GeoVision inc
The Vision of Security

GV-Tower System V3 (Rev. B)

User's Manual



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[Warranty]

[Technical Support Policy]

User's Manual for GV-Tower System V3 (Rev. B)

Welcome to the GV-Tower NVR/VMS System V3 (Rev. B) User's Manual.

The Manual provides an overview of GV-Tower NVR/VMS System V3 (Rev. B) and its accessories. It also includes the instructions to guide you through the installation and use of GV-Tower NVR/VMS System V3 (Rev. B):

Chapter 1, Introduction

Identifies the accessories and options of GV-Tower NVR/VMS System V3 (Rev. B).

Chapter 2, Overview

Identifies the components of GV-Tower NVR/VMS System V3 (Rev. B).

Chapter 3, Getting Started

Provides step-by-step instructions on setting up GV-Tower NVR/VMS System V3 (Rev. B).

Chapter 4, Troubleshooting

Suggests courses of action if GV-Tower NVR/VMS System V3 (Rev. B) doesn't seem to be working properly.

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Safety Instructions

 Observe these safety instructions to help ensure against injury to yourself and damage to the product.

- **Read** all safety and installation instructions before you operate the product.
- **Do not operate** the product in high humidity areas or expose it to water or moisture.
- **Do not put** the product in an unstable, a slanting or vibrated place.
- **Do not block** any ventilation opening.
- **Do not install** the product near any heat sources such as radiator, heat register or other apparatus that produce heat.
- **Operate** the product using only the type of power source indicated on the marking label.
  - If you are in an area with unstable voltage, make sure to install an automatic voltage regulator (AVR) or a UPS power supply with AVR function, to maintain a constant voltage.
  - All damages to the power supply caused by unstable voltage are not included in the 2-year warranty service.
- **Do not defeat** the safety purpose of the grounding-type plug. A grounding plug has two blades and a third grounding prong. The third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- **Do not overload** wall outlets or extension cords, as this may cause fire or electric shock.
- **Do not use** the product when abnormality occurs, such as emitting smoke from the product, smelling burning, being damaged by drop, invasion of foreign objects inside the product, etc. Be always sure to remove the AC adaptor at once and contact your dealer.
- **Do not use** accessories or attachments not recommended by the manufacturer, as they may cause hazards and void the warranty.
- **Do not attempt** to service the product yourself, as removing the casing may expose you to dangerous voltage and void the warranty.

Chapter 1 Introduction

1.1 Features

- Powered by Intel Core Ultra 5 Processor
- 64-bit Windows 11 IoT Enterprise
- Support for GPU Decoding
- 8-bay hot swap data HDD
- Maximum storage capacity of 192 TB
- One Gigabit LAN port
- Multiple monitor display for up to 3 monitors simultaneously (HDMI, DisplayPort, D-Sub)
- Key-operated safety lock for enhanced HDD data protection
- Support for 3rd party IP devices
- Up to 64 channels for GV-VMS V20 / Up to 32 channels for GV-VMS V17 & V18 / Up to 32 channels for GV-NVR (pure IP surveillance)
- All-in-one solution (Live View, Playback, Recording, Backup, CMS)
- Video analysis (Advanced Motion Detection, Privacy Mask, Scene Change Detection and Counter)
- Fisheye camera dewarping function
- Automatic connection to GV-IP devices
- H.265 / H.264 / MJPEG / MPEG4
- On-screen LED panel for HDD status
- Smart device access
- Multiple languages

1.2 Model

GV-Tower NVR/VMS System V3 (Rev. B) has the following models:

GV-Tower NVR System V3 (Rev. B)	- Up to 32-channel GeoVision IP Devices and third-party IP devices digital video recorder
GV-Tower VMS System V3 (Rev. B)	- **For GV-VMS V17 / V18:** Up to 32-channel GeoVision IP Devices and third-party IP devices digital video recorder - **For GV-VMS V20:** Up to 64-channel GeoVision IP Devices and third-party IP devices digital video recorder

1.3 Software License

1.3.1 GV-Tower NVR System V3 (Rev. B)

GV-Tower NVR System V3 (Rev. B) supports GV-NVR.

For software license details, see the *GV-NVR Datasheet*.

1.3.2 GV-Tower VMS System V3 (Rev. B)

GV-Tower VMS System V3 (Rev. B) supports both GV-VMS V17 / V18 and GV-VMS V20.

For software license details, see the *GV-VMS V17 & V18 Datasheet* and the *GV-VMS V20 Datasheet*.

1.4 Packing List

The GV-Tower NVR/VMS System V3 (Rev. B) package includes the following items. If any of the items are missing or damaged, contact your dealer to arrange a replacement.

IMPORTANT: Keep the original carton and all packing materials for future shipping needs.

- GV-Tower NVR / VMS System V3 (Rev. B)
- Keys for Hard Disk Safety Lock x 2
- Hard Disk Drive Screw x 16



- AC Power Cord



- Wi-Fi Antenna x 2



- Download Guide

1.5 Recommended Hard Drive

For system efficiency, we recommend the following enterprise level hard disk drives. Avoid using desktop level or green HDD which may affect system efficiency. See here for details.

1.6 Options

Optional devices can expand your system's capabilities and versatility. See the datasheets for available options:

- Datasheet GV-Tower NVR System V3 (Rev. B)
- Datasheet GV-Tower VMS System V3 (Rev. B)

Chapter 2 Overview

2.1 Front View



No.	Name	No.	Name
1	3.5” HDD Tray x 8	7	USB 3.2 Port (Type-C, 5 Gbps) x 1
2	Power Button	8	USB 3.2 Port (Type-A, 5 Gbps) x 2
3	Reset Button	9	Not Functional
4	Power LED (White) x 1	10	HDD Power LED (Green) x 8
5	OS HDD Activity LED (White Blinking) x 1	11	HDD Activity LED (Blue Blinking) x 8
6	Combo Audio Jack x 1	12	Safety Lock (Keys Included)

Note: LED No. 4 lights white when the power is on. LED No. 5 blinks white when the OS HDDs are writing or reading data. LED No. 10 lights green after the HDD is installed. LED No. 11 blinks blue if the HDD is reading or writing data.

2.2 Rear View



No.	Name	No.	Name
1	Power Connector x 1	5	USB 2.0 Port (Type-A) x 4
2	Wi-Fi Antenna Port x 2	6	2.5 GbE Ethernet Port x 1
3	HDMI Port x 1	7	USB 3.2 Port (Type-A, 5 Gbps) x 2
4	DisplayPort x 1	8	Audio Jack x 3 ➢ Line In (Blue) ➢ Line Out (Green) ➢ Mic In (Pink)

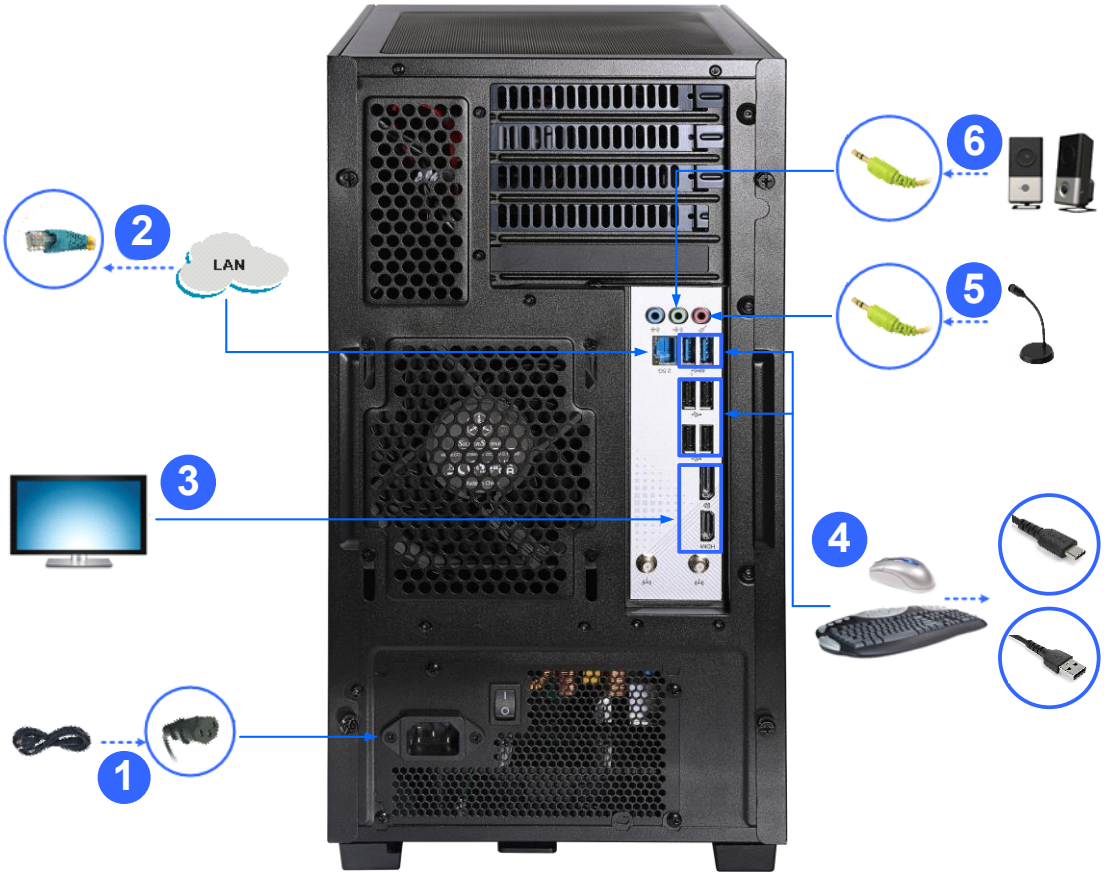
Note:

1. GV-Tower NVR/VMS System V3 (Rev. B) includes a built-in Wi-Fi module.
2. For IP cameras, an Ethernet connection is recommended instead of Wi-Fi to ensure more stable and reliable communication.

Chapter 3 Getting Started

3.1 Basic Installation

This section describes all the equipment required to program and operate GV-Tower NVR/VMS System V3 (Rev. B).



1. Using the supplied power cord, connect one end to the AC input and the other end to the power outlet.
2. Using the RJ-45 cable, connect one end to the Ethernet port and the other end to the network.
3. Connect HDTVs to GV-Tower NVR/VMS System V3 (Rev. B) using an HDMI or DisplayPort cable.
4. Connect the mouse and keyboard to a USB port (USB 2.0 or USB 3.2). You can also connect them via Bluetooth.
5. Connect microphones to the Audio Mic In port (pink).
6. Connect speakers to the Audio Line Out port (green).

Once the above hardware is properly connected, press the Power button on the front panel to start the system. It takes about 1 minute for startup. The system should load automatically and display cameras in the main screen.

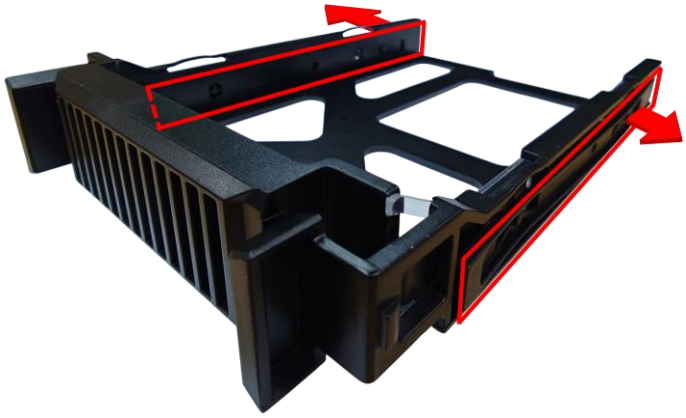
3.2 Installing the Hard Drive

GV-Tower NVR/VMS System V3 (Rev. B) uses SATA hard drives for video and audio data storage. Before recording, ensure to install your hard drives. Follow the steps below to install the hard drive.

1. To remove the hard drive drawer from the drive bay, place your thumb on one handle and your fingers on the other. Press the handles inward to release the latches. Keep them pressed while pulling the drawer out.



2. Remove the two side lids from the drawer.





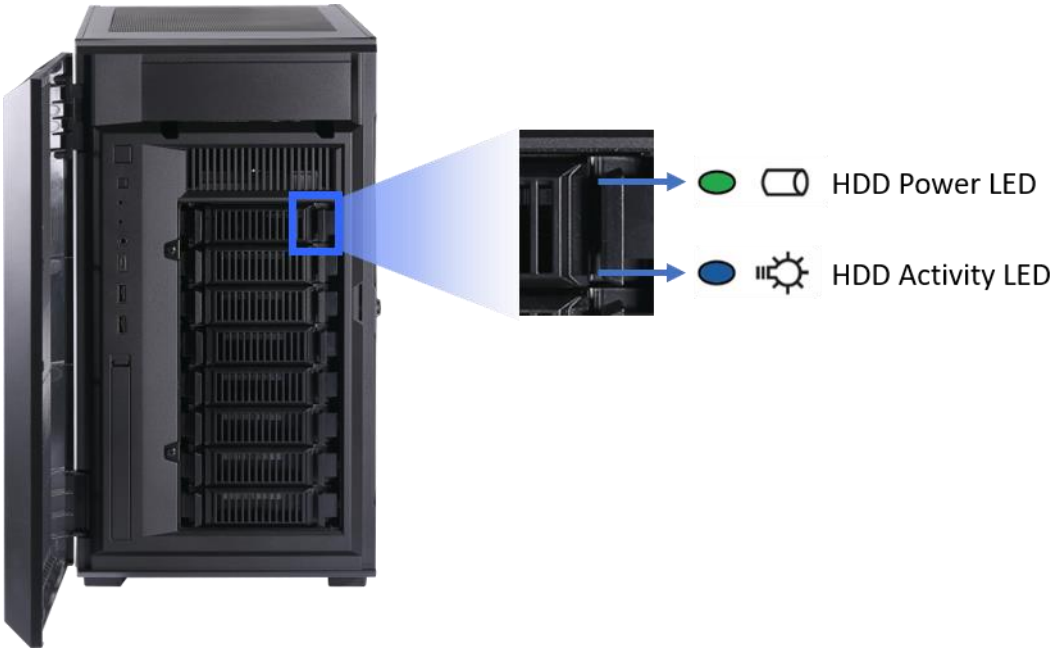
3. Place the hard drive into the drawer.



4. Reattach the side lids to secure the hard drive in place.



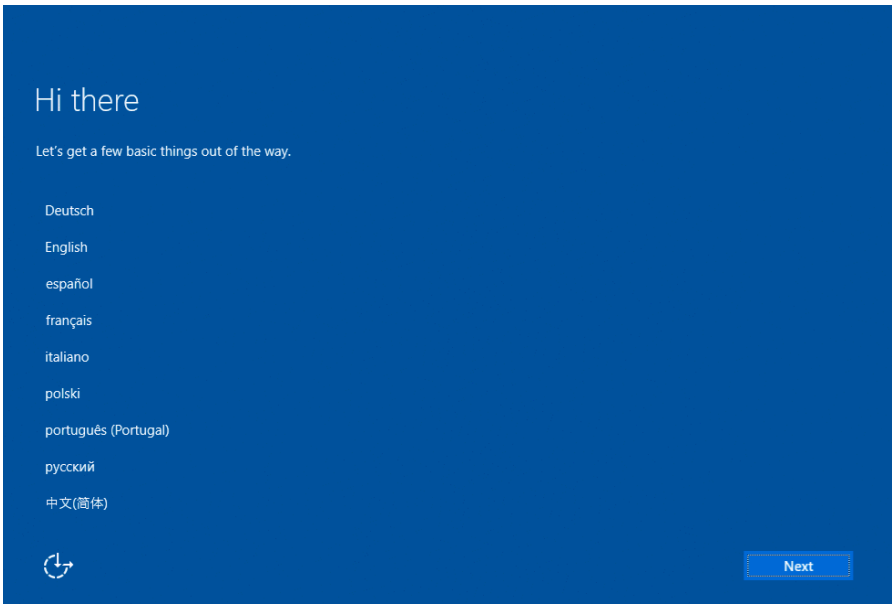
5. Insert the drawer back into the drive bay of GV-Tower NVR/VMS System V3 (Rev. B) until the latches lock.
6. When the HDD Power LED on the drawer lights green, the hard drive is ready for use.



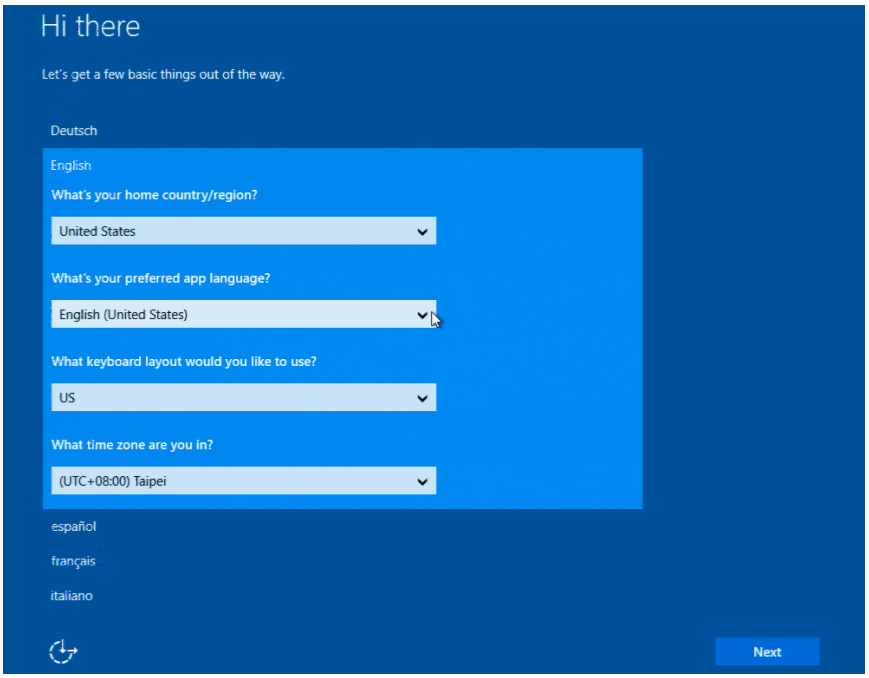
3.3 Starting up Windows

The Windows setup is preparing your computer for first use.

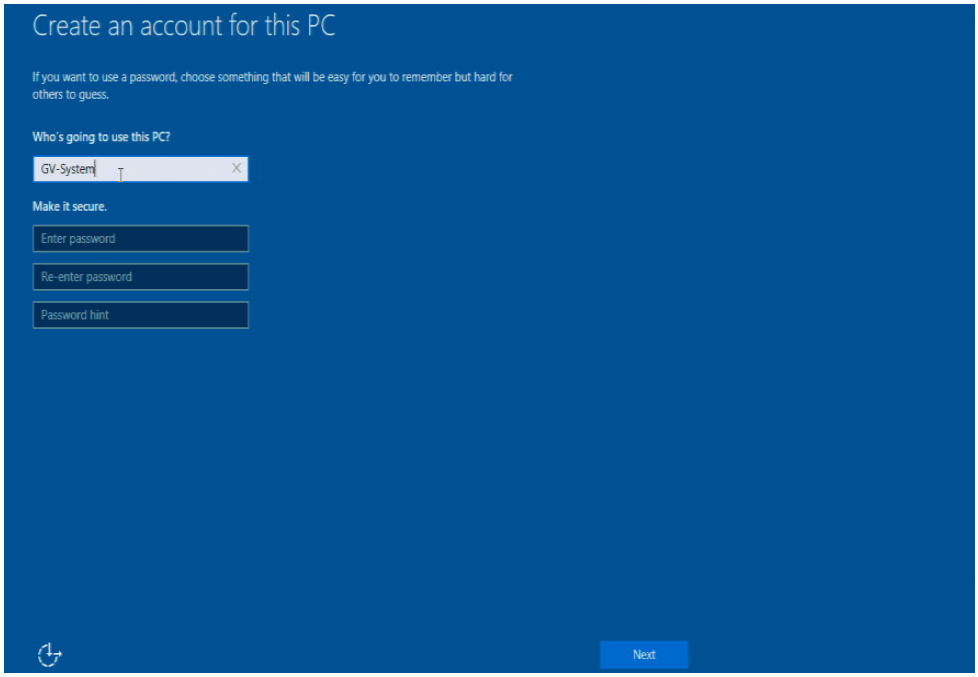
1. After Windows starts, this setup screen appears. Select your language and click **Next** to continue.



2. Select your regional settings and time zone and click **Next** to continue.



3. Click **Accept** to accept Microsoft software license terms.
4. Select between “Customize” or “Use Express settings” for your Windows installation.
5. Type your account name. It is recommended that you create a password for your account and click **Next**.



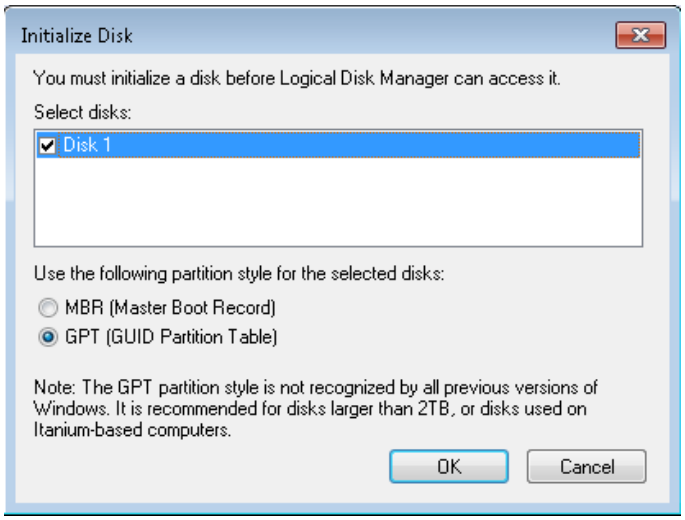
When the above setup process is complete, Windows will finalize your settings automatically in the background and restart.

IMPORTANT: In case of any problems causing you to be unable to access the Windows operating system, it is highly recommended to back up the OS before you start any settings or operations. For details, see *3.8 System Restoration*.

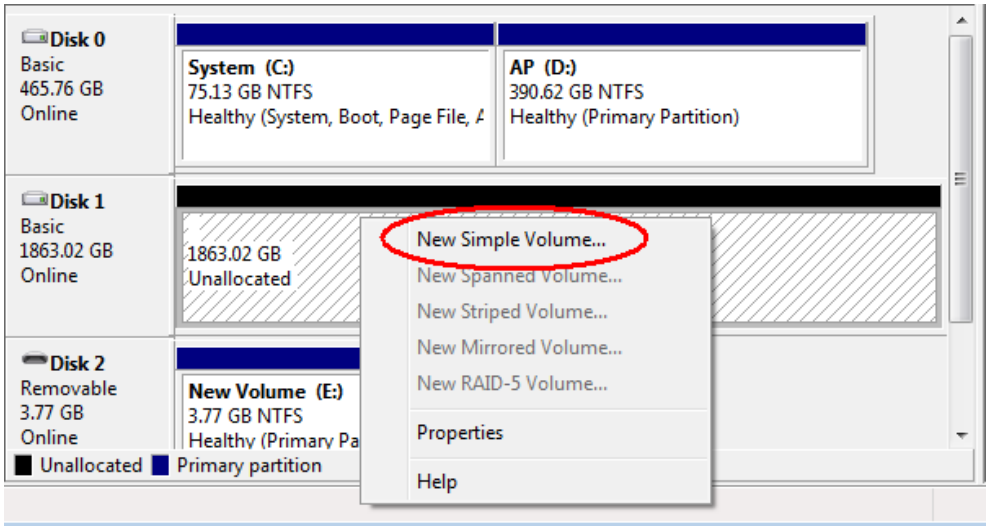
3.4 Formatting the Hard Drive

After installing hard drives to your system, you will need to format them before use.

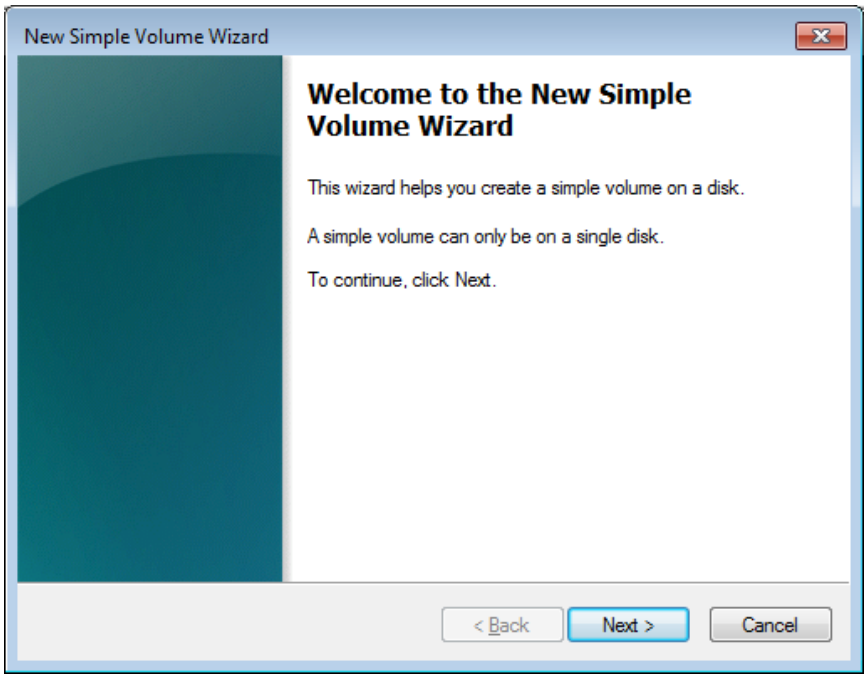
1. Right-click the **Computer** icon  on your desktop, select **Manage**, and select **Disk Management** when the Computer Management window appears.
2. On the main page of Disk Management, the Initialize Disk dialog box appears for the new drive. Click the created disk and select a partition style.



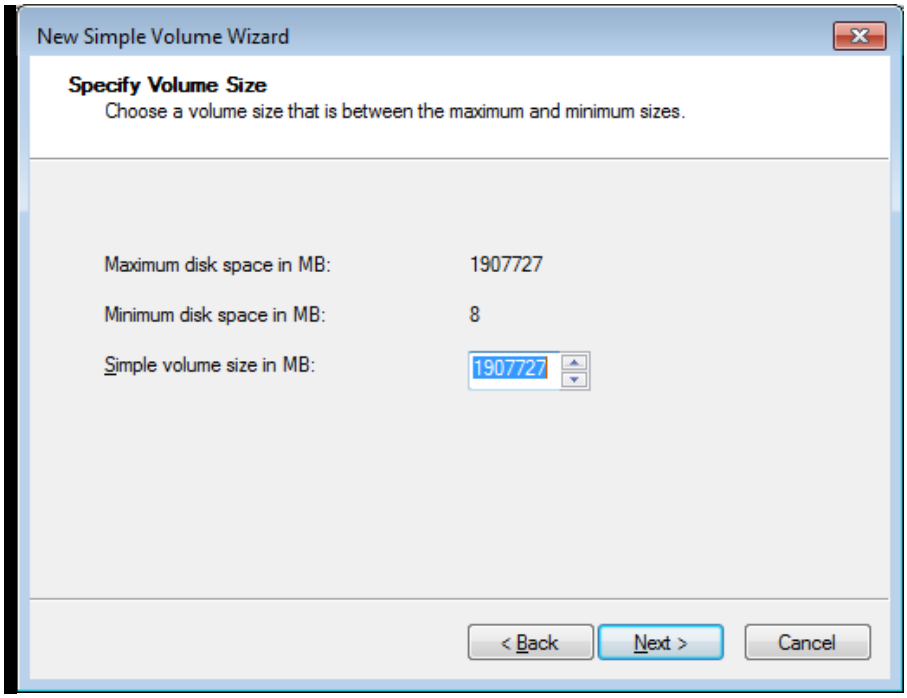
3. Right-click in the unallocated space of a new drive, and select **New Simple Volume**.



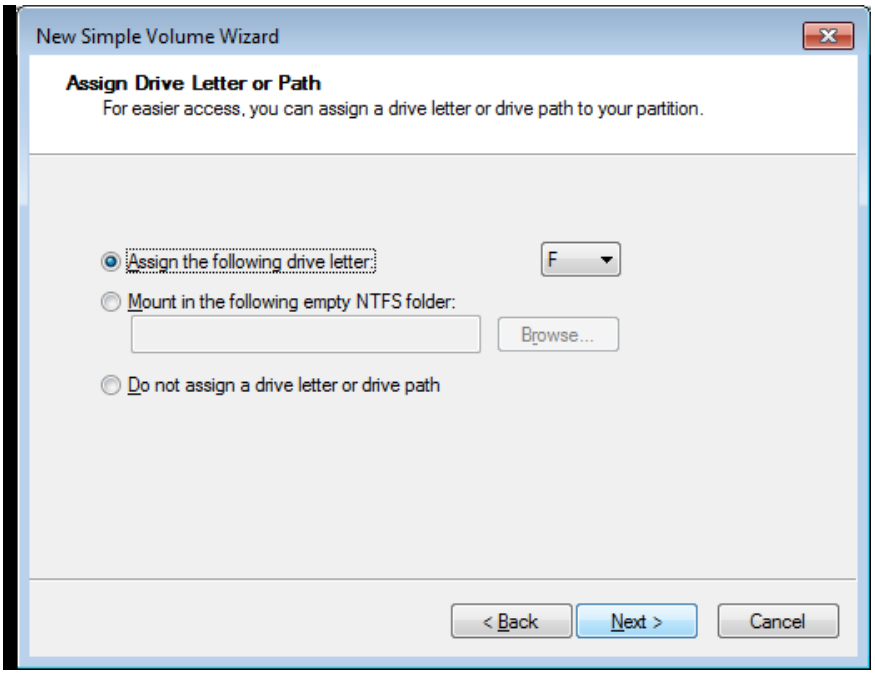
4. The New Simple Volume Wizard appears. Click **Next** to continue.



5. The default partition size is the same as the maximum disk space. Make changes if necessary. Click **Next** to continue.

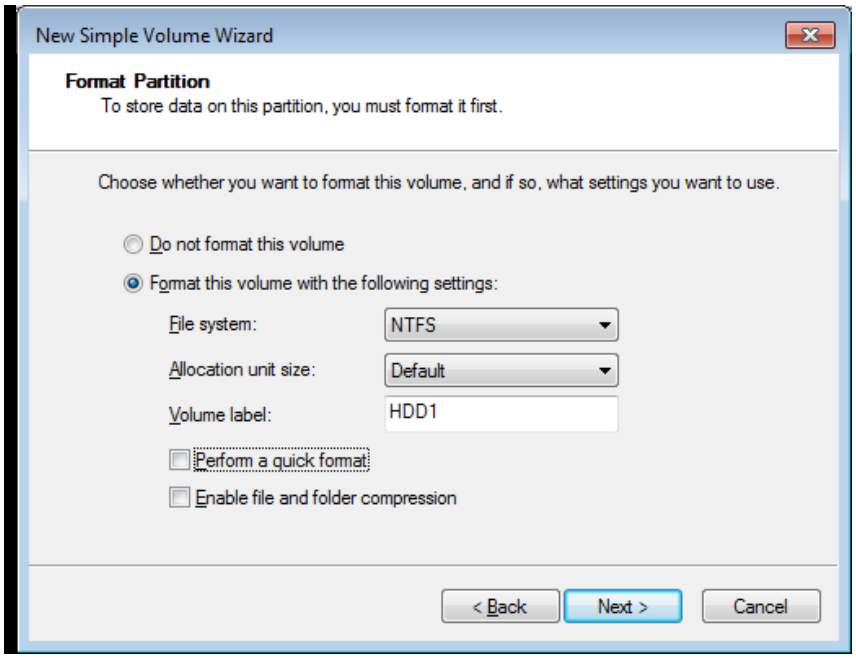


6. Assign a drive path that is not in use by other devices, and click **Next** to continue.

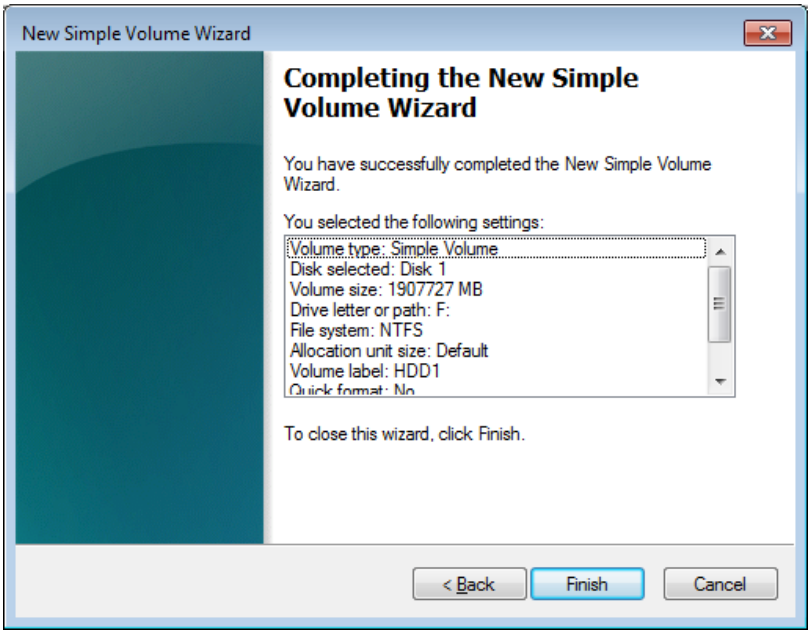


Note: The default drive path starts from D:\.

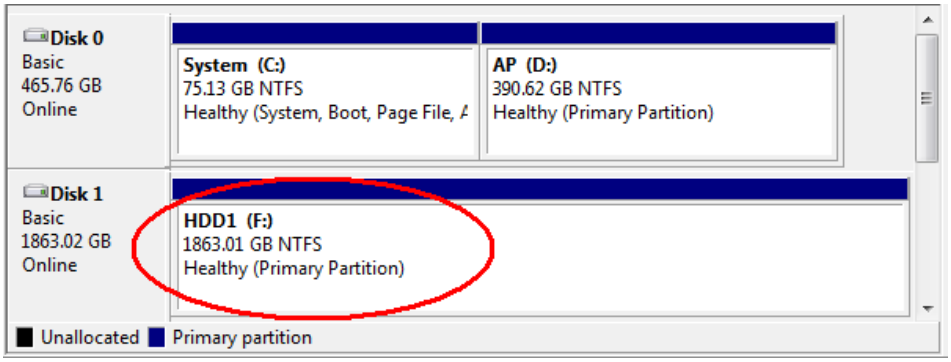
7. Type a name in the **Volume label** box, e.g., HDD1, and click **Next** to continue.



8. When the formatting is complete, click **Finish** to close the wizard.



9. When the drive is successfully initialized, partitioned, and formatted, its status description should display "*Healthy*."

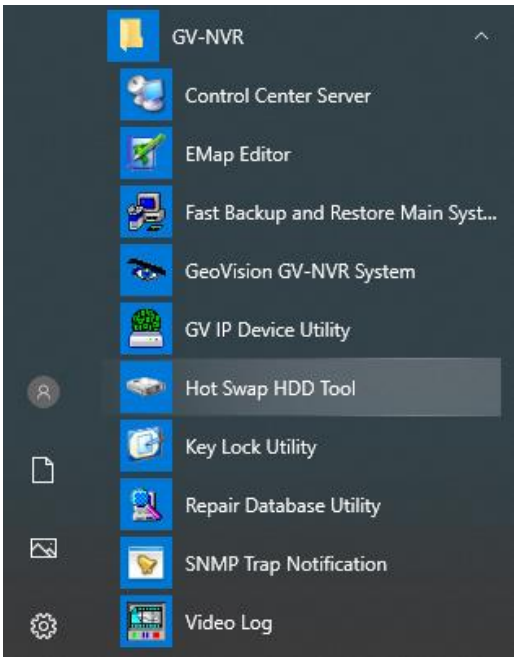


3.5 Adding the Hard Drive to the Recording Path

For GV-Tower NVR/VMS System V3 (Rev. B), you need to add the formatted hard drives to the recording path before recording.

3.5.1 GV-Tower NVR System V3 (Rev. B)

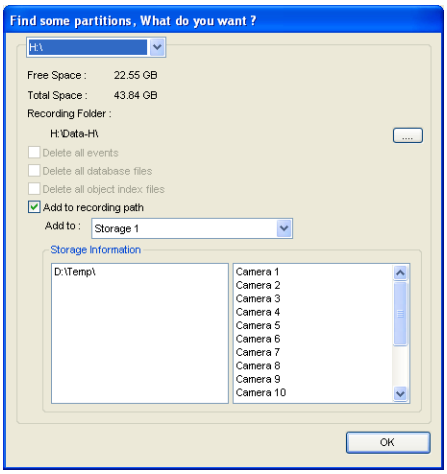
1. Click the Windows **Start** button, click **GV-NVR**, and select **Hot Swap HDD Tool**. The MediaMan Tools window appears.



2. If a hard drive is already inserted, right-click it in the MediaMan Tools window, select **Add for recording**, and then select the storage group from the drop-down list.

3. If a hard drive is not inserted, follow these steps:

   A. Insert a hard drive or plug a USB hard drive to GV-Tower NVR System V3 (Rev. B).

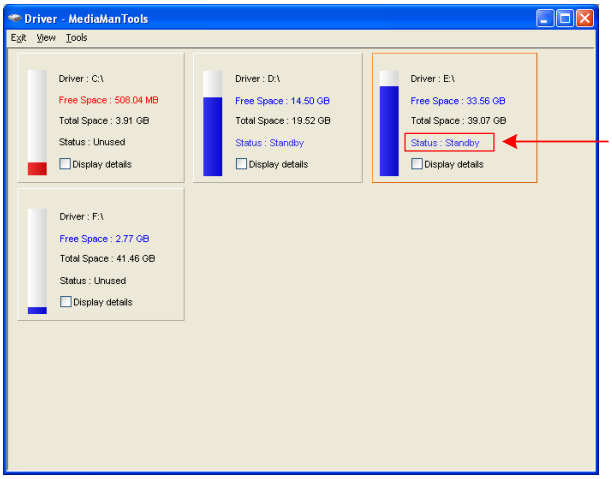


   B. Select **Add to recording path**, and select the storage group from the drop-down list.

Note: Storage 1 is the default storage group.

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4. Click **OK** to automatically configure the hard drive to the recording path.
5. In the MediaMan Tools window, if the hard drive is successfully added to store data, its Status field should display "*Standby*".

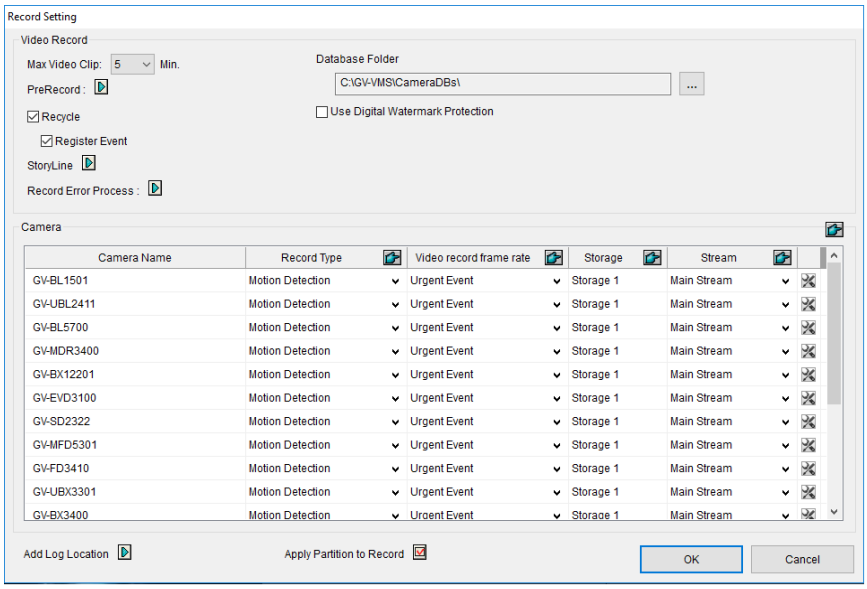


6. To add another formatted hard drive for storage, repeat the above steps.

For the details on using Hot Swap HDD Tool, see *Hot-Swap Recording*, Chapter 11, *DVR User's Manual* (**C:\UserManual**).

3.5.2 GV-Tower VMS System V3 (Rev. B)

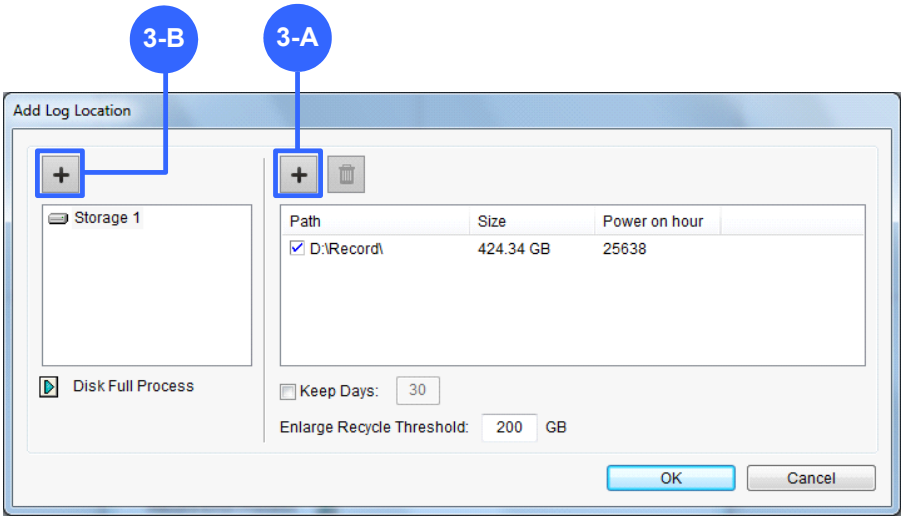
1. On GV-VMS, click **Home** , select **Toolbar** , select **Configure** , select **System Configure**, and click **Record Setting.** This dialog box appears.



2. Click the Arrow button next to **Storage**. This dialog box appears.



3. To add a hard drive to the recording path, follow these steps:



A. To add a new folder in the first storage group, click the **Add** button + on the right pane and select a folder. Only 1 folder can be assigned as storage folder for each partition (e.g., only 1 folder in D drive).

B. To add a new storage group, click the **Add** button + on the left pane and repeat the step 3-A to assign at least one folder to the storage group.

C. Click **OK**.

4. To add another formatted hard drive for storage, repeat the above steps.

For the details on setting the recording path, see *Setting Up the Video Storage Location* Chapter 1, *GV-VMS User's Manual* (**C:\UserManual**).

3.6 Setting Up On-Screen LED Panel

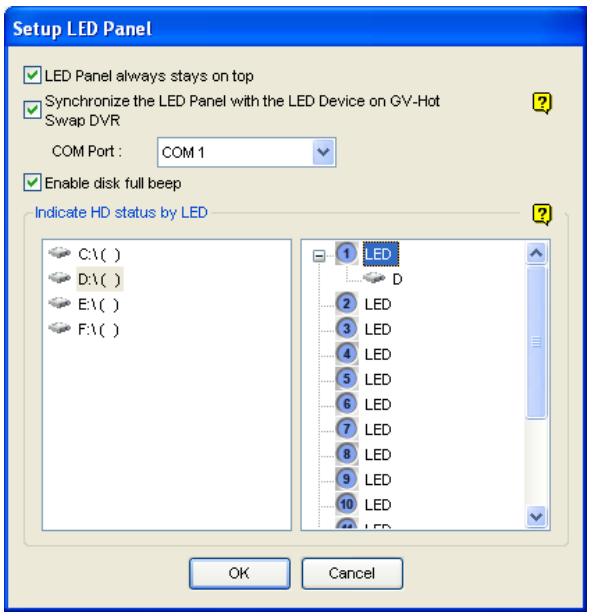
For GV-Tower NVR/VMS System V3 (Rev. B), an LED panel on the screen provides a quick indication of the activity status of hard disk drives.

Note: This section does not apply to GV-VMS V20, as Media Man Tools is no longer supported.



LED Color	Description
Gray	- No HDD is assigned to this LED. - The system is not started.
Green	An HDD is assigned to this LED.
Red	The HDD is full.
Flashing Green	The system is recording.
Flashing Red	The HDD is recycling.

1. Click the Windows **Start** button, and select **Hot Swap HDD Tool**.
2. Click **Tools** on the menu bar, and select **Setup LED Panel**. This dialog box appears.



- **LED Panel always stays on top:** This option makes the LED panel stay on top of other windows when the Media Man Tools window is minimized.
- **Synchronize the LED Panel with the LED Device on GV-Tower System V3 (Rev. B)**: Not functional on **GV-Tower NVR/VMS System V3 (Rev. B).**
- **Enable disk full beep:** When the hard disk drive is full, the system sounds on. Note this function only works when speakers are connected to GV-Tower NVR/VMS System V3 (Rev. B).

3. By default, only the hard disk drive D will be assigned to LED. If you want to re-assign the hard disk drive or assign other drives to LEDs, freely drag and drop the hard disk drive to the desired LED on the tree.
4. Click **OK** to apply the settings, and minimize the MediaMan Tools window to display the LED panel on the screen.
5. If you want to return to the MediaMan Tools window, right-click the LED panel and select **Switch to the setup window**.

Note:

1. Because the LEDs are designed to indicate the video and audio files are being written or read, it is not recommended to assign the HDDs that store log files to the LEDs.
2. If the HDD that stores log files is assigned to a LED and its LED turns red, make sure the log files are not being written before you remove it. Otherwise, the log files might be lost during the removal.

3.7 Replacing the Hard Drive

You can replace the hard drive without shutting down GV-Tower NVR/VMS System V3 (Rev. B).

1. Do not turn off the power before you replace the hard drive.
2. Push the release latch. The drawer handle pops up.
3. Lift the handle, pull out the drawer slightly and wait until the hard drive spins down.
4. Pull out the drawer completely, remove the hard drive, and then mount a new one.
5. Put the drawer back in the drive bay.
6. Push the release latch until it locks.

3.8 System Restoration

You can restore the operating system and system software back-up files using Windows Tool. Refer to the instructions here.

3.9 Updating GV-Tower System V3 (Rev. B)

If you like to update your GV-Tower NVR/VMS System V3 (Rev. B), contact your dealer for more information.

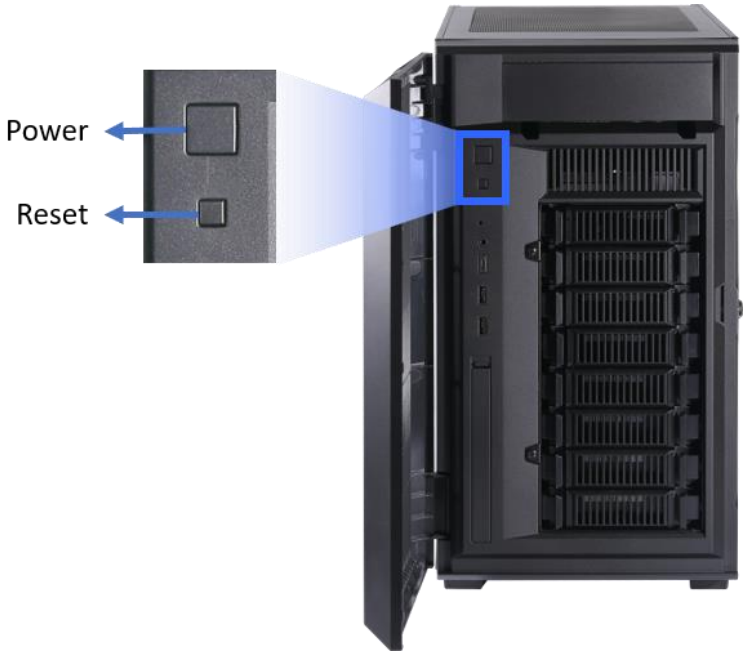
Before contacting your dealer, you may check software update news at our website: https://www.geovision.com.tw

Chapter 4 Troubleshooting

GV-Tower NVR/VMS System V3 (Rev. B) stops responding.

If your GV-Tower NVR/VMS System V3 (Rev. B) is not responding to your clicking, typing, or mouse movements, try these steps to get your GV-Tower NVR/VMS System V3 (Rev. B) back on track. Please note that you will lose any unsaved changes in all open applications.

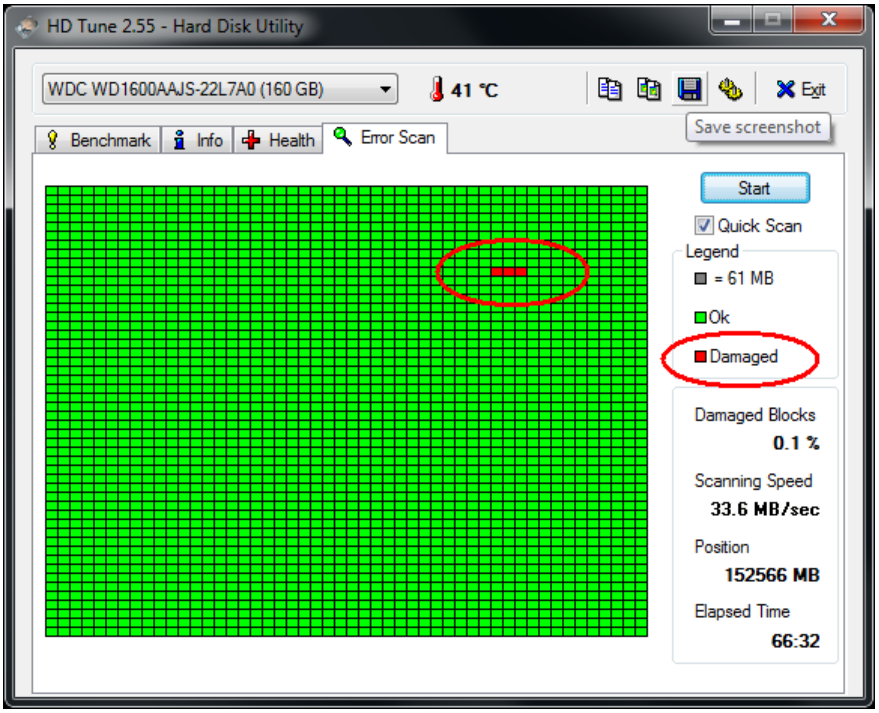
1. Restart your GV-Tower NVR/VMS System V3 (Rev. B) by pressing the **Reset** button on the front panel.
2. If your GV-Tower NVR/VMS System V3 (Rev. B) is still unresponsive, press the **Power** button to shut it down. Wait 30 seconds and then restart your GV-Tower NVR/VMS System V3 (Rev. B).



GV-Tower NVR/VMS System V3 (Rev. B) hard disk corrupts.

If you are experiencing file system corruption problems, such as lost clusters, cross-linked files or invalid files or directories, try these steps:

1. Use the **HD Tune** utility to scan the hard disk for errors. Follow these steps:
   A. Download and install **HD Tune** from https://www.hdtune.com/
   B. Click the **Error Scan** tab and click **Start** to scan. Any found defects will be shown as red blocks as below.

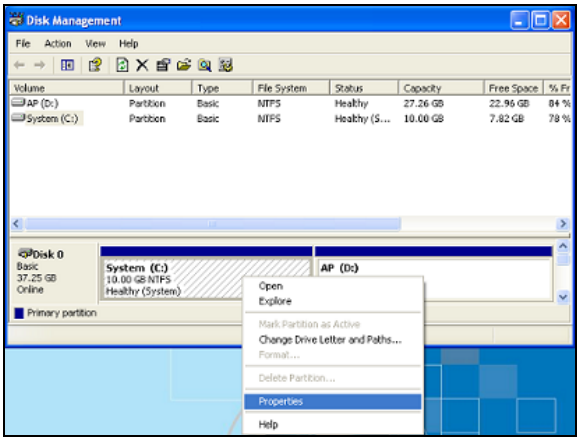


   C. If your hard disk drive is damaged, replace a new one.

2. If the HD Tune utility does not find any defects, use the Windows built-in utility to attempt to fix the errors. Follow these steps:

   A. Right-click the **Computer** icon  on your desktop, select **Manage**, and select **Disk Management**.

   B. Right-click the desired hard disk and select **Properties** from the file menu to display the Properties window.

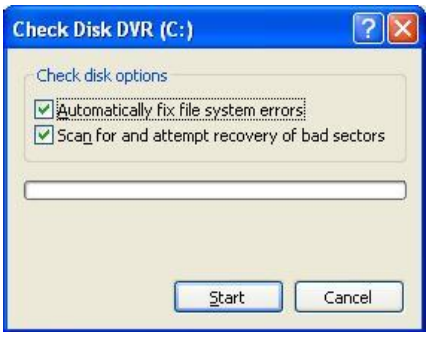


   C. Click the **Tools** tab in the upper portion of the window.

   D. Under Error-checking, click the **Check Now** button.



   E. Select **Automatically fix file system errors** and **Scan for and attempt recovery of bad sectors**.



   F. Click **Start**.

3. If the problem persists, replace a hard disk drive.

GV-Tower NVR/VMS System V3 (Rev. B) suffers virus attack.

GV-Tower NVR/VMS System V3 (Rev. B) is designed and optimized for 64-bit Windows IoT Enterprise platform. It may be vulnerable to newly created worms and exploits that attack any of the underlying operating system's previously undocumented flaws. If your GV-Tower NVR/VMS System V3 (Rev. B) suffers virus attack, try restoring the operating system and GV-System Software by using Windows Tool. Refer to *3.8 System Restoration*.

The screen image appears distorted or jitters.

If the screen image seems to be distorted, jitter, or not to look right, make sure the camera and its cable are not damaged or frayed. Try to replace a camera or camera cable to see if this fixes the problem.

How can I find more help?

1. Visit our website at https://www.geovision.com.tw
2. Write to us at support@geovision.com.tw

Specifications

For hardware and software specifications, total frame rate, and max number of channels supported, see details in:

- Datasheet GV-Tower NVR System V3 (Rev. B)
- Datasheet GV-Tower VMS System V3 (Rev. B)

Appendix

A. Hard Disk Requirements

The total of recording frame rates that you can assign to a single hard disk is listed as below:

Frame rate limit in a single hard disk when connecting to IP cameras

Frame Rate Limit in a Single Hard Disk						
Video resolution	H.264		H.265		MJPEG	
	Frame Rate	Bit Rate	Frame Rate	Bit Rate	Frame Rate	Bit Rate
12 MP	330 fps	14.47 Mbps	N/A	N/A	56 fps	65.98 Mbps
8 MP	660 fps	14.13 Mbps	N/A	N/A	96 fps	58.52 Mbps
5 MP	220 fps	8.5 Mbps	660 fps	6.73 Mbps	80 fps	30.4 Mbps
4 MP	330 fps	10.4 Mbps	550 fps	7.74 Mbps	105 fps	40.53 Mbps
3 MP	440 fps	9.83 Mbps	660 fps	5.35 Mbps	140 fps	38.67 Mbps
2 MP	660 fps	12.59 Mbps	N/A	N/A	210 fps	44.93 Mbps
1.3 MP	660 fps	6.16 Mbps	N/A	N/A	300 fps	32.26 Mbps

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

B. Total Frame Rate and Max. No. of Channels Supported

For the total frame rates that GV-Tower NVR/VMS System V3 (Rev. B) can support at approximately 70% CPU usage to ensure performance and stability, see the *GV-Tower NVR System V3 (Rev. B) Datasheet* and *GV-Tower VMS System V3 (Rev. B) Datasheet*.

C. Certified Hard Disk Drive

For the hard disk drive models certified by GeoVision to be compatible with GV-Tower NVR/VMS System V3 (Rev. B), see here.

Warranty Requirements

Thank you for purchasing the GV-Tower NVR / VMS System V3 (Rev. B). GeoVision understands that accident happen, and have developed a warranty policy in place. See https://www.geovision.com.tw/warranty.php for more information on warranty.

Before you return the product

Some problems you experience may be related to software or the operating system. It is important to investigate other sources of assistance first. Before returning the product, try the following:

1. Review the troubleshooting sections in the documentation for software and peripheral devices.
2. Try rebuilding the operating system and GV-System. Refer to *3.8 System Restoration*.
3. Consult your dealer. They are your best sources for current information and support. Or you can call or email GeoVision offshore offices for assistance.

   When you call or email, please inform us of the following:

   - Model name
   - Bar Code
   - Details of the defect or problem
   - Attempted solutions
   - Your contact information
   - Reseller's contact information

4. If you find it is a software problem, please check our website or your dealer for software updates.

Obtaining Warranty Service

If you are still unable to solve the problem and suspect that it is hardware related, follow these:

1. Send an email to GeoVision to start Return Merchandise Authorization (RMA) process.

   Email: support@geovision.com.tw
2. Securely pack the product in its original carton using the original packing material, or in equivalent packaging.
3. The product shall be returned to **GeoVision, Taiwan** at your expense for shipping and insurance costs.

BEFORE YOU DELIVER YOUR GV-TOWER NVR/VMS SYSTEM V3 (REV. B) FOR WARRANTY SERVICE, IT IS YOUR RESPONSIBILITY TO BACK UP YOUR DATA. YOU WILL BE RESPONSIBLE FOR REINSTALLING ALL DATA, SETTINGS AND PASSWORDS. DATA RECOVERY IS NOT INCLUDED IN THE WARRANTY SERVICE AND GEOVISION IS NOT RESPONSIBLE FOR DATA THAT MAY BE LOST OR DAMAGED DURING TRANSIT OR A REPAIR.