



AI Powered Crowd Management

Datasheet v4.3

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INTRODUCTION

Crowd Detection – The Crowd Detection feature estimates the number of individuals in a virtually drawn region and triggers alarms when the crowd formation exceeds a specific, predefined threshold. Powered by Deep Learning technology, this feature can automatically detect and flag unusual congregation of people with high accuracy and low false alarms. The Crowd Detection feature is primarily used in public surveillance applications where the occupancy levels require instant, real-time monitoring. It helps obtain the required data for assessing revenue opportunities and monitors peak occupancy levels, ultimately helping organizations / institutions in identifying bottlenecks and reducing overcrowding. Common applications are in public areas like rail stations, airports, entertainment facilities, convention halls, and shopping malls where monitoring the occupancy levels is vital for maintaining public safety and optimizing staff resources.

Deep Learning: A subset of Artificial Intelligence, Deep Learning technology exposes machines to high volumes of tagged data. The machine is then tasked to ‘learn’, ‘analyse’, and ‘detect’ the same information in new datasets which ensures more proficient detection and identification of objects. Since Deep Learning technology is also powered by robust hardware infrastructure, the analytic output is better and faster.

Use of Deep Learning in Crowd Counting: The use of Deep Learning for Crowd Detection brings it closer to human perception. Advanced Deep Learning methods can assess large datasets of moving objects and the layered filters can take the minutest details into account. This increases the degree of accuracy in generating alerts against the occupancy levels. Thanks to the technology’s improved processing performance and superior object classification capabilities, it can efficiently detect and identify multiple object types with low visual biasing and false alarms.

CROWD MANAGEMENT FEATURES

AllGoVision has a robust algorithm for detecting / counting crowd and analysing the flow/movement. These are applied in Crowd Management application. The features are:

- Provides approximate **crowd count** in a specific area at any instant.
- Provides **overcrowding alert** against crowd count crossing a defined threshold value.
- It works in any kind of crowd including busy scenario and continuous dense crowd.
- Analyses **crowd flow** (highlights crowd sections with different colors for different directions).
- Detects crowd movement in undesired direction and provides crowd **counter flow alert**.
- Sub-applications like **Occupancy Management** and calculation of **Dwell Time** are also possible.

The following section provides description on the feature sets available under AllGoVision's crowd management solution:

Crowd Counting:



The user needs to define the region of interest by drawing a polygon marked by simple mouse clicks on the video screen in the software GUI. The crowd counting algorithm does image processing to analyse the video feed frame by frame for detecting the presence of people and crowd. It provides live count of the number of people occupying the defined area. As people move in and out of the specified zone, the **live crowd count** data also changes accordingly. The live crowd count figure is shown on the alarm file and overlay video.

Crowding Detection:



The user can specify a **threshold** which when crossed by the live count data, initiates an alarm for **Crowding Detection (overcrowding alert)**. It can also detect sudden crowd surge. The phenomenon of crowding can be alternatively found out by running analytics based on percentage of area occupied. This is called congestion. When the moving people cover more than a specified percentage of area in the region of interest, event of congestion is detected.

Crowd Flow Detection:



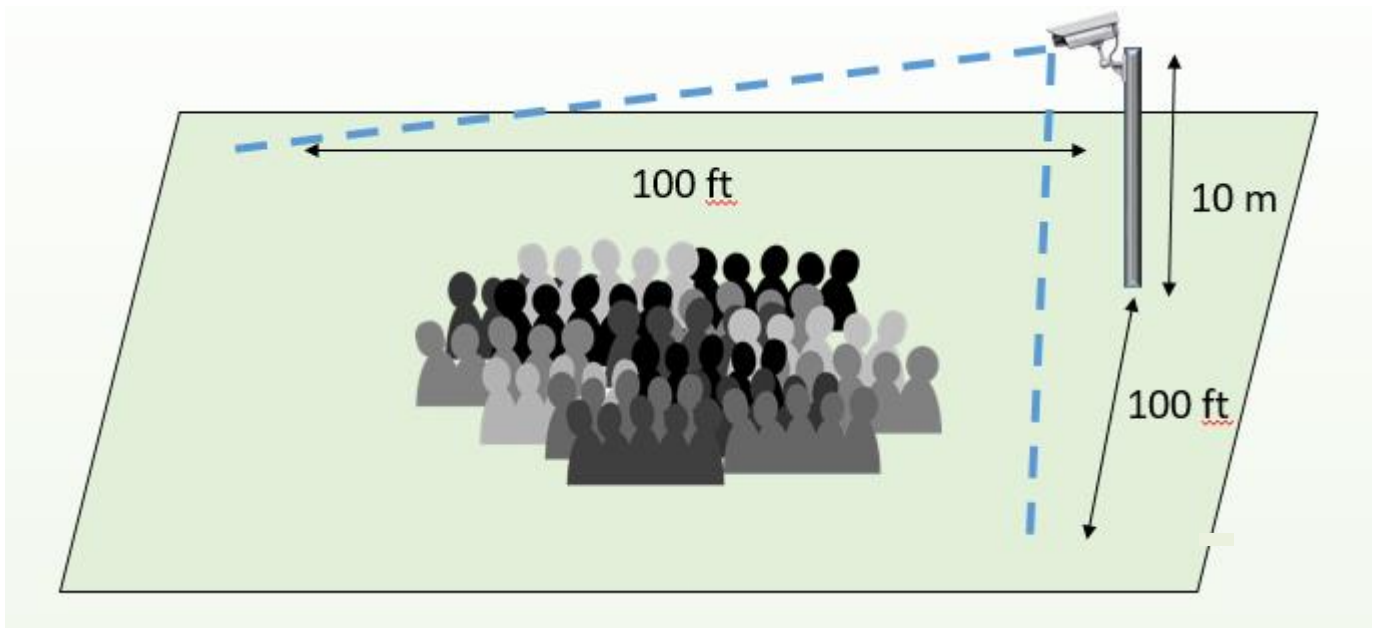
The application can also indicate the movement of crowd sections in different directions with the help of different **color indication**. This is used for movement / flow analysis by crowd management personnel. Crowd movement in an undesired direction based on user-specified input, would initiate an alarm for **crowd counter flow**. Counter flow detection can alert security personnel and help in preventing mishaps.

SYSTEM REQUIREMENTS

AllGoVision analytics has the following system hardware and software requirements.

CATEGORY	REQUIREMENT
Operating System	Ubuntu server 18.4, Windows Server 2016, Windows Server 2019
Network	Ethernet, 1GB or higher recommended
Hardware Requirements	x86_64 Platform, AVX 2 Support 6 th Gen and above + Nvidia GPU
Frame Rate	Frame Rate > 10 fps
Database	Maria DB (X64) 10.3.13.0
Stand Alone version camera support	Camera Models from Axis, Pelco, Bosch, Hikvision, Honeywell, IQinvision, Sony, Dahua, Panasonic, Brickcom, IndigoVision, Cisco, Samsung, Acti, Digital Watchdog, and others (ONVIF Cameras).
VMS Support	Honeywell DVM, Honeywell Maxpro, Milestone, Genetec, IndigoVision, ExacqVision, Cognyte (Verint), Bosch, Network Optix Note: With VMS all cameras supported by VMS will be supported
Reporting & Analysis Software	AllGoVision Alarm Center

INSTALLATION



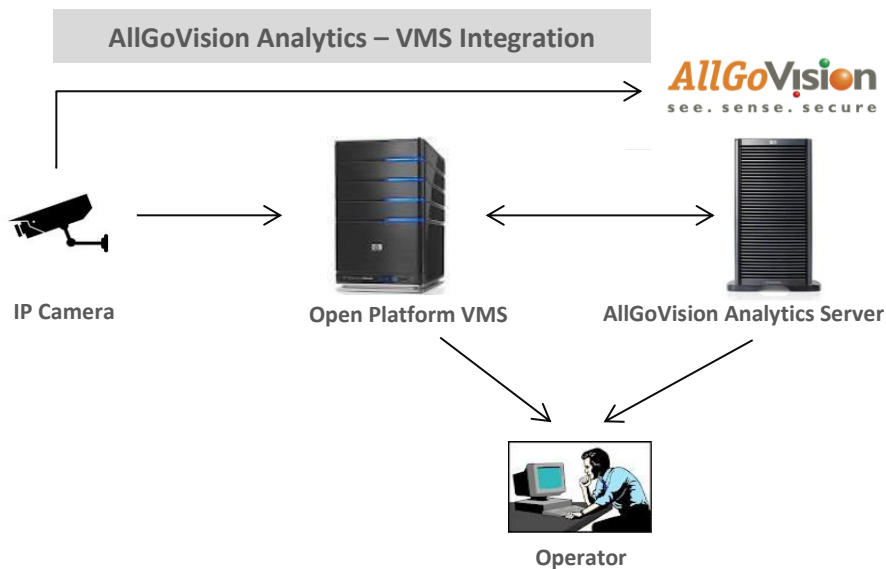
TECHNICAL HIGHLIGHTS

- ✓ Crowd counting is done by actual count of # of people using AI based people detection
- ✓ Provides live crowd count in a specific area at any instant
- ✓ Provides overcrowding alert against crowd count crossing a defined threshold value
- ✓ High accuracy, low false alarm rate
- ✓ Works in any kind of crowd including in busy areas and in continuous dense crowd
- ✓ Report for crowd counting across cameras and over a given time can be generated

AllGoVision Crowd Management application is available in 2 flavors:

With VMS:

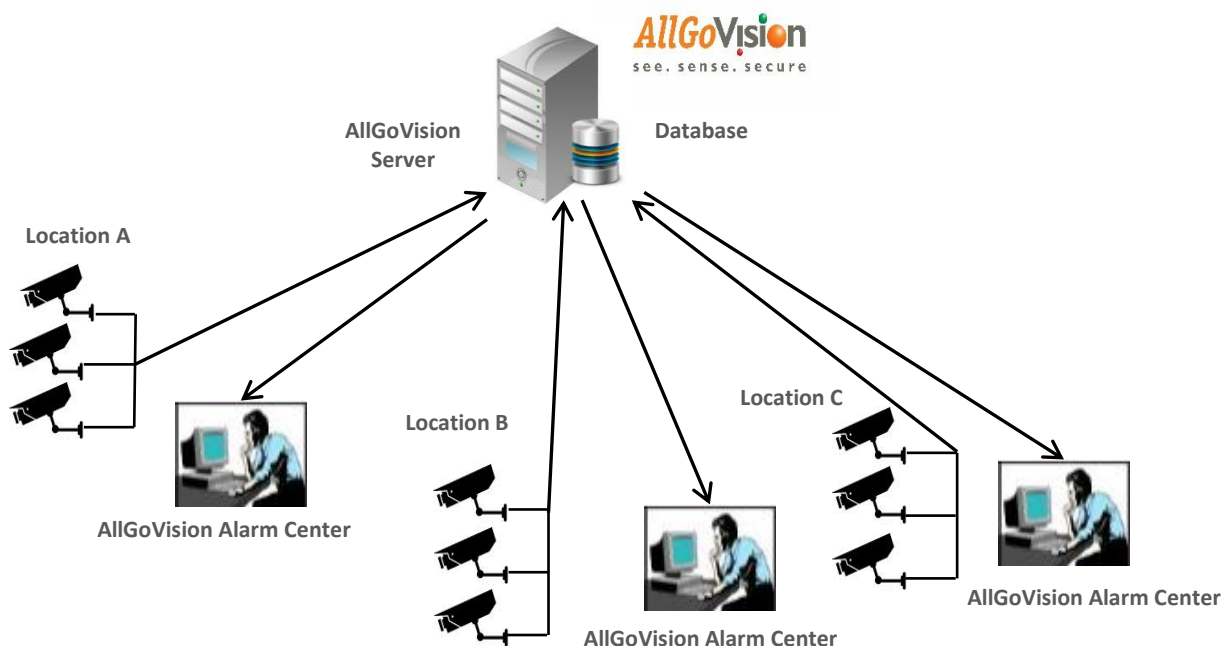
AllGoVision application is based on Open Platform Standards.
It is integrated with many open platform VMS.



Without VMS:

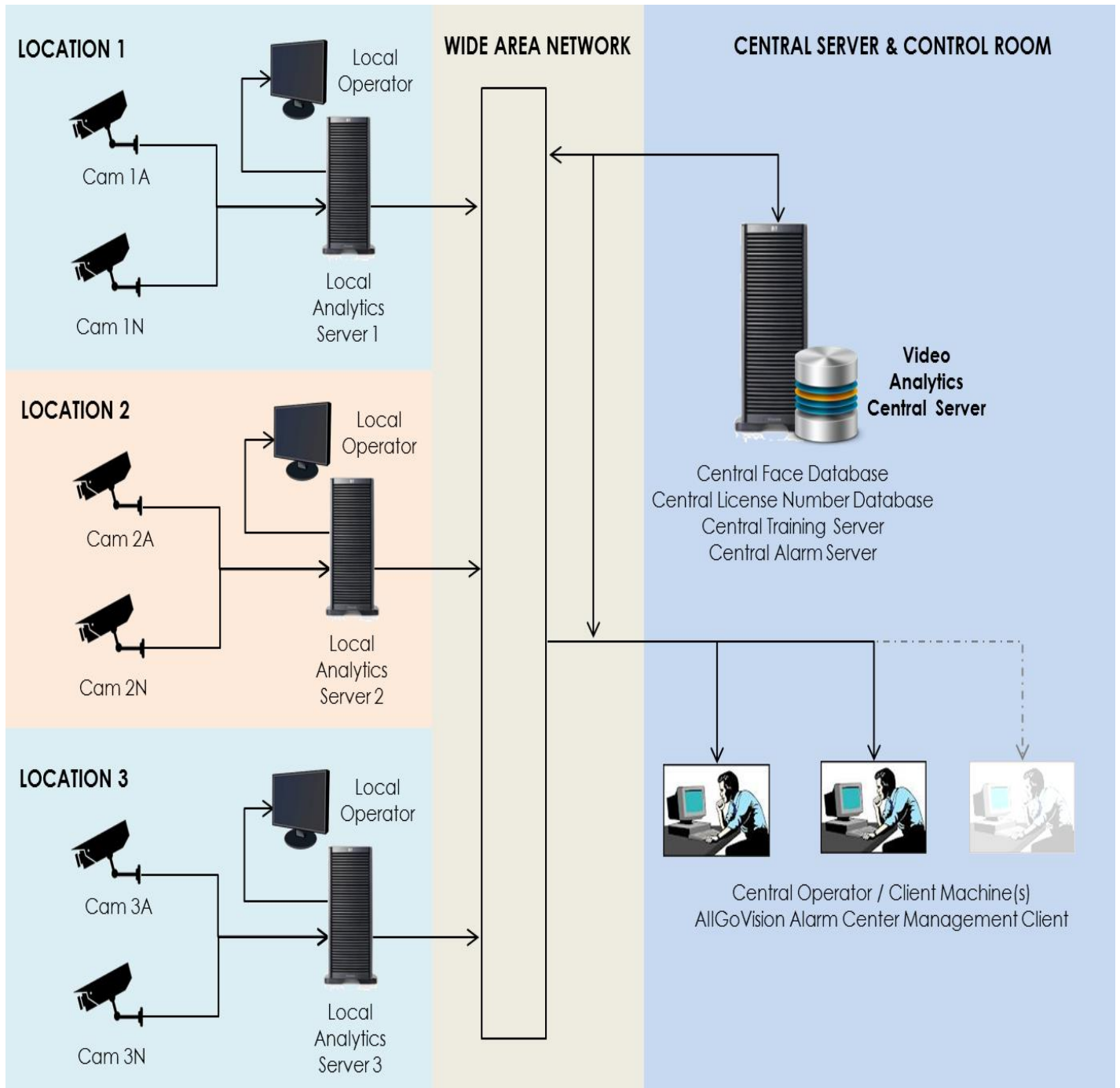
- It is a standalone application.
- Directly takes the video feed from camera.
- The alarms and reports are seen in AllGoVision Alarm Center.

AllGoVision Analytics- Without VMS Integration



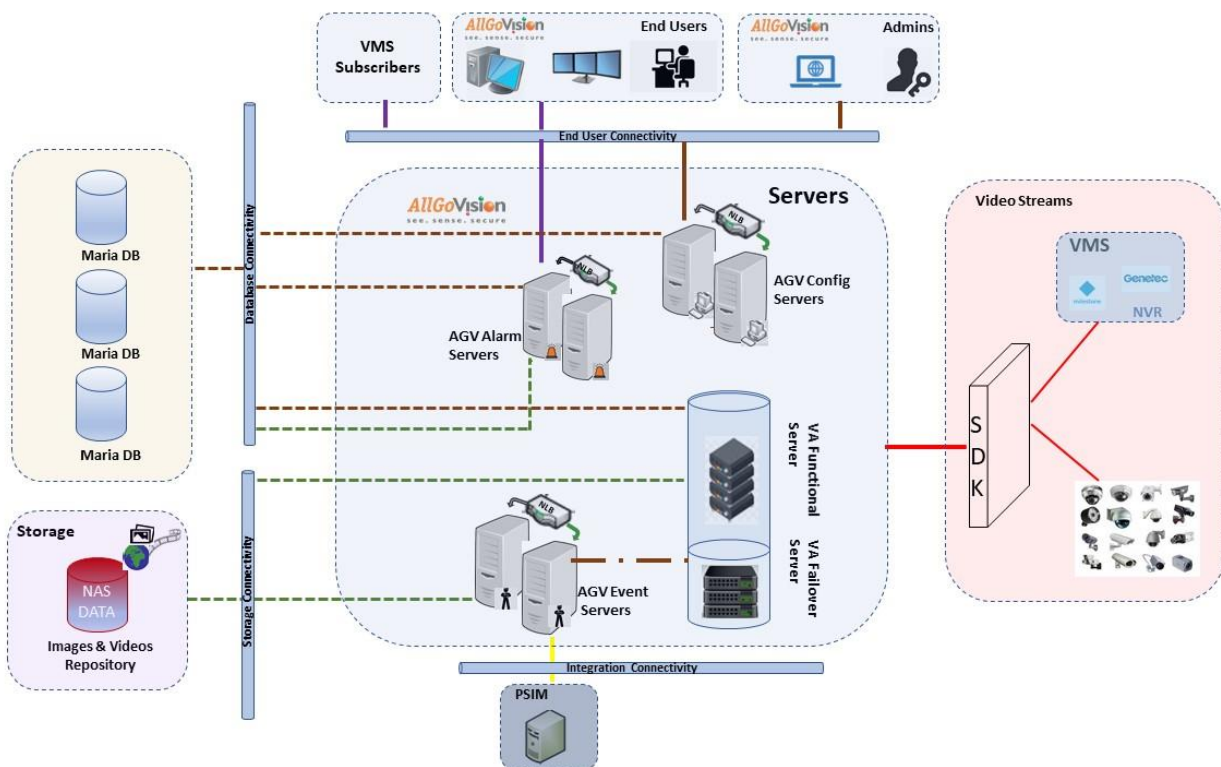
Federated Architecture

- With Federated Architecture, analytics can be done at local servers and viewed by local operators.
- A central server with a central operator can view all the alarms in the system generated by all the local servers.
- Alarms from different clients can be seen at the central Alarm Center and alarms are differentiated through Client IDs.



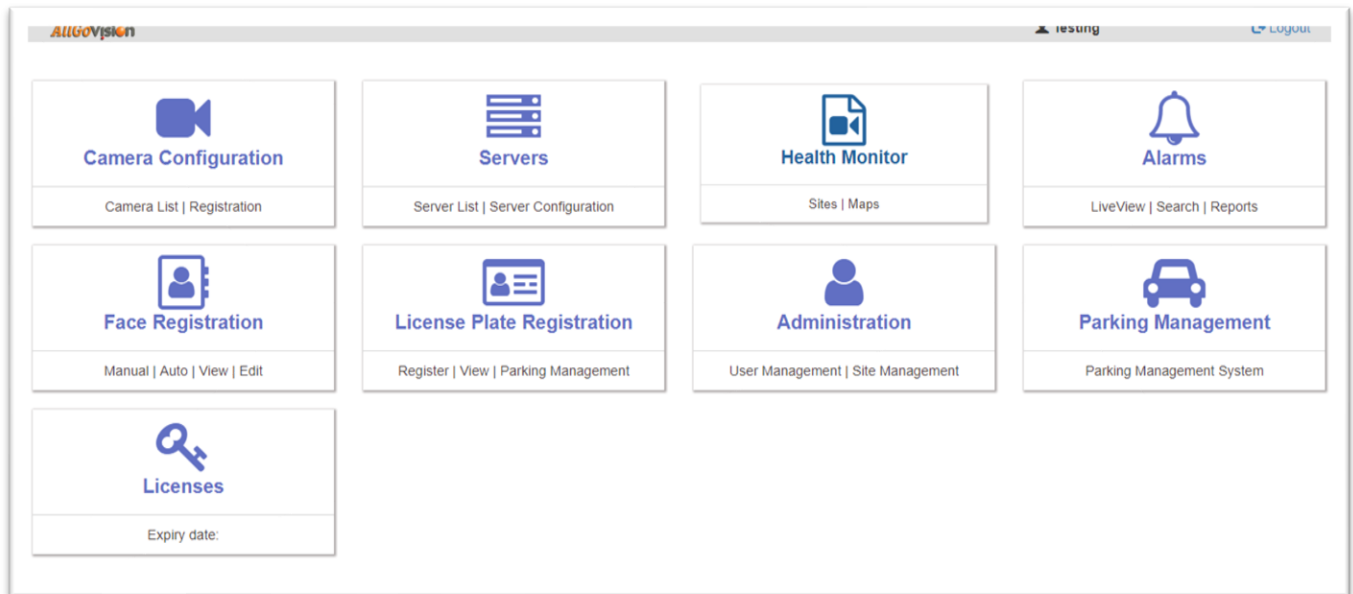
Redundancy / Failover

- Config Server can be setup for active/passive redundancy. NLB is used to manage the Active/Passive redundancy. When the active Config Server is up, all requests will be serviced by it. Only when it is down, requests are serviced by the passive Config Server.
- For video analytics, redundancy is achieved by having redundant server capacity for N:1 or 1:1 redundancy. When one or more VA Servers fail, the analytics pertaining to the cameras running in that server are re-assigned to a pre-designated set of servers.

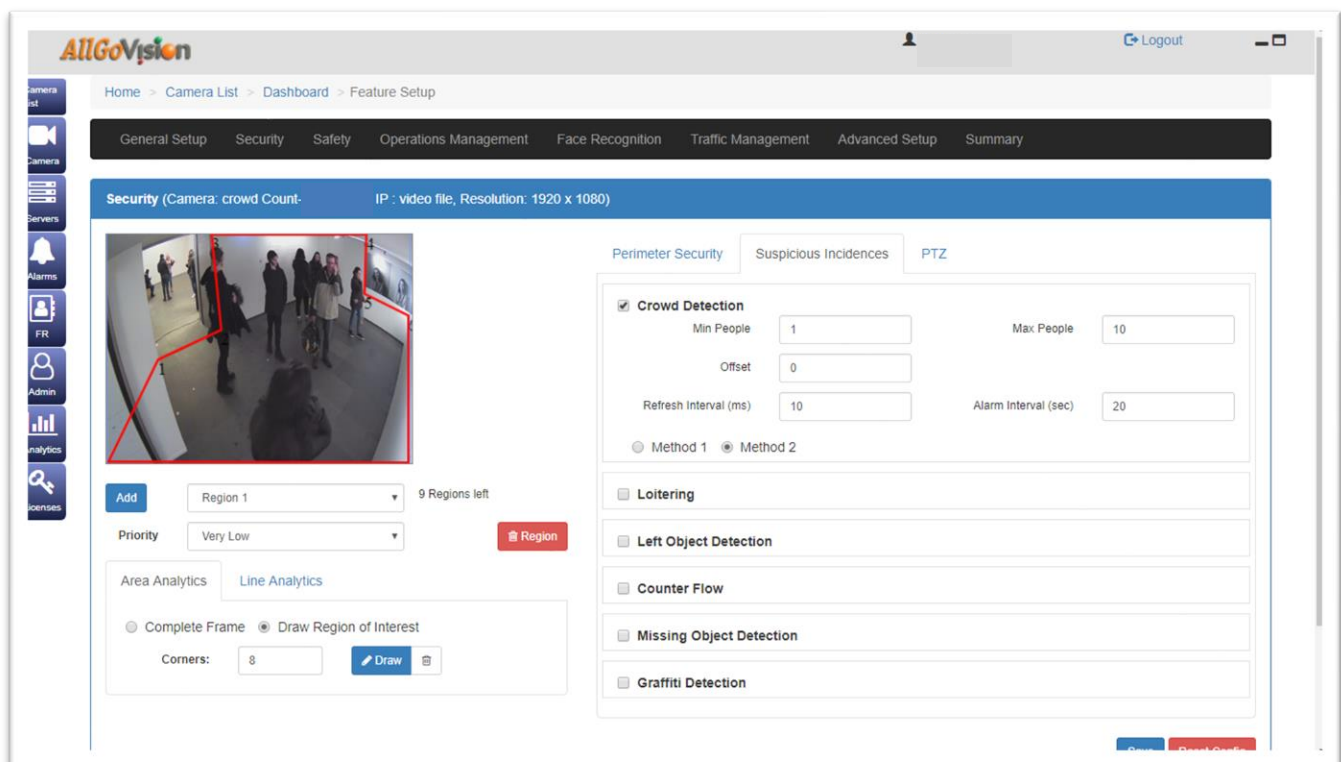


ALLGOVISION GUI

AllGoVision product offers a graphical user interface with the choice of native windows-oriented, tab based, point and pick interface along with the Web UI. The options are provided to add cameras directly or from VMS, provide configuration and view alarms whenever event happens.



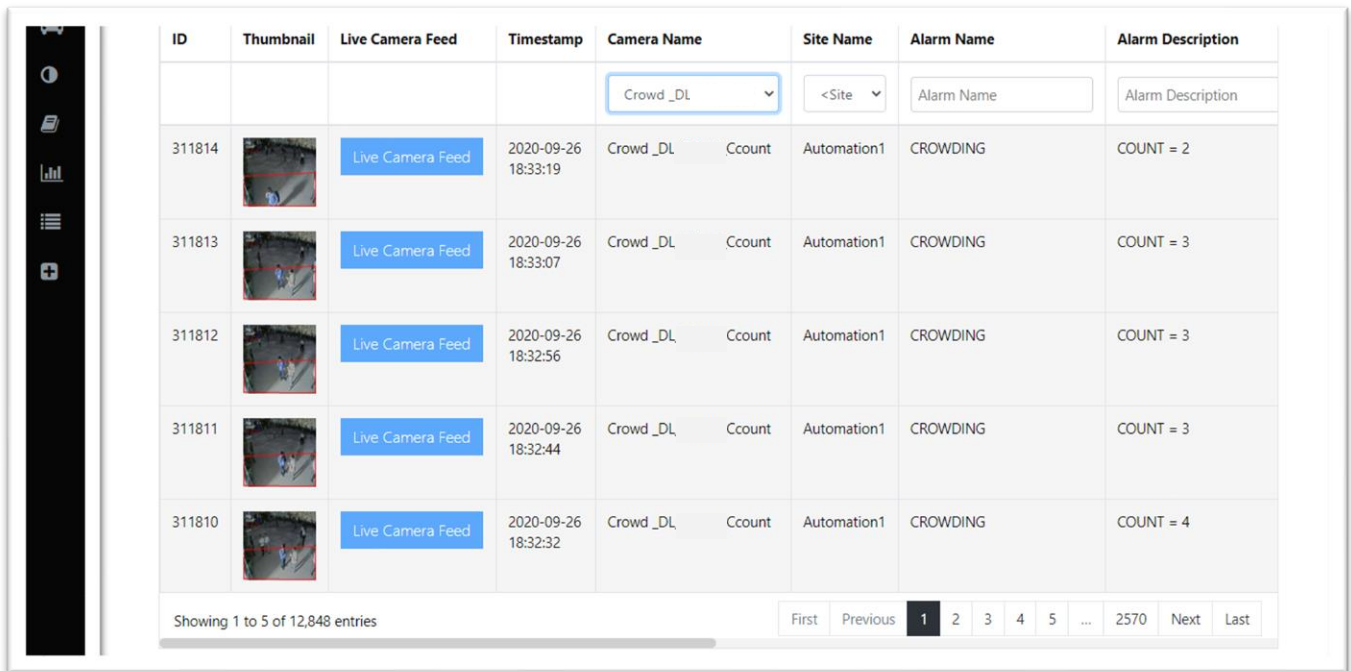
AllGoVision Dashboard








Crowd Detection

ALLGOVISION ALARM CENTER

AllGoVision Alarm Center is a Client to view all the alarms generated by AllGoVision analytics running on different systems across a LAN. It also supports report generation.



ID	Thumbnail	Live Camera Feed	Timestamp	Camera Name	Site Name	Alarm Name	Alarm Description
				Crowd_DL	<Site	Alarm Name	Alarm Description
311814		Live Camera Feed	2020-09-26 18:33:19	Crowd_DL Ccount	Automation1	CROWDING	COUNT = 2
311813		Live Camera Feed	2020-09-26 18:33:07	Crowd_DL Ccount	Automation1	CROWDING	COUNT = 3
311812		Live Camera Feed	2020-09-26 18:32:56	Crowd_DL Ccount	Automation1	CROWDING	COUNT = 3
311811		Live Camera Feed	2020-09-26 18:32:44	Crowd_DL Ccount	Automation1	CROWDING	COUNT = 3
311810		Live Camera Feed	2020-09-26 18:32:32	Crowd_DL Ccount	Automation1	CROWDING	COUNT = 4

Showing 1 to 5 of 12,848 entries

First Previous 1 2 3 4 5 ... 2570 Next Last

Crowd Management Alarm in Alarm Center