



Intelligent
Video
Management
Software

Adding sense to surveillance.

Videonetics Intelligent Video Management Software

Videonetics' 'Intelligent' Video Management Software (IVMS) is based on a unified, monolithic architectural framework to capture and handle video and audio data over IP network in an efficient and elegant way, going way beyond what traditional 'view-record-replay' based DVR-like systems offer.

Our IVMS software is scalable across multiple verticals such as City Surveillance, Enterprise Surveillance, Banking, Retail, Traffic Management etc. using the same video management software framework. It comes integrated with our in-house intelligent video and audio analytics platform, and is deployable across multiple operating systems and hardware platforms. It can be seamlessly integrated with other Videonetics offerings like Automated Number Plate Recognition (ANPR) system, Red Light Violation Detection (RLVD) system, vehicle entry/exit monitoring system and other traffic management applications; retail solution for business intelligence generation; face recognition, intrusion detection, crowd monitoring; and other typical video analytics applications, thus providing a homogeneous, one-stop solution.

We provide investigation-friendly monitoring software at the front-end, while relegating to the back-end all the complexity of the server software (which is crash-proof and based on modular architecture). This ensures that not much training is required for the users, and they continue to interact with the system using a very simple and intuitive graphical user interface. The system is easy to use even when it is scaled from a single server to a distributed multi-server system, with thousands of cameras and heterogeneous storage devices (NAS, SAN, hard disks etc.) spanning multiple sites.

Videonetics' IVMS can accommodate DVRs* along with IP cameras to protect existing investments on analog systems, while enabling you to gradually move towards IP-based video management culture in a phased manner. Our IVMS software can be deployed on Microsoft Windows, Linux, Unix, and Mac OS. It is integrated with open source DBMS software to give you the freedom to choose your own platform and plan your budget, thus providing a truly open platform solution.



THE NEED FOR 'INTELLIGENT' VIDEO

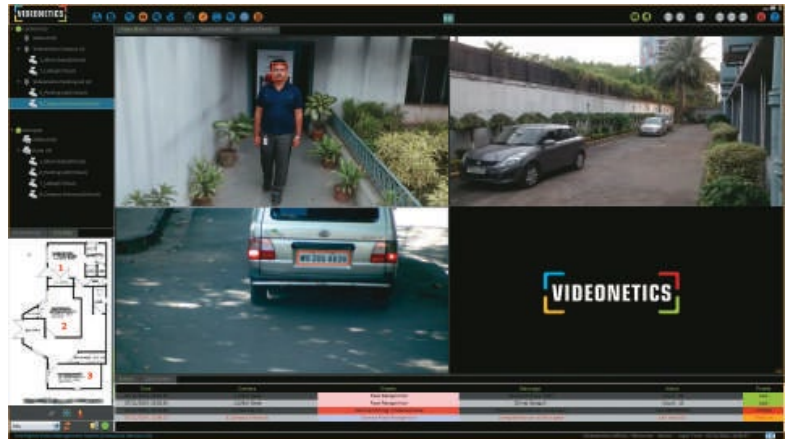
To derive actionable information from the rich visual data that is all-pervasive in this digital age, you need to make sense of these fleeting images, and discern patterns.

This is where
Videonetics comes in.



Single GUI for VMS and VAS

Video Analytics framework is a built-in component in Videonetics Intelligent VMS. A single user interface (GUI) configures and interacts with both the systems in a homogeneous way. Therefore, it is easy to learn the system with minimal training.



Openness and scalability redefined

Videonetics' IVMS is a truly open, IP-based system that allows you to use OS of your choice (Windows, Linux, Unix or Mac OS), both in the servers or in the viewing (client) stations in any combination. It is open to your choice of web browsers (Internet Explorer, Firefox, Safari, Chrome) for remote monitoring. The system is scalable from a single server VMS system to a distributed, multi-server based city surveillance system integrated with different intelligent Video Analytics applications. Regardless of scale, it functions under a single umbrella with consistent interface for easy user interaction. Videonetics' IVMS supports ONVIF-compliant IP cameras/devices.

Figure 1: Top-level intelligent VMS systems architecture diagram

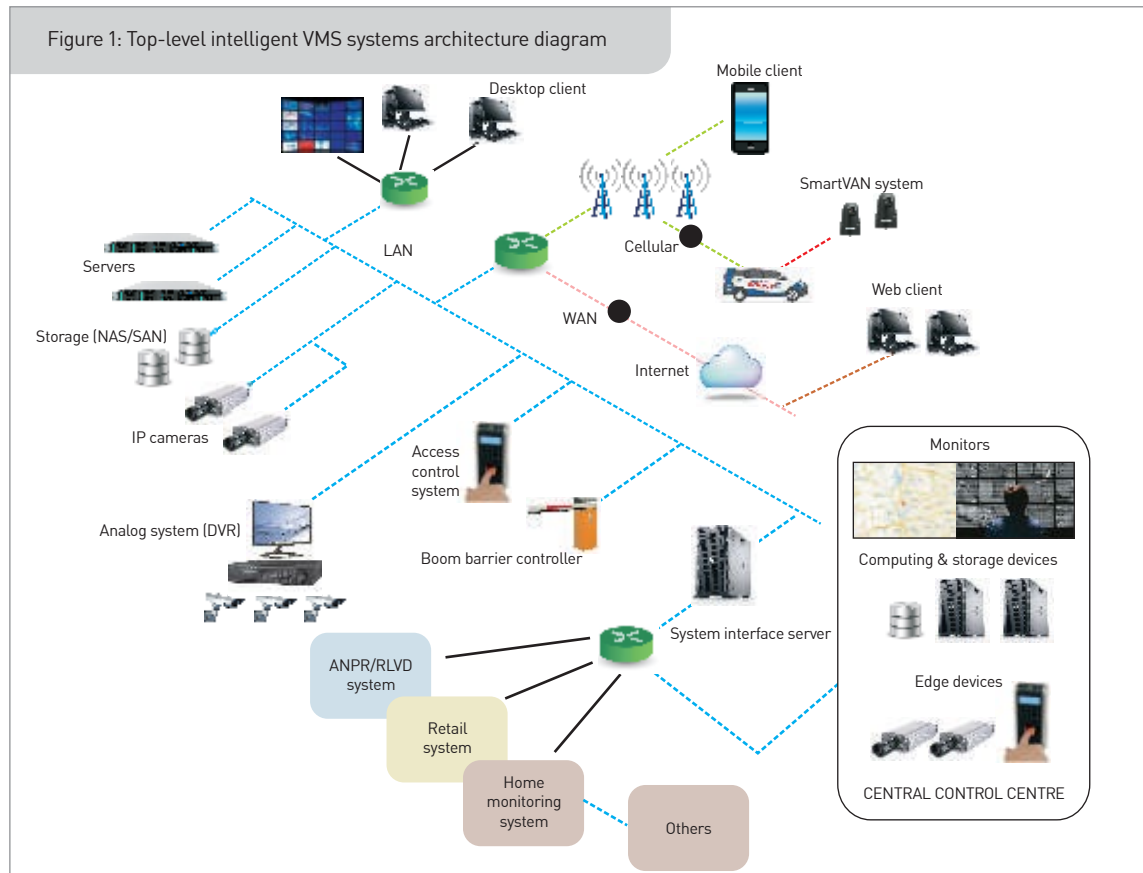
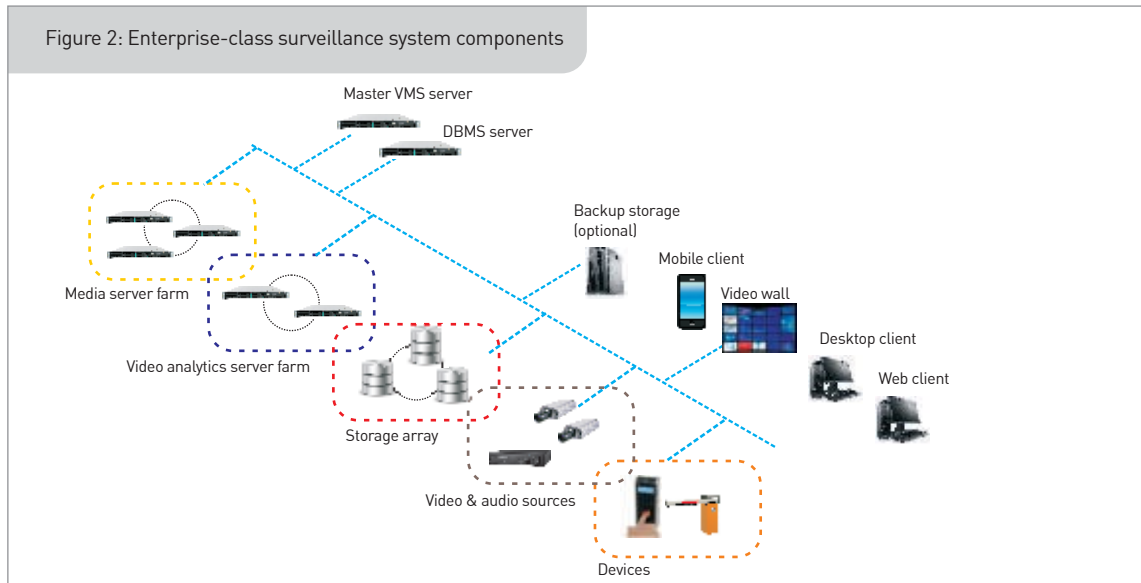


Figure 2: Enterprise-class surveillance system components



Fault-tolerant & demand-adaptive system

Failover and redundancy is pervasive across all the components of Videonetics' IVMS. This ensures data integrity and data security against failure of servers, storage devices and network links, without using any separate storage or server hardware. The patented failover logic embedded into the IVMS system gives the user a cost advantage over other alternatives, as no 1:1 redundant server needs to be bought. Videonetics' 'Universal-Health-Checker' component not only monitors health of each hardware device and instantly prompts you to take preventive actions, but it also keeps an eye on performance of critical tasks within the IVMS process. The architecture is truly modular in nature, so the failure of any one module within the software triggers its automatic restart immediately, without affecting the functionality of other modules. When there is increasing demand for any particular service from the user group, IVMS replicates those services automatically in a distributed fashion with optimal usage of the existing hardware resources.

Fail-safe storage management

Videonetics' multi-tier storage management protects your data not only against physical damage to one or more storage devices, but also offers you the flexibility to provision these devices to suit your budget. Failure of network storage device automatically triggers the system to temporarily use server resident storage space for recording. You can mark any one or more cameras as critical, and the system will keep the recording safe for those cameras in multiple places, to avoid losing critical data in case of any disaster.

Exponential Video Decay – Better utilisation of your storage

Videonetics' innovative e-Snap™ and Exponential Video Decay™ services significantly reduce the storage space requirement compared to the competition. Our e-Snap™ technology embeds high-resolution still images within low resolution video to reduce storage space considerably, yet protects the contents in video files and aids in better investigation. Videonetics' IVMS retains archived video over a longer duration of time using much lower storage space, with its Exponential Video Decay™ technology, where rather than totally deleting older video files, their size is progressively reduced as they age.

Video Digging™ – Investigative navigation

Videonetics unprecedented Video Digging™ technology enables you navigate across multiple camera views simultaneously in a systematic way. By a simple copy-paste operation, you can synchronise replays for any two or more cameras. On spot investigation of activities in the scene, with orchestrated use of Sitemap, Message Window and Virtual Matrix, gives you the real flavour of a truly intelligent IP-based video surveillance system, and clearly distinguishes it from the competition. You can follow movements of people, vehicles and other objects across multiple cameras in the archived video systematically and quickly, in a time synchronised fashion. You can also watch live views of multiple cameras along a corridor or pathway, with a single drag of mouse on the sitemap.



Both way integration framework – Devices and third-party systems

Videonetics' VMS provides a rich set of APIs and SDK for integration with third-party applications like CAD, help desks, EMS, and other IP devices. This gives you the flexibility to choose those systems as per your specific requirements. On the other hand, the VMS is built on a modular architecture, so that other applications can use it as a component in their system (Figure 1 showing the Top Level Systems Architecture Diagram). The interface is available in the VMS framework to receive communication from external emergency response systems (e.g. Dial 100) and link it to the VMS database.

Other security and safety enforcing devices like fire alarms, burglar/intrusion detection systems can communicate with the VMS using its unified device integration framework. The VMS can receive alarms and health status signals from those devices and generate alerts using its alert handling framework.

Unprecedented viewing experience

With multi-tasking, multi-monitor support, you have the facility to select cameras for a live view, recorded video display, and to navigate quickly from one camera view to another. Parallel live view and archived video tiles in the same window gives you the flexibility to dig into archived video for selected cameras in a time-locked mode, yet keeping an eye on live camera views. Intelligent use of the multi-streaming capability of the cameras along with Virtual Optical Zoom (VOZ) feature enables you to watch any selected area of the scene in megapixel resolution in a small window. You can save your favourite views as bookmarks and retrieve the same with a single mouse click. Desktop client, WAN client, mobile client and meb client – all are optimised to give you the best viewing experience, overcoming various infrastructural constraints.

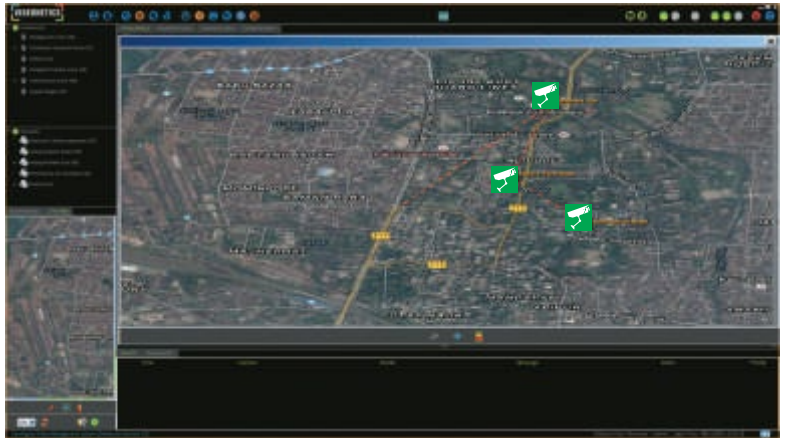


Efficient forensic and evidence management

Videonetics integrated framework for VMS and Video Analytics provides an unprecedented flexibility to navigate across recorded video database quickly during investigation of an event. Video Cart enables you to download multiple video segments from multiple cameras, in a systematic and organised way in a single folder, with hyperlinks to the video files in a spreadsheet. The video files are encrypted for data protection and embedded with user-defined 'watermarks' to produce tamper-proof evidence. You can generate evidential proof as a single video file for various events using the embedded MovieMaker.

Multilayer sitemap

Videonetics multi-layer hyperlinked sitemap enables you to select cameras quickly from the camera pool. Any section of the map can be expanded using a next layer map to provide you a clearer view of camera distribution across your city, for instance. You can either drag and drop camera icons independently to video tiles, or select cameras installed along any passage or road using Videonetics' unique 'touch-n-drop' feature. The system also comes with API for integration with Google Maps and third-party GIS. The Android mobile client software is already integrated with Google Maps.



Integrated system health monitoring & audit trail

Onscreen icons on the operator's screen display the health status of all major components constantly. You always know whether the cameras are recording, and the status of servers, storage, networking components etc. In case of any problem, you can dig into the details of any problem in a systematic manner without being an IT expert. The system also gives you the facility to search through the health status using simple database query processing tool embedded in the system. Operations by the users are tracked and saved in a database to generate audit trail of the system, and authorised personnel can search this audit trail database for necessary information.



Alarm management and event log

Videonetics unified Alarm Management Framework handles alerts from Video Analytics applications, media servers, and external devices alike, and provides you with an integrated platform to act on the alerts quickly. The alert handler is able to receive alerts from external systems (such as external I/O) or software applications, e.g. Red Light Violation Detection system, face recognition system, access control system etc. The alert handling framework enables you to track the actions taken, and escalate the alert to higher authority, in case appropriate actions are not taken by the operators within a user-defined period. Alerts can also be distributed to registered recipient only using GSM communication, in case the usual internet connectivity is not available. Any operator can redirect the alerts to any other operator, if required. The events are logged into a database with index to the video archive. Users can search events from the event log with simple query processing in real time.

Audio analytics

Audio signals coming from IP devices can be analysed in real time to alert you in case unusual sounds are detected. Audio analytics applications detect presence of human voice in the scene, and they analyse the sound signals to identify the nature of the speech. The system also detects presence of non-speech audio like those generated by knocking, glass breaking, gun shots etc.

Green computing – Low computation & optimum processor utilisation

Videonetics' IVMS is optimised for maximum utilisation of the computing capability of the deployed hardware. The architecture automatically detects number of cores in the computing platform and dynamically load-balances the computation across various cores. Hence less hardware components are required run the software. The underlying software architecture is built to use minimum memory and I/O bandwidth. This reduces the number of clocking and results in power savings.



High level features of different versions

	FEATURES	PRO
OPEN PLATFORM	Deployment model	Multi-site, Multi-server
	Number of servers	Unlimited
	Number of cameras for recording & monitoring	Unlimited
	Maximum number of simultaneously connected users	Unlimited
	Open architecture to support Windows, Linux, Mac OS	✓
	Open architecture to support Firefox, Chrome, Safari, IE	✓
	OS-independent, in-built user privilege management with multiple user category (not limited to Windows-dependent active directory framework)	5 user levels, unlimited users
	Open source DBMS support	✓
	Time synchronisation with NTP	✓
STORAGE	Local HDD for recording	✓
	Networks storage (NAS/SAN) support	✓
	Hi res snap-embedded video recording	✓
	Multi-level storage control for reduced storage demand	✓
	Exponential decay of video	✓
	Videonetics eSnap	✓
VIDEO ANALYTICS	In-built Video Analytics applications (activity detection, people presence)	✓
	Pre-integrated VA framework (Videonetics VAS)	✓
	Video Précis framework ready	✓
	VA event export to external application	✓
ALARM MANAGEMENT	External I/O device integration	✓
	SMS for alerts over cellular network	✓
	Emails for alerts	✓
	Alert handler & event escalation	✓
	Operator-triggered alerts	✓
	Instant video alert on mobile phone	✓
	Stand-alone health check monitor & event receiver module	✓
	Event redirection	✓
MONITORING	e-Map	✓
	Multilayer site map	✓
	GIS & Google Maps integration API	✓
	Multi-stream & multi-cast support	✓
	Live view & instant playback on mobile phone client	✓
	Web client for remote monitoring	✓
	Mobile clients for remote viewing	✓
	Favorite layout bookmarks	✓
	In situ PTZ controller	✓
	Single window simultaneous live & replay	✓
	Video streaming from mobile phone integrated cameras	✓
	Video wall support	✓
	Multi-monitor support	✓
	Two way audio communication	✓
	Snap upload from mobile phone integrated cameras	✓
	Integrated archive player	✓
Encryption while video export	✓	
DATA SECURITY & ACL	Video watermarking	✓
	Critical video bookmarking & retention	✓
	Failover with redundant server	-
	Distributed failover without redundant server	✓
	Machine locking for clients	✓
	Client desktop import to admin panel	✓
	Video cart	✓
FORENSICS	Movie export	✓
	Colour & activity search on recorded video	✓
	Video enhancing for live and recorded view	✓
	Magnifying glass for ROI magnification	✓
	Messaging service amongst logged in users	✓
CENTRALISED MANAGEMENT	Videonetics central monitoring station support	✓
	Centralised administration for multiple sites	✓
	Daily/weekly report generation for every site at central location	✓
	Edge storage support	✓
INTEGRATION	Integration with ANPR/RL VD, e-challan system	✓
	Third party device integration	✓
	DVR integration (please check list of DVRs)*	✓

Note:

• For database high availability, additional server will be required. User needs to procure enterprise-level DBMS software separately to enable high availability mode.

* List of DVRs: HikVision, Pelco, Capture, Honeywell, GE.

Minimum system requirement for Intelligent VMS software

HARDWARE

PRODUCT	CAMERAS/ SERVER	SERVER SPECIFICATIONS	WORKSTATION SPECIFICATIONS
PRO	64#	Intel Hexa Core Xeon, 16 GB RAM, 1 TB HDD*, 1 Gbps NIC	Intel i7 processor, 8 GB RAM, 500 GB HDD, Nvidia Graphics Card(2 GB RAM), 1 Gbps NIC

* Excluding video storage space # Full HD resolution, 25 fps

SYSTEM SOFTWARE

Server (OS should be server grade)	MS Windows: Windows 2008, Windows 2012 Linux: Ubuntu 10.04 LTS or higher, SuSe Linux, RHEL Mac OS: Mountain Lion
Workstations	MS Windows: Windows 8, Windows 10 Linux: Ubuntu 10.04 LTS or higher, SuSe Linux, RHEL Mac OS: Mountain Lion

Making the world a safer, smarter, happier place.

Videonetics's Unified Video Computing Platform™ helps you make sense of surveillance, by providing you with an end-to-end solution for a wide range of applications. The platform is powered by our Artificial Intelligence and Deep Learning engine, which is trained on humongous data sets, making our solutions incredibly robust and smart. All our products and solutions are integrated yet modular, ONVIF compliant, OS and hardware agnostic, scalable and interoperable.

Videonetics has been ranked #1 video management software provider in India, and among the top 5 in Asia (IHS/Informa Tech Research). We remain driven by innovation, and committed to making the world a safer, smarter, happier place.

Providing an end-to-end solution for a wide range of applications



Intelligent
VMS



AI Enabled
Video Analytics



Facial
Recognition



Intelligent Traffic
Management System



Video Command &
Control Centre



VOC
Video+Analytics
on Cloud

Technology leader across verticals, in different parts of the world



CITIES &
NATION



AVIATION &
TRANSPORTATION



COMMERCIAL
BUILDINGS



INDUSTRIAL



FINANCIAL
& LEGAL



EDUCATION



CRITICAL
INFRASTRUCTURE



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