

## *IVC APPLICATION NOTE:*

# Utility Perimeter Security

A water agency in Northern California purchased a number of IVC 25x pan-tilt-zoom cameras for primarily monitoring activity on or near the perimeter fence of a water treatment facility that was being constructed. A requirement of the system was to interface the facility's fence protection system to the video system so that cameras would automatically react to possible intrusions into the facility. An additional requirement was to detect entry/exits at key doors and gates of the facility and record video segments of activity at these locations.



### **Hardware Solution**

The network architecture at the facility includes a fiber backbone with 10/100 Mbps copper to the IP-cameras from IVC. The cameras, fence perimeter security system, and access control system were all independently installed with no regard for potential integration. So the challenge was to integrate these disparate systems seamlessly post-installation.

The fence protection systems employs a strain-sensitive cable system. Any mechanical disturbance on the fence is converted to an electrical signal. This causes a low voltage signal to appear at the cable's output. The system installed here is comprised of nine zones. Each zone has its own cable and a device that sends the signal to a centrally-located controller. The controller analyzes the signal and filters out any disturbances caused by weather or other non-threatening factors. The controller provides interfaces and intelligence in order to convey possible threat conditions by actuating lights, synthesizing voice commands, print reports, actuate relays, etc. At this water treatment plant, the fence protection system was not initially connected to the plant network.

Entry to plant and critical plant areas is controlled by a standard analog access control system. Proximity card readers are located at these entries and positive identification is determined by the system's own controller, which controls the gates or electronic strikes of critical doorways. This system is also not inherently IP-based.

The challenge for IVC and the contractors involved was to integrate IVC's network cameras and these analog systems. To accomplish the physical integration, signals from each of the fence protection system's nine zones and from the critical plant entries were wired to a single Sixnet EtherTRAK ET-16DI2. This device is designed to report analog I/O status over an IP network. Now, the fence protection and access control systems statuses are on the same network as the cameras.



## Software Solution

The problem of having the camera system recognize this status information and reacting accordingly now had to be solved. IVC proposed the use of its Alarm Server software as the mechanism for determining the status of these analog systems and then controlling the IP cameras appropriately.



The IVC Alarm Server is part of our View Station client software package. It is a true server app that can run anywhere on the network and “listen” for alarm messages from a variety of devices, including cameras. The Alarm Server is designed to recognize a variety of message types and protocols including TCP, SMTP, Modbus, IPASCII, and others. The software also has the capability to pole dumb devices. It is architected to facilitate adding support for other message protocols as customers require them.

In this case, the Sixnet interface device is a dumb I/O module, so the Alarm Server poles the device periodically based on a user-defined time interval. The Alarm Server then parses the TCP packets from the Sixnet device to determine if an alarm condition is present and what door, gate, or fence zone is causing the alarm.

At this point, the system uses the standard features of the IVC View Station software to determine, if necessary, how to react to a specific alarm. The View Station GUI provides the user the ability to define a series of actions to take should a specific alarm occur. In the case of detection of a possible threat at the perimeter fence of the water treatment plant, the Alarm Server first identifies the source of the alarm (fence zone, perhaps). The View Station responds by moving the three nearest PTZ cameras to view the fence zone in question and begin recording. The alarm is also logged and visual and audio cues are given to the operator.

This application note illustrates how IVC video management software, which includes Relay Server, View Station, and Alarm Server, and our surveillance cameras can be efficiently and cost-effectively interfaced to existing analog fence perimeter security and access control systems to provide a comprehensive IP-based security system.

## About IVC

Based in Newton, MA, IVC delivers a broad range of quality IP-based video systems to industrial, commercial and military applications. Their standards-based software, which delivers quality video to PCs and other client devices over a network, is designed to be scalable and easily integrate with third party software. A key strength of IVC is its ability to develop cameras, enclosures, and software to meet demanding customer requirements.

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