



AI Powered Video Analytics

Datasheet v4.3

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INTRODUCTION

Video Analytics : Video Analytics is an advanced technology that processes raw video footage and integrates sophisticated AI powered algorithms to perform security related tasks. While VA is primarily used for enhancing security monitoring, it also provides video content analysis in real-time and assists in sourcing customer insights. It makes the entire process of surveillance more efficient, enabling security personnel to immediately address security issues as they develop. Advanced Video Analytics software may be used for sending real-time alerts against security incidents and generating detailed security reports. Common applications of the technology are in all business, retail, traffic, and industrial segments, where it is used for detecting and preventing intrusion and vandalism attempts, identifying and recognizing the human face in camera view, monitoring vehicle movement patterns, preventing traffic law violations, reading license plates, reducing crowding, and more.

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 Video Analytics: The use of Deep Learning for Video Analytics is closer to human perception. The sophisticated DL algorithms identify for one or more specific behaviour(s) from raw video footages and issue alarms and alerts against the same. Advanced Deep Learning methods can assess large datasets of static and moving objects and the layered filters can take the minutest details into account. This increases the degree of accuracy in generating alerts against security incidents. 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.

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

VIDEO ANALYTICS PACKAGES & FEATURES

AGV-VA | AllGoVision Video Analytics Software

SECURITY		BUSINESS / RETAIL INTELLIGENCE	
AGV-VA-PKG-INTR-B	INTRUSION DETECTION - BASIC	AGV-VA-PKG-CNTG-P	PEOPLE COUNTING
AGV-VA-TRPW	Tripwire*	AGV-VA-PPLC	People Counting*
AGV-VA-TRSP	Trespass*	AGV-VA-RPAN	Reporting & Analysis
AGV-VA-TMPR	Camera Tampering*	AGV-VA-PKG-MGMT-Q	QUEUE MANAGEMENT
AGV-VA-PKG-INTR-A	INTRUSION DETECTION – AUTO PTZ	AGV-VA-QUMT	Queue Management
AGV-VA-PTZC	Continuous Auto PTZ	TRAFFIC & PARKING MGMT.	
AGV-VA-PTZH	PTZ Handoff	AGV-VA-PKG-MGMT-T	INTELLIGENT TRAFFIC MANAGEMENT
AGV-VA-PTZP	PTZ Pre-set Position Analytics	AGV-VA-VHLC	Vehicle Counting*
AGV-VA-PKG-SUSP-O	SUSPICIOUS INCIDENT - OBJECT	AGV-VA-WWDT	Wrong Way Detection*
AGV-VA-LODT	Left Object Detection*	AGV-VA-IPDT	Illegal Parking Detection*
AGV-VA-MODT	Missing Object Detection*	AGV-VA-SPDT	Speeding Detection
AGV-VA-PKG-SUSP-P	SUSPICIOUS INCIDENT – OBJECT	AGV-VA-CNDT	Congestion Detection
AGV-VA-TGDT	Tailgating Detection* (Person/Vehicle)	AGV-VA-RLVD	Red Light Violation Detection
AGV-VA-LTDT	Loitering Detection*	AGV-VA-PKG-MGMT-P	PARKING MANAGEMENT
ADVANCED SAFETY		AGV-VA-PRMT	Parking Management (Availability)
AGV-VA-PKG-ADVS-C	CROWD MANAGEMENT	AGV-VA-PKG-LPDR-A	LICENSE PLATE RECOGNITION
AGV-VA-CRDT	Crowding Detection*	AGV-VA-LPDT	License Plate Detection
AGV-VA-CCNT	Crowd Counting*	AGV-VA-LPRC	License Plate Recognition
AGV-VA-CFDT	Crowd Flow Detection*	FACE DETECTION & RECOGNITION	
AGV-VA-PKG-ADVS-S	ADVANCED SAFETY – SMOKE	AGV-VA-PKG-FACE-D	FACE DETECTION
AGV-VA-VSDT	Video Smoke Detection	AGV-VA-FCDT	Face Detection / Face Capture
AGV-VA-PKG-ADVS-F	ADVANCED SAFETY – FIRE	AGV-VA-PKG-FACE-R	FACE RECOGNITION
AGV-VA-VFDT	Video Fire Detection	AGV-VA-FCRC	Face Recognition / Verification
AGV-VA-PKG-ADVS-P	ADVANCED SAFETY – PERSON	SEARCH & ANALYSIS	
AGV-VA-SFDT	Slip & Fall Detection	AGV-VA-PKG-SRCH-A	SEARCH & ANALYSIS
		AGV-VA-MDAS	Smart Subject Search

For details on any feature, please contact AllGoVision

* : The features are available on the edge.

Note: The Product, Package & Feature Ids are given in Orange coloured codes


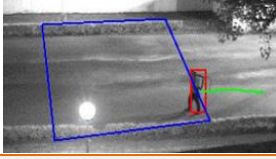



TECHNICAL HIGHLIGHTS

- i. Vehicles, people, and objects are detected, classified, recognized and tracked based on Deep Learning / Artificial Intelligence.
- ii. Multiple analytics features supported, including People Counting, Face Recognition and Automatic Number Plate Recognition
- iii. Advanced features such as Smart Search and Multi camera tracking supported
- iv. Supports multiple VMSes
- v. Server redundancy / failover – both Active – Active (load balancing) as well as Active – Passive N:1 support
- vi. Web based UI. It runs on popular browsers such as Chrome and Edge.
- vii. MySQL (Maria DB) and MS SQL databases supported
- viii. **Advanced user access capabilities:**
 - a. Supports enterprise and site level user access control
 - b. Supports multiple user roles with varying privileges: Global admin, Site level admin, Operator and User
 - c. Supports LDAP based login capability (needed for Windows Active directory support)
- ix. **Cyber security:**
 - a. All user credentials stored in an encrypted fashion
 - b. All incoming API requests authenticated based on credentials of the requestor
 - c. All external communications are over a secure channel such as https
- x. **Configuration:**
 - a. Rule engine allows for combining multiple detection rules
 - b. Allows configuration of regions that need to be excluded by the analytics algorithm for alarm generation
 - c. Allows drawing region of interest where analytics are applied. Drawing the ROI is possible using rectangles and free line-based areas defining multiple regions of interest in the same view for capturing alerts
 - d. Supports running multiple analytics per camera feed simultaneously
 - e. Supports scheduling so that that analysis can be enabled or disabled for a certain period
- xi. **Advanced reporting capabilities:**
 - a. Generate reports in PDF, JPG, Excel, Text formats
 - b. Schedule reports for Email & FTP
 - c. Filtering report output based on roles
 - d. Auto generation of reports through scheduling and ability to send the report to a predefined list of recipients
 - e. Present information in various chart formats such as: Pie Charts, Columns, and Histograms to support trend analysis of alarms over a period of time and over the installed camera base
 - f. Ability to create custom reports

xii. Alarm management

- i. Alerts are displayed on screen as soon as they occur
- ii. Audio alarms when a real time alert occurs
- iii. Support for playback of alert videos
- iv. Support unlimited number of alarm clients
- v. Support for multiple languages: English, Arabic, Spanish
- vi. Ability to set filters such that the set of alarms that can be sent to a user or a group of users is configurable
- vii. System Administrator to define custom fields to be maintained per each event type
- viii. Notification templates per each alert type allowing the System Administrator to select the data to be passed in such notification messages
- ix. Allows user to personalize user layouts determining size, color, and position of windows, tabs
- x. Ability to set different colour for icons representing different alert types
- xi. Able to send alert information to other systems through REST APIs

BRIEF DESCRIPTION OF FEATURES

<p>#01 AGV-VA-TRPW</p> 	<p>Tripwire</p> <p>Detection of a person or vehicle crossing (or touching) a virtual line drawn in the camera field of view. The line crossing event can be detected for both directions.</p> <p>Example: Intruder detection on fenced areas, alert monitoring at the entrance, detection of illegal crossing of railway lines or getting closer to a restricted zone.</p>
<p>#02 AGV-VA-TRSP</p> 	<p>Trespass</p> <p>Detection of a person or vehicle entering or exiting virtual area drawn by the user.</p> <p>Example: Intruder detection in restricted areas. Illegal entry into secured zones in Banks, Stores, Plants. Entry of person or vehicle into restricted area or exit from that.</p>
<p>#03 AGV-VA-TMPR</p> 	<p>Camera Tampering</p> <p>Detection of camera tampering efforts by camera focus change or view obstruction or video cable cut.</p> <p>Example: Sabotage attempts by vandals (initiated with camera tampering) are detected and alerted and security personnel can take necessary actions.</p>
<p>#04 AGV-VA-LTDT</p> 	<p>Loitering Detection</p> <p>Detection of a person's or vehicle's persistence beyond a specified time (set by the user) in a monitored virtual area in the camera field of view.</p> <p>Example: People loitering in malls even after closing hours; people or vehicle having longer dwell time in restricted area; people persistence near critical assets.</p>
<p>#05 AGV-VA-TGDT</p> 	<p>Tailgating Detection</p> <p>Detecting a person (individual) or vehicle following too closely the person or vehicle in front to get past access controlled entrances or barriers (like boom barriers).</p> <p>Example: Unauthorized access at the mall entrance, gated communities, office premises, factories.</p>

<p>#06 AGV-VA-LODT</p> 	<p>Left Object Detection Detection of any object left behind in the monitored zone by a moving agent such as the owner of the object or baggage. Example: Threat detection due to baggage left unattended in public places like malls, roads, railway station, airports etc. Unmindful passenger leaving any luggage.</p>
<p>#07 AGV-VA-MODT</p> 	<p>Missing Object Detection Detection of object(s) removed from the monitored zone in the camera view. Example: Detection of removal or theft of precious items like paintings hanging on a wall. Critical Asset protection. Artefacts protection in museums, etc.</p>
<p>#08 AGV-VA-PTZC</p> 	<p>Auto PTZ Tracking Automatic tracking of object (Single or Multiple) using Pan-Tilt-Zoom (PTZ) camera. Example: Tracking of objects like intruder; tracking of vessels in Sea.</p>
<p>#09 AGV-VA-PTZH</p> 	<p>PTZ Handoff Violation detected on any Fixed camera triggers PTZ camera to its view for auto tracking of the violator object. Example: Auto tracking of intruder with one PTZ camera covering multiple Fixed cameras, for instance, along the compound perimeter.</p>
<p>#10 AGV-VA-PTZP</p> 	<p>PTZ Pre-set Position Analytics Different PTZ pre-set positions can be assigned to different regions and analytics can be run to monitor each of those pre-set positions. Example: Analytics can be applied for monitoring various regions of interest in a wider zone within the range of a PTZ camera.</p>
<p>#11 AGV-VA-CRDT</p> 	<p>Crowd Detection Detects crowd in the camera field of view / region of interest, and when the crowd formation goes beyond a specified threshold (crowd count / percentage of area) alerts against the over-crowding scenario. Example: Detecting illegal gathering of masses or getting alert for overcrowding scenario in public places (malls/railway stations/airports) and entry/exit/lobby areas.</p>
<p>#12 AGV-VA-CCNT</p> 	<p>Crowd Counting Measures the crowd level in terms of number of people occupying a specified region of interest in the camera field of view, provides live crowd count on screen Example: In festivals & public places crowd counting is used for crowd management and for taking corrective action against crowd surge or overcrowding</p>
<p>#13 AGV-VA-CFDT</p> 	<p>Crowd Flow Detection Analyses crowd movement patterns in different direction and marks it by different colours and detects and movement of crowd in undesired direction. Example: Crowd movement tracking and crowd counter flow detection can help in avoiding mishaps due to crowd movement in wrong directions.</p>
<p>#14 AGV-VA-VSDT</p> 	<p>Video Smoke Detection Detects presence of smoke for both indoor & outdoor environments within only 5-10 seconds when it appears in the camera view and covers more than 10-15% of area. Example: Rapid detection of smoke as an early warning for smoke generation / initiation of fire in large indoor/outdoor areas, Warehouses, Server and Data rooms.</p>

<p>#15 AGV-VA-VFDT</p> 	<p>Video Fire Detection</p> <p>Detects and alerts rapidly (in 5-10 seconds) against presence of fire in the camera view / monitored zone even when it is formed in 10-15% of the view.</p> <p>Example: Rapid detection of fire as an early warning for avoiding huge loss & greater impact due to fire hazards in Oil & Gas plants, critical infrastructure etc.</p>
<p>#16 AGV-VA-SFDT</p> 	<p>Slip & Fall Detection</p> <p>Detection of person slipping and falling on ground.</p> <p>Example: Used towards human safety, as necessary care could be taken promptly against alarm generated for slip & fall of people in Malls, Airports, Metro etc.</p>
<p>#17 AGV-VA-PPLC</p> 	<p>People Counting</p> <p>Counts the number of people traversing a certain passage. While angular camera can also be used, best results are achieved with head detection in overhead camera at entry / exit. Counts are provided in both directions (coming in/going out)</p> <p>Example: People counting to analyse foot fall statistics in malls, retail stores etc. Conversion factor can be calculated by comparing footfall data with sales figures.</p>
<p>#18 AGV-VA-QUMT</p> 	<p>Queue Management</p> <p>Detects queue properties for waiting time analysis (Ingress – in flow, Egress – out flow,</p> <p>Example: Used in service counters, ticket counters / travel desk, check in counters, flight boarding areas for waiting time analysis and improvement of service process.</p>
<p>#19 AGV-VA-VHLC</p> 	<p>Vehicle Counting</p> <p>Counting of vehicles that cross a virtual line in a vehicle lane or entry / exit gates.</p> <p>Example: Vehicle movement statistics for traffic study, traffic density calculation etc.; multi-lane vehicle counting; vehicle queue length and waiting time analysis at toll plaza etc.</p>
<p>#20 AGV-VA-WWDT</p> 	<p>Wrong Way Detection</p> <p>Detects vehicle movement in a direction opposite to user specified direction.</p> <p>Example: Vehicle moving in wrong direction in one way road system; vehicles exiting / entering wrongly through entry only / exit only areas.</p>
<p>#21 AGV-VA-IPDT</p> 	<p>Illegal Parking Detection</p> <p>Detects parking or stopping by any vehicle in a specified virtual area (no parking zone or restricted zone) beyond a specified period.</p> <p>Example: Illegal parking on roadsides, in no parking areas or restricted zones, Illegal parking of the vehicle in front of the entry/exit gates.</p>
<p>#22 AGV-VA-SPDT</p> 	<p>Speeding Detection</p> <p>Detects speeding of any vehicle above specified speed limit observed in camera installed parallel to the road.</p> <p>Example: Over speeding vehicles on highways, city roads and campus pathways.</p>

#23 AGV-VA-CNDT

Congestion Detection



Detects the percentage of area occupied by vehicles and alerts against vehicle congestion as the vehicles occupy area beyond a threshold value.

Example: Detects traffic jams and traffic slowness in zones which have moving traffic otherwise.

#24 AGV-VA-PRMT

Parking Management (Availability)



Provides the parking occupancy level and free parking slot availability by detecting vehicle entry and exit by monitoring these transition points in parking lot areas.

Example: Parking management with live parking availability status display at parking lots of malls, offices, factories, residential building complexes, airports etc.

#25 AGV-VA-LPDT

License Plate Detection



Detects the presence of vehicle license plate (or number plate) and captures the image of the license plate along with the vehicle.

Example: Records keeping of vehicles entering or exiting a specific zone. Used for evidence and monitoring purpose.

#26 AGV-VA-LPRC

License Plate Recognition

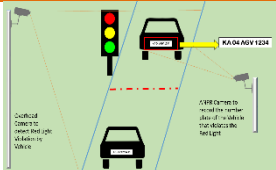


Extracts / recognizes the license number (registration number) from detected vehicle plates and can verify against a user defined black / white list.

Example: Used for traffic monitoring & law enforcement (detection of traffic rule violation and identification of the associated vehicle, detection of stolen cars etc.); vehicle access control & task automation; automated parking & toll management.

#27 AGV-VA-RLVD

Red Light Violation Detection



Detects the Violation of Red Light by a Vehicle and gives an alarm. Can also be integrated with LPR to get the License plate details of the vehicle.

Example: At traffic junctions, Red Light Violations can be detected and the license plate of the violating vehicle can be recognised.

#28 AGV-VA-FCDT

Face Detection / Face Capture

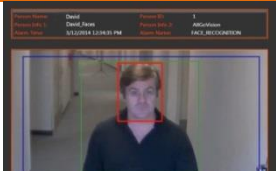


Detects and tracks the human face in the camera view, and also captures the face image and stores it in the database for future reference.

Example: Initiation of alarm or systems (to be integrated) which need activation on appearance of any person. Detected and captured faces are used for evidence / monitoring purpose.

#29 AGV-VA-FCRC

Face Recognition



Matches the Face detected in the camera view with the registered faces in the database and sends alarms corresponding to match or mismatch.

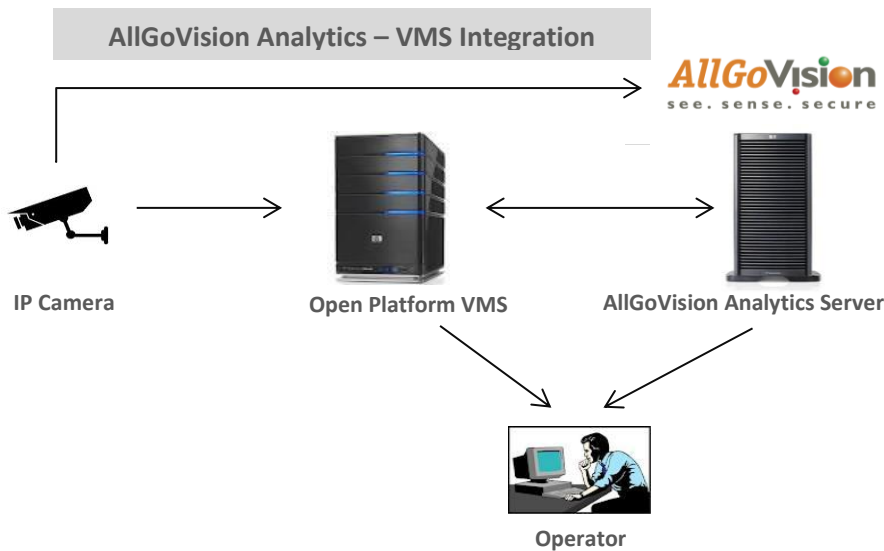
Example: Face recognition & verification is used in multiple applications such as VIP identification, Black List alarm, Forensic Face Search, People Authentication, Attendance Recording & Reporting, and can be integrated with Access Control.

INTEGRATION FLEXIBILITY

AllGoVision Video Analytics application is available in 2 flavors:

With VMS:

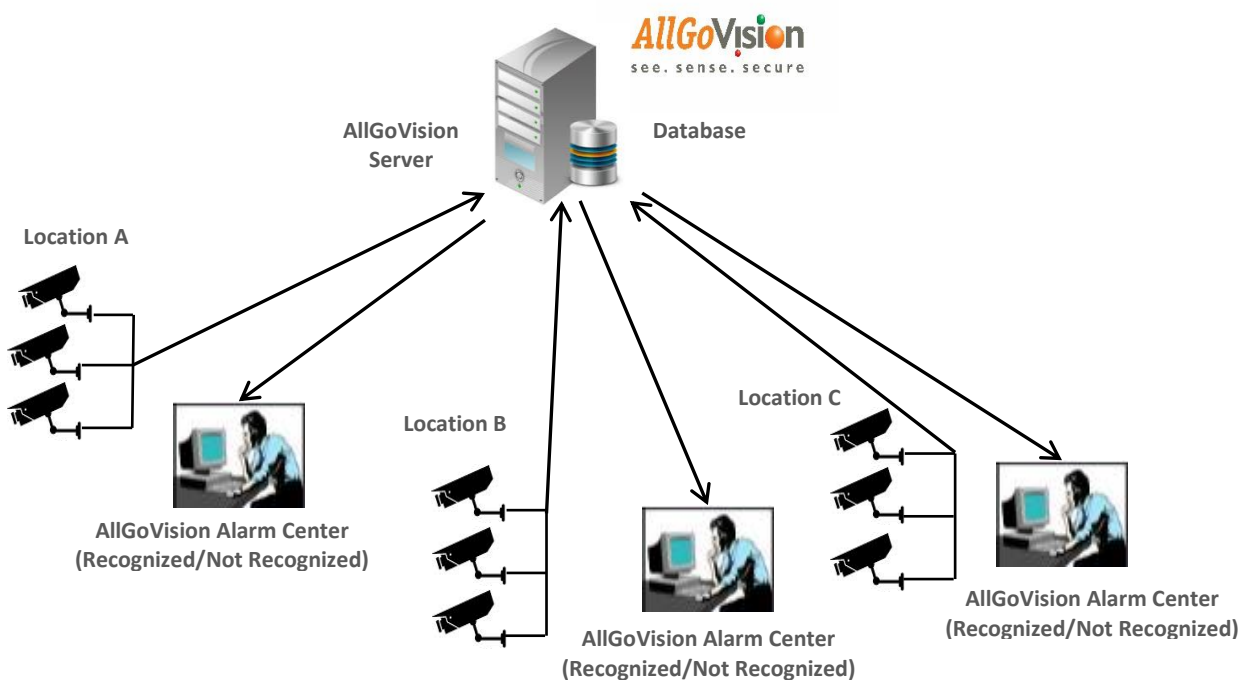
AllGoVision application is based on Open Platform Standards. It is integrated with many open platform VMS.



Without VMS:

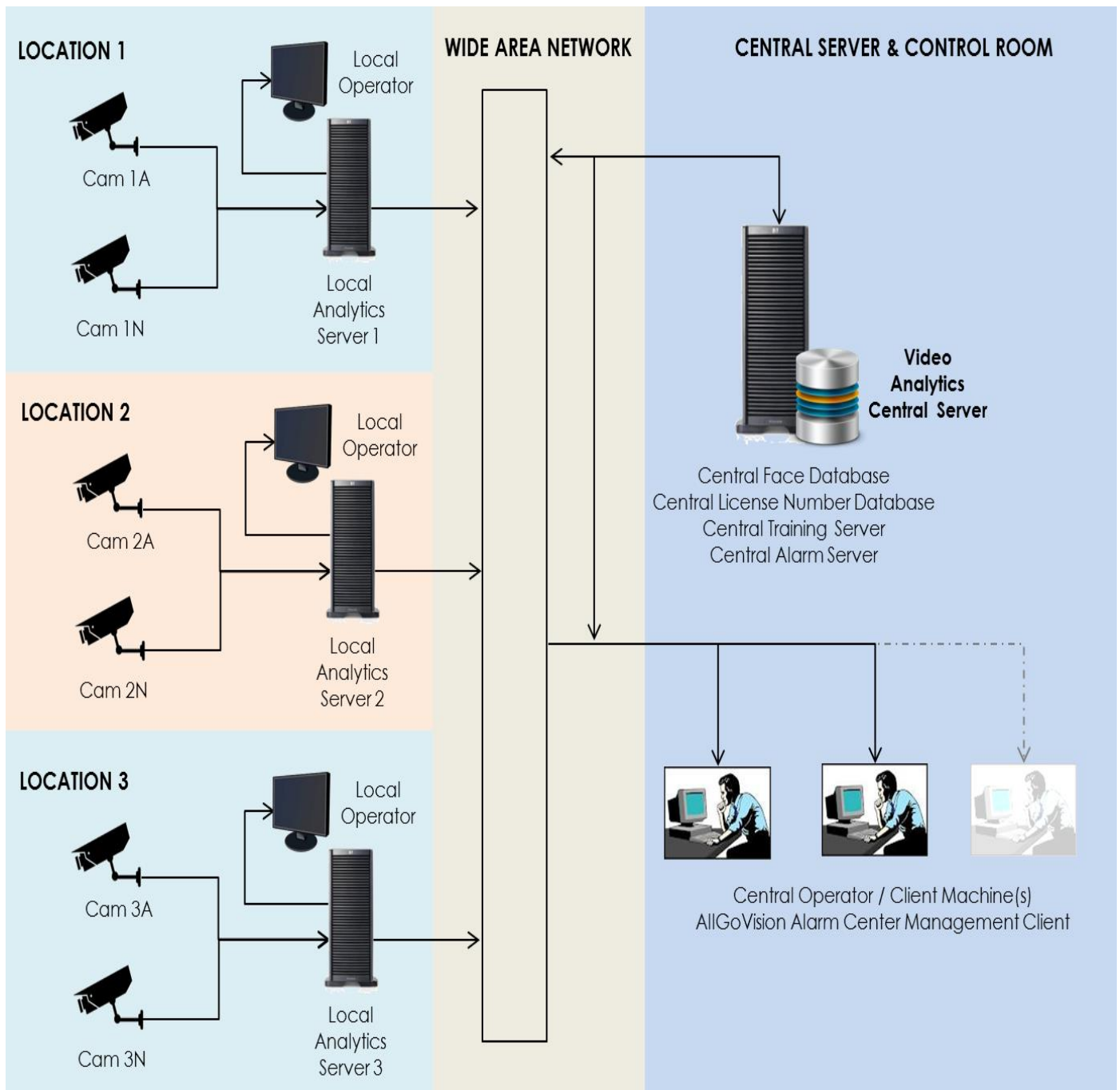
- It is a standalone application.
- Directly takes the video feed from camera.
- The alarms and reports are seen in Alarm Center.

AllGoVision Analytics- Without VMS Integration



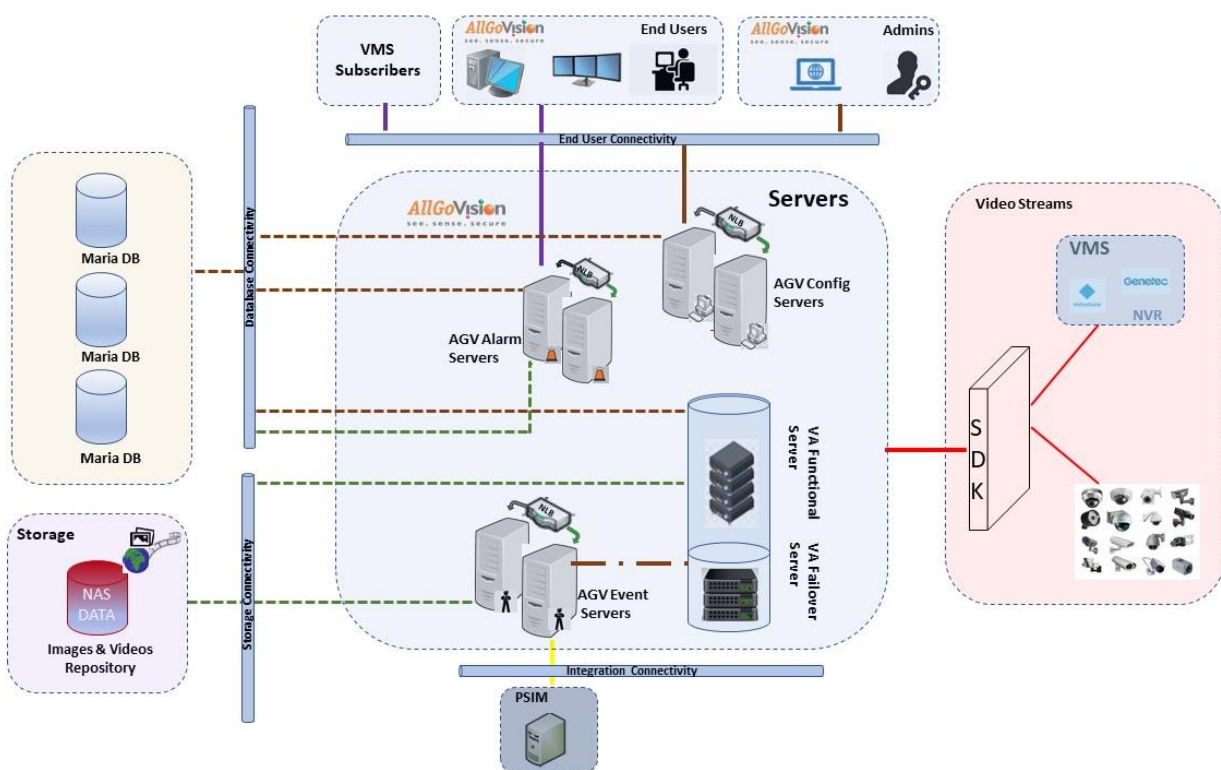
Federated Architecture

- 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.



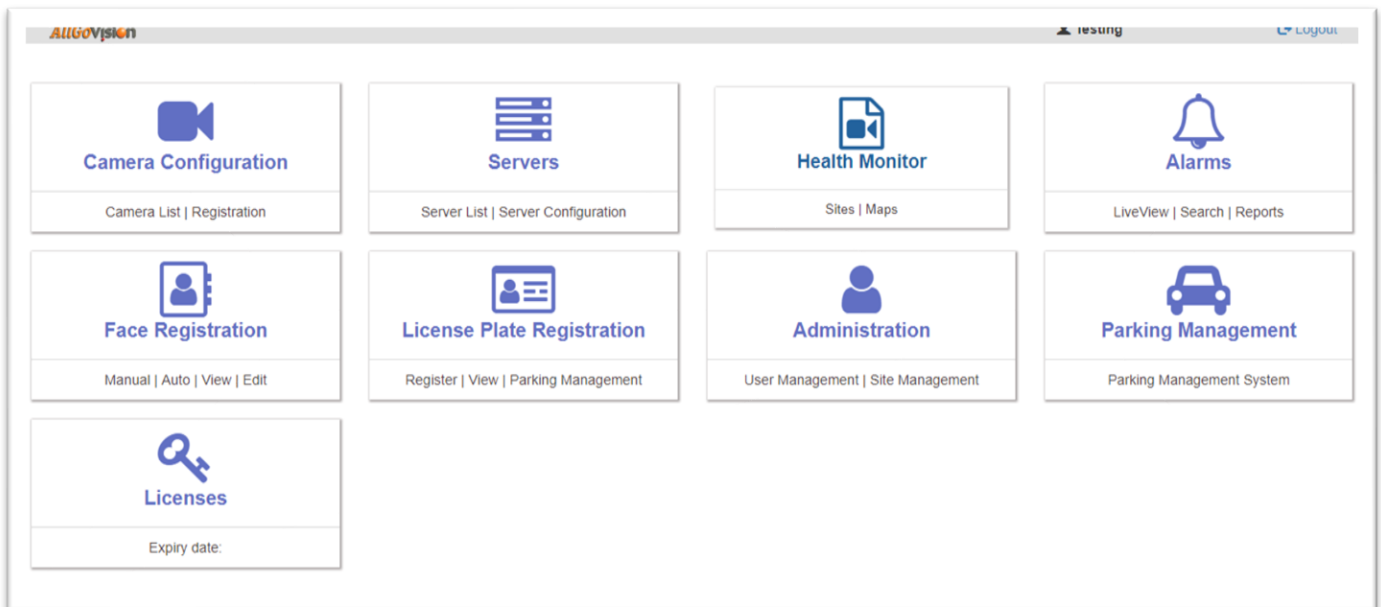
Redundancy / Failover

- 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.

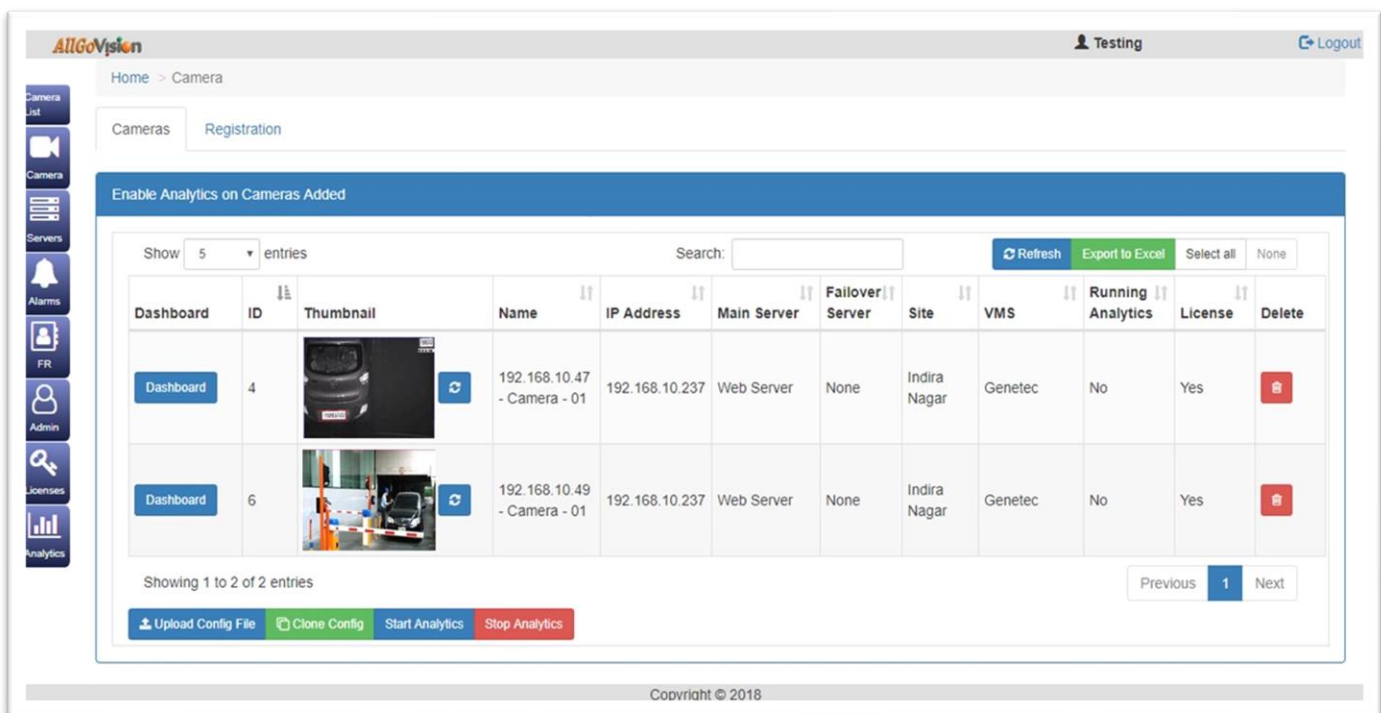


ALLGOVISION GUI

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.



Dashboard



Camera List

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.

The screenshot displays the 'Alarm List' interface. At the top, there are search filters for 'Start Time' and 'End Time' in 'dd-mm-yyyy --:-- --' format, along with 'Submit' and 'Export to CSV' buttons. Below the filters, there is a 'Show 5 entries' dropdown and a toolbar with 'Refresh', 'Select all', 'None', and 'Clear Alarms' buttons. The main content is a table with the following columns: Alarm ID, Thumbnail, Live Camera Feed, Timestamp, Camera Name, Site Name, Alarm Name, and Alarm Description. The table contains four rows of data, all with the same values: Alarm ID (337248, 337247, 337246, 337245), Timestamp (2020-10-09 11:41:33, 11:41:32, 11:41:28, 11:41:24), Camera Name (Tripwire_DL_Peoplejumping), Site Name (Automation1), Alarm Name (LINE CROSSING), and Alarm Description (TRIPWIRE). Each row has a thumbnail and a 'Live Camera Feed' button.

Alarm ID	Thumbnail	Live Camera Feed	Timestamp	Camera Name	Site Name	Alarm Name	Alarm Description
337248		Live Camera Feed	2020-10-09 11:41:33	Tripwire_DL_Peoplejumping	Automation1	LINE CROSSING	TRIPWIRE
337247		Live Camera Feed	2020-10-09 11:41:32	Tripwire_DL_Peoplejumping	Automation1	LINE CROSSING	TRIPWIRE
337246		Live Camera Feed	2020-10-09 11:41:28	Tripwire_DL_Peoplejumping	Automation1	LINE CROSSING	TRIPWIRE
337245		Live Camera Feed	2020-10-09 11:41:24	Tripwire_DL_Peoplejumping	Automation1	LINE CROSSING	TRIPWIRE

AllGoVision Alarm Center