GeoVision inc
The Vision of Security

GV-AI Server

User's Manual



AIServerV114-UM-A

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Preface

Welcome to the *GV-AI Server User's Manual*. The instructions will guide you through the installation and use of the software.

This *Manual* is designed for the following GV-Software:

Software
GV-AI Server

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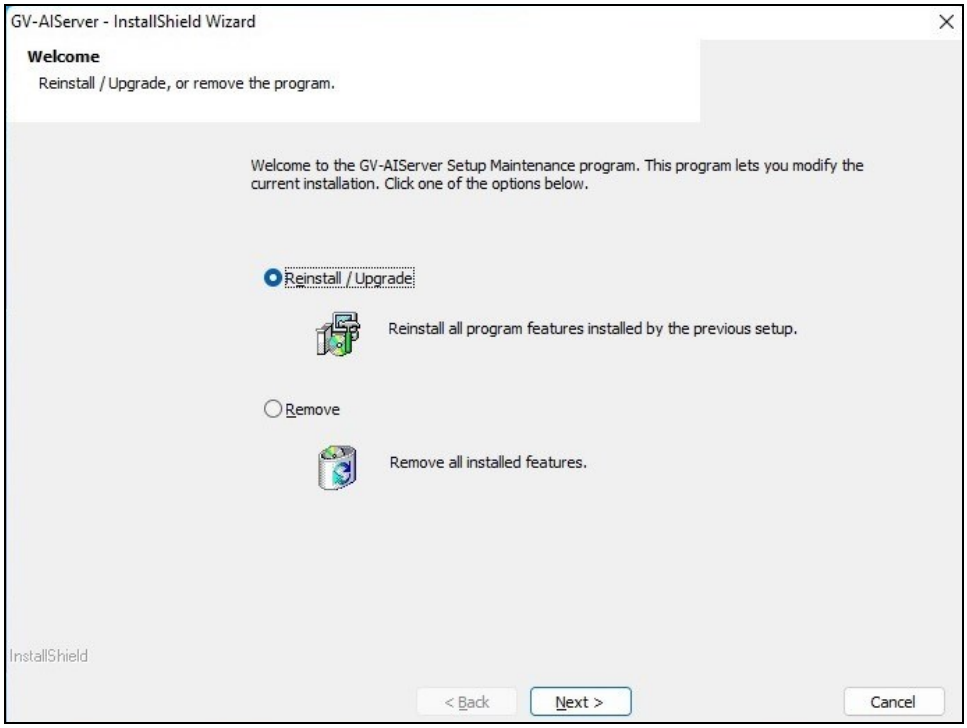
Note for Installing GV-IP Cameras

The following are some tips to consider when connecting to and installing GV-IP Cameras for using the various Video Analytic (VA) features of GV-AI Server:

- All cameras connected must be set to a resolution of 12 MP or lower in order to use any VA feature except for Product Attention by motion.
- All cameras to be used for VA should not have Smart Streaming enabled as it may affect the VA's accuracy and results.
- For optimal **Face Detection** and **Face Recognition** performance, the use of Face Detection cameras is recommended.
- For **Product Attention** *by motion*, Fisheye cameras are recommended to be installed at the center of the retail setting covering all merchandise areas. See *3.3 Product Attention* for details.

Note for Upgrading GV-AI Server

To upgrade GV-AI Server, run the **Installer** (Setup. exe) included in the latest software downloads from our website. Select **Reinstall / Upgrade.**



Chapter 1 Introduction

By integrating various video analytic features for up to 8 channels of IP cameras, GV-AI Server is able to identify and compile customer statistics, such as age, gender and customer behavior for sales maximization, as well as automatically notify managers or security personnel of inventory shortages or upon detecting suspicious persons.



Live Monitoring & Welcome

When a person enters the premises, the corresponding face attribute results, along with a predefined image, can be displayed on the connected Welcome screens, playing an advertisement, for greeting and/or commercial purposes.

Dashboard & Average Hourly / Daily Face Count

The **Dashboard** and **Hourly / Daily Face Count** features of GV-AI Server respectively display the distribution of age and gender of visitor face events within a day and an average hourly / daily visitor face count for a selected day, week, month or year.

Visitor Face Attributes & Face Recognition

The **Face Attributes** / **Face Recognition** features can capture and store the faces of the visitors detected, along with their attributes, and can be enrolled into or compared with the face database of GV-AI Server.

Suspect & Loitering Detection

The **Suspect & Loitering Detection** feature can monitor for, capture and play back suspicious persons and/or loitering activities at the vicinity.

Human Counter

The **Human Counter** feature can count the number of persons detected entering and exiting at the vicinity.

Product Attention & Short Inventory Alert

The **Product Attention** and **Short Inventory Alert** features allow for merchandising adjustment and sales optimization by monitoring and counting the numbers of persons dwelling at different product regions with a heatmap display, and also notifying store managers of inventory shortages.

Queue Management

The **Queue Management** feature can monitor the cashier checkout time and the number of persons waiting in line, and notify store personnel whenever either of the two exceeds the limits set.

1.1 Key Features

- Support for up to 8 channels of IP cameras
- Realtime face recognition and tracking
- Realtime masked face recognition and tracking
- Average recognition speed of within 1 second per face when the recognition targets are moving toward the cameras
- Face profiling by age and gender
- Product Attention with heatmap display for monitoring product interest by foot traffic
- Short Inventory monitoring and alert
- Queue Management for monitoring the cashier checkout time and the number of persons waiting in line
- Suspect & Loitering Detection
- Human Counter for counting the number of people entering and exiting a designated area
- Support for AI-capable GV-IP cameras and GV-3D People Counter V2 / V3 for collecting people flow data In / Out / Stay
- Automatic compilation of statistical graphs for each type of VA event
- Exportable daily / weekly / monthly / yearly average hourly or daily visitor count
- Query by VA events
- Integration of GV-VMS for video recording and management

- Master and Slave feature for interconnecting multiple GV-AI Servers with a centralized Face Database

1.2 System Requirements

- For the minimum PC requirements for connecting and performing face recognition and video analytics with up to 8 channels of IP cameras, see the datasheet.

- GV-AI Server is a paid software that requires a GV-Dongle license, which is available in increments of 1 channel, from 1 – 8 channels. For details, see the datasheet.

1.3 Optional Accessories

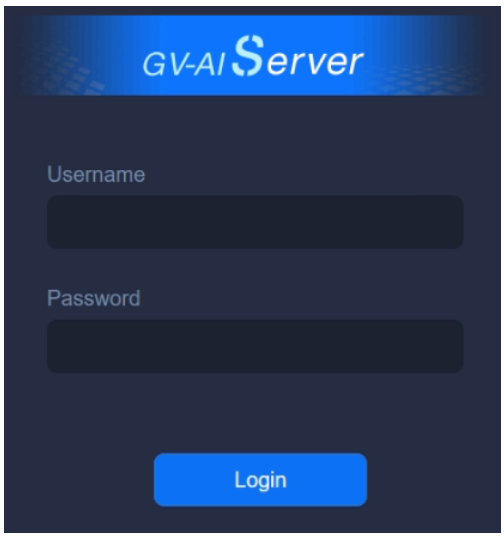
The following optional accessories are available for purchase to expand the capabilities and versatility of GV-AI Server. Contact your local dealer for details.

Optional Accessories	Details
GV-3D People Counter V3	GV-3D People Counter V3 is a dual-lens 4MP people-counting camera that detects, tracks, and counts the number of bidirectional people flow in a recognized location. See *4.1.4 IP Device People Counter*.
GV-3D People Counter V2	GV-3D People Counter V2 counts the number of people entering, exiting and staying at the premises with high precision. See *4.1.4 IP Device People Counter*.
GV-IO Box (Ethernet) Series	GV-IO Box series (4E / 8E / 16E) provide 4 / 8 / 16 inputs and relay outputs and support Ethernet module, with 4E additionally supporting PoE connection. See *4.2.3 IO Box*.

Chapter 2 Getting Started

2.1 Installation

1. Download and install GV-AI Server from the GeoVision's website.
2. To use an USB dongle, make sure the driver **GV-Series Card Driver / USB Devices Driver** is properly installed, from the GeoVision's website, and insert the dongle.
3. Log in by typing the default **Username** and **Password** of the Administrator account *admin*, *admin*.

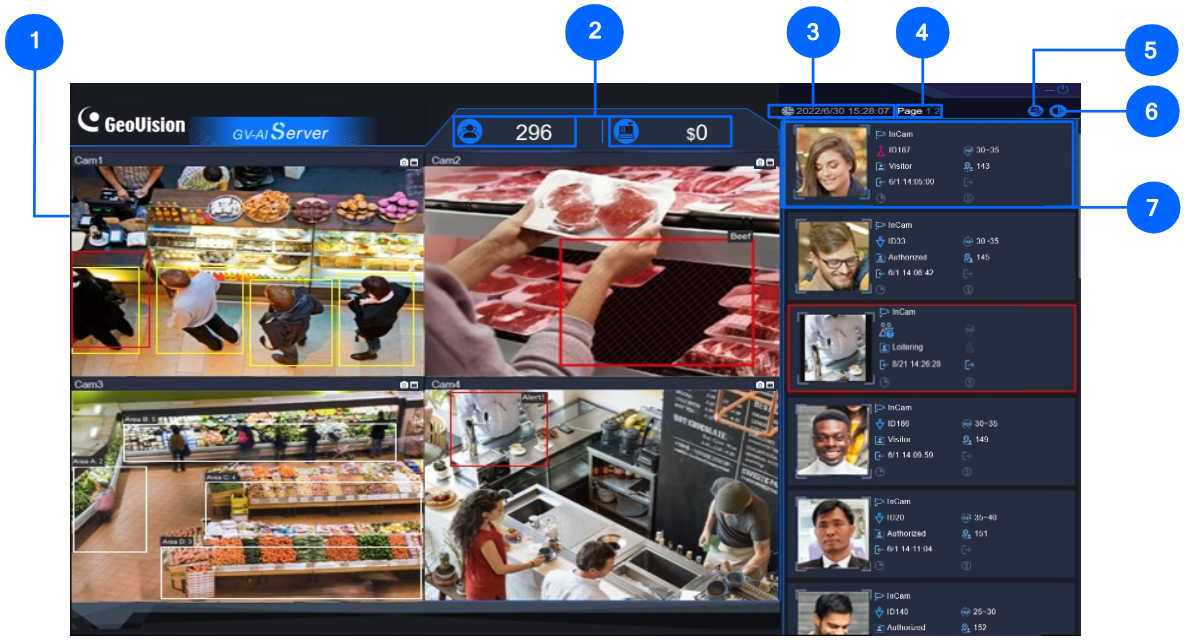


4. Upon first-time login, users are required to perform a one-time installation of the Windows OCX plugin in order to run the program.

IMPORTANT: For security reasons, it is strongly suggested that the user change the login credentials of the Administrator account, see *4.1.6 Account & Authority*.

2.2 Main Screen

After logging into GV-AI Server, the following main screen appears.

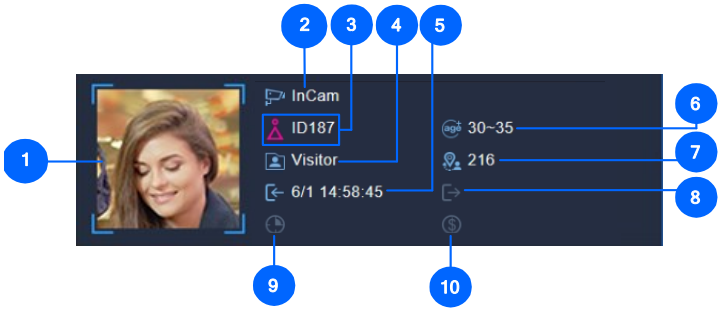


No.	Name	Description
1	Live View	Displays the live view of the IP cameras connected.
2	Live Values	Displays the following two **Live Values** by default: ● Face Count — Counts the total number of faces detected within the day. ● POS Transaction Amount — Adds up the total amount of transactions made within the day. To change the Live Values to be displayed on the Main Screen, see *2.3.1 Configuring System Settings*.
3	Time	Displays the current system date and time.
4	Page	Switches live view windows between camera 1 – 4 and camera 5 - 8.

5	Dashboard	Accesses the following: ● Welcome — Previews the welcome screen to be displayed by the connected Welcome Monitor upon face detection/recognition. For related settings, see *4.2.1 Welcome Settings*. ● Dashboard — Displays an in-depth visitor analysis, with data including age and gender ratio, stay time and transactions made, within the day, see *2.2.2 Dashboard*. ● Analysis — Displays the chart results of all Video Analytics (VA) functions, such as Visitor Demographic and Product Attention, see *3.8 VA Analysis Charts*. ● General Settings — Accesses the settings of GV-AI Server, such as System, Camera and Video Analytics, see *2.3 Basic Settings*. ● Face Management — Manages the face recognition database of GV-AI Server, see *3.2.1 Enrolling Face Data* and *3.2.2 Editing Face Groups*. ● Notify Settings — Configures notification settings, see *4.2 Notify Settings*. ● Event Query — Displays and searches for Video Analytic Event and System Logs in chronological order. See *4.3 Event Query*.
6	Logout	Logs out of the system.
7	Face Profile / Loitering Alert	Displays the latest visitor detected by the connected cameras, in chronological order. See *2.2.1 Face Profile / Loitering Alert*.

2.2.1 Face Profile / Loitering Alert

Next to the live view on the main screen, Face Profiles and/or Loitering Alerts are displayed in chronological order, with the most recent face detection or loitering alert events at the top.



No.	Name	Description
1	Visitor Face / Loitering Snapshot	The face of the visitor captured during face detection/recognition or the snapshot of the suspect / loitering event.
2	Camera Channel	The camera channel where the visitor or suspect / loitering event was captured.
3	Profile ID	For face detection, the automatic-generated, gender-specific ID of the visitor upon his/her first face detection/recognition.
4	Visitor & Event Type	All visitor faces captured are registered as *Visitor* by default, which can later be found in Auto Enroll Face Group, see *3.2.2 Editing Face Groups*. For any Suspect or Loitering events captured, the text *Suspect* or *Loitering* is displayed, respectively. See *3.6 Suspect & Loitering*.
5	Entrance time	The time of the visitor entering the vicinity, determined by face detection/recognition of cameras positioned at *Door(In)*, see *3.2 Face Recognition*, or the time of the suspect / loitering event.
6	Age Range	For face detection, the age range of the visitor as determined by GV-AI Server, see *Chapter 3 Video Analytics*.
7	Visit Count	For face detection, the number of times the visitor has visited the vicinity.
8	Exit time	For face detection, the time of the visitor exiting the vicinity, determined by face detection/recognition of cameras positioned at *Door(Out)*. See *3.2 Face Recognition*.
9	Dwell time	For face detection, the amount of time the visitor stayed at the vicinity (from Entrance time to Exit time).
10	Total Transactions	For face detection, the total amount of transactions the visitor has made at the vicinity.

2.2.2 Dashboard

On the **Dashboard** page, the users are also able to see an in-depth analysis of all of the visitors that have come into the vicinity within the day. To access, click **Dashboard**  (No. 5, *2.2 Main Screen*) on the main screen of GV-AI Server.



No.	Name	Description
1	Date	Selects the date of the visitor data currently shown.
2	Visitor count	Displays the total number of visitors within the selected date.
3	Day-to-Day Growth	Displays the percentage of visitor growth compared to the previous day.
4	Male / Female count	Displays the total number of male and female visitors within the selected date.
5	Average stay time	Displays the average dwell time per visitor within the selected date.
6	Transaction count	Displays the number of transactions made within the selected date.

7	Average sales amount	Displays the average value of sales per transaction within the selected date.
8	Total sales	Displays the total amount of sales within the selected date.
9	Conversion rate	Displays the percentage of visitors who made transactions.
10	Visitor by time	Displays the number of male and female visitors (y-axis) by time (x-axis) within the selected date.
11	Gender by age group	Displays the number of male and female visitors (y-axis) by age group (x-axis) within the selected date.
12	Visitor Ratio pie charts	Displays the ratio of visitors within the selected date, by *gender*, *age*, *age of male* and *age of female*, respectively.
13	Top 5 Stores	Displays the top 5 stores by the total number of visitors, among all interconnected GV-AI Servers. For details on interconnecting, see *4.1.7 Master / Slave Sync*.

2.3 Basic Settings

This section will guide users through some of the basic settings of GV-AI Server, as listed below:

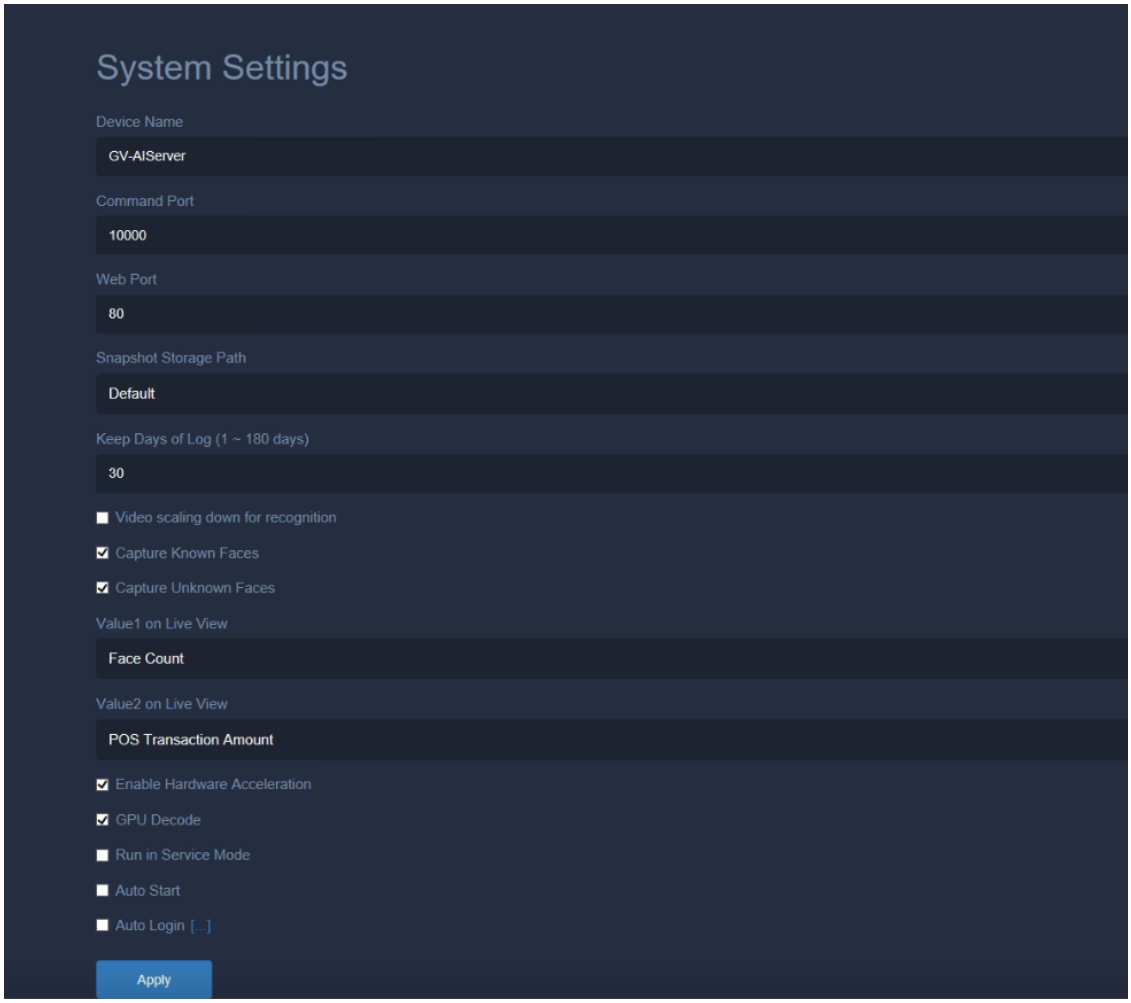
- General Settings: See *2.3.1 Configuring System Settings*.
- Camera Setup: See *2.3.2 Adding IP Cameras*.

For face Video Analytics related settings, see *Chapter 3 Video Analytics*.

For other advanced settings, see *Chapter 4 Advanced Settings*.

2.3.1 Configuring System Settings

To configure the system settings of GV-AI Server, click **Dashboard** (No. 5, *2.2 Main Screen*) > **General Settings** > **System Settings**



- **Device Name:** Type a desired name for the GV-AI Server.
- **Command Port:** Modify the default port of *10000* if necessary.

- **Web Port:** Modify the default port of *80* if necessary.
- **Snapshot Storage Path:** Select the storage path for captured snapshots.
- **Keep days of Log (1 ~ 180 days):** Define the number of days event logs are kept for.
- **Video scaling down for recognition:** Disabled by default, reduce the system loading by compressing the videos of 4 MP / 5 MP to 1 MP for face recognition.
- **Capture Known Faces:** Enabled by default, record and display recognized faces. Optionally deselect to disable.
- **Capture Unknown Faces:** Disabled by default, record unrecognizable faces.
- **Value 1 / 2 on Live View:** Select the types of Live Values to be displayed on the main screen (No. 2, *2.2 Main Screen*) for Value 1 / 2 from the following:
  - **Face Count:** Displays the total number of faces detected within the day.
  - **POS Transaction Amount:** Displays the total amount of transactions made within the day.

Note: For POS data collecting, GV-AI Server supports API for 3rd-party POS system integration.

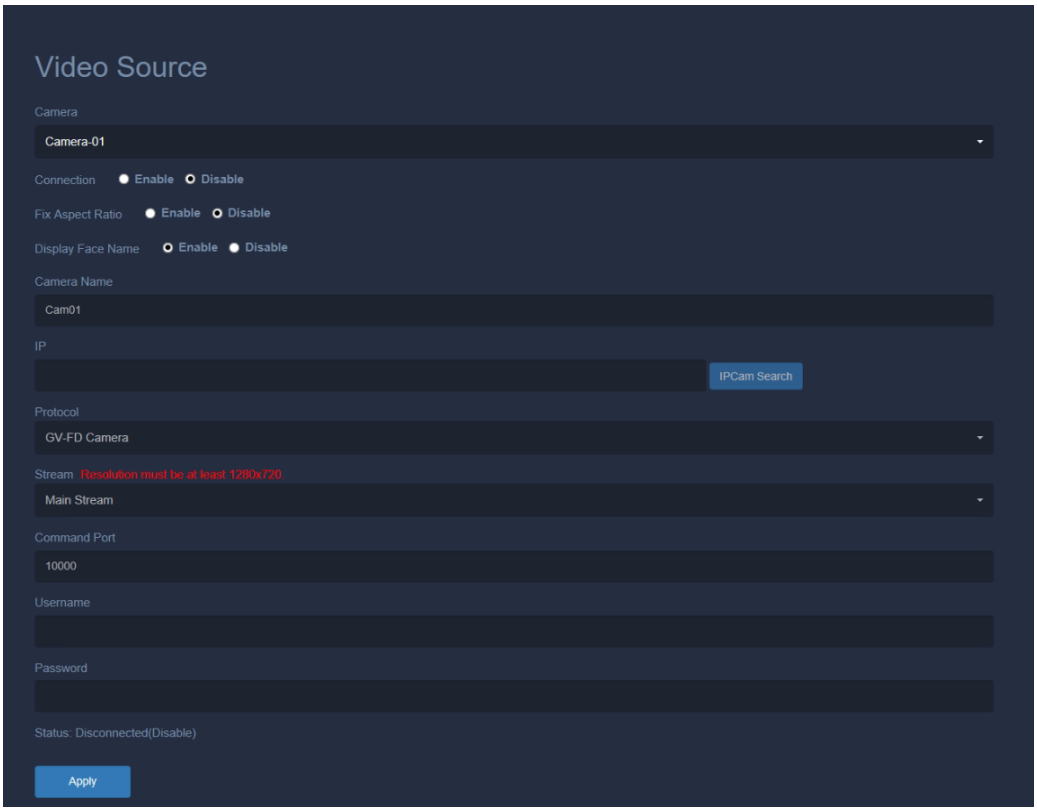
  - **Total In Value of IP Device People Counter:** Displays the total number of persons that have entered the vicinity, as recorded by the connected GV-3D People Counter V2 / V3 or AI-capable GV-IP cameras. See *4.1.4 IP Device People Counter*.
  - **Current Stay Value of IP Device People Counter:** Displays the total number of persons currently at the vicinity, as calculated by the connected GV-3D People Counter V2 / V3 or AI-capable GV-IP cameras, see *4.1.4 IP Device People Counter*.
  - **Visitor Count of Camera 1 - 8:** Displays the total number of persons detected by Camera Channel 1 - 8.
- **Enable Hardware Acceleration:** Enabled by default for CPU acceleration.
- **GPU Decode:** Enabled by default for graphic card decoding.
- **Run in Service Mode:** Enable to continue running the program after logging out of Windows.
- **Auto Start:** Enable to automatically run GV-AI Server after the PC is started.
- **Auto Login […]:** Enable to automatically log in with the desired user account, which could have limited access account. To set different user accounts, see *4.1.6 Account & Authority*.

2.3.2 Adding IP Cameras

Note: Make sure the IP cameras to be added are installed within the same LAN as GV-AI Server.

IMPORTANT: Any IP cameras to be added to GV-AI Server must first be set to a resolution of 12 MP or less.

1. From the main screen, click **Dashboard** (No. 5, *2.2 Main Screen*) > **General Settings** > **Video Source**. The following page appears.



2. Select one of the 8 channels for the IP camera to be connected through from the **Camera** dropdown list.
3. Enable **Connection** for the live view of the camera to be streamed to GV-AI Server.
4. Optionally enable **Fix Aspect Ratio** and **Display Face Name** to respectively keep the original aspect ratio of the video source and display the recognition results of the recognition targets on the live view.
5. Type a desired name for the camera channel under **Camera Name**.
6. Select one of the following as the **Camera Type**:
   - **ONVIF**: For all GeoVision and/or 3rd-party IP devices via ONVIF protocol.

- **RTSP(TCP)** / **RTSP(UDP)**: For all IP devices via RTSP(TCP) / RTSP(UDP).
- **USB Webcam**: For webcam cameras connected via USB.
- **GV-FD Camera**: For connecting to GV-Face Detection cameras. For details on GV-Face Detection Cameras, see Face Detection models.

7. Type the **IP**, **Command Port** and login **Username** and **Password** of the camera to be added.
8. Optionally select **Main Stream** / **Sub Stream** from the **Stream** dropdown list.
9. Click **Apply**. After the camera is successfully connected, a Status of Connected is shown.



10. To add more cameras, select a different channel under the **Camera** dropdown list and repeat Step 3 – 8.

Chapter 3 Video Analytics

This chapter will guide users to set up the various Video Analytics functions available on GV-AI Server, as listed below:

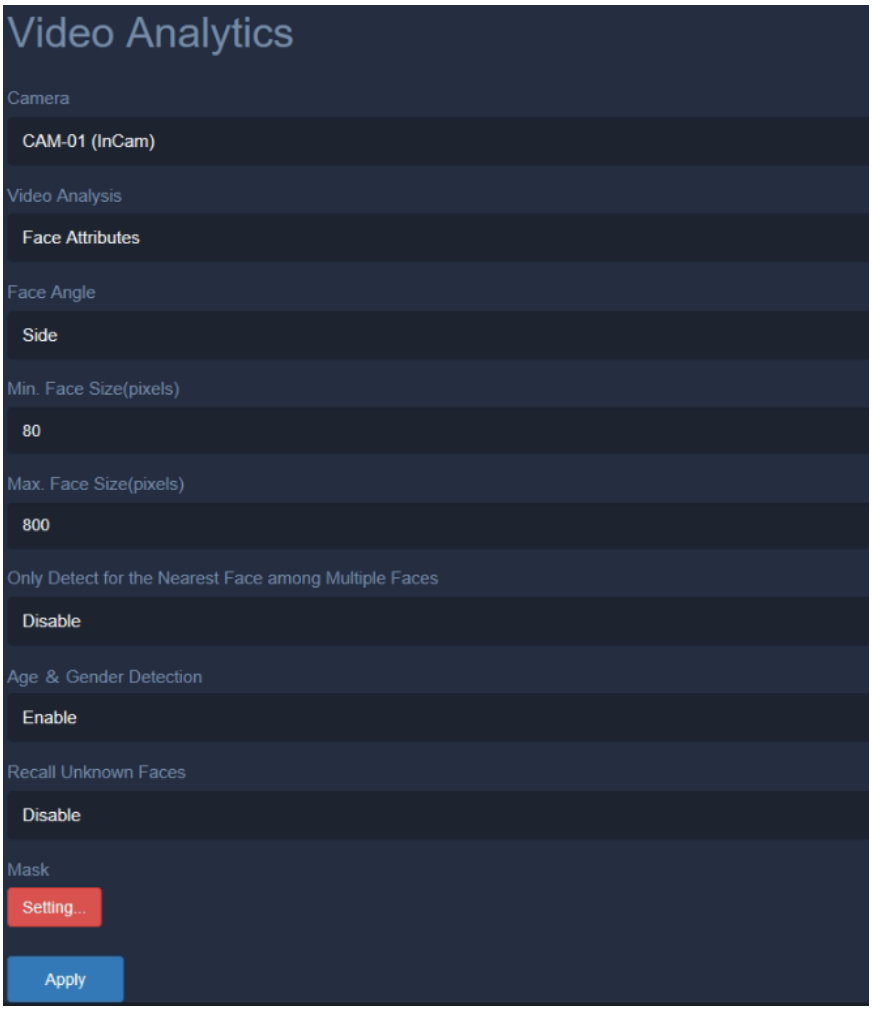
IMPORTANT: Make sure all IP cameras to be used for Video Analytics does not have Smart Streaming enabled as it may affect the accuracy and results of the Video Analytics.

List of VA Functions

3.1 Face Attributes	Captures and stores faces detected, along with their attributes including gender and age range.
3.2 Face Recognition	Captures and compares faces detected with the face database of GV-AI Server.
3.3 Product Attention	Counts the number of people dwelling at up to 10 predefined (product) regions.
3.4 Short Inventory Alert	Triggers alerts when the inventory diminishes below a specified percentage.
3.5 Queue Management	Monitors the queue length and checkout time of the cashier at the vicinity.
3.6 Suspect & Loitering Detection	Detects for suspicious individuals and/or loitering at the vicinity.
3.7 Human Counter	Counts the number of people entering and exiting across up to 10 predefined lines.
3.8 VA Analysis Charts	Compiles analysis charts for each of the VA functions according to their results.

3.1 Face Attributes

1. To configure, click **Dashboard** (No. 5, *2.2 Main Screen*) on the main screen and select **General Settings** > **Video Analytics**.
2. From the **Camera** dropdown list, select a desired camera channel.
3. Under **Video Analysis**, select *Face Attributes*. The following setting options appear.



4. Select the **Face Angle** for the face detection to perform under, as listed below:
   - **Front:** Faces can be detected when they are facing the camera at a horizontal deviation of 0 ~ 15 degrees and a vertical deviation of 0 ~ 10 degrees.
   - **Side:** Faces can be detected when they are facing the camera at a horizontal deviation of 0 ~ 25 degrees and a vertical deviation of 0 ~ 20 degrees
   - **Any Angle:** Faces can be detected when they are facing the camera at a horizontal deviation of 0 ~ 45 degrees and a vertical deviation of 0 ~ 30 degrees.
5. Optionally modify the following settings:
   - **Min. Face Size(pixels)** and **Max. Faze Size(pixels):** Only the faces within this size range can be detected.

- **Only Detect for the Nearest Face among Multiple Faces:** Only the largest face can be detected when two or more faces are captured simultaneously.
- **Age & Gender Detection:** Detect and record the estimated age range and gender of the faces. To trigger alerts upon detecting faces within a specified age and gender range, see *4.2.2 Event Trigger*.
- **Recall Unknown Faces:** Optionally enable to keep track of unknown faces and record the number of times each unknown visitor has visited, as well as their purchases.
- **Mask:** Mask areas where face detection will not be performed.

Note: When **Recall Unknown Faces** is enabled, GV-AI Server will count the number of times the same unknown visitor has been recognized and track his/her purchases, and thereby affect the *Face Count* and *Visitor Count* values, see *2.3.1 Configuring System Settings* for details.

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6. Click **Apply**. Face Attributes detection is now enabled and the camera channel will start detecting and capturing faces.

3.2 Face Recognition

Note: To enroll face data for creating Face Profiles or manage Face Groups, see *3.2.1 Enrolling Face Data* and *3.2.2 Editing Face Groups*, respectively.

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1. To configure, follow Step 1 & 2 in *3.1 Face Attributes* and select *Face Recognition* under **Video Analysis**. The following setting options appear.





2. Under **Operation Mode**, select **Round the Clock** or **Start/Stop by Trigger** to always perform face recognition or only recognize faces as controlled by event trigger(s), respectively.
3. Selecta a **Position** for the camera to be added from *Door(In)* and *Door(Out)*.
   - **Door(In):** Faces recognized from this camera are identified as persons entering the vicinity.
   - **Door(Out):** Faces recognized from this camera are identified as persons exiting the vicinity.
   - **POS Counter:** The transactions made at a connected POS device can be displayed and recorded with the faces recognized from this camera.

Note: For POS data collecting, GV-AI Server supports API for 3rd-party POS system integration.

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4. Optionally adjust the maximum frames per second under **Max Input FPS**.
5. Adjust the **Confidence** level, from 0 to 100. The higher the level, the more definitive and stricter the camera is toward distinguishing between similar faces upon face recognition.
6. Adjust the **Threshold for Unknown**. Recognition events below this value of confidence are recorded as unknown.
7. Select the **Face Angle** for the face recognition to perform under, as listed below:
   - **Front:** Faces can be recognized when they are facing the camera at a horizontal deviation of 0 ~ 15 degrees and a vertical deviation of 0 ~ 10 degrees.
   - **Side:** Faces can be recognized when they are facing the camera at a horizontal deviation of 0 ~ 25 degrees and a vertical deviation of 0 ~ 20 degrees
   - **Any Angle:** Faces can be recognized when they are facing the camera at a horizontal deviation of 0 ~ 45 degrees and a vertical deviation of 0 ~ 30 degrees.
8. Optionally modify the following settings:
   - **Min. Face Size(pixels)** and **Max. Faze Size(pixels):** Only the faces within this size range can be recognized.
   - **Unknown Interval:** The amount of time before face recognition can be performed again on recognition targets that have been identified as unknown.
   - **Only Detect for the Nearest Face among Multiple Faces:** Only perform recognition to the largest face detected when there are two or more faces at a time.
   - **Age & Gender Detection:** Estimates the age range and gender of the faces recognized.
   - **Recall Unknown Faces:** Optionally enable to keep track of unknown faces and recording the number of times each unknown visitor has visited, as well as their purchases.
   - **Mask:** Mask areas on which face recognition will not be performed.

Note: When **Recall Unknown Faces** is enabled, GV-AI Server will count the number of times the same unknown visitor has been recognized and track his/her purchases, and thereby affect the *Face Count* and *Visitor Count* values, see *2.3.1 Configuring System Settings* for details.

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9. Optionally select **Apply All** to apply the same VA settings to all camera channels.

10. Click **Apply**. Face Recognition is now enabled for the channel selected and will recognize Face Profiles within the Face Database or automatically register faces that are not yet included in the Face Database under Auto Enroll Face Group. To enroll faces, see *3.2.1 Enrolling Face Data*.

3.2.1 Enrolling Face Data

There are 5 ways to enroll face images into GV-AI Server, as listed below:

- **Manual Enrollment:** See *3.2.1.2 Creating Face Profiles*.
- **Batch Enrollment:** See *3.2.1.3 Batch Enrolling Faces*.
- **Automatic Enrollment:** See *3.2.1.4 Auto Enroll*.
- **Enrolling Unknown Recognition Events:** See *3.2.1.5 Enrolling via Query*.
- **Enrolling on Android / iOS Mobile Devices via GV-Face app:**

  See *GV-Face App Installation Guide* (requires GV-AI Server Patch V1.1.4.3).

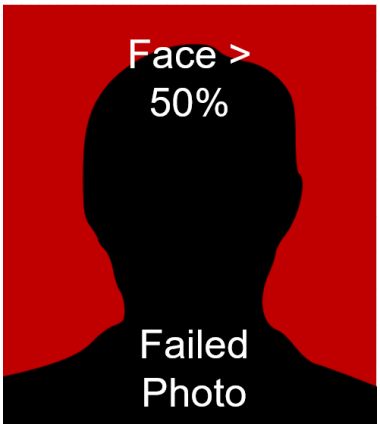
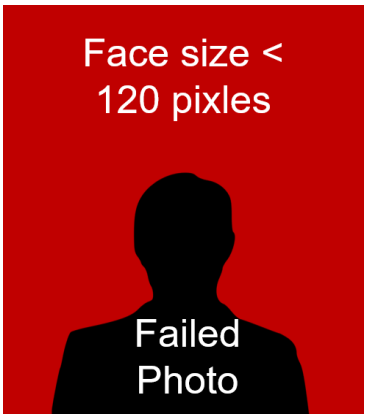
Regardless of the method of enrollment, the face images used must meet the criteria as specified in *3.2.1.1 Photo Requirements*.

3.2.1.1 Photo Requirements

All face images to be enrolled as the basis of face recognition must meet the following criteria:

- Each photo must consist of only one face.
- Size of the face within the photo should be within 120 ~ 150 pixels.
- The file size of the photo cannot exceed 350 KB.
- Only JPEG format is supported.
- Make sure the face of the person does not occupy more than 50% of the image.

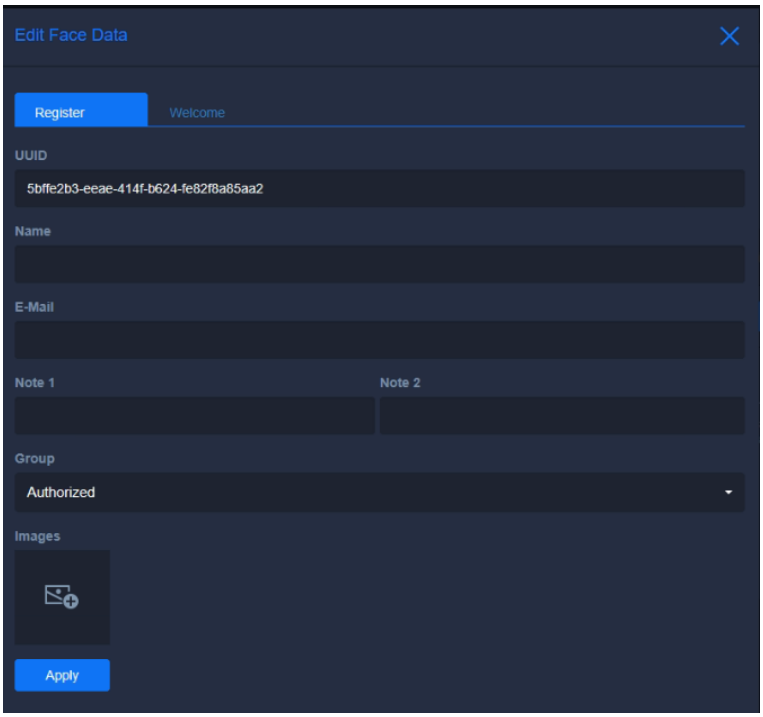
See examples below:

Ideal	Failed to enroll – 1	Failed to enroll – 2
		
The face occupies 50% of the image. The size of the person's face is between 120 ~150 pixels.	The face occupies more than 50% of the image.	The size of the person's face is less than 120 pixels.

3.2.1.2 Creating Face Profiles

To manually enroll face images and create Face Profiles on GV-AI Server, follow the steps below.

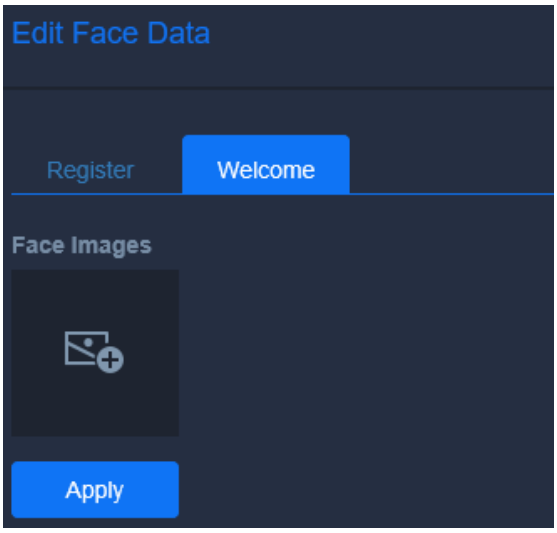
1. From the main screen, click **Dashboard** (No. 5, *2.2 Main Screen*), select **Face Management** > **Face Profiles** and click **New Face** . The following window appears.



2. Type a desired name for the Face Profile under **Name**.
3. Optionally type the email address for the Face Profile.
4. Optionally type notes for the Face Profile under **Note 1** and **Note 2**.
5. Select a **Group** for the Face Profile to be categorized under. To create and/or edit Face Groups, see *3.2.2 Editing Face Groups*.
6. Click the icon under **Images** to browse for and add face images for the Face Profile. Face images used must follow the criteria as specified in *3.2.1.1 Photo Requirements*.
7. Click **Apply**. The Face Profile is created.

Face Image

In the **Welcome** tab of **Edit Face Data**, optionally browse for a **Face Image**, which can be displayed on the Welcome screen upon recognizing of the Face Profile. For details on the Welcome screen settings, see *4.2.1 Welcome Settings*.



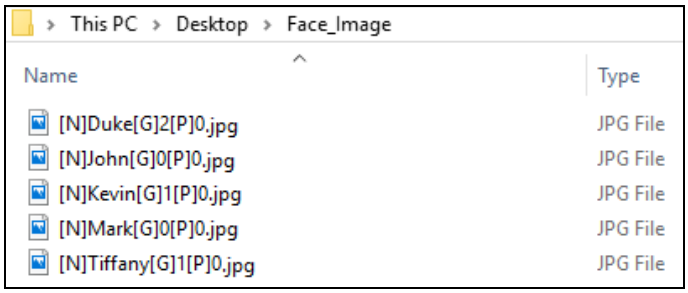
3.2.1.3 Batch Enrolling Faces

1. To enroll multiple face images, save all of the face images, which must follow the criteria as specified in *3.2.1.1 Photo Requirements*, to the same folder on your PC and rename them as exemplified below:

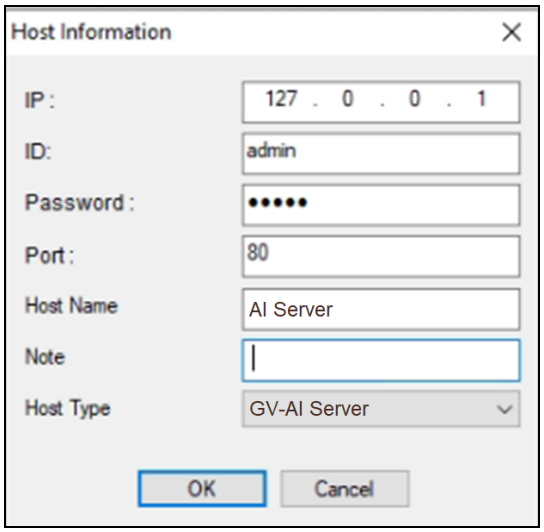
   [N]< Face Profile Name>[G]<Group No. – 1>[P]<Photo No. – 1>[ID1]<Note 1>[ID2]<Note 2>.jpg

For example, [N]John[G]0[P]0.jpg

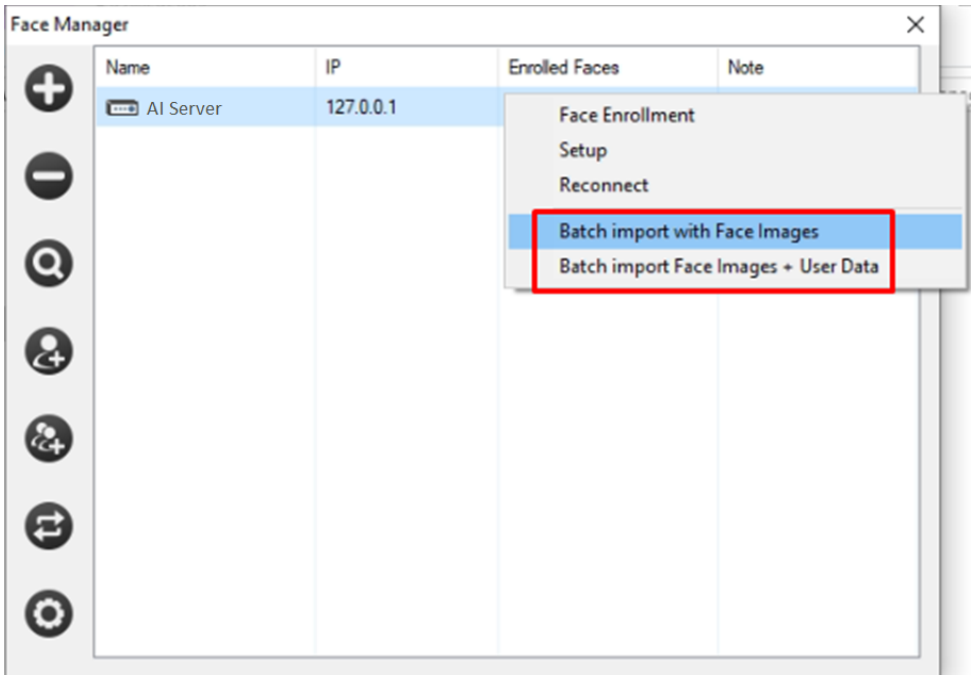
The above image file will be added to Face Profile John, as its first photo, while being categorized under Group 1, and with no data in its Note 1 and Note 2 fields.



2. Once all the face images are named properly and saved under the same folder, run **FaceManager.exe** from the GV-AI Server > FaceManager directory (C:\GV-AIServer\FaceManager).
3. Upon first-time execution, the user is required to set a login ID and Password for the Face Manager.
4. After logging in, click **Add Host** , type the **IP address**, **Port**, login **ID** and **Password** and a desired **Host Name** for the GV-AI Server and click **OK**.



5. Once the GV-AI Server is added to Face Manager, right-click on it and select **Batch import with Face Images** or **Batch import Face Images + User Data** to respectively batch enroll the face images *without* or *with* their paired access card data.



6. Select the folder and click **Select Folder**. All the face images saved within are imported into the GV-AI Server.

Note: For further details on the different functions of Face Manager, see *Face Manager User's Guide*.

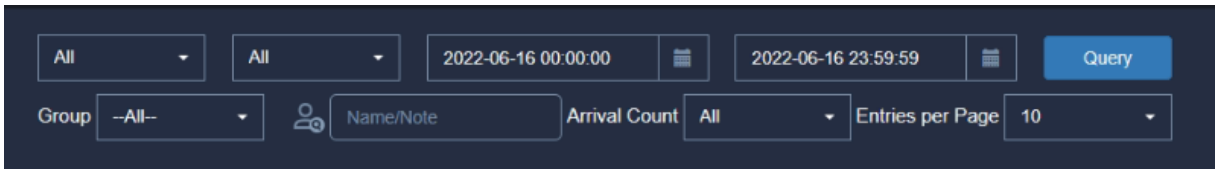
3.2.1.4 Automatic Enrollment

For faces that are not yet registered in the Face Profiles, GV-AI Server automatically registers the faces as *Visitor* under **Auto Enroll Face Group** upon the first detection when *Recall Unknown Faces* is enabled. See *3.2 Face Recognition* for details.

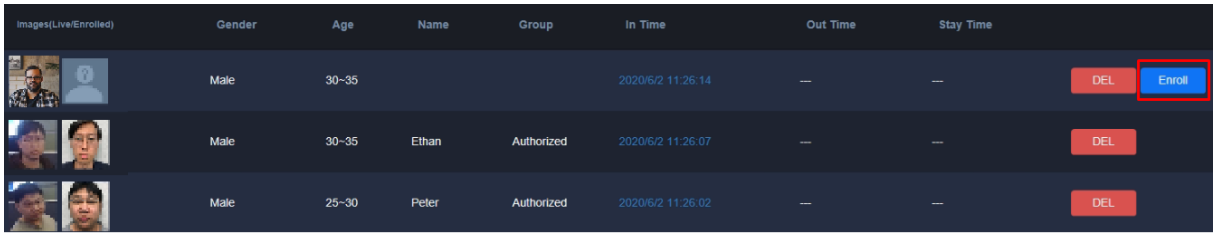
To inquire the automatically enrolled faces, select *Visitor* from the dropdown list of *Group* on **Detail Log** or **Advanced Log**. See *4.3 Event Query*.

3.2.1.5 Enrolling via Query

1. To enroll face snapshots of unknown recognition events, click **Dashboard** (No. 5, *2.2 Main Screen*) > **Event Query** and select **Advanced Log**. The following search options appear.



2. Select the start and end date/time of the events to be searched for.
3. Optionally filter by **Gender**, **Age** and/or **Face Group** from the respective dropdown lists.
4. Optionally filter by the number of times the face has been detected by setting the **Arrival Count**. Type the desired value when options other than **All** are selected.
5. Optionally select the number of entries to be shown each page from the **Entries per Page** dropdown list.
6. On the desired unknown recognition event, click **Enroll**.



7. Follow Step 2 – 5 in *3.2.1.2 Creating Face Profiles*.
8. Click **Apply**. A new Face Profile is created.

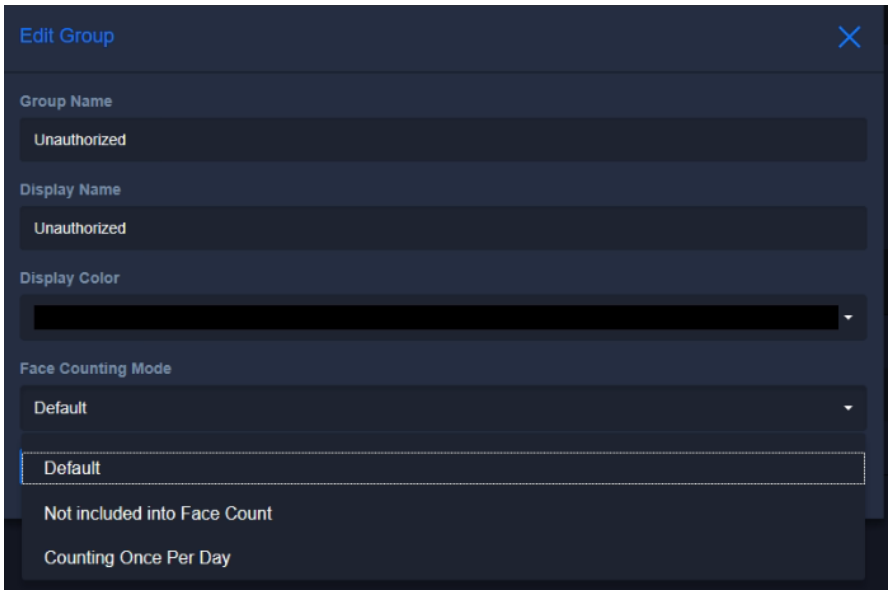
3.2.2 Editing Face Groups

From the main screen, click **Dashboard** (No. 5, *2.2 Main Screen*) > **Face Management** > **Face Groups**. The Face Groups page appears, which allows users to create new Face Groups and/or edit existing ones, for the Face Profiles to be categorized under.



- **New Group:** Click to create a new Face Group.

- **ID:** Displays the ID number of the Face Group.
- **Name:** Displays the name of the Face Group
- **Display Name:** Displays the name of the Face Profile as shown on the **Welcome** page, see *4.2.1 Welcome Settings*.
- **Display Color:** Highlights all Face Profiles within this Face Group on the live view with the color selected.
- **Auto Enroll:** Stores the automatically registered visitor data.
- **Edit:** Click edit to modify the Face Group.

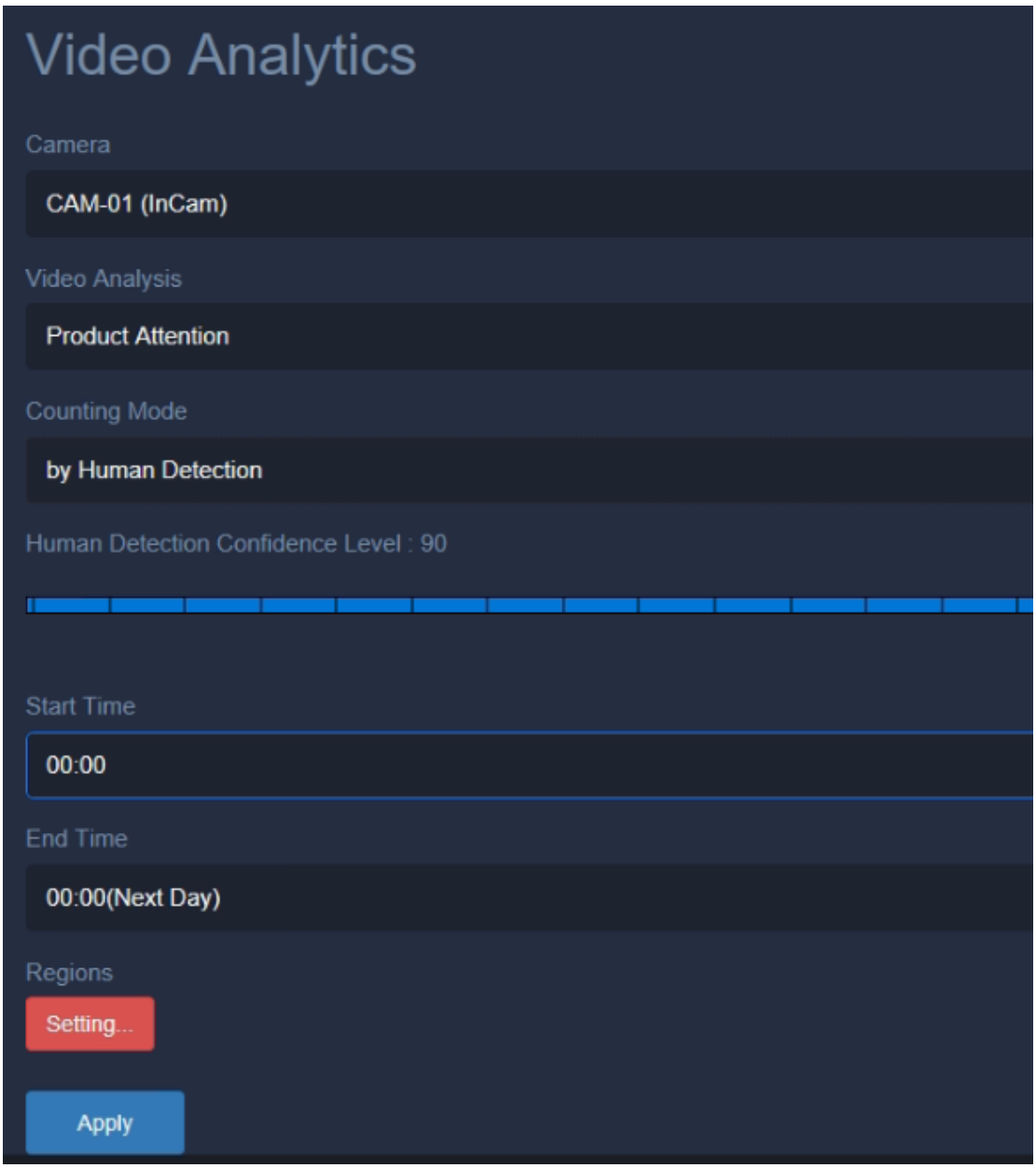


When creating or editing a Face Group, the following **Face Counting Mode** are available:

- **Default:** Select to count the faces based on the actual number of detections.
- **Not included into Face Count:** Select to not include any face recognition events of that Face Group into the face detection/recognition counts of GV-AI Server.
- **Counting Once Per Day:** Select to count the faces registered under the specified Face Group once per day.

3.3 Product Attention

1. To configure, follow Step 1 & 2 in *3.1 Face Attributes* and select *Product Attention* under **Video Analysis**. The following setting options appear.

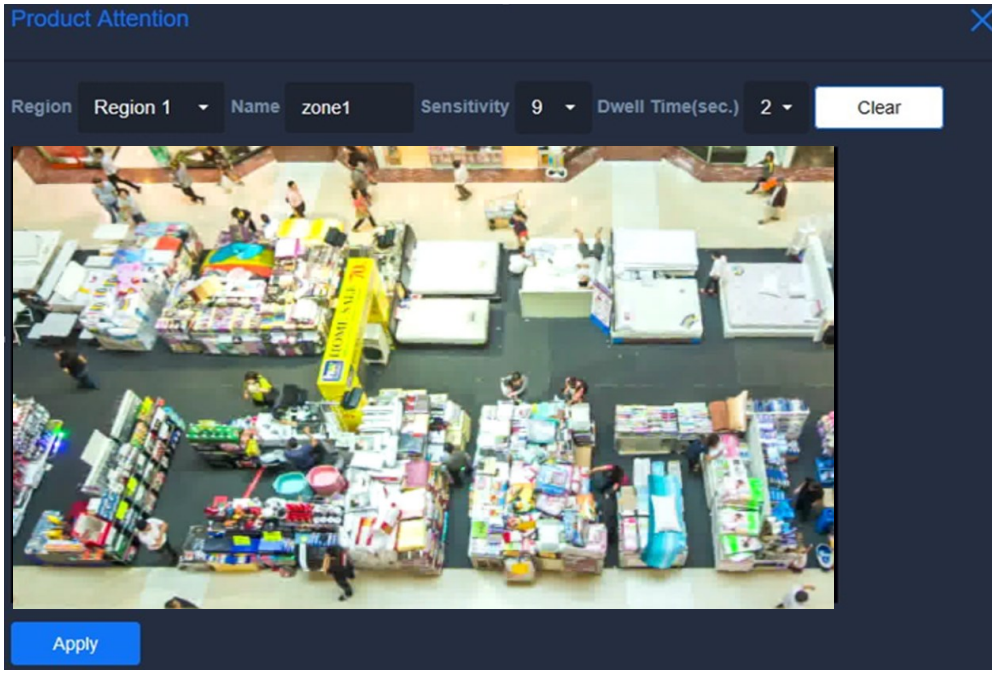


2. Under **Counting Mode**, select **by Motion Detection** or **by Human Detection** to count for the number of persons dwelling at the predefined (product) regions by motion or human detection.

Note: To count the number of persons dwelling at the predefined regions *by Motion,* fisheye cameras are recommended. For counting *by Human Detection*, only non-fisheye cameras are supported.

A. For *by Human Detection*, adjust the **Human Detection Confidence Level**, from 0 to 100. The higher the level, the more definitive and stricter the camera is toward distinguishing human objects.

3. Set the **Start Time** and **End Time** for when the persons are counted and resetting the count totals.
4. Click **Setting** under Regions. The following dialog box appears.



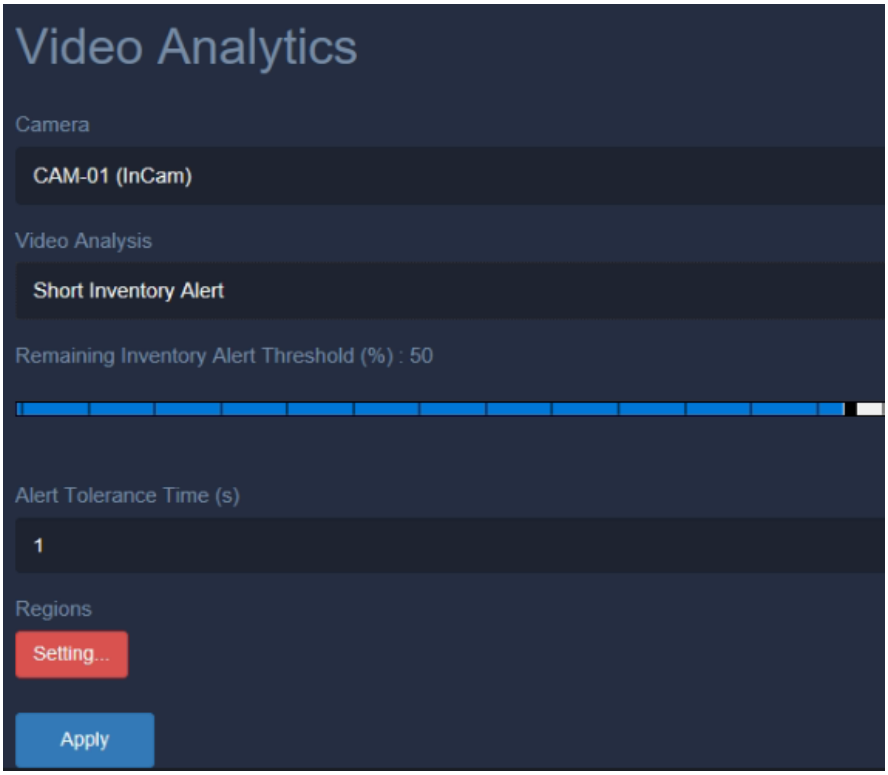
5. Click and drag on the image to draw a (product) region for where persons dwelling will be counted.
6. Optionally modify the following settings:
   A. **Name:** Type a desired name for the region.
   B. **Sensitivity:** The higher the sensitivity value the more sensitive it is towards detecting persons.
   C. **Dwell Time (s):** The amount of time the persons must stay at the region to be counted.
7. To create multiple regions, select another from the **Region** dropdown list and repeat Step 6 & 7. Up to 10 regions can be set.
8. Once all of the desired (product) regions are set, click **Apply**.
9. Click **Apply**.

Product Attention is now enabled and the camera channel is shown with a heatmap display, to monitor the foot traffic of customers and count the number of persons dwelling at each of the regions defined.



3.4 Short Inventory Alert

1. To configure, follow Step 1 & 2 in *3.1 Face Attributes* and select *Short Inventory Alert* under **Video Analysis**. The following setting options appear.

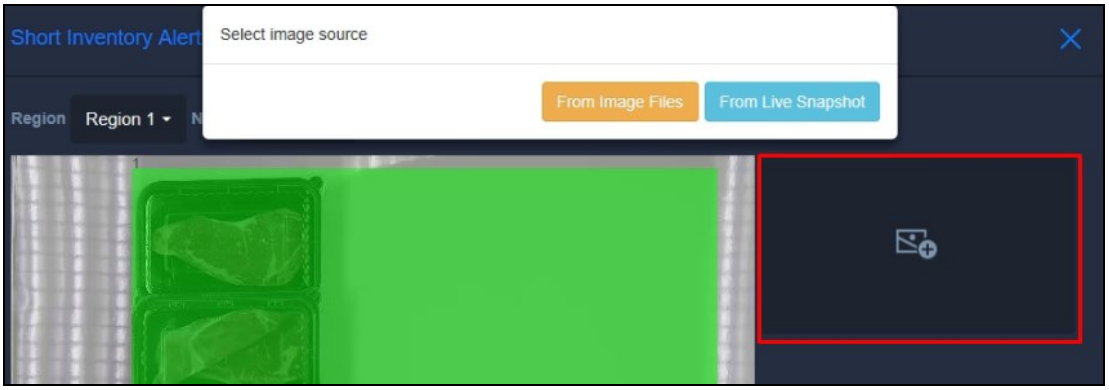


2. Under **Remaining Inventory Alert Threshold (%)**, set the percentage below which an alert will be triggered when the inventory diminishes under.

3. Set the time interval the inventory is monitored for, from 1 to 1800 seconds, under **Alert Tolerance Time (s)**.
4. Click **Setting** under Regions. The following dialog box appears.



5. Click and drag on the image to draw an area where the inventory shall cover when fully stocked.
6. Optionally type a desired **Name** for the inventory area.
7. To monitor multiple inventory areas simultaneously, select another from the **Region** dropdown list and repeat Step 5 & 6. Up to 10 areas can be set.
8. Click **Add Image** and select **From Image Files** or **From Live Snapshot** to add an image of the surveillance scene when all of the inventory areas set are empty.



9. Once all of the desired inventory areas are set, click **Apply**.
10. Click **Apply**. Short Inventory Alert is now enabled for the camera channel to trigger alerts when any of the inventories set diminishes below the percentage set.

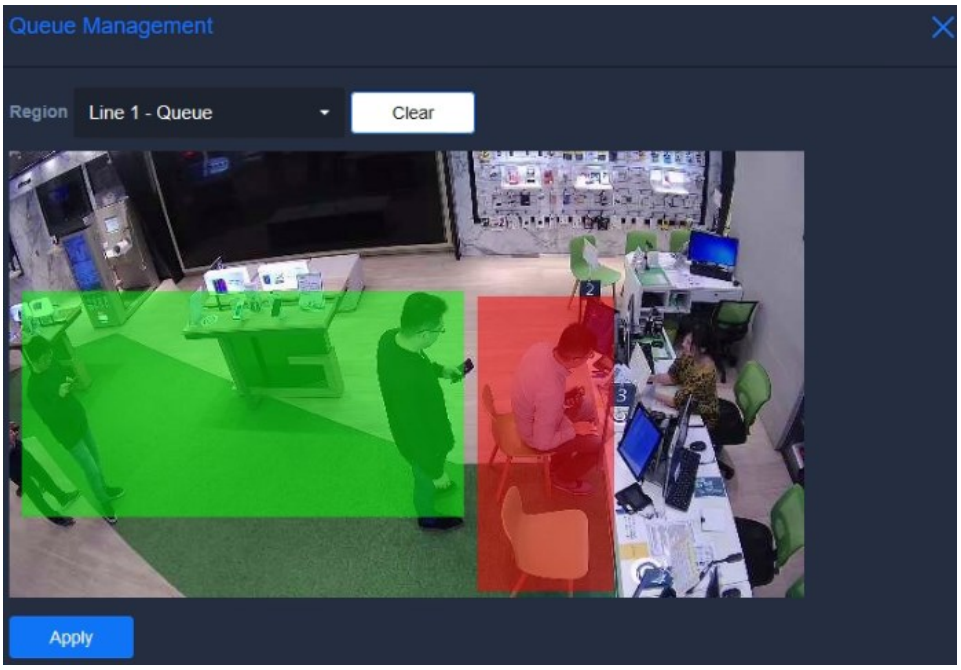
To trigger alerts upon short inventory, see *4.2.2 Event Trigger*.

3.5 Queue Management

1. To configure, follow Step 1 & 2 in *3.1 Face Attributes* and select *Queue Management* under **Video Analysis**. The following setting options appear.



2. Optionally adjust the **Human Detection Confidence Level**, from 0 to 100. The higher the level, the more definitive and stricter the camera is toward distinguishing human objects
3. Under **Checkout Time Alert (s)**, set the estimated or allowed time for each cashier checkout.
4. Under **Queue Length Alert**, set the maximum number of persons within the queue allowed.
5. Click **Setting** under Regions. The following dialog box appears.



6. Select **Line 1 – Queue** from the **Region** dropdown list, and click and drag on the image to draw a queue region, where the number of persons waiting in line will be monitored for.
7. Select **Line 1 – Cashier** from the **Region** dropdown list, and click and drag on the image to draw a cashier region, where the amount of time of each checkout will be monitored for.
8. Optionally type a desired **Name** for the cashier region.
9. From the **Info Position** dropdown list, select a position, from *Upper Left*, *Upper Right*, *Bottom Left* or *Bottom Right*, for where the following monitoring values will be displayed.



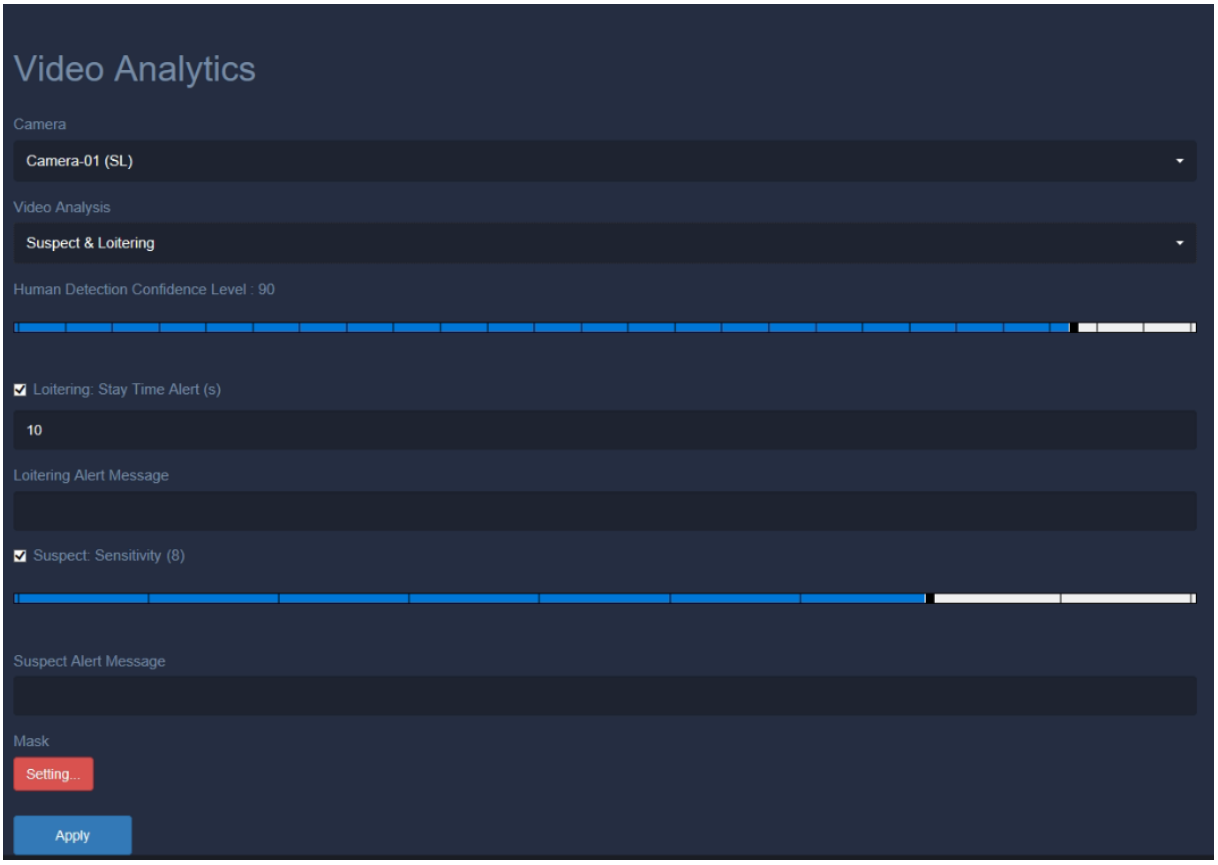
The number of persons currently waiting in line.
The amount of time taken for the current checkout.
The average amount of time taken for each past checkout completed.
The estimated queue wait time.

10. To create a second set of Queue and Cashier region, repeat Step 5 – 8 by selecting **Line 2 – Queue** and **Line 2 – Cashier** from the **Region** dropdown list.
11. Once the desired queue and cashier regions are set, click **Apply**.
12. Click **Apply**. Queue Management is now enabled for the camera channel to monitor the queues and the checkout times at the cashier, as well as trigger alerts when the number of persons waiting in line exceed the limit or when the checkout time exceeds the estimated time.

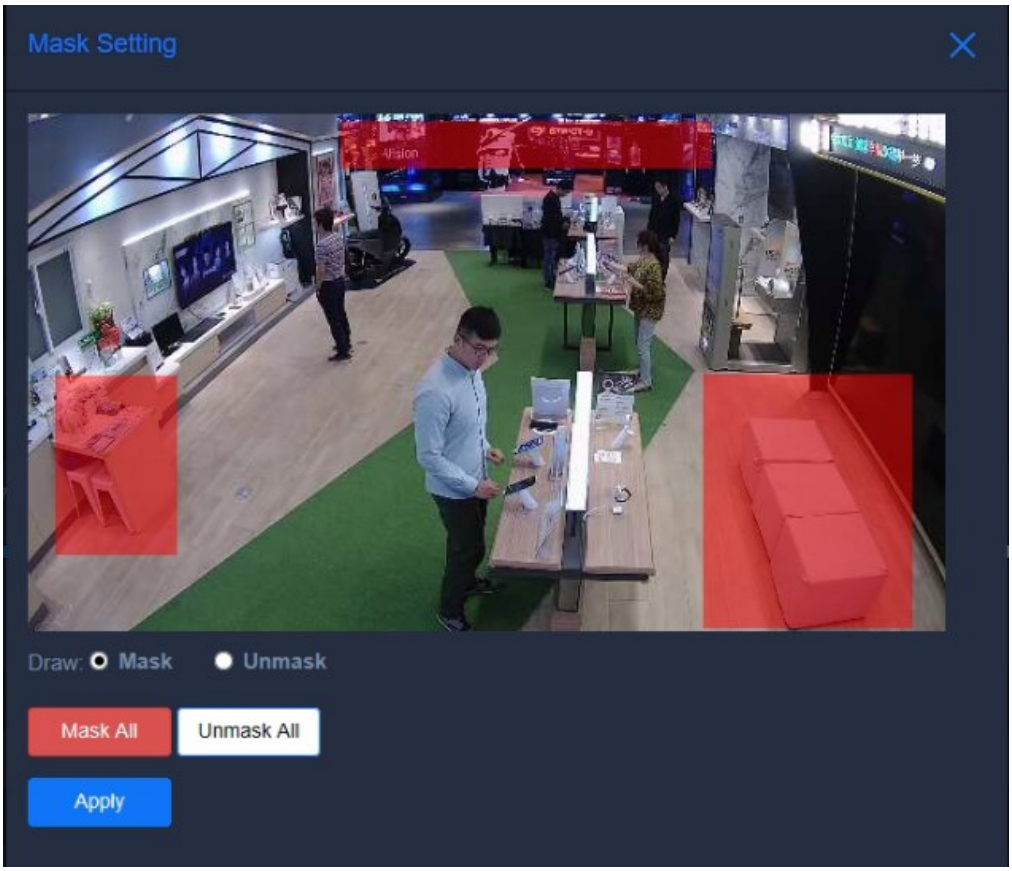
To trigger alerts upon exceeding the specified queue length and/or checkout time, see *4.2.2 Event Trigger*.

3.6 Suspect & Loitering Detection

1. To configure, follow Step 1 & 2 in *3.1 Face Attributes* and select *Suspect & Loitering Detection* under **Video Analysis**. The following setting options appear.



2. Adjust the **Human Detection Confidence Level**, from 0 to 100. The higher the level, the more definitive and stricter the camera is toward distinguishing human objects.
3. Select **Loitering: Stay Time Alert (s)** to trigger loitering alerts when a person stays at the same position exceeding the time set, from 1 to 1800 seconds.
4. Optionally type a desired name for the loitering alert under **Loitering Alert Message**, to be displayed on the live view.
5. Select **Suspect: Sensitivity (#)** to set a sensitivity value for detecting suspicious persons and triggering alerts. The higher the sensitivity value, the more sensitive to suspicious behavior.
6. Optionally type a desired name for the suspect alert under **Suspect Alert Message**, to be displayed on the live view.
7. Optionally click **Setting…** under Mask to mask regions where you don't want suspect and loitering detection to be performed.



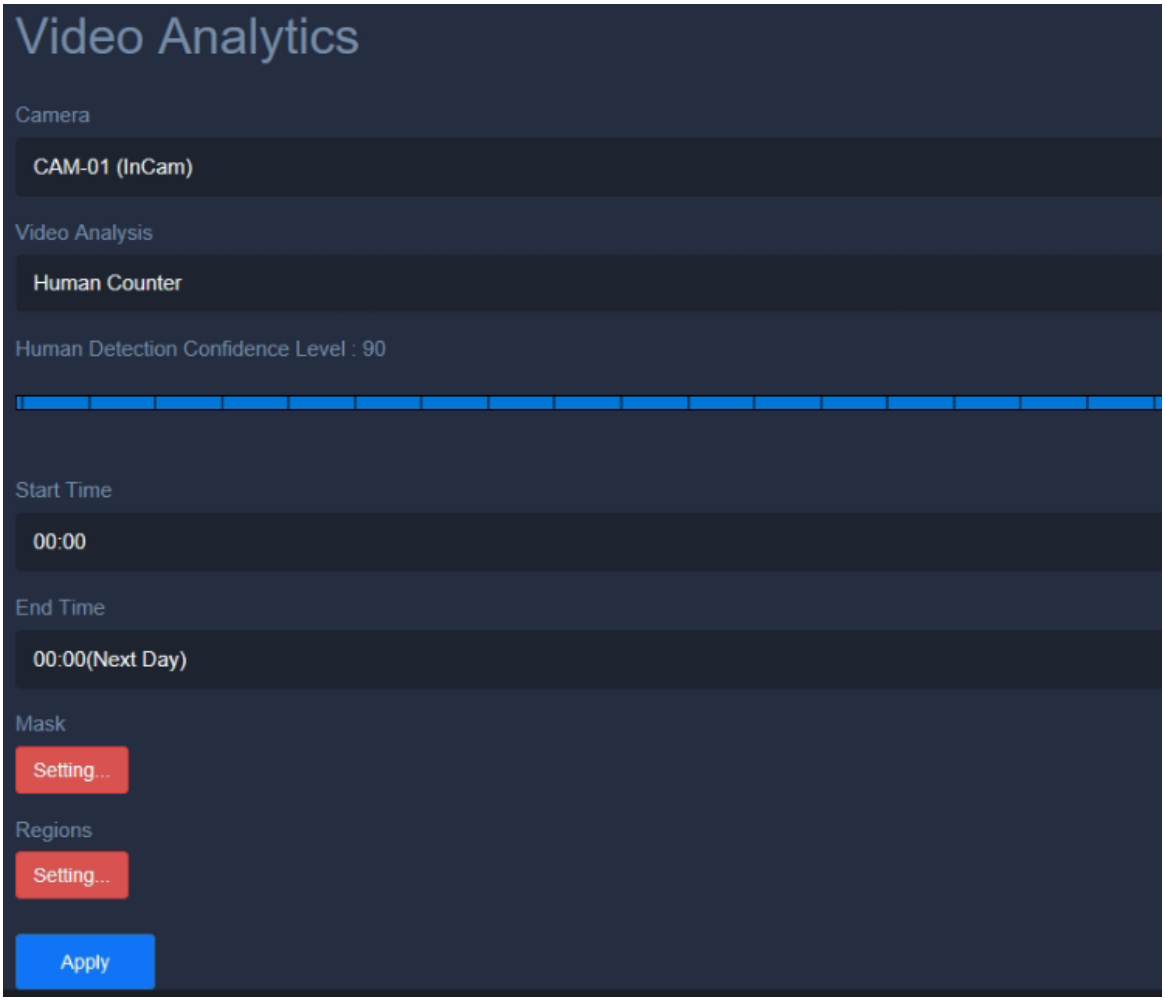
- **Mask:** Select and click and drag on the image to draw the desired mask regions.
- **Unmask:** Select and click and drag on drawn masks to unmask the desired regions.
- **Mask All:** Click to mask the entire image.
- **Unmask All:** Click to unmask the entire image.

8. Once all of the desired mask regions are set, click **Apply**.
9. Click **Apply**. Suspect & Loitering Detection is now enabled for the camera channel to trigger alerts when suspicious persons and/or loitering activities are detected.

To trigger alerts upon detection of suspect and/or loitering events, see *4.2.2 Event Trigger*.

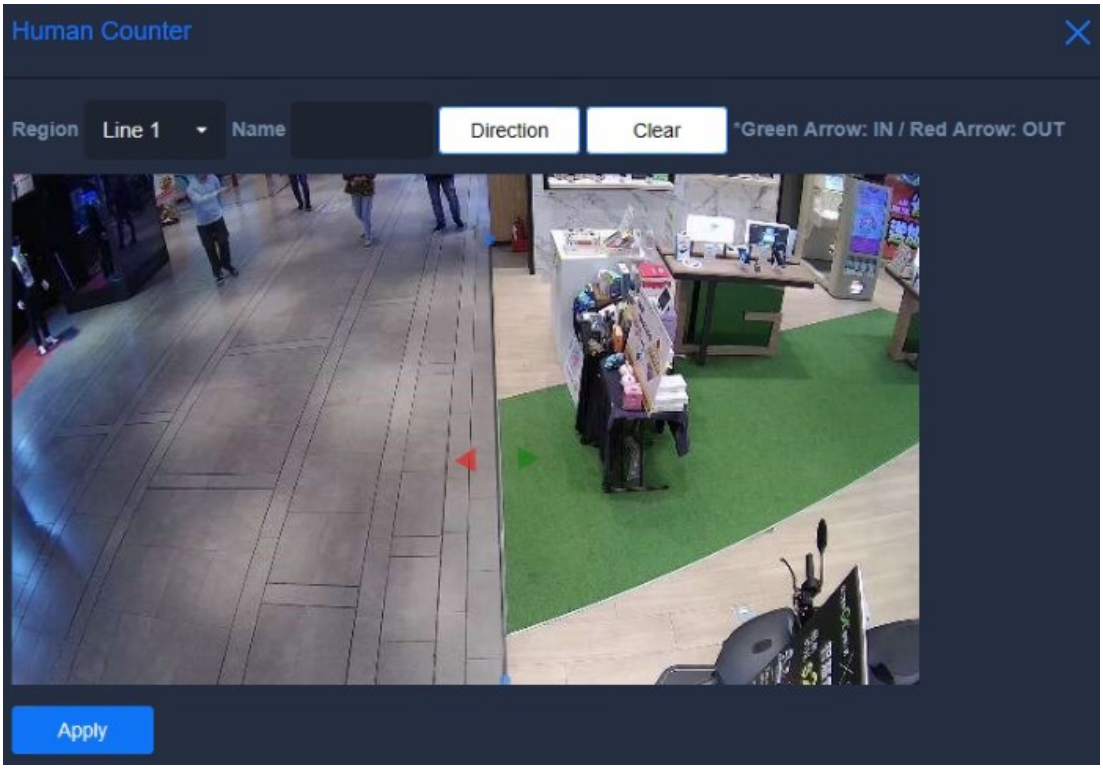
3.7 Human Counter

1. To configure, follow Step 1 & 2 in *3.1 Face Attributes* and select *Human Counter* under **Video Analysis**. The following setting options appear.



2. Adjust the **Human Detection Confidence Level**, from 0 to 100. The higher the level, the more definitive and stricter the camera is toward distinguishing human objects.
3. Set the **Start Time** and **End Time** for when the persons are counted and resetting the count totals.
4. Under Mask, optionally click **Setting** to mask areas where human counter will not be performed.

5. Click **Setting** under Regions. The following dialog box appears.



6. Click on any two spots on the image to draw a line in between.
7. Type a desired **Name** for the line set.
8. Click **Direction**, once or more, until the direction is properly set, where the green arrow indicates in while the red arrow indicates out.
9. To create multiple lines, select another from the **Region** dropdown list and repeat Step 6 – 8. Up to 10 lines can be set.
10. Once all of the desired regions are set, click **Apply**.
11. Click **Apply**. Human Counter is now enabled for the camera channel to count for the number of persons entering and/or exiting across the lines drawn.

3.8 VA Analysis Charts

When the VA functions are set, GV-AI Server is able to record their events and generate daily analysis charts, specific to each VA function, for users to see an overview of the activities at the vicinity across a given date, week, month or year.

To access, click **Dashboard** (No. 5, *2.2 Main Screen*) from the main screen and select **Analysis**. The following analysis chart options appear.



For a detailed description and the VA function related to each, please refer to the list below:

List of VA Analysis Charts

VA Function	Analysis Chart		Chart Description
Face Attributes / Face Recognition	**Demographic**	Visitor Counter / Hour	Displays the average number of visitor faces detected every hour, over a day, week, month or year, which can be distinguished by gender and/or age range when enabled.
		Visitor Counter / Day	Displays the average number of visitor faces detected on every day of the week over a week, month or year, can be distinguished by gender and/or age range when enabled.
		Age / Gender	Displays the gender and age range percentage ratio of all visitors over a specific date, week, month or year.
		Ratio Report	Displays the percentages of visitor growth on a daily, weekly, monthly or yearly basis.

VA Function	Analysis Chart	Chart Description
Product Attention	**Product Attention**	Displays the average number of persons detected dwelling at each product region every hour, over a day, week, month or year.
IP Device People Counter	**IP Device People Counter**	Displays the average number of persons entering, exiting and staying at the premises every hour, detected by the connected GV-3D People Counter V2 / V3 or AI-capable GV-IP cameras, over a day, week, month or year. Note: For IP Device People Counter to work, the GV-AI Server must be connected to a GV-3D People Counter V2, GV-3D People Counter V3, or AI-capable GV-IP camera, see *4.1.4 IP Device People Counter*.
Human Counter	**Human Counter**	Displays the average number of persons detected entering, exiting and staying at the premises every hour, over a day, week, month or year.
Queue Management	**Queue**	Displays the average number of people waited in line, and the average checkout and waiting times every hour, over a day, week, month or year.
Short Inventory Alert	**Short Inventory**	Displays the average number of seconds the short inventory alerts were triggered for every hour, over a day, week, month or year.
Suspect & Loitering Detection	**Suspect & Loitering**	Displays the average number of suspect and loitering alerts triggered every hour, over a day, week, month or year.

Chapter 4 Advanced Functions

This chapter covers the advanced functions of GV-AI Server, which includes the following categories: **General Settings**, **Notify Settings**, and **Event Query**.

List of Configurations

See the table below for the advanced functions of GV-AI Server.

4.1 General Settings	4.1.1 System Settings 4.1.2 Video Source 4.1.3 Video Analytics 4.1.4 IP Device People Counter 4.1.5 GV-VMS Connection 4.1.6 Account & Authority 4.1.7 Master / Slave Sync
4.2 Notify Settings	4.2.1 Welcome Settings 4.2.2 Event Trigger 4.2.3 IO Box 4.2.4. Telegram Notify 4.2.5. Send E-Mail
4.3 Event Query	

Note: For details on the Face Management pages, **Face Profiles** and **Face Groups**, see *3.2.1.2 Creating Face Profiles* and *3.2.2 Editing Face Groups*.

4.1 General Settings

This section covers all of the settings available under General Settings, including **System Settings**, **Video Source**, **Video Analytics**, **IP Device People Counter**, **GV-VMS Connection**, **Account & Authority**, and **Master / Slave Sync**.

4.1.1 System Settings

The **System Settings** page configures the system settings of GV-AI Server, see *2.3.1 Configuring System Settings*.

4.1.2 Video Source

The **Video Source** page allows users to connect up to 8 IP cameras to the GV-AI Server for live video streaming, see *2.3.2 Adding IP Cameras*.

4.1.3 Video Analytics

The **Video Analytics** pages enables and configures the various VA functions available on GV-AI Server for its camera channels, see *Chapter 3 Video Analytics*.

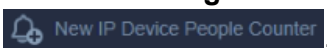
4.1.4 IP Device People Counter

GV-AI Server can be connected to GV-3D People Counter V2 / V3 and AI-capable GV-IP cameras for collecting people counting data, including In, Out, and Stay. To connect, follow the steps below:

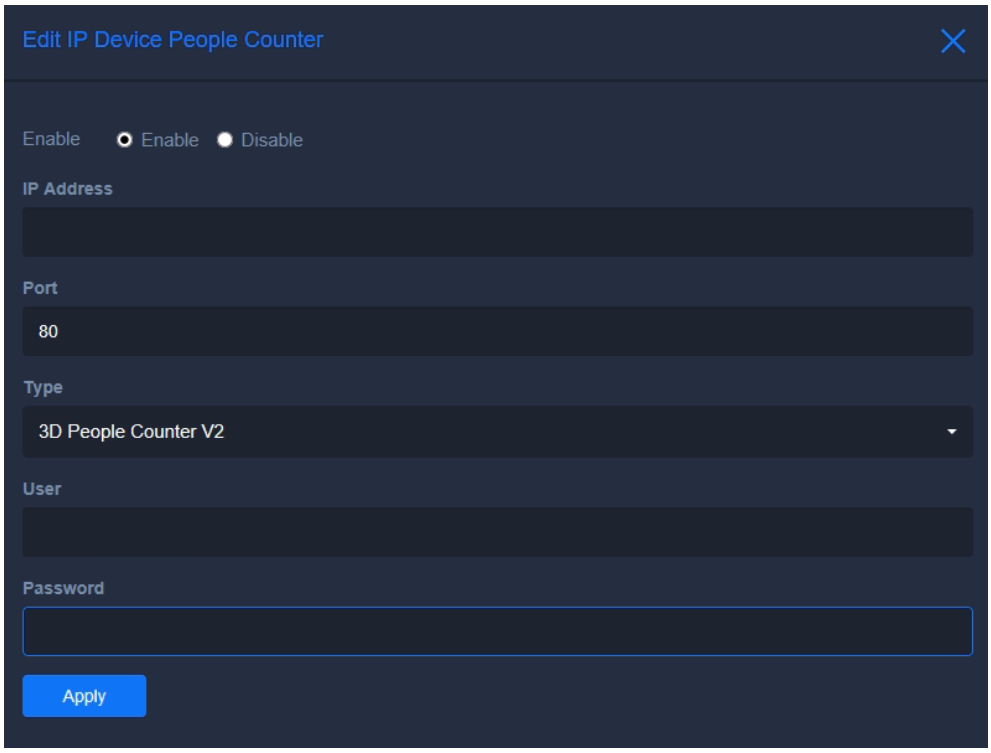
Note:

1. Only the following models support the counting function:
   - **GV-3D People Counter V2 / V3**
   - The following AI-capable GV-IP cameras with People Counting function enabled before GV-AI Server setup:
     - **GV-T/EBD/BLFC/EBFC Series:** GV-BLFC5800 / EBD4813 / EBFC5800 / TBL4807 / TBL4810 / TBL8804 / TBL8810 / TDR4803 Series / TDR8805 / TFD4800 / TVD4810 / TVD4811 / TVD8810 / PTZ5810-IR / SD4825-IR / SD4834-IR
     - **GV-G Series:** GV-TMEB5800 / BX2802 / BX4802 / GBLN4800 / GEB4900 / GEBF4911 / GEBN4800 / GDR4900 / GBL4900 / GBL4911 / GVD4910 / GFER6900 / GFER12800 (GV-G Series only supports the Target Counting by Line function)
2. A maximum of 64 IP Device People Counters (GV-3D People Counter / AI-capable GV-IP camera / Integrated Counter) is supported.

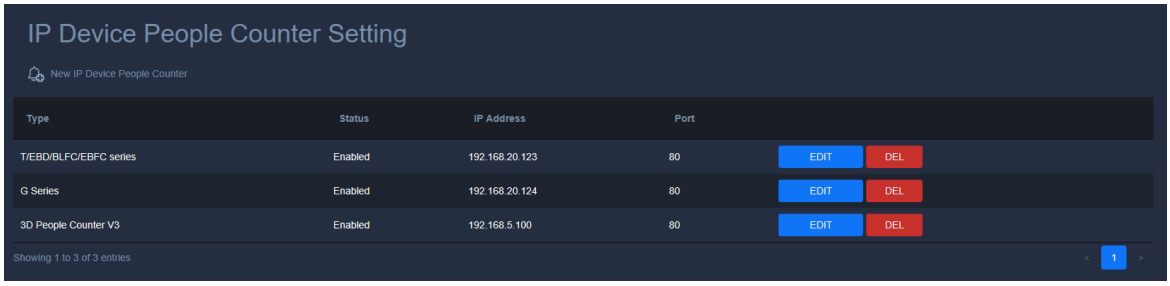
4.1.4.1 Adding a GV-3D People Counter / AI-Capable GV-IP Camera

1. On the IP Device People Counter Setting page (**Dashboard** (No. 5, *2.2. Main Screen*) > **General Settings** > **IP Device People Counter**), click **New IP Device People Counter** 

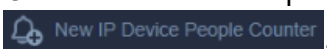
. The following dialog box appears.



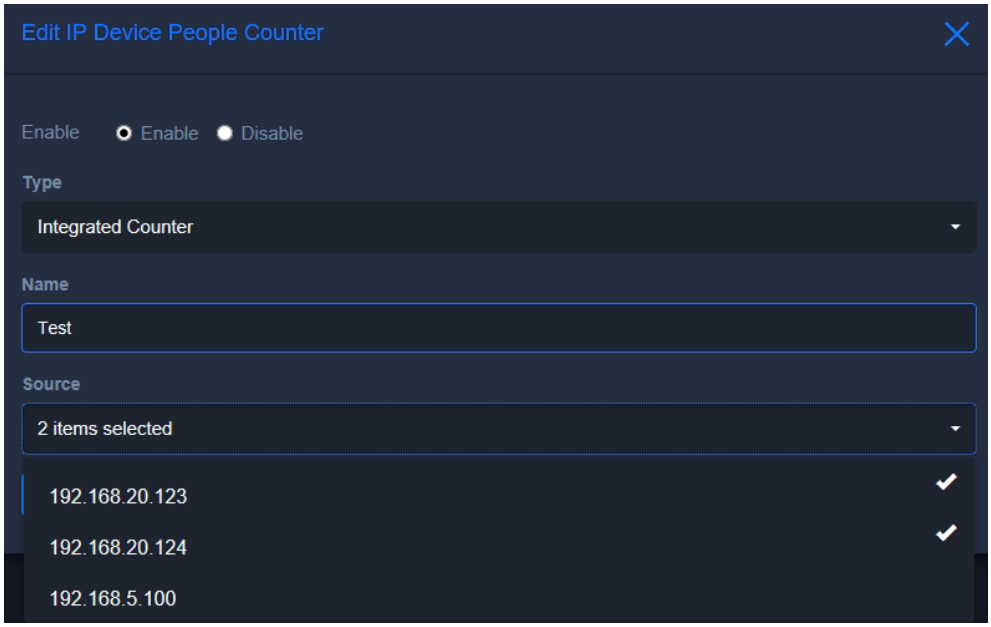
2. Type the **IP Address** and **Port** of the GV-3D People Counter V2 / V3 or AI-capable GV-IP camera.
3. Next to **Type**, select a GV-3D People Counter (**3D People Counter V2** or **3D People Counter V3**) or AI-capable GV-IP camera (**G Series** or **T/EBD/BLFC/EBFC Series**).
4. Type the **Username** and **Password** of the connected devices.
5. Click **Apply**. The GV-3D People Counter V2 / V3 or AI-capable GV-IP camera is now added to GV-AI Server.



4.1.4.2 Adding an Integrated Counter

1. Finish connecting to GV-3D People Counter / AI-capable GV-IP cameras first. See the instructions in *4.1.4.1 Adding a GV-3D People Counter / AI-Capable GV-IP Camera*.
2. On the IP Device People Counter Setting page, click **New IP Device People Counter** 

. The following dialog box appears.



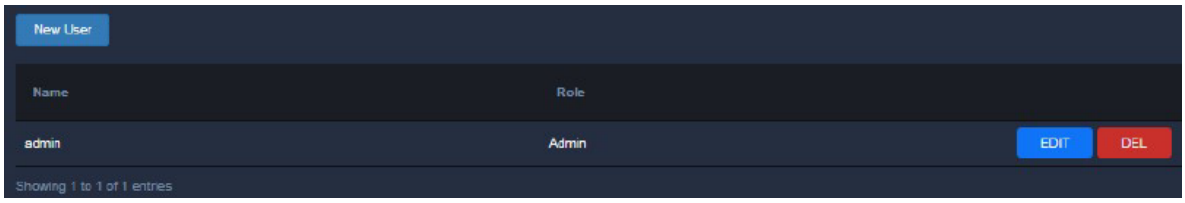
3. Next to **Type**, select **Integrated Counter** for collecting the counting data from the connected GV-3D People Counter and AI-capable GV-IP cameras.
4. Type the **Name** for the counter.
5. From the dropdown list of **Source**, select the IP addresses of the desired GV-3D People Counters / AI-capable GV-IP cameras.
6. Click **Apply**. The **Integrated Counter** is now added to GV-AI Server.

4.1.5 GV-VMS Connection

GV-AI Server can be connected to GV-VMS V18.1 or later for remote streaming and video recording, see *Chapter 5 GV-VMS Integration*.

4.1.6 Account & Authority

The **Account & Authority** page allows users to create and edit user accounts, available in 4 levels, as well as enabling / disabling configuration rights for various accounts.



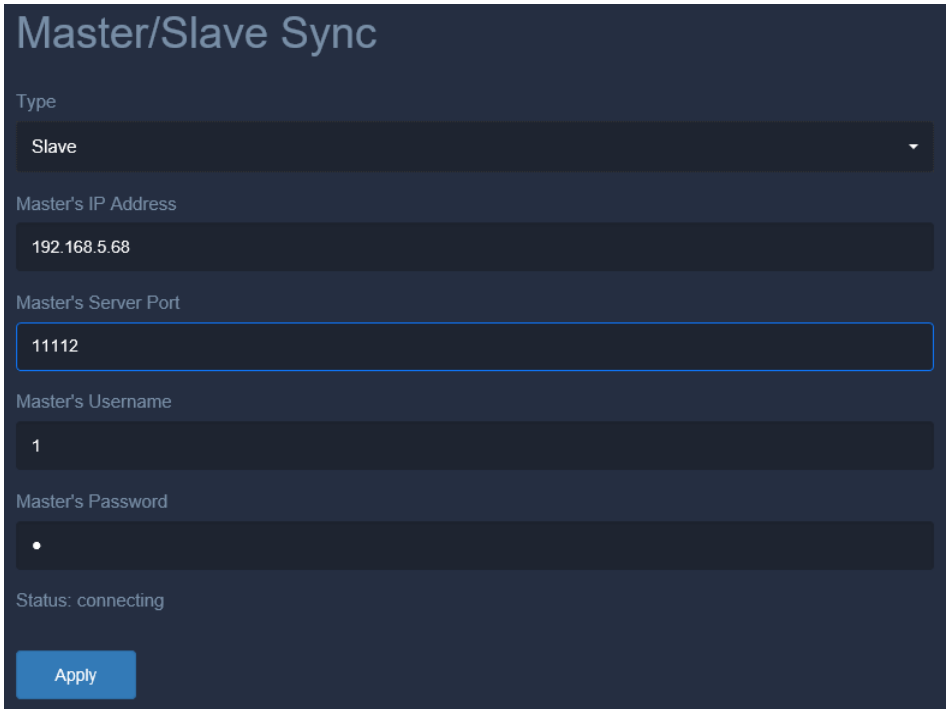
4.1.7 Master / Slave Sync

When there are two or more GV-AI Servers installed, users can set one of them as the **Master** for storing and recording all visitor face data to be used by **up to 10** other GV-AI Servers, or **Slaves**, to avoid the need of managing multiple databases simultaneously.

Note: By default, all GV-AI Server are set as **Standalone** and have their own, exclusive face database for visitor face recognition.

To set up Master and Slave GV-AI Servers, follow the steps below:

1. On the GV-AI Server to be set as the Master, typically the one in which all the visitor face data are stored, click **Dashboard** (No. 5, *2.2 Main Screen*) > **General Settings** > **Master/Slave Sync**.



2. Select **Master** as **Type** and set a desired **Username** and **Password**, which will be used by other Slave GV-AI Servers for connecting to the Master.
3. Optionally modify the default **Port** of **11112** if necessary and click **Apply**.
4. After the Master GV-AI Server is set, click **Dashboard** (No. 5, *2.2 Main Screen*) > **General Settings** > **Master/Slave Sync** on a separate GV-AI Server to set it as the Slave.
5. Select **Slave** as **Type** and type the **IP Address**, **Port**, **Username** and **Password** of the Master GV-AI Server.
6. Click **Apply** and restart the slave GV-AI Server for the changes to take effect.
7. To connect multiple Slave GV-AI Servers to the Master, repeat Step 4 – 6.

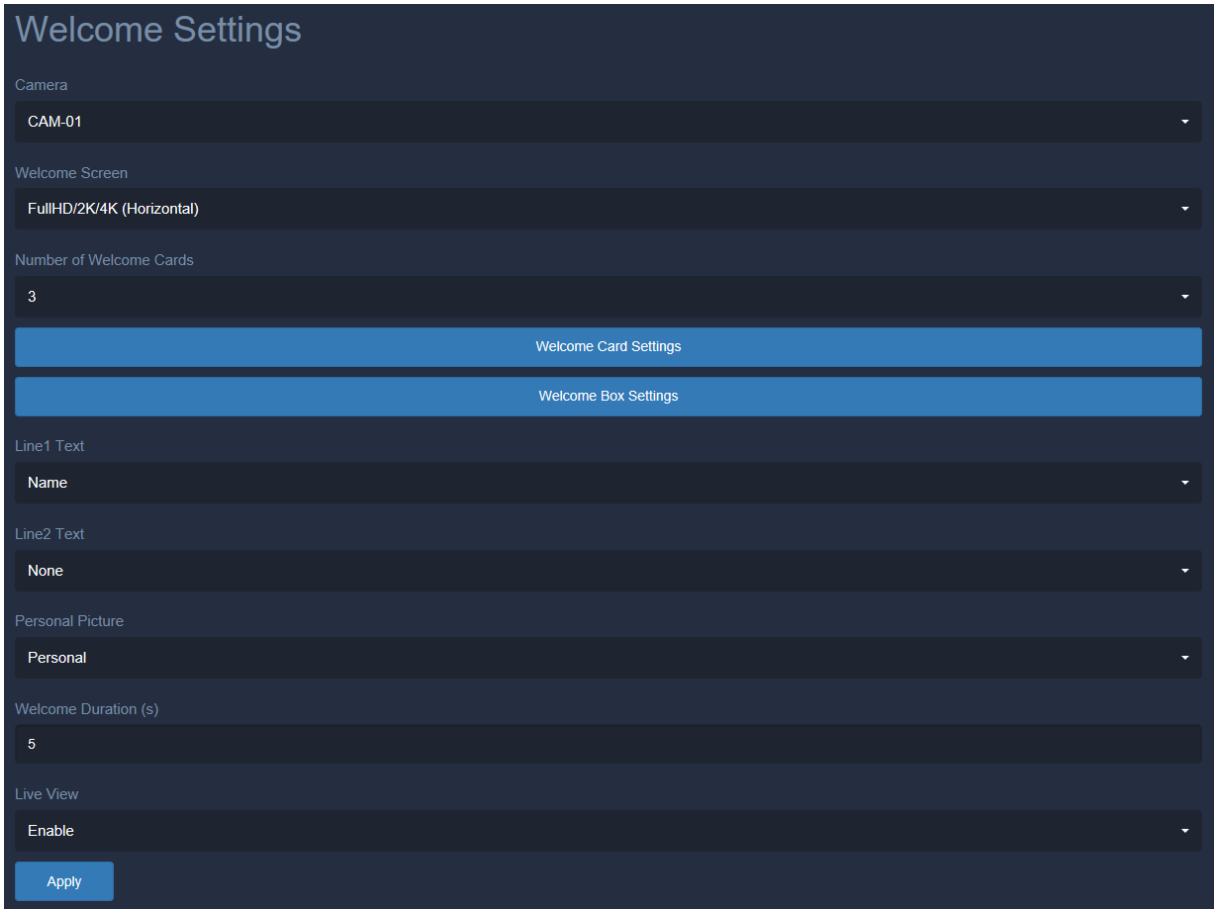
Once the Slave GV-AI Servers are successfully connected to the Master GV-AI Server, all visitor face recognition events occurred on the Slaves will be based on and sent to the face database of the Master.

4.2 Notify Settings

This section covers all the event notification functions of GV-AI Server, including **Welcome**, **Event Trigger**, **IO Box, Telegram Notify**, and **Send E-Mail**.

4.2.1 Welcome Settings

The **Welcome Settings** page can configure to display a welcome screen and/or advertisement, either locally or on a remote monitor, for each of the camera channels upon visitor face detection. To access the Welcome Settings, click **Dashboard** (No. 5, *2.2 Main Screen*) > **Notify Settings** > **Welcome**.



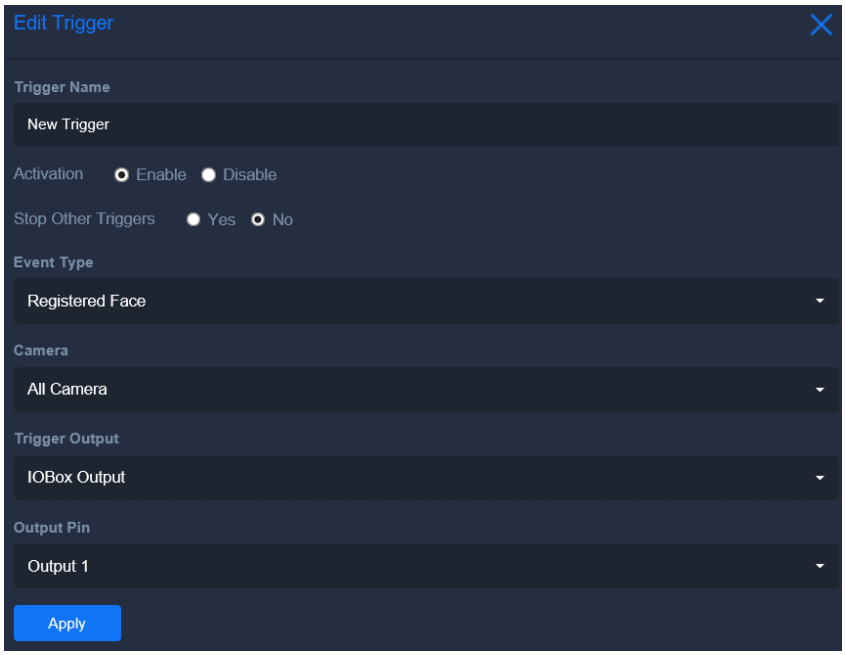
- **Camera:** Select the camera channel to configure the welcome screen for.
- **Welcome Screen:** Only for local display, select the desired image resolution for the welcome screen and/or configure to display an advertisement upon visitor detection.
  - ⊙ When displaying AD, users can replace the default advertisement video with their own *mp4* videos at *C:\\GV-AIServer\Apache\htdocs\welcomeboard\style4\ad* and *C:\\GV-AIServer\Apache\htdocs\welcomeboard\style5\ad*, respectively for **1920 x 1080 + AD (Horizontal)** and **1920 x 1080 + AD (Vertical)**.

- **Number of Welcome Cards:** Sets the maximum number of welcome messages, from 1 – 3, to be shown at a time.
- **Welcome Card Settings:** Select the type of message to display upon visitor detection.
- **Welcome Box Settings:** Connects to and display the welcome screen remotely on GV-Welcome app, see *GV-Welcome App Installation Guide*.
- **Line 1** / **2 Text:** Select the info of the Face Profile recognized or the age and/or gender of the visitor detected to be displayed on the welcome screen upon visitor detection/recognition.
- **Personal Picture:** Select **Enroll** to display the enrolled face photo of the Face Profile recognized; select **Live** to display the live snapshot of the visitor detected; or select **Personal** to display the Face Image of the Face Profile recognized, see *Face Image*, *3.2.1.2 Creating Face Profiles*.
- **Welcome Duration (s):** Sets the number of seconds the welcome card and message are displayed for upon visitor detection/recognition.
- **Live View:** Only for local display, enable to display the live view at the bottom-right corner of the welcome screen.

4.2.2 Event Trigger

The **Trigger Settings** page allows users to set up various trigger actions upon certain VA and/or input trigger events. To access the Trigger Settings page, click **Dashboard** (No. 5, *2.2 Main Screen*) > **Notify Settings** > **Event Trigger**.

1. To set up trigger actions, click **New Trigger**. This dialog box appears.



2. Type a desired name for the trigger action under **Trigger Name** and enable **Activation**.
3. Optionally enable **Stop Other Triggers** to have priority over and stop all other trigger events upon triggering.
4. Select the type of events the trigger action is triggered for under **Event Type**.
   - **Face Recognition:** Triggers action upon face recognition. See *3.2 Face Recognition*.
   - **Unknown Face:** Triggers action when unknown faces are detected. See *3.1 Face Attributes* and / or *3.2 Face Recognition*.
   - **Registered Face:** Triggers action when registered faces from the face database are recognized. See *3.2.1 Enrolling Face Data*.
   - **Face in Group:** Triggers action when Face Profiles within a specific Face Group are recognized. See *3.2.1.2 Creating Face Profiles*.
   - **Gender / Age in Range:** Triggers action when the specified gender and age range is detected. See *3.1 Face Attributes* and/or *3.2 Face Recognition*.
   - **Input Trigger from IO:** Triggers action upon a specified input trigger. See *4.2.3 IO Box*.
   - **Schedule Job:** Select the desired frequency and time for GV-AI Server to automatically send Human Counter event log .csv file via e-mail.
   - **Short Inventory:** Triggers action upon Short Inventory alerts of the regions specified. See *3.4 Short Inventory Alert*.
   - **Queue:** Triggers action when the number of persons waiting in line or the cashier checkout time exceeds the specified limit. See *3.5 Queue Management*.
   - **Suspect & Loitering:** Triggers action when a suspicious person and/or loitering activity is detected. See *3.6 Suspect & Loitering Detection*.
   - **Human Counter:** Select the desired Host, Camera, Counting Value, and Threshold for actions to be triggered when the set counting value exceeds or falls below the threshold.
   - **System Event:** Triggers action when the selected system event occurs.
5. Select a desired type of trigger action under **Trigger Output**, from *IO-Box Output*, *GV-Face App, Telegram Notify*, *Trigger Camera Output*, or *Send E-mail*.
6. Click **Apply**.

Note:

1. For triggers to function, make sure the corresponding trigger output(s) are properly set, see *4.2.3 IO Box*, *4.2.4 Telegram Notify*, or *4.2.5 Send E-Mail*.

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2. To enable the trigger output of *Send E-mail*, make sure to complete SMTP settings first. See *4.2.5 Send E-Mail.*
3. For details on sending push notifications to Android / iOS mobile devices upon trigger events via the GV-Face app, see Chapter 7 of *GV-Face App Installation Guide* (requires GV-AI Server Patch V1.1.4.3).

4.2.3 IO Box

The **IO Box Settings** page can configure for and connect the GV-AI Server to a GV-IO Box via network.



- **Type:** Select the type of GV-IO Box the GV-AI Server is connecting to.
- **Activation:** Enables / disable the GV-IO Box to be connected.
- **Name:** Type a desired name for the GV-IO Box to be connected.
- **IP Address:** Type the IP address of the GV-IO Box.
- **Command Port:** Modify the default port value of *10000* if needed.
- **Username** & **Password:** Type the login Username and Password of the GV-IO Box to be connected.

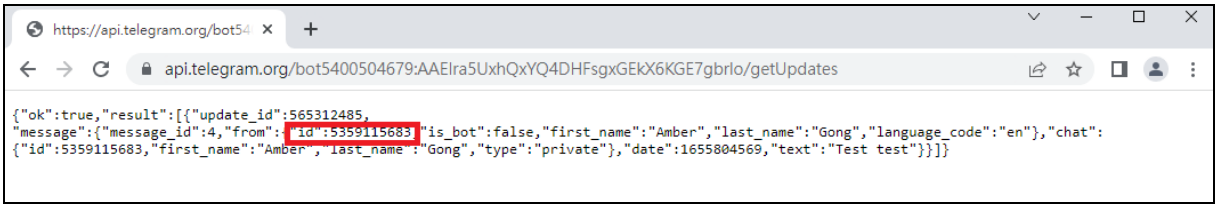
Click **Apply**.

4.2.4 Telegram Notify

GV-AI Server can be configured to connect to up to 16 Telegram accounts for sending Telegram notifications upon VA and/or input trigger events. Before enabling Telegram Notify on GV-AI Server, configurations on Telegram are required.

Configurations on Telegram

1. Search for @BotFather on Telegram and start the chat by clicking **Start**.
2. In the chat, type "/newbot" to build a new bot, and type the desired name for the bot.
3. Create the username for the bot. Note that the username must end with "_bot." For example, "AI-Server_bot."
4. The bot should generate the bot token.
5. To acquire the chat ID, type random content in the chat room with the new bot to create the chat history.
6. On the browser, type: **https://api.telegram.org/botTOKEN/getUpdates.** The token is as acquired in *step 4.*
7. Access the chat ID on the webpage as follows:



Configurations on GV-AI Server

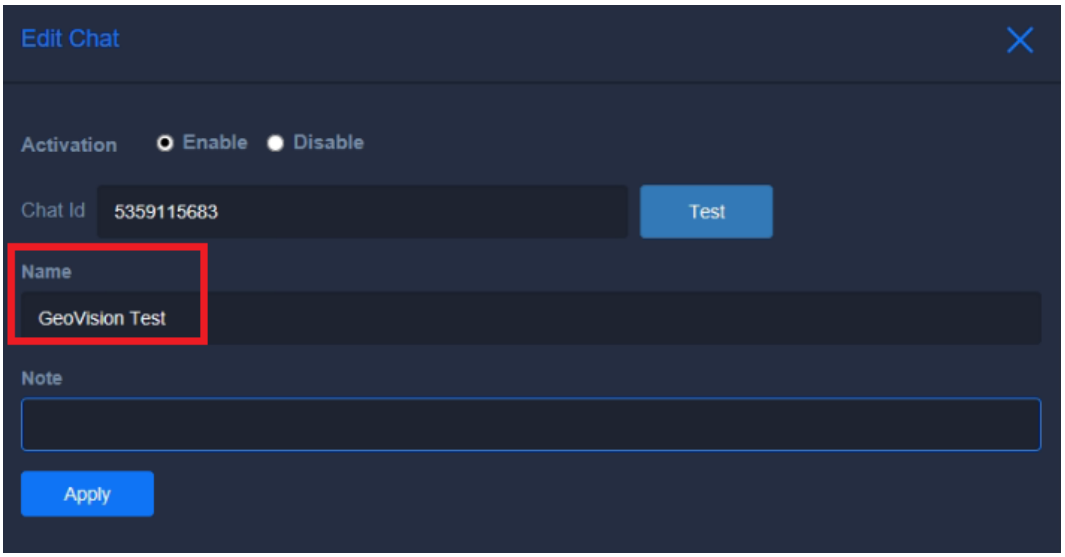
8. To access the Telegram Notify Settings page, click **Dashboard** (No. 5, *2.2 Main Screen*) > **Notify Settings** > **Telegram Notify**.

9. Fill in the **Bot Token** field with the token acquired on Telegram (see *step 4)* and click **Save**.

10. Click **Edit** on the Telegram ID you wish to activate the notify function.

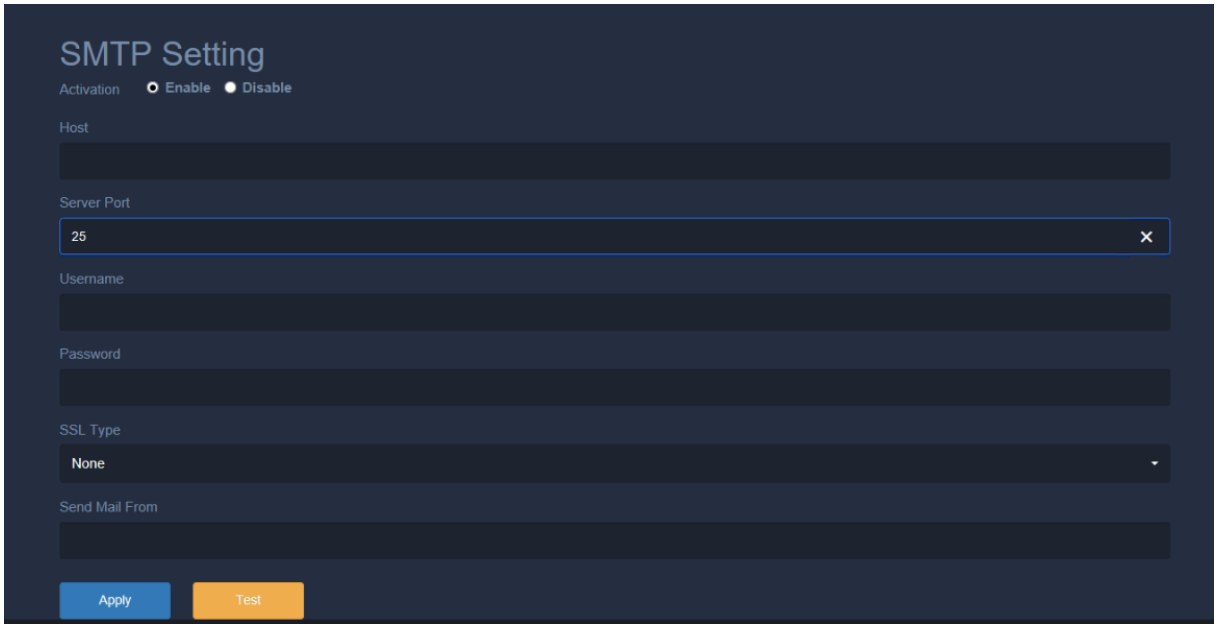
11. After selecting *Enable* for **Activation,** type the chat ID acquired on the webpage (see *step 7*) and click **Apply.**

12. Once the connection is properly established, the Telegram account name will appear in the **Name** field.



4.2.5 Send E-Mail

To send e-mail notifications upon VA and/or input trigger events, it is required to complete the SMTP settings first. To access the **SMTP Setting** page, click **Dashboard** (No. 5, *2.2 Main Screen*) > **Notify Settings** > **SMTP Setting**.



1. **Enable** the SMTP function.
2. Fill in the required information, including **Host** (SMTP server)**, Server Port, Username** (mail server's username)**, Password, SSL Type**, and **Send Mail From** (sender mail address).
3. Click **Test** to see if the e-mail notifications can be successfully sent.
4. Click **Apply.**

4.3 Event Query

The **Event Query** pages allow users to search for all VA and/or system log events during a specified time, as well as play back Face Attributes / Face Recognition / Short Inventory / Suspect & Loitering events.

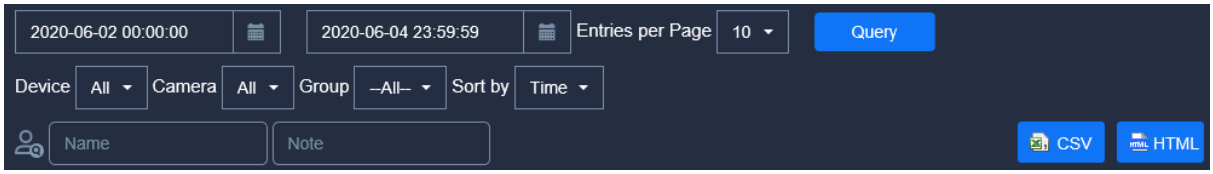
Note: For GV-AI Server to play back VA events, make sure of the following:

- It must be connected to GV-VMS V18.1 or later for recording, see *Chapter 5 GV-VMS Integration*.
- When multiple GV-AI Servers are interconnected, users are able to search for all of their VA events but can only play back events from their local systems.

There are 6 types of event logs that can be accessed by clicking **Dashboard** (No. 5, *2.2 Main Screen*) > **Event Query**:

- **Detail Log:** Searches for and allows users to play back Face Attributes and Face Recognition events. Click the eye icon under **Action** to include or exclude the specific face detected in or from the counting calculates.
- **Advanced Log:** Searches for Face Attributes and Face Recognition events and allows users to enroll unknown faces, see *3.2.1.4 Enrolling via Query*.
- **Short Inventory Alert Log:** Searches for and allows users to play back Short Inventory alert events.
- **Suspect / Loitering Alert Log:** Searches for and allows users to play back suspicious persons and/or loitering detection events.
- **Queue Log:** Searches for queue alert events, when the number of persons waiting in line and/or the cashier checkout time exceeded the limits set.
- **System Log:** Searches for the system logs of the GV-AI Server.

When accessing Event Query, apply the desired search criteria and click **Query**.



Exporting Logs

On the Event Log pages, users can also export the event logs displayed as an *.csv* or *.html* file by clicking 

or 

. When exporting, all ongoing and finished export tasks are displayed on the **Exported Files** page, which can be accessed by clicking **Dashboard** (No. 5, *2.2 Main Screen*) > **Event Query** > **Exported Files**.

Chapter 5 GV-VMS Integration

This chapter will guide users through all of the configurations related to the integration of GV-VMS, as listed below:

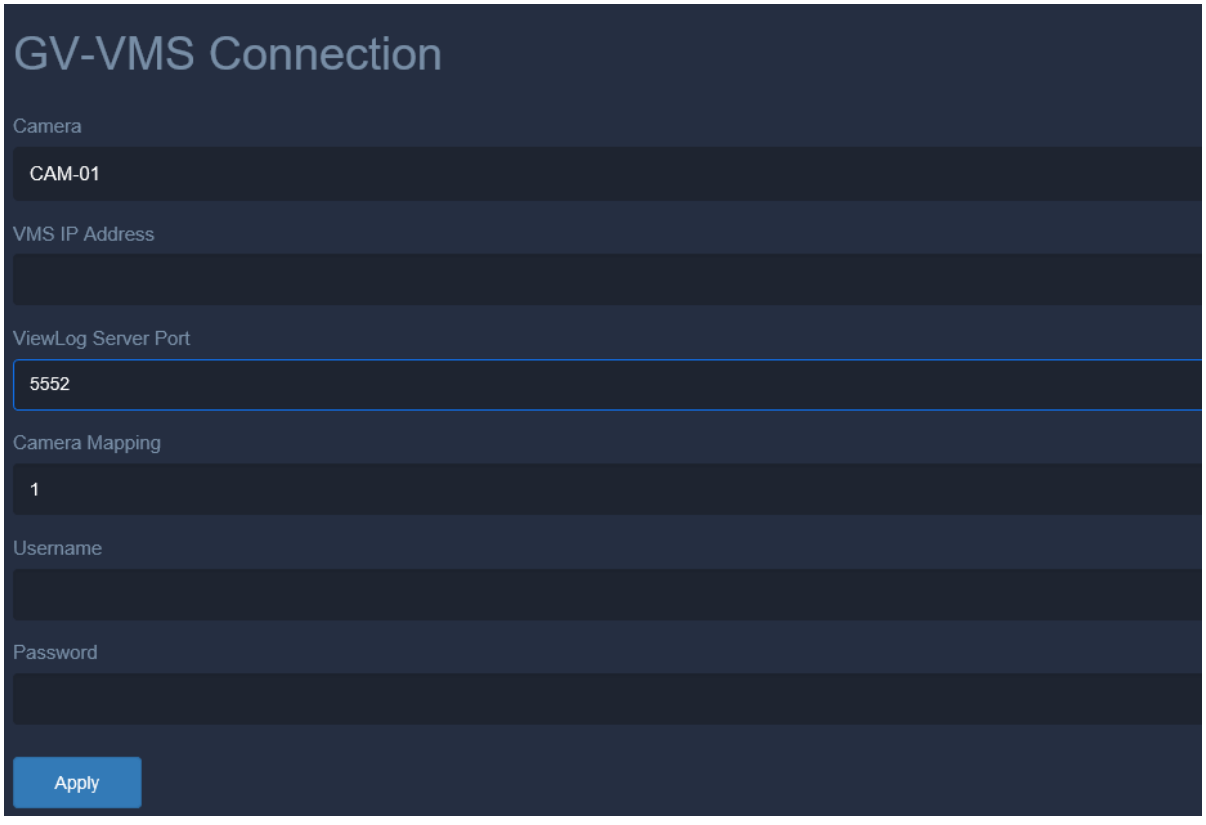
- **Connect GV-AI Server to GV-VMS:** See *5.1 Connecting to GV-VMS*.
- **Record Camera Streams of GV-AI Server by GV-VMS:** See *5.2 Video Recording by GV-VMS*.
- **Playback VA Events:** See *5.3 Playing back VA Events on GV-AI Server*.

Note: The GV-VMS to be connected must be of V18.1 or later, installed on a separate PC, within the same LAN and have the same time settings as GV-AI Server.

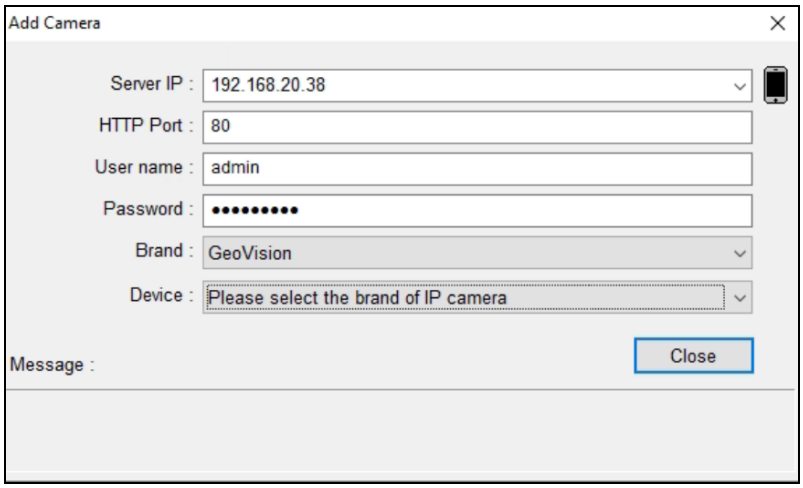
5.1 Connecting to GV-VMS

To connect GV-AI Server to GV-VMS, follow the steps below:

1. On the GV-AI Server, click **Dashboard** (No. 5, *2.2 Main Screen*) > **General Settings** and select **GV-VMS Connection**. This page appears.



2. Under **Camera**, select the desired camera channel of the GV-AI Server to be connected to GV-VMS.
3. Under **VMS IP Address**, type the IP address of the GV-VMS.
4. Under **ViewLog Server Port**, optionally modify the default port value of *5552*, to match the Control Center Server Log port of GV-VMS.
5. Under **Camera Mapping**, type the camera channel of GV-VMS to which the camera will be connecting to.
6. Type the login **Username** and **Password** of the GV-VMS to be connected to.
7. Click **Apply**.
8. Repeat Step 2 – 7 to connect multiple camera channels of the GV-AI Server to GV-VMS.
9. In **IP Device Setup** of the GV-VMS (**Home** > **Toolbar** > **Configure** > **Camera Install**), click **Add Camera**. This dialog box appears.



10. Type the IP Address, Port, Username and Password of the IP camera corresponding to the channel of GV-AI Server selected in Step 2 and select its brand and model from the respective **Brand** and **Device** dropdown lists.
11. Repeat Step 10 to add multiple cameras of the GV-AI Server to GV-VMS.
12. Once the desired IP camera(s) of the GV-AI Server are added to GV-VMS, assign them to the same camera channel(s) as defined by Step 5 and close **IP Device Setup**.

Once successfully configured, the camera channel(s) of the GV-AI Server can be streamed to and recorded by the GV-VMS. For details, see *5.2 Video Recording by GV-VMS*.

5.2 Video Recording by GV-VMS

After the IP cameras of GV-AI Server are added to GV-VMS, users can start recording their video streams on the GV-VMS by starting monitoring.

To start monitoring, click **Home** > **Toolbar** > **Monitor** and select the camera channels the IP cameras of the GV-AI Server are assigned to in Step 12, *5.1 Connecting to GV-VMS*.

Note: After starting monitoring, the camera channels will be recorded upon motion detection by default. To change the recording settings of GV-VMS, see *Recording Settings*, Chapter 1, *GV-VMS User's Manual*.

5.3 Playing back VA Events on GV-AI Server

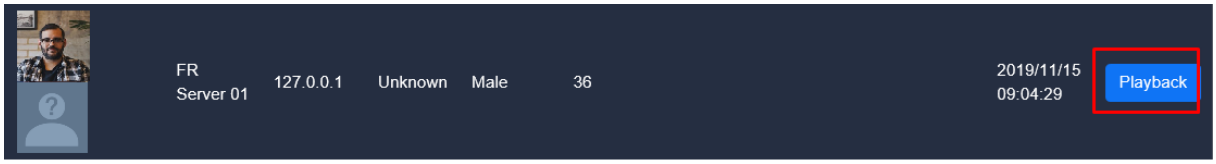
Prior to playing back VA events on GV-AI Server, make sure the Remote ViewLog Server of the GV-VMS used for recording is enabled.

Enable Remote ViewLog Server

On the GV-VMS, click **Home** > **Toolbar** > **Network** > **Control Center Server** and select **Remote ViewLog Service** to enable.

VA Event Playback

On the GV-AI Server, click **Dashboard** (No. 5, *2.2 Main Screen*) > **Event Query** > **Detail** / **Short Inventory Alert** / **Suspect & Loitering Alert Log**, set the desired search criteria to search for the desired VA events and click **Playback** next to an event to play back its recording.



Note: For GV-AI Server to play back VA events, make sure of the following:

- The recording GV-VMS must have the same time settings as GV-AI Server.
- When multiple GV-AI Servers are interconnected, users are able to search for all of their VA events but can only play back events from their local systems.

For details on searching for the event logs of GV-AI Server, see *4.3 Event Query*.

Chapter 6 Useful Utilities

6.1 GV-DDNS V2 Client

GV-AI Server comes with **GV-DDNS V2 Client**, which provides GeoVision's Dynamic DNS Service for users to register for a domain name that always point to GV-AI Server when it uses a dynamic IP address.

To access GV-DDNS V2 Client, go to the DDNS folder within the GV-AI Server directory (*C:\GV-AIServer\DDNS*) and double-click **DNSClientV2.exe**. This dialog box appears.



For details on registering for and configuring GV-DDNS, see *GV-DDNS V2 Installation Guide*.