

Challenges

- Need for effective video surveillance solutions to aid lean-staffed law enforcement personnel
- Legacy network and video surveillance solution unsatisfactory
- Growing video surveillance expansion/consolidation requirements exceed current capacity

Value Created

- Reliability and performance of new system help to minimize liability risks
- Dramatically sharper image quality enhances security
- Shift to IP from analog platform results in lower costs for installing IP cameras and fewer units required because of wide camera range
- High capacity enables quick assessment of situations requiring rapid response
- Scalability and flexibility – customer can add cameras, locations, and new functions with ease
- Customer reports virtually no maintenance required for the rock-solid, always-on Avaya network



Avaya Fabric Connect Enables Powerful Video Surveillance for Michigan's Safest City



Troy, Michigan – The Troy Police Department recently grappled with how best to upgrade their video surveillance system throughout the city to provide optimum security for citizens and staff, protection of public property, and a strong first line of defense against liability claims. Their journey demonstrates the importance of not only choosing quality video equipment, but also having the right networking infrastructure to support video surveillance through high performance and reliability, with minimal maintenance.

Background

Troy is ranked the safest city in Michigan, and one of the safest in the United States. Over the past decade, video surveillance has been playing into an increasingly important role in helping to maintain this enviable record.

Before making the decision to move to an IP-based video surveillance system,

the City of Troy Police Department had a 48-camera analog system at police headquarters, and several independent video silos throughout the city. The limitations of this approach included difficulty in reviewing video from multiple locations. The overall system was almost ten years old, and issues were developing with some of the back-end equipment.



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*Both statements by:
Ryan Wolf, Research and
Technology Administrator for the
City of Troy Police Department*

Massive Problems and a Spectacular Solution

Believing that their network infrastructure could successfully support the expected increase in load that the new technology would bring, the City of Troy decided to invest in new IP video equipment from video surveillance solution provider Pelco, a subsidiary of Schneider Electric.

“Unfortunately, we had a very bad implementation that was painful, to say the least,” says Ryan Wolf, Research and Technology Administrator for the City of Troy Police Department. “We had corruption in the database, cameras dropping off the system, and encoders locking up. We were unable to connect the management consoles into the system, so they weren’t able to find the Pelco system managers, retrieve video, or get audio. In short, there were massive problems, and the whole situation was completely unacceptable from a law enforcement perspective”, says Wolf.

At first Wolf and his team blamed these problems on the video

equipment. However, Pelco technicians came to the rescue by identifying that the difficulties were caused by the underlying network, rather than the video equipment itself. Having worked with the Avaya networking team to solve similar problems at a recent implementation in California, they could confidently recommend Avaya as the networking solution that could solve the problems being experienced.

A cross-disciplinary vendor team was assembled to quickly resolve Troy’s video surveillance problems. Tyco SimplexGrinnell worked with Pelco as the video systems integrator, and an Avaya authorized partner who handled the network installation and configuration.

The team designed and implemented an Avaya IP network infrastructure that would provide optimal support for video surveillance. (Please see diagram, page 3.)

Wolf recalls that the process moved rapidly, and the results were heartening. *“From a cost standpoint the Avaya solution was good. After the equipment arrived, we got it racked and powered up in about half a day. The rest of the installation required only a few more days. And then it seemed like we had a brand new camera system.”*

Wolf adds, *“After we installed the Avaya network, our massive video surveillance problems went away. Since then things have been essentially flawless. What we learned from our*

experience is that IP video and its demands on multicasting are not what IT and network administrators typically understand about multicasting. The realization was that placing video surveillance on a traditional network is like dumping Los Angeles-scale traffic on a much smaller city's roads!"

High-Quality Video for Mission-Critical Applications

When the City of Troy began running their Pelco Endura® video surveillance cameras on the Avaya network, they were able to appreciate and benefit from the many features of high-quality video surveillance. For example, the City's HD cameras can now be driven to much higher quality. In some cases this quality allows the police to zoom in on a vehicle in the parking lot from a distance and read the license plate numbers. The new cameras also have a better field of view, so the police can cover bigger areas using fewer cameras.

Wolf notes that they also use HD cameras in the property room at the police station, where money is counted and things such as drugs are weighed. "We can see the serial numbers on the bills and even read the scale,"

Wolf says. "These are really significant quality control features for us."

Superior Reliability for the Protection of Citizens and Property

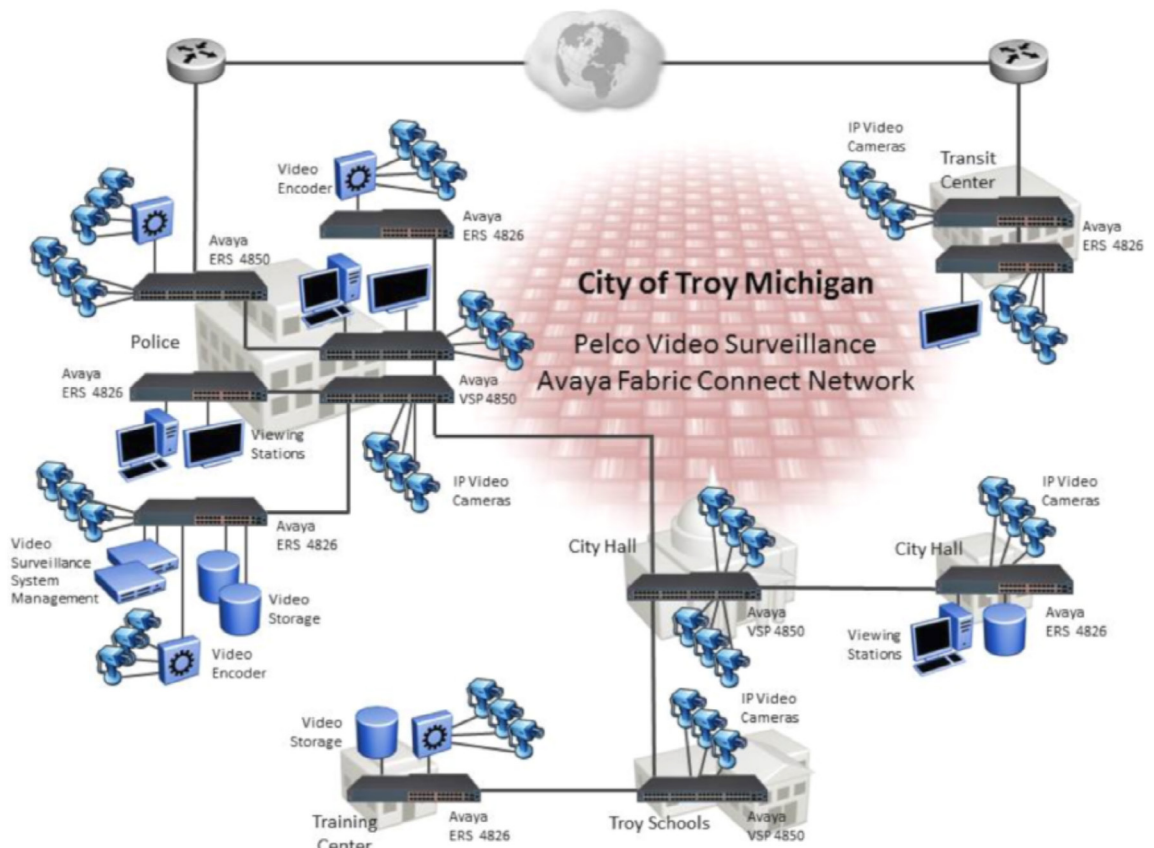
Reliability has improved, which is a relief for the police, as the State of Michigan mandates recording of prisoner transfers and certain interview room conversations. The importance of reliable recording is significant because potential liability issues exist whenever individuals are taken into custody.

In addition to serving the critical needs at police headquarters, Pelco Endura® video surveillance equipment is distributed throughout the City of Troy, running on a single dedicated network consisting of an Avaya

Virtual Services Platform 4000 with Avaya Ethernet Routing Switch (ERS) 4800 series switches. The system serves several functions throughout the city, including:

- Property protection for costly equipment at locations such as the Training Center (used by the Fire and Police Departments) and the Department of Public Works
- Public protection at all locations
- Monitoring of staff interactions with the public at various public service locations

"Now that the video surveillance system is working so well and we know we have consistently high performance with always-on reliability through the Avaya network, we are actively looking at many more things we can do with it," Wolf states. "Our system has a level of scalability and



Top 10 ways Avaya Fabric Connect makes video surveillance simpler and better

1. Deliver scalable and reliable IP Multicast without PIM
2. Eliminate lapses in video with sub-second network recoveries
3. Enable video streaming from remote monitoring stations in real-time
4. Completely eliminate Spanning Tree
5. Simplify management and troubleshooting by eliminating complex protocol overlays
6. Provision an IP video surveillance network in minutes not days with end- point service provisioning
7. Add, move, and change cameras on the fly
8. Scale the number of cameras and receivers to tens of thousands of devices - without having to purchase new Switches
9. Support any type of surveillance implementation (analog, IP, hybrid, Unicast, Multicast) with the same network configuration - and eliminate redesign!
10. Create a secure zone for video surveillance across a converged backbone quickly and easily

For more information about Avaya Fabric Connect and video surveillance, you can read the white paper at:
www.avaya.com/usa/documents/dn7348.pdf

flexibility that allows us to consider a multitude of new projects without concern about whether or not the system can handle them.”

For example, the City has already expanded its weather system to include full screen monitoring from “Weather Underground” - www.wunderground.com (a site that takes National Weather Service reporting and displays it in its own format), concurrent monitoring of local TV channels, and even a broadcasting capability. This assists the citizens, the police, and public works in dealing with weather emergencies. In addition to migrating additional buildings to IP surveillance, the City is considering expanding the system out to “high crash” intersections to monitor traffic flows. They are also looking at partnering with local businesses so the Police Department can get feeds from the businesses’ camera systems to monitor what their security professionals are looking at.

City of Troy’s Video Surveillance Deployment Demonstrates the Avaya Difference

While IP Multicast plays a key role in the transition of video surveillance technology from analog to IP-based systems, it can be difficult to design, deploy, troubleshoot, and scale - as the City of Troy experienced with its traditional legacy network. However,



Avaya's fully integrated and optimized IP Multicast capability addresses such issues by providing scalability, flexibility, and ease of deployment. Avaya Fabric Connect, an extended implementation of the IEEE/IETF standards for Shortest Path Bridging, avoids the complexity of traditional overlay IP Multicast Routing protocols, to simplify IP video surveillance deployments ranging from small to large.

Conventional IP Multicast networks tend to offer slow recovery, requiring seconds or minutes. This can result in the loss of critical video footage. The Avaya network, on the other hand, provides lightning-fast recovery, with sub-second recovery times (<200 msec). This protects applications and ensures that video is always available. MPLS can isolate traffic, but design, deployment, and troubleshooting can be complex. With Avaya Fabric Connect you can set up secure zones across the enterprise to isolate traffic for security and regulatory purposes. IP video surveillance traffic can be separated from other corporate traffic easily and securely.

In traditional IP Multicast networks, a protocol known as PIM must be enabled on all Routers and on all Core and Local edge interfaces where Multicast is required; and traffic is routed through a fragile "rendezvous point." This approach is complex to operate and difficult to troubleshoot.

From the integrator's perspective:

"In the City of Troy deployment, we saw a dramatic improvement in network performance to support video surveillance. It is a very viable and tightly provided solution that benefits from the partnership that exists between Avaya and Pelco, and from Avaya's understanding of how the Pelco systems work. That partnership is certainly advantageous and would be beneficial in other deployments.

"I think one of the things the project has highlighted is the need for integrators, and the whole team really, to understand the infrastructure and what it is to be used for. It is also important to recognize, right from the start, what video networking is, compared to data networking. These fundamentals are very important to avoid the type of issues that Troy experienced at the outset, before migrating to the Avaya network.

- Carl Moody, Systems Support, Tyco SimplexGrinnell

In contrast, the Avaya Fabric Connect technology is far simpler in design and operation. It utilizes a single unified protocol, in which traffic takes a direct route to its destination.

The Avaya Fabric Connect network is easy to deploy and troubleshoot - with Edge-only provisioning and single command configuration. Importantly, there is no need to touch the Core of the network.

Traditional networks also provide only limited scalability, ranging from hundreds of streams to a maximum of one or two thousand. The Avaya network offers massive scaling, with tens of thousands of simultaneous streams supported.

Troy's experiences show the real-world implications of these differences. Wolf recalls the problems he and his team encountered running scripts used by the Pelco video surveillance

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“The simplicity and reliability of Avaya’s Fabric Connect technology have given us a hassle-free experience from the day it was installed. [Our Avaya reseller] did a great job establishing the network for us, and since then, we literally haven’t had to touch it – ‘it just works,’ day in and day out.”

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equipment, especially when the Police Department was running video “tours” of various buildings.

“The video wall at Police Headquarters was set up to display 16 cameras at once,” Wolf explains. “Yet most of the time there would be cameras that had failed to connect, or the scripts just couldn’t connect to cameras. Sometimes that giant display was almost completely black. Since our migration to the Avaya backbone, those scripts are amazingly fast. For example, when an operator presses the button that dials into the dispatch center, it does a full camera call-up. That script would take almost 60 seconds to execute with our previous network, if it worked at all. Now, with the Avaya network, we’ve got that down to about five or six seconds. And subsequent camera call-ups are so fast they are almost instantaneous.”

Flexibility and Ease of Management

The City of Troy’s new Avaya network and Pelco video surveillance system deliver the flexibility to enable unique responses to special situations. For example, if staff members have trouble with someone at the records bureau or a walk-up desk, they hit the panic alarm. Not only does it set off an alarm in the dispatch center, but it also takes two of the 55-inch displays and directs them to go full screen on cameras that can view the affected area. And if it’s an alert text, the alert goes right up on the screen, indicating that there’s a panic alarm at a specified location. In this way, the dispatch center can instantly monitor the situation and send units to assist.

The system also enables remote access to video screens via smartphones provided to supervisory personnel, enhancing effective coordination of law enforcement services.

Wolf has found that the Avaya network provides a worry-free, virtually maintenance-free platform for optimum video surveillance. *“Like most public IT departments, we just don’t have the staff to be constantly working on network maintenance. The simplicity and reliability of Avaya Fabric Connect technology have given us a hassle-free experience from the day it was installed. [Our Avaya reseller] did a great job establishing the network for us, and since then, we literally haven’t had to touch it – ‘it just works,’ day in and day out.”*

“Our current experiences and future visions for the video surveillance system have changed dramatically since we’ve been running it on the Avaya network,” Wolf says. *“We can now proceed with confidence that whatever plans we develop for surveillance, the network will be able to handle it without giving us the host of difficulties that we had before.”*

Wolf concludes, *“I sleep a lot better now, knowing that our video surveillance is on an Avaya network.”*

Learn More

For more information, contact your Avaya Account Manager or a member of the Avaya Connect channel partner program, or access other collaterals by clicking on Resource Library at www.avaya.com.

ABOUT CITY OF TROY, MICHIGAN

Troy is one of the most dynamic and livable cities in Michigan, and in the United States. It is renowned for A+ rated schools, excellent public services, and a community spirit that’s second to none. As one of the safest cities in the nation, and the safest city in Michigan, Troy combines diversity, Midwestern values, and a great location that make it a wonderful place to live, work, and raise a family. The city is a vibrant business and technology center that’s home to over 6,100 thriving businesses that employ 125,000 people. For more information, see www.troymi.gov.

About Pelco

Pelco by Schneider Electric is a world leader in the design, development, and manufacture of video security systems and supporting equipment ideal for any industry. From an impressive manufacturing facility located in Central California and through a responsive global network of professional sales representatives, Pelco continues to offer new technologies, products, and services that constantly confirm the company’s position as the security industry’s premier video systems and equipment manufacturer. See more at www.pelco.com.

About Tyco SimplexGrinnell

Tyco SimplexGrinnell, a Tyco business, is a longtime leader in fire and life safety, with one million customers and over 200 years of combined history in the industry. Tyco SimplexGrinnell is advancing safety and security with a comprehensive array of fire alarm, fire sprinkler, fire suppression, emergency communications, integrated security, sound, and healthcare communications systems and services. Tyco SimplexGrinnell has over 9,000 employees and serves customers through 130 company-owned offices in the United States. For more information, visit www.tycosimplexgrinnell.com.

Systems, Applications, and Services

- Avaya Fabric Connect, an extended implementation of the IEEE/IETF standards for Shortest Path Bridging
- Avaya Virtual Services Platform 4000
- Avaya Ethernet Routing Switches 4800 series
- Pelco Endura® Video Management System including HD IP cameras, Network Storage Managers (video recorders), IP Encoders for analog cameras and Video Display Workstations, all under the management umbrella of the Endura® System Manager
- Video surveillance integration by Tyco SimplexGrinnell
- Network integration by Integration Partners

Statements in this case study were made by Ryan Wolf, Research and Technology Administrator for the City of Troy Police Department; and Carl Moody, Systems Support, Tyco SimplexGrinnell.

About Avaya

Avaya is a global provider of business collaboration and communications solutions, providing unified communications, contact centers, networking and related services to companies of all sizes around the world. For more information please visit www.avaya.com.