Jefferson County Waterway's Critical Vessel Traffic Monitored through Milestone Surveillance

The Sabine-Neches Waterway runs 55 miles through Jefferson County, Texas, to the Gulf of Mexico, and includes the number-one commercial and military out-load port in the United States. It is the fourth largest port in terms of processed tonnage. A vast waterway traffic-monitoring network has been deployed to ensure all vessels (civilian, military and commercial) can safely navigate the waters with minimal interference such as collisions or other traffic stoppage. A new surveillance system also monitors the many petroleum refineries that line the channel. Backed by a Verizon Wireless 4G connection, the county cameras reside along the Sabine-Neches Waterway, networked through Milestone XProtect® Enterprise for managing high definition video, live vessel movements and incident reporting.

"Milestone's open platform IP software is truly the best on the market. It integrates with all of the cameras seamlessly. Milestone XProtect provides the sheriff's department with more high definition screen images and significantly better views of the waterway than the previous system. Now our system's design provides live video and pushes to tablets, smartphones, dispatchers, and personnel on watercraft, who are given access to the video." – Mark Nolan, Knight Security Systems

The challenge - Securing and monitoring 55 miles of waterway with traffic, including vessels ranging in size from small tugboats to huge tanker ships hauling hundreds of tons of oil and other commodities. When an incident is called into port security, the port authorities must assess the situation and respond immediately. Through the Milestone interface, reported incidents are checked on video to determine if the port must close or can continue operating. Closing the port for any amount of time is an expensive procedure, so having virtual eyes on the scene is imperative to operations. The previously installed system was only viewable and navigable in a control station building.

The solution: Knight Security Systems designed and installed a Milestone XProtect Enterprise IP video surveillance solution with AXIS Q1604 and Sony SNC-ER550 cameras and more than eight terabytes of storage to provide 24 hours of monitoring. With the Milestone Mobile client, the sheriff's department and port authorities have instant access to video at a moment's notice, from anywhere. A Verizon Wireless 4G network for reliable and redundant operation powers the entire system.

The advantages: The Milestone XProtect® solution consolidates every one of the 24-hour monitored cameras into one centrally managed solution, viewable by all administrators in their respective offices, in the main monitoring station and on mobile devices. With high-level national security implications, live camera views and the ability to quickly check recorded video is essential to the port's operational standards for efficiency. Every second between an incident report and confirmation of the validity of the report is crucial to the response process.

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A Vital Artery for US Oil Imports
As the fourth largest port in the U.S., Port Arthur in Texas' Jefferson County is the number-one crude oil destination for foreign tankers, as well as the number-one commercial and military out-load port. Hundreds of vessels are processed through the channel each day, making their way from other domestic ports and from all over the globe into the Gulf of Mexico and up the Sabine-Neches Waterway.

With oil refineries and other critical infrastructure lining the 55 miles of river bank through Jefferson County, the sheriff's department required a sophisticated security surveillance system to monitor waterway traffic and incidents. They need to ensure the safety of those working and traveling through the port, and to keep traffic flowing for the sake of commerce that relies on a clear waterway.

The problem: Previously installed systems relied on T1 lines, leased communication lines and microwave communication methods. Jefferson County was relying on outside partners to host landing points and was constantly provided low definition video. The area is scattered with low-lying areas and swamps, which limited coverage for the low-capacity T1 lines which were easily corroded from damp conditions and salt corrosion. When monitoring the video during and after an incident, a command center was the only place where the sheriff, Coast Guard or port officials had access to the video.

When looking to completely upgrade the county's river surveillance, officials contracted Texas-based Knight Security for a better solution – one that would provide nearly lossless access to video at a moment's notice, even for those stationed away from the central command center.

"Our goal was to provide high-definition screen views and more efficient monitoring of the waterway," stated Mark Nolan, Sales Engineer, Knight Security Systems, Gulf Coast Region. "The new video system was specifically designed to capitalize on the unique areas of the Port. We now have camera 'eyes' located on an array of tall locations in challenging environments. Coupled with Milestone XProtect, the system provides advanced coverage throughout the entire waterway. We are able to provide live video and push out to tablets and mobile devices to numerous dispatch stations, personnel on watercrafts and others to have immediate access to any incident."

Protecting the Port
The only way to access Jefferson County through the waterway is via Sabine Pass, TX or through two entry points on the Intracoastal Waterway. With an advanced communications system and screening process, no vessel is unaccounted for. The cameras act as verification to confirm radio transmissions. The Vessel Traffic Service (VTS) at Port Arthur acts as the "keepers of the gate" aided by the Milestone video management solution. VTS Port Arthur trained operators scan the waterways efficiently and effectively, 24 hours a day.

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VTS issues advisories and works to minimize blind spots utilizing cameras and radar. Activities are monitored with the aid of the Milestone XProtect interface. Whether it's a dredge, accident, or other incident; almost every vessel, regardless of size, is within a camera's field of vision.

"If we pick up a radar blip that's not transmitting an identification signal, it is imperative to identify that blip before it enters the port," explained Michael Measells, Director of Vessel Traffic Service. "The cameras can do what radar can't achieve. We can put an eye on a vessel through the Milestone XProtect software, allowing us to know what's moving from a marine safety and security standpoint. That's the number-one mission."

Uniquely Stationed Surveillance Points
Cameras line the river and port entrance, placed in strategic locations from the roofs of buildings to the top of the Verizon Wireless 4G towers. A Jefferson County Sheriff helicopter also hosts a mounted camera ready to be called into action at any time, whether it's monitoring an incident or making rounds.

"Our cameras feed the entire system and with the added support of the 4G LTE, the chances that we'll be blacked out are very low. Nearly all aspects of the system have a redundant counterpart," stated Measells. "We've been up and running as a group for eight years and other than hurricanes we've never had a shut down due to the system."

Knight Security Systems can monitor the status of the sheriff's cameras and immediately notify the client of a camera outage, which might not have been noticed by the authorities if they've not checked their mobile device. Downtime is completely minimized with the proactive monitoring and Milestone system alerts.

3

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"We've adapted to the ease of application, connectivity and versatility of the Milestone interface very quickly – it's become so easy to use. It's something we can just access without really putting too much extra work into it," stated John Moore, Electronics Materials Officer, United States Coast Guard. "Milestone is always up and running and it loads extremely fast on any mobile operating system."

The system also includes a rapidly deployable camera system that can be connected to a generator and a camera on a portable frame to easily access the waterway. It can be deployed and launched live into the Milestone system via local cell towers within minutes of a reported incident.

"The versatility of our Milestone setup also allows us to remotely provide access to our Sector Command Center in Houston so they can view any potential issue," Moore continued.

Incident Confirmation and Control

The port is a vital, active entity, responsible for millions of dollars in assets and manpower. If an incident is reported to the Sheriff's Department or Coast Guard, which isn't uncommon, there are established procedures to follow before any response is made. A response for any event, whether a boating accident, cargo spill or personal injury, has the potential to shut down the critical channel for an extended length of time.

When an incident is reported, officials must immediately confirm the report. Once confirmed, the proper authorities are contacted and ground or water personnel deployed as needed. The sheriff's department jurisdiction covers the entire 55 miles of critical infrastructure, so mobility is vital.

"I'm not monitoring the lines 24 hours a day personally, but if I get a report of an incident, I'll pull Milestone Mobile up on my tablet or phone to assess the situation," stated Deputy Chief Mark Dubois, Jefferson County Sheriff. "XProtect helps us respond quickly, allowing us to pull up video from any particular time and cameras immediately, from any location, to confirm or deny an event."
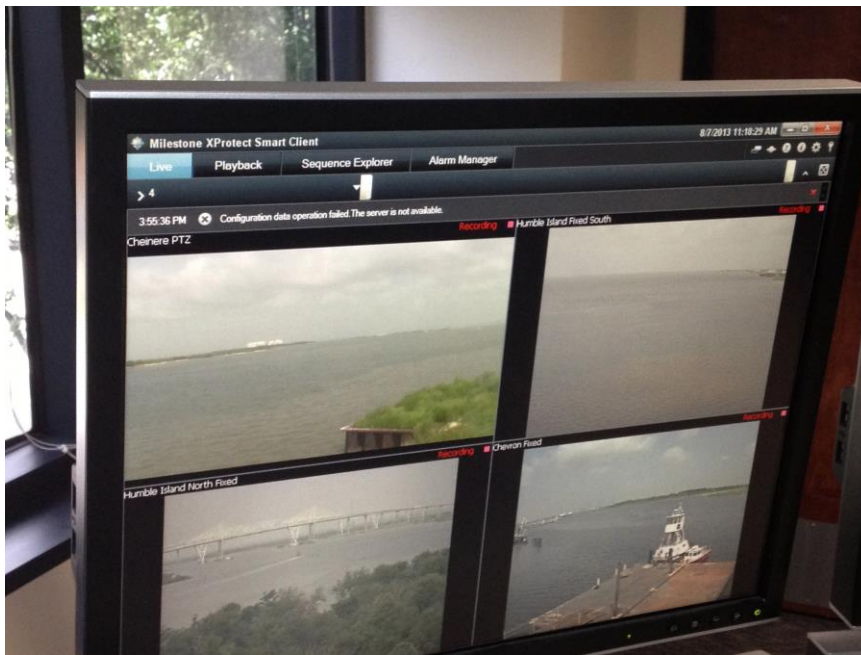
"With our camera coverage, we can move from evaluation of a report to initiating a response in a matter of minutes, if not seconds," Moore continued. "There's time and money there. Once we confirm, all responders' mindsets are immediately shifted into 'response'."

The Benefits of Scalability and Usability

Quickly allowing access to live and recorded video, Milestone can handle a large number of cameras should the sheriff's department decide to upgrade or add more hardware devices to the monitoring solution.

4

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"Overall, it used to take a lot more time before the sheriff could react to an incident, which could have been a life-or-death difference over a few minutes," continued Nolan. "Milestone provides the open platform capability, allowing the end user to stay current on the latest and greatest software, and scaling up without changing the entire system from the ground level up."

Training was quick and efficient among the three user groups -- field users on the ground and water, and users in the office reporting on analytics, recording and searching archives. Knight Security Systems created different user profiles and tailored training sessions for each group, showing them exactly the views and functions they will regularly access, rather then diving into processes that would not be relevant to their specific duty.

In total, 40 personnel were trained on Milestone, from 'power users' to those who use the system casually or view cameras sporadically. Screen images are used for numerous activities besides security, including studying tow configurations, training, and exporting photos and data to port partners.

"This is a high-traffic waterway and with a limited width, there are bound to be close calls and incidents," said Measells. "It's just good to have more eyes on each vessel. The cameras are high resolution enough to read a football player's jersey number from a mile away in low light! We're sending photo-quality screenshots throughout our network, which is incredibly valuable for investigations".

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