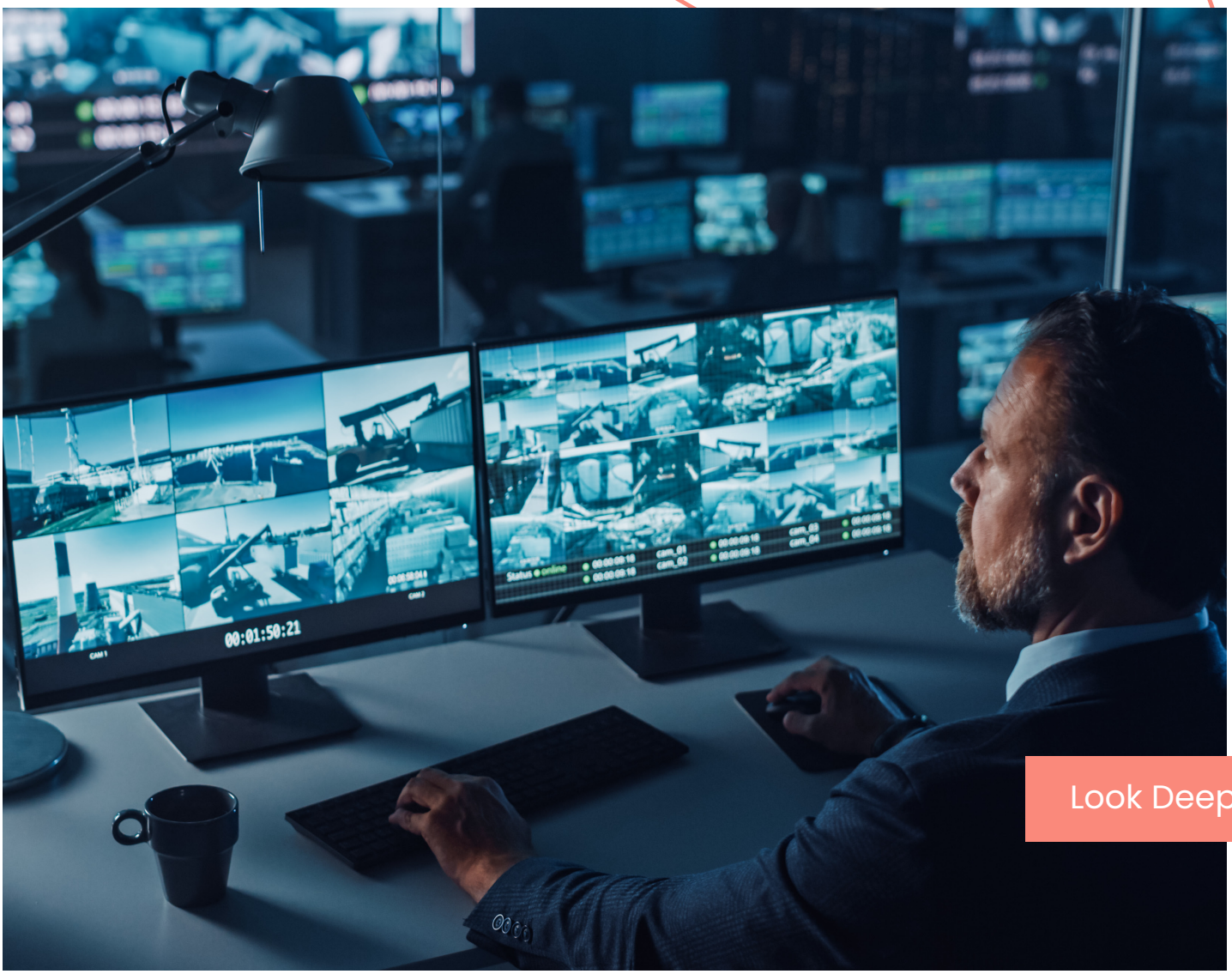
videonetics
Look Deeper

# Videonetics Video Management System

## Version 3.0

**An Enterprise-Class VMS. Powered by AI.**



# Changing Landscape

Managing and processing security-critical video data is essential for any enterprise, which is why robust video management software is required to handle massive video data while protecting it against cyber threats and managing operations when confronted with unforeseen incidents.

With the widespread use of video surveillance using multi-megapixel IP cameras, video management today demands in-built intelligence in handling video streams, analysing them, and thereby generating actionable information besides being archived and distributed. Distributed computing involving edge devices and cloud-hosted compute and storage infrastructure is essential for better management of critical data and to ensure secured access to classified information from geo-separated locations in a cost-effective way, besides leveraging the benefits of distributed computing and communication networks.

"WATCH, RECORD, REPLAY" within a physical boundary hardly meets current expectations from a Video Management System.

## Key challenges:

- Disparate systems
- Operator/User inefficiency
- Cybersecurity Threats
- Laborious investigations
- Flexibility & Scalability issues
- High Cost of Ownership
- Streaming and Bandwidth limitations
- Business continuity during disasters or failures

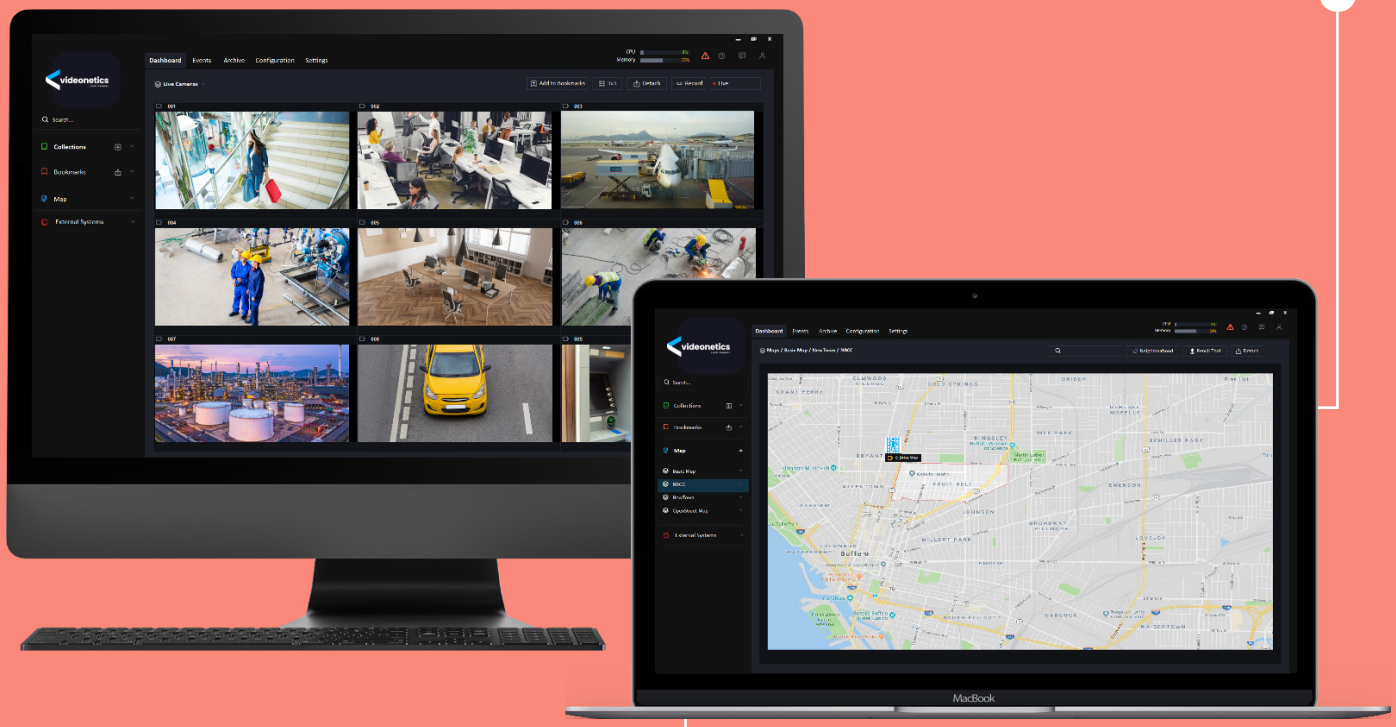
01

# We Understand Video Surveillance.

# Our VMS Looks Deeper

Videonetics brings its AI-powered Video Management System, a one-stop, modular video management solution pre-integrated with AI and machine learning framework that opens a whole new dimension to holistic situational awareness and generates opulent actionable information.

Videonetics VMS gives the power to simplify the complexities of handling vast amounts of video data, metadata, and video computing services in a unified and homogenous software architecture platform that avoids data replication and ensures data integrity and interoperability. Challenges faced by different enterprises or users are not the same, therefore Videonetics VMS provides flexibility to personalize the system as per user requirements.




02

# Yes, the buck stops at Videonetics.

# Artificial Intelligence at the **Core**

Videonetics' VMS is a product of insightful analysis of video metadata, trained with massive datasets of adverse demographic conditions, and decade-long R&D efforts in computer vision, video computing, advanced artificial intelligence, and machine learning techniques.

Videonetics' built-in AI-enabled Video Analytics (VA) engine extracts, analyses, and generates actionable information from a humongous amount of video or image metadata. It is designed to serve as an intelligent decision support system for VMS users.

## Unmatched Precision

A patented and award-winning technology, our AI and DL-powered VA engine ensures the highest level of accuracy by detecting various patterns, features, intrinsic, object attributes, activities, actions, behaviours, and events using a novel continuous and self-learning mechanism. It provides accurate and timely alerts for detecting anomalies with highly optimised computing resources.

## Fog Computing

Our VA engine framework is a perfect fit for Video Internet of Things (VIoT) applications with its fog computing capabilities, in which computing load is distributed judiciously across the edge and central computing resources. It is agnostic to operating systems and cloud platforms, thus providing maximum flexibility to the users and ensuring the lowest total cost of ownership (TCO).

## Customizable AI Engine

Our video analytics engine is highly customizable, compute-efficient, and compatible with on-premise, edge, cloud, and hybrid deployment scenarios. It uses a collection of indigenously designed AI and DL engines, each computationally optimised for a specific set of tasks. The framework is reconfigurable with the interconnection of these engines and hence suitable for domain-specific, customised video analytics application development.

## 100+ Use Cases

Field-proven in diverse environments and challenging conditions, our suite of video analytics is the reliable choice for safe and smart cities, aviation, mass transportation, small to large enterprises, critical infrastructures, retail, defence, law enforcement, BFSI, educational institutions, and healthcare, to name a few. With the power of AI, our framework offers over a hundred state-of-the-art use cases broadly categorized under the below segments.

People Analytics and Object Analytics

Crowd Analytics

Vehicular Analytics

Traffic Enforcement Analytics

Highway Traffic Analytics

Law Enforcement Analytics

Urban and Municipal Analytics

Industrial Safety & Health Analytics

Women Safety Analytics

Face Recognition Analytics

Retail Analytics

Tracking Analytics

Pandemic Management Analytics

Forensic Investigation and Smart Search Analytics



For elaborate details of the Video Analytics Features please refer to its brochure or contact Videonetics.

# Cyber Secured

## Rugged and Tolerant

AI algorithms of VMS analyze the attributes of deployed servers, storage, network communication bandwidth, and other integrated devices to intelligently assess the capability of those devices and services to offer a fault-tolerant, fail-safe, responsive, and rugged system for intelligent video management.

## Data Safety, Security, Privacy

Data encryption and its transmission over secured channels ensure data security at rest, on the move, or when in use. Our trained AI engines are also encrypted to protect them from tampering. Videonetics VMS handles cybersecurity threats with multi-pronged security measures to ensure user data privacy, security, and integrity when data is at rest, in motion, or in use.

## Tested for Vulnerabilities

Videonetics software applications are certified for OWASP compliance, and its client applications are continuously tested for any venerability. All communications amongst different servers and between servers and clients take place over encrypted channels and are authenticated by exchange of certificates.

# Our Philosophy

- Secure Development
- Secure Deployment
- Operational Endurance
- Rapid Response

# Built For Today - and Tomorrow

We keep things simple! Be it our philosophy or our VMS, we understand that the need for security and surveillance keeps evolving, and this rhetoric shouldn't create problems while scaling up the systems. Right off the shelf, VMS software comes fully loaded with all features, completely capable of scaling up and enjoying 100% of its system functionalities, be it an on-premise deployment, a cloud deployment, or following a hybrid deployment architecture.

## Distributed & Scalable

Videonetics VMS uses microservices capable of scaling-up as new workloads are created without interfering with other microservices. Each software component is self-sufficient and independently deployable. Computed resources for individual components are provisioned accordingly, avoiding misutilization of resources.

## System Redundancy

Servers assigned for managing video data can support 1:1, N:1, N: N, and N:0 redundancies. In the case of N:0, no server hardware remains idle to take over the task of a failed server. Instead, the computing load of one or more failed servers is distributed across all other active servers based on their spare computing power, thus ensuring maximum utilization of resources while keeping the compute load within healthy limits.

Databases are also periodically backed up. The application also allows replicating data from primary data center (DC) to other geo-separated disaster recovery (DR) sites. In case DC fails, the services offered by DC (like live streaming, recording, analytics applications, etc.) will be handled by one or more DRs to ensure critical business continuity. Additionally, two independent systems could be configured in a master-master configuration to sync data for mission-critical applications.

## Edge to Cloud

Videonetics VMS provides flexibility to deploy the system in a distributed computing framework spanning across edge devices to the cloud. Videonetics VMS allows unprecedented flexibility to choose which data and compute infrastructure you want to host on a cloud, besides having on-premises compute facilities.

## Content-Sensitive Data Movement

The Safekeeping of ever-growing video data by replicating it across multiple locations is of paramount importance but costly. Videonetics VMS categorizes data based on its source and purpose and offers flexibility to adopt independent strategies for different categories of data for their movement or replication, thus providing a cost-effective disaster recovery system. It ensures business continuity with the least service disruption in case the primary system fails.

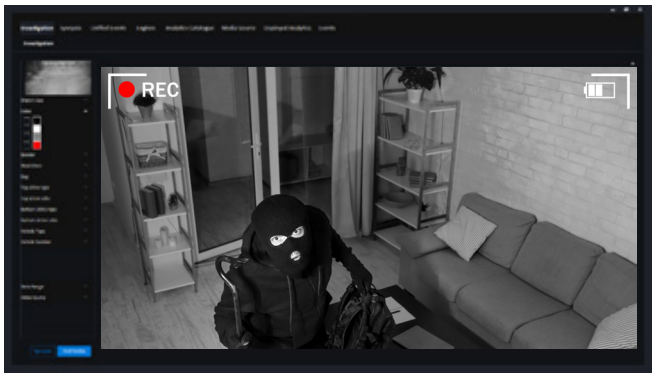
**Videonetics VMS is built to scale-up with your Business Needs.**

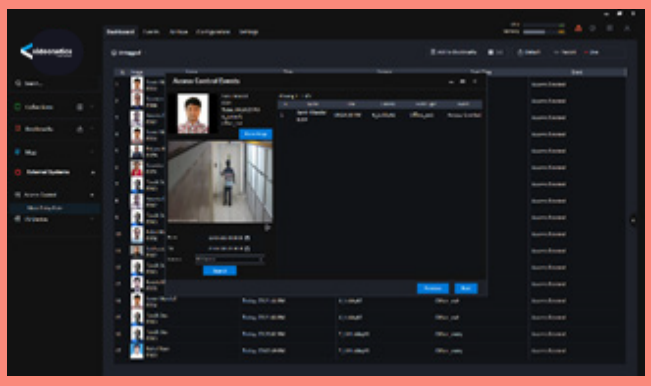
# Don't Just Watch.Record. Replay.

Video surveillance has evolved and now goes beyond mere 'WATCH. RECORD. REPLAY" generation of video management.

## Forensics & Investigation

Do not feel helpless when you identify a person in live view or recorded video and want to track the person across many cameras. Videonetics VMS's integrated attribute search engine can extract attributes of a person selected by you and then search for the person across other cameras. When accompanied by Videonetics' Face Recognition System, you can extract the face of the person and match it against stored faces in the database.



## Open Platform for Collaboration

Videonetics VMS has a rich set of APIs to share data with other applications. External systems can use the API for fetching video streams, event data, system health data, and many more over the standard RESTful API. Besides, VMS can also share data with other applications over ONVIF.

## Video Summarization

Video feeds are analysed to detect occurrences of activities in the scene, and segments of video involving those activities are packed in a spatiotemporal way to create video files of much smaller duration. You can watch this video file to monitor all the activities in a scene that took place over a few hours by spending only a few minutes.

# Aggregation of View and Data

Videonetics VMS enables monitoring multiple locations from a central command and control center. Events, alerts, critical segments of videos, and other classified data are automatically fetched from centrally located storage and database to ensure they are never lost and are readily available with proper access control.

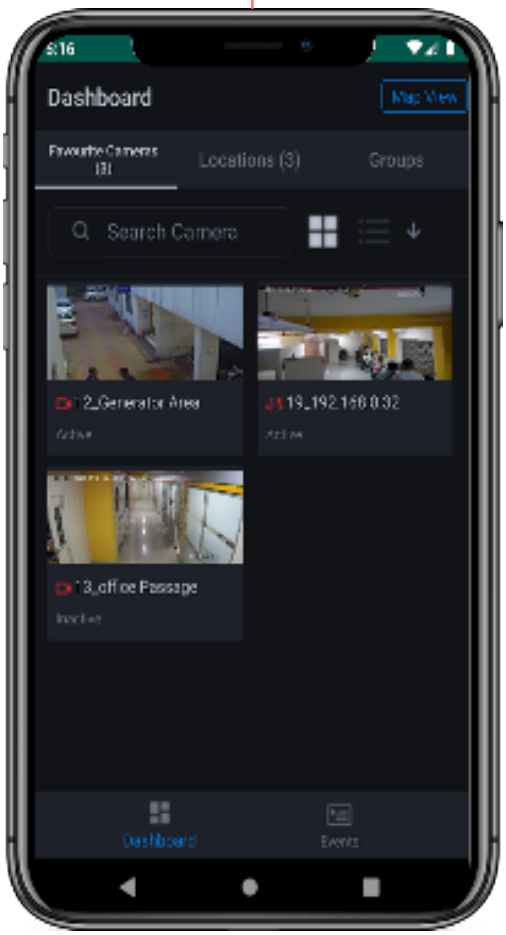
Do More with our VMS.

# Information to you – **Wherever you are**

Doesn't matter if you are at home, at work or on the go, you have the access to VMS with our Clients.

## Mobile

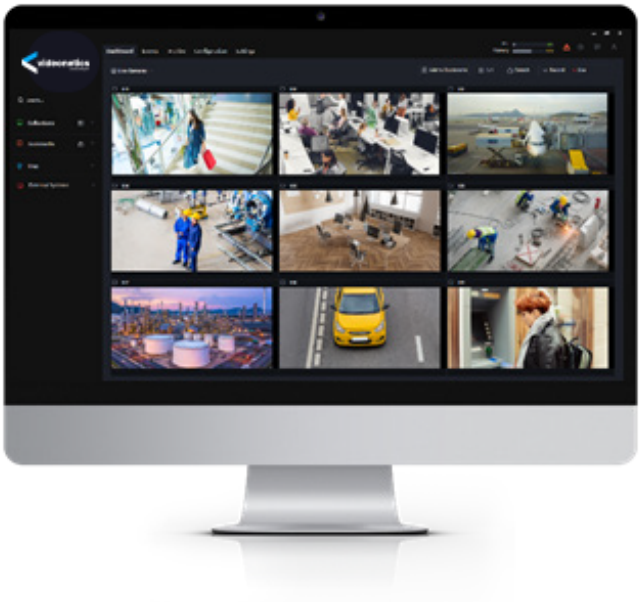
- Get alerts and alarms on the move
- View camera health on sitemap and in camera list
- Watch live view of cameras in grid view with low latency
- Watch recorded video
- View event statistics along timeline
- Locate other mobile users nearby and start communicating with them for collaboration
- Uploading of images and video to command centre
- Available for iOS and Android devices



## Web

- Low latency live feed and smooth PTZ control
- Agnostic to browsers and operating systems
- Receive alerts from video analytics applications
- Search events and alerts
- Replay and download recorded video
- Visualization dashboard

# Our VMS knows when to alert you.



## Desktop

- View, monitor and control VMS, end-to-end
- Intuitive user interface
- Same interface for System configuration, video analytics configuration and operator console
- Navigate through cameras with GIS map support
- Comprehensive map view for all devices and external systems (Access control, PIDS, Radar, etc)
- Dig deep into recorded video for forensics and investigation
- Multi-monitor feature allows viewing of multiple screens with a single workstation
- Realtime notification of Events and Alerts while watching live view
- System health monitoring: server, storage, database, cameras
- Video wall support

# Easy. Intuitive. Smart.

## User-Friendly Interface

Videonetics VMS provides an intuitive, responsive, adaptive, and friendly user interface that supports user-specific camera view layouts and hierarchical camera groups to enable users to multitask and improve operational efficiency. The Videonetics VMS application supports all standard web browsers and provides mobile apps for iOS and Android platforms.

## Smart Navigation

Users enjoy engaging video viewing experiences. Both live and archived view panels can corelate with the help of features such as sync replay, surround view, event hotspots, etc. Parallel view of live and recorded video on the same display panel helps them quickly investigate activities in the past without losing sight of current events.

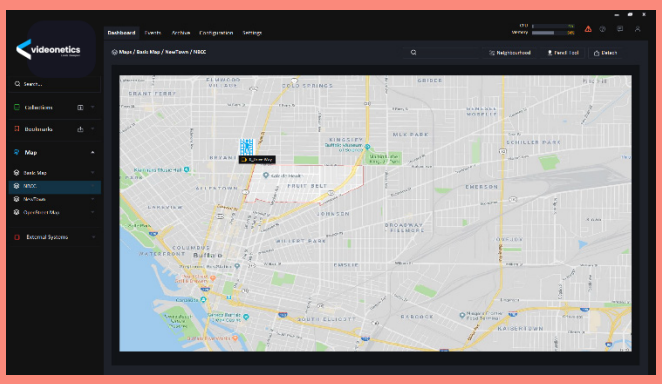
## Search and Help

Videonetics VMS comes with an in-built user manual and a search function for help on any topic related to system operations. Users can raise a support ticket from the same interface, with the ability to attach a screenshot, in case further technical assistance is required.

## Our VMS bolsters teamwork and efficiency.

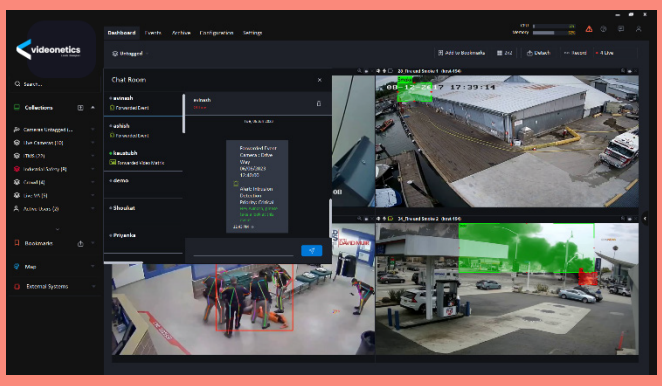
## Geo-Situational Awareness

Videonetics VMS offers multi-layer, hyperlinked sitemaps for a clear view of cameras installed across the site geography. The unique amalgamation of static maps and online/GIS map services such as Google Maps, OpenStreetMap, etc., provides detailed positions of the devices. The information generated by other systems like access control, PIDS, radar, and other sensors is depicted on a map along with IP cameras and IP speakers. The built-in pencil tool helps in the quick selection of multiple cameras for instant live viewing.



## Collaborative Vigilance

Users get a collaborative surveillance platform for exchanging events of interest, alarms, and live-view panels besides messages amongst themselves using an inbuilt chat engine. A supervisor can compose live camera layouts and instruct the user to monitor a set of cameras. User screens can be closely monitored by the supervisor to keep a tab.



# Agnostic. Adaptive. Open.

## Flexible Platform Selection

Videonetics VMS works across various operating systems, such as Windows, Linux, UNIX, and macOS, and database platforms, such as MS-SQL, MySQL, PostgreSQL, Oracle, and MongoDB, giving a users flexibility. It also supports all the leading virtualisation platforms such as VMware, KVM, QEMU, VirtualBox, etc.

## Conforms to latest ONVIF Protocols

From the start, we are committed to the cause of standardization and interoperability between IP-based physical security products, and that is substantiated with our decade-long association by ONVIF and its mission. Videonetics VMS is ONVIF conformant and supports ONVIF profiles S, G, T, and M.

## Edge Analytics

Videonetics VMS can receive the metadata of edge analytics streamed by a camera on the ONVIF Profile M protocol. It can analyse the images further based on the metadata and thereby provides a two-stage distributed video analytics application framework. It enriches the existing edge analytics of the cameras and can cater to varied domain-specific use cases.

## Network Adaptive

Videonetics VMS follows a distributed computing architecture and is deployable over numerous network communication systems. It offers a smooth video experience over heterogeneous communication infrastructure due to its bandwidth-adaptive video streaming technology. It supports both unicast and multicast communications. A separate streaming server can be added as a pluggable module to add transcoding services and streaming in various protocols to different recipients over different networks.

# Videonetics VMS helps you become Flexible.

# Key Specifications

| | |
|---|---|
| **OS & Hardware Supported** | • Windows, Linux<br>• Containerization and virtual machine supported, both in Windows and Linux<br>• MS-SQL, MySQL, PostgreSQL, Oracle databases<br>• Supports Commercially Off-The-Shelf (COTS) hardware and storage<br>• Firefox, Chrome, Safari, Internet Explorer, Microsoft Edge, Opera<br>• ONVIF-conformant for profiles S, G, T and M<br>• NVIDIA, Intel HD Graphics and QuickSync hardware decoders.<br>• Android and iOS Mobile Apps |
| **Architecture and Platform** | • Standalone and federated architecture<br>• Simultaneous multi-site monitoring<br>• Back-up multi-sites data to central location<br>• Failover, fail-safe, and High Availability (HA) features<br>• Flexible and scalable Disaster Recovery (DR) system<br>• Direct interface to S3 object storage of cloud<br>• Unique master-master configuration of two systems with data synchronization<br>• Time synchronisation with NTP |
| **Deployment Capabilities** | • Single site on-premise, on-cloud, hybrid<br>• Multi-site with central command centre at cloud/data center/hybrid |
| **Security and Encryption** | • Multi-factor authentication<br>• Integration with multiple directory access protocols, for single sign-on<br>• Secured TLS 1.3 protocol for server-client communication<br>• Video watermarking and encryption support for video recording<br>• Secured HTTPS protocol for integration with external systems through API<br>• Encryption of video files, critical system information and AI models to prevent tampering<br>• VAPT certified to confirm resilience against cyber-attacks |
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| **Monitoring** | • Unlimited cameras<br>• Unlimited Users<br>• Supports WebRTC and HLS (for mobile and web app)<br>• Sequence view, matrix switching with configurable dwell time<br>• Video-wall support<br>• Supports multiple monitors, each one with different camera matrix<br>• Simultaneous view of live and recorded video on the same view panel<br>• Multi-camera time synchronized replay for better situational awareness<br>• Supports multiple streams from a single IP camera or encoder<br>• Bandwidth adaptive streaming with or without transcoding<br>• Multicast support<br>• Matrix switching among bookmarks, with pre-determined time<br>• Variable playback speed<br>• Multi-channel video weaving and record as a single video file<br>• Digital zoom function<br>• Instant snapshot from the live camera view<br>• Access right hierarchy based PTZ control<br>• Integrated archive player within the client<br>• Export video in multiple formats (MP4, MJPG, AVF, AVI), frame rate (full/half) and encryption<br>• Export single frame of the video in BMP, GIF, TIF, JPG and PNG formats.<br>• Video Compression - MJPEG, H.264, H.265, H.265+, ZipStream<br>• Video cart to download multiple archive video clips<br>• Report on the downloaded video<br>• Region selection with intelligent grid for smart motion search by time, sensitivity and interval<br>• Colour and activity search in archive video<br>• Timeline to indicate the availability of recording, motion or event<br>• Video watermarking<br>• Export recording details in a spreadsheet, with details of each of the video segments<br>• Automatic/manual selection of hardware/software accelerator decoder<br>• Print surveillance report with a snap and camera specific information and user notes<br>• Supports transcoding for bandwidth adaptive streaming<br>• Thumbnail search for fast investigation of incidents |
| **Maps** | • Integration with multi-layer sitemaps, GIS, Google map, static maps<br>• Camera navigation using the pencil tool<br>• Camera live view and recorded video replay on maps<br>• Camera event notifications on the maps<br>• Display map on a separate monitor |
| | |

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| **Storage, Recording, data protection, Disaster recovery** | • Supports local storage/DAS/SAN/NAS<br>• Hierarchical storage deployment, with independent data retention at different layers<br>• DC-DR architecture for data replication and flexible business continuity options.<br>• Supports multiple recording schedule configurations<br>• Start/stop parallel recording for any specific camera<br>• Supports configurable video retention policy for every camera<br>• Profile G compliant for fetching recordings from camera SD cards.<br>• Supports data purging on FIFO or retention basis<br>• Supports motion activated and Event activated recording<br>• Alert when storage space reaches a pre-defined threshold |
| **User Management** | • Role-based access control, with multiple user categories<br>• Flexibility to modify access rights for specific system roles<br>• Restricted access to cameras for selected users<br>• Locking user access from designated devices only- specific mobile phone or workstation<br>• Co-operators or system users can communicate via in-built operator messaging tool<br>• Operator screen can be recorded and imported for supervision by supervisor<br>• Standard Operational Procedure (SOP) workflow for the ease of the operator<br>• User activity audit trail<br>• LDAP and AD integration<br>• Forced logout for any operator by his superior<br>• Escalation messages if operator is nonresponsive |
| **Video analytics** | • Integrated video analytics framework within the same platform<br>• Integration of edge analytics over ONVIF (Profile M) or using SDKs<br>• Unified event and alarm handling framework<br>• Easy deployment of video analytics applications by license activation |
| **Notifications & Alarm Management** | • Send alerts via SMS, WhatsApp, or Email<br>• Create recipient group email IDs and phone numbers<br>• Transfer or escalate event alerts to administrator<br>• Trigger and create incidents on recorded or live video<br>• Alert notification with sound and pre-recorded voice messages, along with audio and video annunciator integration |
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| **System Health Monitoring** | • Health status monitoring and display for all components<br>• Reports camera uptime availability, camera recording percentage and status, critical events, incident video, camera performance data with resolution, frame rate and network usage<br>• Allows operator to raise a support ticket from the interface console, attaching screenshot and details of the issue<br>• Dynamic visual indication on the camera icon to display camera status |
| **External device Integration** | • Universal device integration framework- both PUSH and PULL modes<br>• Open to any IP camera, encoder integration<br>• IP speaker, two-way audio integration with cameras<br>• Integration support with command-and-control centre application to share live video, recorded video clips, alarms and alerts with timestamp and source information<br>• Integration support with access control, perimeter intrusion detection, physical access control barriers, SCADA, BMS, TAS, POS devices, DI/Dos, etc.<br>• DVR, NVR and multi-lens camera integration support<br>• Supports open API standards (REST and WEBSOCKET)<br>• Supports USB, joystick, surveillance keyboard |

For elaborate specifications, please contact
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Look Deeper

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