

Open Platform for Facility Management & Surveillance Systems

Video Surveillance and Facility Management industry is experiencing a tremendous growth in demand worldwide, not only due to increased sophistications, competitiveness or demand, but also due to globalization. People are demanding increased ROI from their immovable assets such as buildings, which are able to do its own visitors management, or able to communicate if there are any issues which need immediate attention.

This sector is experiencing information technology convergence and convergence is happening really fast. Market is demanding solutions, which are not only able to control the local facility, but also controls remote facility and delivers the true remote presence experience for the operator. This way facility managers and Security in charge could control, observe and manage his task sitting at totally independent location.

At the same time, businesses are demanding more from operations spread across multiple locations. It has become critical that the facility management systems should think beyond security and help improve the real time remote supervision, operations management and contingency handling. With the current global financial melt down, need is more evident towards low cost of operations, intelligent event detection and self-corrective methods.

In the rest of this paper we will discuss some of the functional and technical aspects of the open platform facilitating the IT convergence of all modules involved in building security and management. Cradle's Networked Video Surveillance Systems (NVSS) is one of such pioneering platforms.

For the multiple components of BMS to work together or even co-exist on the same platform in integrated environment, the platform should be able to serve the toughest candidate. Video Surveillance being most CPU intensive portions of the systems, it makes sense to choose a platform, which can deliver the best of the class performance. The same platform should facilitate the integration with other components easier.

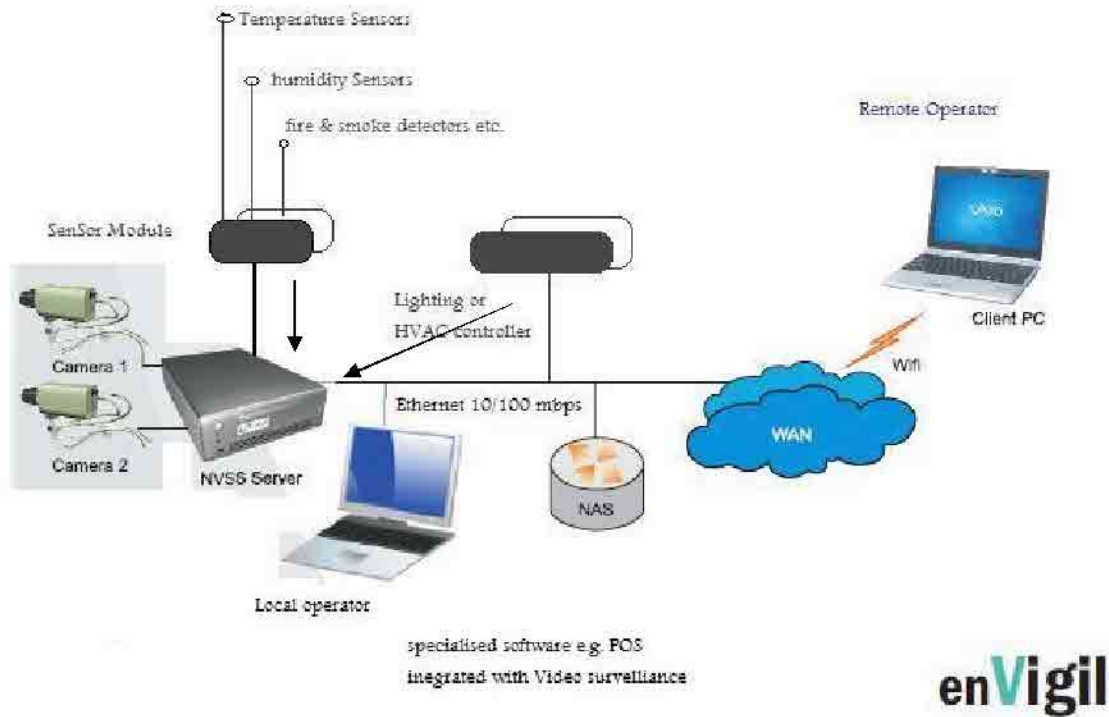


Fig. 1.0 Network Diagram showcasing the IT convergence

Fundamentally following considerations are very important while selecting the system for your use.

Secure Access:

Access to the equipment as well as data such as audio and video from business locations such as factories, franchisees or warehouses need to be transported over the network for remote supervision and management. These video streams should not be viewable by any one not authorized to do so. The streams must be encrypted and utilize virtual private networks to ensure secure completely secure access.

Remote Viewing:

For the purposes of remote supervision and facility management, authorized individuals need to view the video over the Internet from any location worldwide. At any given moment the actual available bandwidth is unpredictable and can change at any moment.

Platform should be able to estimates the available bandwidth and adapts the compression parameters to facilitate smooth motion video viewing experience. In

addition to adjusting compression rates to the instantaneous bandwidth of the Internet, audio and video needs be kept in synch for a richer viewing experience.

Location Independence:

Authorized personnel need to be able configure, change settings, view live video, analyze stored video among all the features and functions from anywhere on the Internet. This requires that a full functional portable client be supported locally, on LAN or on the Internet.

Mobile Device Support:

Mobile phones are common and are more easily accessible than the computers. Open platform based solutions should be able to send alerts as SMS or email messages to portable devices so as to enable prompt action if needed.

Network Attached Storage:

Most current solutions require that the video be stored locally to the Digital Video Recorder (DVR) or Networked Video Recorder (NVR). There have been many cases where the system has been stolen along with the local storage. There is also a requirement for adding storage beyond the capacity provided locally.

Network attached storage would enable the platform to extend data storage capabilities and allows it be located away from the system also provide **Redundancy** of data i.e. RAID (**Redundant Array of Independent Disks**) capabilities

Archiving:

Mission Critical Video data needs to be archived on demand or automatically locally or away from the surveillance system, for later use or for audit purposes. Platform must enable users to archive either locally or remotely and also allow for automatic continuous archival.

Dynamic domain name (DNS)

Many of the current products needs static IP support so that they are visible and accessible over Internet. Fact is, that the Static IP cost a lot over longer run. This adds additional cost and may make the cost prohibitive when the Video Surveillance and BMS network is made of many nodes.

The platform must support dynamic DNS capabilities so dynamic IP address can be used for each PLATFORM node. This shall also allow the other devices on the networked accessible through the common platform.

User Classes:

Businesses require that only the authorized individuals perform control and management of the surveillance systems. Certain cameras and devices should be restricted to specific personnel. PLATFORM must implement comprehensive user classes and authorization mechanisms to facilitate such control.

Alerts:

Open platform is required to generate timely alerts based on detected video or device events or combination of related events from related applications from one or more locations. These alerts are to be transmitted as e-mail or SMS messages to appropriate personnel or invoke other actions as desired, such as sounding an alarm or close a gate.

Integration:

Often there are other solutions such as fire safety, Visitor management, attendance system or access controlled is also deployed in the buildings. All these systems need to operate in harmony and over multiple locations. Appropriate open programming interfaces must be made available by the common to facilitate this integration to suit each situation so that all these independent applications can communicate with each other and share the relevant data.

Intelligence at edge

Market requires that detection of relevant events be available for a broad set of Video Surveillance and BMS solutions. Businesses need the surveillance process to be driven by interesting events.

Video Content Analysis (VCA) technology needs to be deployable seamlessly and should be made available on demand. For Video Surveillance System, it means that any of the cameras could be directed to “look” for a particular event and send a real time alert if so desired or tag the video in way that it can be retrieved efficiently.

Potentially interesting events in surveillance video in the context of any midsize commercial building could be classified in 3 categories:

People Video Analytics: - Counting people, Intrusion, Cashier absent from station, Wrong way movement, Face capture when in view, falling, running etc.

Vehicle Video Analytics: - License plate reading, Stopped car, Wrong way, Speeding, Model and make etc.

Object Video Analytics: - Unattended object, Removed object, Object moved

As Internet is getting omnipresent and the broadband is becoming available and affordable everywhere. It is required that the video and audio from any location such as a factory floor or hotel lobby be accessible by appropriate and authorized management from anywhere regardless of location, anytime and by using any means, such as a laptop or a cell phones. And in a very secure way. Whenever, there is a situation that warrants immediate attention, an alert with relevant information needs to be sent to appropriate personnel in real time. These requirements are being driven as much by the medium size commercial customers as by the enterprise and infrastructure projects.

Putting the all the technology pieces together, we should be able to deploy the automated access plan for the facility and perform the frequent audits very easily. The Platform shall allow you to do the customized access plan within the facility and help you with the audit against it.

Similarly for the areas like car parking, open routes & doors could be maintained efficiently and easily. Sensors spread across horizontally and vertically across facility would help in power/energy vis-à-vis comfort level of the facility.

Networked Systems would be able to give the access and information to team spread across multiple locations horizontally and vertically. The systems would be able to capable of delivering the audio, visual communication within the facility as well as with the outside world.

To summarize, next generation facility management systems would have its own eyes, ears, senses, and ability to communicate with our side world and most importantly would be able to make its own decisions. The products of this category shall be in the market sooner or later and the major success mantra will lie on the choice of the platform one will choose the build systems.

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