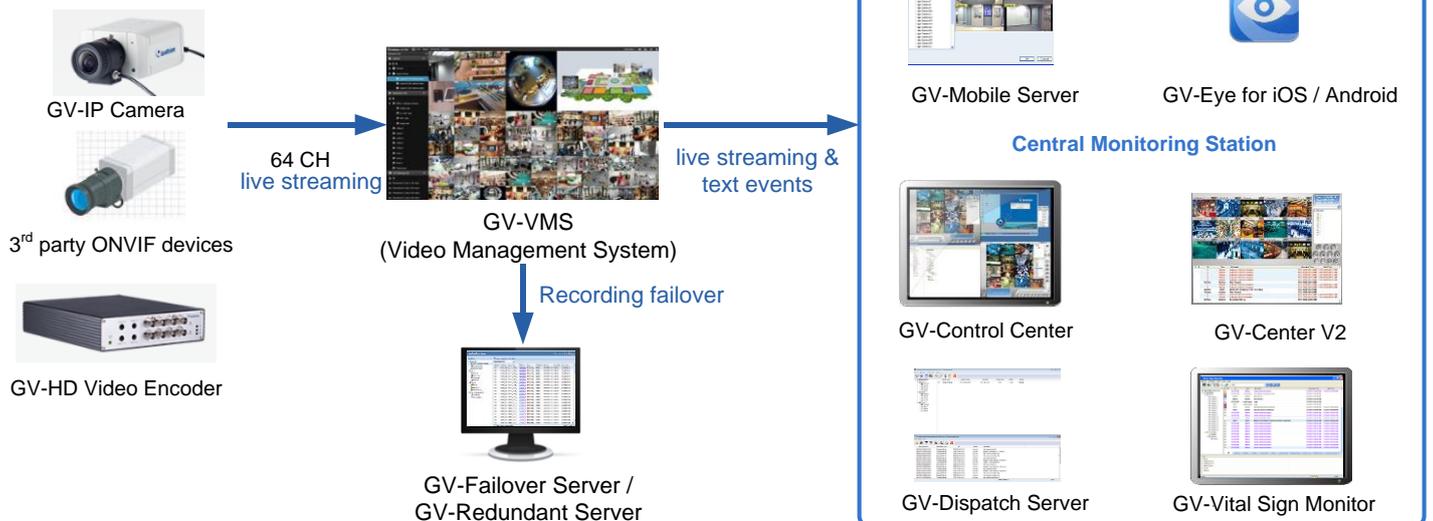## GV-VMS

INTRODUCTION

GV-VMS is a comprehensive video management system, and requires a purchased license starting from V18.1, that records up to 64 channels of GeoVision and/or third-party IP devices. The live view and playback layout can be easily adjusted with the intuitive drag-and-drop function. GV-VMS comes with a variety of intelligent video analytics to offer precise monitoring and to reduce the need for manual supervision. The built-in WebCam Server allows users to remotely access live view and recordings from anywhere using Web browsers, mobile app and Remote ViewLog. Compatibility with GV-CMS (GeoVision Central Monitoring Station) and interoperability with a wide selection of third-party IP cameras through ONVIF make GV-VMS a versatile and effective surveillance solution.

GV-IP Camera

3rd party ONVIF devices

GV-HD Video Encoder

64 CH
live streaming

GV-VMS
(Video Management System)

Recording failover

GV-Failover Server /
GV-Redundant Server

live streaming &
text events

Live View

GV-Cloud Center   GV-Edge Recording Manager

GV-Mobile Server   GV-Eye for iOS / Android

Central Monitoring Station

GV-Control Center   GV-Center V2

GV-Dispatch Server   GV-Vital Sign Monitor

Features

Monitoring

- Support for 64 channels in GV-VMS and CMS applications
- Support for H.264, H.265 GPU decoding and GPU fisheye dewarping
- Software license management support
- Customizable layout for live view and playback with drag-and-drop support
- Multi-monitor display to show live view and playback on different monitors
- Support for QView display which enables the projection of a live view display onto another monitor
- Support for Microsoft SQL and Access database type
- Support for over 500 GeoVision and 3rd party IP camera models – see IP Camera Support List
- Auto search for IP cameras within the LAN
- Support for H.264, H.265, and MJPEG codec
- Support for resolution from CIF to megapixels
- Smart Dual Streaming for monitoring and recording
- Support for smart streaming of GV-IP cameras
- Panel resolution up to 4K
- Noise Tolerance for motion detection
- 3D E-map
- System log
- Support for up to 1,000 accounts for login
- Multi-level passwords protection and password expiration management
- Automatic login with GV-PCR310 Enrollment Reader
- I/O devices control
- PTZ control panel and PTZ auto functions
- System Idle Protection
- Live view buffer and frame rate control
- Live View Object Index to show the objects or faces captured
- Dual stream on-demand display
- Fisheye dewarping for GeoVision and 3rd party fisheye cameras
- Realtime color-coded face recognition events from GV-Face Recognition Camera and GV-AI FR *V18.1 only*
- Support for GV-Live Streaming for streaming from Android / iOS mobile device cameras *V18.1 only*
- Support for ONVIF, PSIA, and RTSP protocols

Intelligent Recording, Smart Search and Easy Playback

- Continuous recording (round-the-clock) and recording triggered by motion detection, alarm and schedule
- Adjustable recording quality and frame rate for each camera
- Pre-motion/IO and post-motion/IO recording
- Storyline recording
- Timeline Search
- Object search
- Thumbnail browse to quickly search for specific frames within video footage
- Instant Playback
- Extracting frames from a video clip during playback
- Support for Daylight Saving Time (DST)
- Support for recording in standard H.264, H.265, and MJPEG codec
- Support for configuration change without stopping recording
- Continuous playback of set frames A to B
- AVI repair utility

Video Merging and Export

- Exporting video recording within a specified time range
- Exporting videos in EXE format, playable with any third-party players
- Exporting videos of multiple channels in a single AVI video
- Support for automatically assigning storages to multiple camera channels
- Support for Windows burning software
- Time Merge function for exporting a full-length video with recorded and non-recorded periods
- Support for saving dewarped fisheye view in AVI format

Notification

- E-mail notifications with video images attached upon specified alert conditions
- Camera popup upon motion or I/O trigger
- Computer alarms upon recording errors, input, motion and other alarm conditions
- Video lost detection and notifications through on-screen message
- Face event alarms & alerts via I/O devices, computer alarms, e-mails, GV-Notify app and executing programs on the PC *V18.1 only*

Video Analytics

- Object Index
- Privacy Mask
- Defog
- Stabilizer
- Intrusion Alarm
- Counter
- Crowd Detection
- Advanced Unattended Object
- Advanced Scene Change
- Advanced Missing Object
- Face Count
- Face Detection by Software
- Heat Map
- Face Detection by GV-Face Detection Camera (GV-BX2600-FD / 2700 / 2700-FD / 4700 / 4700-FD / 8700-FD, GV-MD8710-FD) *V18.1 only*
- Face Recognition by GV-Face Recognition Camera (GV-VD8700 / FD8700-FR) and GV-AI FR *V18.1 only*
  - o Face Search with GV-Face Detection & GV-Face Recognition Cameras / GV-AI FR by face snapshots & photos, age, gender, name, face group and alert type *V18.1 only*

Utilities

- Dynamic DNS
- Digital watermark
- Windows lockup
- Fast backup and restore (FBR)
- Bandwidth Control program
- Point of Sale (POS) integration
- Local backup and remote backup with GV-Backup Center
- Report Generator *V18.1 only*

WebCam for Remote Surveillance

- SSL Encrypt Connection Support
- UPnP™ Support
- Control Panel on Single View to provide instant information and operation
- Support for PIP, Focus View, Defogging Live Videos, and Video Stabilizer in Single View
- Restricting Power User and User to access WebCam Server at specified time length
- Event List Query
- Download Center
- Remote E-Map with pop-up live images upon input trigger

Advanced I/O Control

- Visual Automation to intuitively trigger an output by clicking on the camera view
- Virtual I/O control
- Record video, send e-mail notification and trigger output upon input trigger
- Move PTZ camera to a preset location on input trigger
- Latch Trigger feature

Remote Monitoring Software

- WebCam
- GV-Mobile Server
- GV-Edge Recording Server (Windows / Mac) *
- GV-Cloud Center
- GV-Eye for Android Smartphones and iPhone / iPod / iPad

IT Technology

- RSA Network Security
- Authentication Server: centralized control of password settings in multiple GV-VMS with support for Windows Active Directory

Integration with Centralized Management Software

- GV-Center V2
- GV-Vital Sign Monitor
- GV-Dispatch Server
- GV-Control Center

License

GV-VMS V18.1 or later is a paid software that supports connection of up to 64 IP devices, and can connect up to 32 GV-IP devices upon initial purchase. If you need to connect more than 32 channels of GV-IP devices or connect with third-party IP devices, additional license(s) are required.

Supported Devices	Channels	License
GV-IP Devices Only	32 ch	Initial license
	64 ch	2 licenses required: • **GV-VMS V18.1 or later** initial license • **GV-VMS Pro** license, 32 ch per license
GV-IP Devices + 3rd-Party IP Devices	32 ch	2 licenses required: • **GV-VMS V18.1 or later** initial license • **3rd-Party** license required, in increments of 1 ch
	64 ch	3 licenses required: • **GV-VMS V18.1 or later** initial license • **GV-VMS Pro** license, 32 ch per license • **3rd-Party** license, in increments of 1 ch

IMPORTANT: Make sure your purchased *GV-Dongle* or *software license* has been inserted into or activated on the PC prior to running GV-VMS.

Note: GV-USB Dongle comes in internal and external dongles. Internal dongle is recommended for the Hardware Watchdog function, which restarts the PC when Windows crashes or freezes.

Minimum System Requirements

Below are the minimum PC requirements for connecting GV-VMS with 32 and 64 channels of GV and 3rd party IP cameras (dual streams).

CPU	GV-VMS (Up to 32 Channels)	GV-VMS Pro (Up to 64 Channels)
OS	64-bit Windows 10 / Server 2016	
CPU	4th Generation i3-4130, 3.4 GHz	4th Generation i7-4770, 3.4 GHz
Memory	8 GB RAM	16 GB RAM

Note:
1. To use the fisheye dewarping function, the graphic card must support DirectX 10.1 or above.
2. H.265 decoding and searching of face recognition events by face images requires 6th Generation Intel Desktop Processor (Skylake) or above, which comes with onboard GPU.
3. The system requirements are determined in round-the-clock recording settings with live view only, while remote connections and video analysis being disabled.

Minimum Network Requirements

The data transmitting capacity of GV-VMS depends on the number of Gigabit connections available. The number of Gigabit network cards required to connect 64 channels are listed below according to the resolution and codec of the source video.

Codec	Resolution	Bitrate Used (Mbps)	Total FPS for 64 ch	Gigabit Network Cards Required	Max. Channels Supported per Network Card
H.264	1.3 MP	5.05	1920	1	Max. 64 ch / card
	2 MP	7.01	1920	1	Max. 64 ch / card
	3 MP	10.48	1280	1	Max. 64 ch / card
	4 MP	11.65	960	2	Max. 50 ch / card
	5 MP	16.48	640	2	Max. 38 ch / card
	8 MP	17.14	1600	2	Max. 38 ch / card
	12 MP	16.67	960	2	Max. 38 ch / card
H.265	3 MP	7.06	1920	1	Max. 64 ch / card
	4 MP	9.44	1600	1	Max. 64 ch / card
	5 MP	7.52	1920	1	Max. 64 ch / card
MJPEG	1.3 MP	32.36	1920	3	Max. 22 ch / card
	2 MP	44.96	1920	4	Max. 16 ch / card
	3 MP	38.73	1280	4	Max. 18 ch / card
	4 MP	40.35	960	4	Max. 17 ch / card
	5 MP	30.48	640	3	Max. 22 ch / card
	8 MP	58.52	1600	6	Max. 12 ch / card
	12 MP	65.98	960	6	Max. 11 ch / card

Frame rate limit in a single hard disk

Since the size of transmitted data from IP cameras may be quite large and reach beyond the transfer rate of a hard disk, you should note the total recording frame rates that you can assign to a single hard disk, as listed below.

Frame Rate Limit in a Single Hard Disk				
Video resolution	H.264		H.265	
	Frame Rate (fps)	Bitrate (Mbit/s)	Frame Rate (fps)	Bitrate (Mbit/s)
1.3 MP	660	5.05	N/A	N/A
2 MP	660	7.01	N/A	N/A
3 MP	440	10.48	660	5.35
4 MP	330	11.65	550	7.74
5 MP	220	16.48	660	6.73
8 MP	550	14.13	N/A	N/A
12 MP	330	14.47	N/A	N/A

Note: The data above was determined using the bit rate listed above and hard disks with average R/W speed above 110 MB/s.

The frame rate limit is based on the resolution of video sources. The higher video resolutions, the lower frame rates you can assign to a single hard disk. In other words, the higher frame rates you wish to record, the more hard disks you need to install. For the information of recording frame rates, you may consult the user's manual of the IP camera that you wish to connect to.

Specifications

Video Input	Up to 64 channels
Audio Input	Up to 64 channels
Video Codec	MJPEG, H.264, H.265
Audio Codec	16 kHz / 16-bit, 32 kHz / 16-bit
Video Resolution	From CIF to megapixels
Networking	LAN, WAN, Internet
Backup Device	HDD, NAS, CD-R / R-W, DVD+R / +RW, DVD+R (DL), ZIP, JAZ, Blu-ray, GV-Storage System
Language	Bulgarian / Czech / Danish / English / French / German / Greek / Hebrew / Hungarian / Italian / Japanese / Persian / Polish / Portuguese / Russian / Serbian / Simplified Chinese / Slovakian / Slovenian / Spanish / Traditional Chinese / Turkish

Note: All specifications are subject to change without notice.

Optional Licenses

Optional Combinations	1. GV-VMS + GV-POS S/W Capture (with options of 4 serial POS and 32 network POS devices) 2. GV-VMS + GV-POS Text Sender (with options of 1, 2, 4, 8, 12 and 32 ports) 3. GV-VMS + GV-LPR Plugin

GPU Decoding Specifications

A higher total frame rate can be achieved if your CPU comes with onboard GPU or is connected to external GPU for GPU decoding.

Onboard GPU: GPU decoding is only supported when using the following Intel CPU:
For **H.264** Video Compression • 2nd Generation Intel Core i3 / i5 / i7 Desktop Processors (Sandy Bridge) - only support 1 MP to 2 MP videos • 3rd Generation Intel Core i3 / i5 / i7 Desktop Processors (Ivy Bridge) • 4th Generation Intel Core i3 / i5 / i7 Desktop Processors (Haswell / Haswell Refresh) • 6th Generation Intel Core i3 / i5 / i7 Desktop Processors (Skylake) • 7th Generation Intel Core i3 / i5 / i7 Desktop Processors (Kaby lake) • 8th Generation Intel Core i3 / i5 / i7 Desktop Processors (Coffee lake) • 9th Generation Intel Core i3 / i5 / i7 Desktop Processors (Coffee lake / Coffee lake Refresh) For **H.265** Video Compression • 6th Generation Intel Core i3 / i5 / i7 Desktop Processors (Skylake) • 7th Generation Intel Core i3 / i5 / i7 Desktop Processors (Kaby lake) • 8th Generation Intel Core i3 / i5 / i7 Desktop Processors (Coffee lake) • 9th Generation Intel Core i3 / i5 / i7 Desktop Processors (Coffee lake / Coffee lake Refresh)
External GPU: GPU decoding is only supported when using NVIDIA graphics cards with a compute capability of 3.0 or above and a memory of 2 GB or above. To look up the compute capability of the NVIDIA graphics cards, refer to: https://developer.nvidia.com/cuda-gpus.
Note: 1. One external NVIDIA graphics card can be supported by GV-VMS17.1 or later to perform GPU decoding at free of charge. 2. GeForce GTX1060 is not supported.
Onboard GPU + external GPU: To have both the onboard and external GPU to perform GPU decoding, the GPUs must follow their respective specifications listed above.
Note: 1. If you have both onboard and external GPU installed, the onboard GPU must be connected to a monitor for H.264 / H.265 GPU decoding. 2. CUDA compute capability 5.0 or higher is required to ensure optimal performance. For more information, see Total frame rate and number of channels supported section below.

Total frame rate and number of channels supported

Refer to the documents below to see the total frame rate and number of channels supported by GV-VMS when connected to different IP devices.

- IP Device Integration Notes (H.264 CPU/GPU Decoding, based on GV-VMS V15.10.1.0)
- IP Device Integration Notes (H.265 GPU Decoding, based on GV-VMS V15.11.0.0)
- GV-Fisheye Camera Integration Notes

Options

Optional Devices	Description
Internal USB Dongle	The USB dongle can provide the Hardware Watchdog function to the GV-VMS by restarting the computer when Windows crashes. You need to connect the dongle internally on the motherboard.
GV-COM V3	GV-COM V3 can add 1 RS-485 port to your computer through a USB connector.
GV-IO Box Series	GV-IO Box series (4E / 4 Ports / 8 Ports / 16 Ports) provide 4 / 8 / 16 inputs and relay outputs and support both DC and AC output voltages, with optional support for Ethernet module and 4E additionally supporting PoE, TCP/IP and RS-485 connection.
GV-IR Remote Control	GV-IR Remote Control allows you to control GV-VMS at the maximum operation distance of 7 m (22.97 ft).
GV-Joystick V2	GV-Joystick V2 allows you to easily control PTZ cameras. It can be either plugged into the GV-VMS for independent use or connected to GV-Keyboard.
GV-Keyboard V3	GV-Keyboard V3 is used to program and operate GV-VMS and PTZ cameras. Through RS-485 configuration, it can control up to 36 GV-VMS. In addition, you can connect PTZ cameras directly to the keyboard for PTZ control.
GV-NET I/O Card V3.2	GV-NET/IO card V3.2 provides 4 inputs and 4 relay outputs. It supports both DC and AC output voltages and provides a USB port as well.