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Maharashtra Police Academy (MPA) Nashik gets Hi-tech Surveillance System

Case Study by: Revmax Security Systems

After 26/11 Maharashtra state is awaiting a modern city wide surveillance system and MPA Nashik will serve as a good testing ground before public money is spent

The security threat to MPA was evident last year when a Pakistan-based operative, Bilal, was arrested in Nashik with photographs and maps of MPA which is one of the most prestigious police training academies in the country. The Academy is a pioneer institution in the field of police training and has a history of producing tough and efficient officers since its inception in 1906.

Maharashtra Home Minister R.R. Patil was briefed by Director MPA Sanjay Barve and Deputy Director Dr. Nikhil Gupta on the need for a high tech IP camera based surveillance system for MPA, as well as for cities like Mumbai and Nashik. Gupta added that such a system would drive down the crime rate in these cities due to the sense of a third eye watching over the criminals, and the rate of solving cases would also go up. Patil declared that he would immediately clear this system for cities of Nashik and

Mumbai. Barve further proposed that MPA would make its infrastructure open to Nashik City Police.

Patil praised Kaustubh Butala, Director of Revmax who played a crucial role in the implementation, and under whose umbrella the corpus of 85 lakh rupees worth of systems was donated to MPA Nashik. He also asked him to design a system for the cities of Nashik and Mumbai, adding that he would personally look at their early deployment.

The system is a hi-tech affordable solution based on open platform video management system provided by Milestone Systems, a company dominating the world scenario in video management systems. The Milestone software opens up the possibility of integrating any legacy system, besides many innovations like image grooming and GIS integration, thus enabling integration with maps of the area where the system

Application

Intelligent City Wide Video Surveillance (Prototype)

Location

Maharashtra Police Academy, Nashik (MPA)

Partners

Milestone Systems: Video Management Software

Axis Communication: Video Cameras

Agent Vi: Video Content Analytics

Tulip Telecom: MPLS Wire-less Connectivity

is installed. It is based on federated architecture, thus making it immune to terrorist takeover when implemented in bigger metro cities.

The system can analyze the events in present as well as past using intelligence and analytics software provided by Agent Video Intelligence, an Israeli company who is a global market leader in the field. The network is a mix bag of optical fiber provided by Revmax Security Systems Pvt. Ltd., and MPLS (Multi protocol layer switching) radio network provided by Tulip Telecom Ltd., a Delhi based company which pioneered RF (radio frequency) connectivity in India. The high end cameras have been provided by Axis Communications of Sweden, a leading manufacturer of IP cameras



Home Minister of Maharashtra R.R. Patil taking a sneak peek at the Milestone Installation at Maharashtra Police Academy, Nashik

worldwide. The cameras have the capability to detect and transmit in very low light conditions, effectively giving superb detection capabilities at night.

The system comprises cameras, video management system and application software, and is one of the most modern with 15 cameras, in addition to the existing 28. The cameras are enabled with day and night visibility, have face recognition ability, and video alarms can be viewed even on a smartphone. The entire system is based on GIS (Geographical Information System) giving the MPA security team the exact coordinates of an alarm, thus enabling a low response time.

Salient features of the system

Camera poles:

- The poles are specially designed and engineered by Revmax.
- Made of swage type tubular steel hot dipped galvanized material to withstand harsh Indian environment.
- Strong RCC base with grouting to withstand impact of vehicular collision.
- Special material used to minimize external ground vibrations effecting image stabilization.
- All cables (communication and power) are routed from inside the pole to prevent sabotage.
- Airtight terminal box to house and secure all power and LAN equipment.
- Lightning arrestor and POE surge protector to secure the pole installed equipment.

Video cameras:

- Fixed and movable IP cameras to cover wide areas.
- True colour day and night network cameras deliver clear images even in

extreme low light conditions (0.001 lux or lower)

- Edge recording prevents video loss due to broken network links.
- Power over Ethernet (PoE and High PoE), enables single cable for power, video and remote pan/ tilt/ zoom.
- Two-way audio with enhanced audio quality and compression.
- HTTPS encryption mode used for advanced level security and network management.
- Digital PTZ and H.264/ MPEG-4 based multi-view streaming.

Video Management System: (by Milestone Systems)

This limitless multi-server and multi-site solution is federated architecture for better centralized management and control, having the following features:

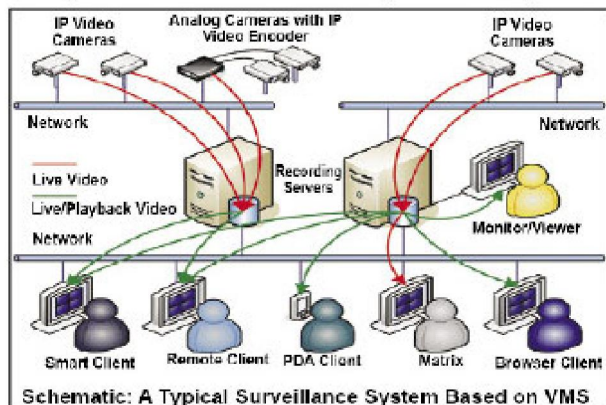
- Advance bookmarking feature to mark video sections of particular interest and add descriptive notes for later analysis or sharing with other users.
- Single point alarm function to provide a consolidated and clear overview of security and system related alarms.
- Safeguard feature that allows cameras



Surveillance Camera at MPA Nashik monitoring the perimeter on Milestone XProtect Corporate Open Platform Video Management Software

to function as failover devices to ensure uninterrupted video recording in the event of network or server failure.

- Sequence explorer feature to display sequences, time intervals and bookmarks in thumbnail previews.
- Unique independent playback function allows instant playback of recorded video in live or playback mode.
- Audit logs for full awareness of the system and user activity with comprehensive logs.
- The system has the ability to traverse



Schematic: A Typical Surveillance System Based on VMS

both LAN and WAN network topologies.

- Additional plug-in to automatically capture a moving vehicle's number plate.

Video Analytics System: (Integrated with Milestone VMS)

- Server-client based solution that distributes the processing of the video image between firmware embedded in edge devices and a server so that a server featuring a quad-core processor is capable of performing analytics on at least 200 cameras simultaneously.
- Utilizes a proxy mechanism to pull the video stream from Milestone (VMS) and performs the feature extraction on the server side.
- Additional servers can be added to the network for enabling analytics on an unlimited number of additional cameras (without downtime).
- The system is capable of delivering analytics to large-scale deployments comprising thousands of video cameras.
- Capable of detecting objects whose height is at least 5% of the field of view (FOV).
- Functions even in diverse environments such as low light, rain, snow and clouds without loss of performance or significant increase in false real-time detection or false search results.
- The solution features a GUI, enabling operators to quickly and easily set up analytics detection rules using a wizard type function.
- Enable operators to configure operational analytics parameters (such as activation time and duration) versus continuous analysis.
- Enable any combination of analytics rules to run on the same camera si-

- multaneously, without limitations.
- Offers a suite of analytics rules to provide automatic detection of a range of motion and non-motion behaviors of persons, objects and vehicles viz., Person moving in area or crossing a line; Crowding; Person tailgating; Loitering; Person counting; Suspicious object; Traffic obstacle; Asset protection; Vehicle moving in area or crossing a line; Stopped or Tailgating vehicle; Vehicle counting; Moving water vessel; PTZ tracking; and 3D masking.

Wired/ wireless network connectivity: (by Revmax and Tulip Telecom)

The implemented network is a mixed bag of wired (optical fiber and copper provided by Revmax) and wireless IP/ MPLS (Multi-protocol layer switching) radio network provided by Tulip Telecom Ltd.

- Armored Single Mode ITU-T G.652 fiber with 10/100 Mbps media converters is used to network IP cameras with Milestone and Agent Vi.
- Tulip's IP/ MPLS network is a carrier grade infrastructure that is built using state-of-the-art networking equipment.
- Tulip's IP/ MPLS network is designed with 'no-single-points-of-failure' architecture. All critical equipment and links are deployed in redundant mode, offering network availability in excess of 99.95%. The hierarchy follows a three-tier model with 3 layers i.e., Core, Aggregation and Access layers.
- This RF based unique approach allows to get connected quickly and easily with very short time lead, eliminating many of the hindrances encountered in implementing traditional wire based networks. ■



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