CASE STUDY

After further review, IP video scores for the 49ers.

San Francisco 49ers upgrade analog cameras with Axis video encoders to tighten stadium security through live video and instant replay.

Organization:
San Francisco 49ers, Candlestick Park

Location:
San Francisco, California, USA

Industry segment:
Leisure

Application:
Stadium safety and security

Axis partners:
IPVision, OnSSI

Mission

When their DVRs started to drop the ball, the stadium operations team at Candlestick Park opted for a new game plan. With a network video solution in place, they felt they'd be more proactive tackling problems that often occur during the excitement of game day. They also expected that quicker access to specific archived video would give them the forensic evidence to forestall liability claims and expedite criminal investigations. These goals caused them to begin investigating ways to leverage their legacy analog surveillance equipment while migrating stadium surveillance into the digital age.

Solution

IPVision, an integrator of intelligent physical security solutions and Axis partner, mapped out a strategy for migrating to a more feature-rich, IP-based surveillance solution. To preserve the stadium's investment in analog cameras and ease the transition to IP video, IPVision network-enabled the analog cameras via Axis video encoders.

They sacked the unreliable DVRs and replaced them with robust Hitachi servers, and installed an intuitive OnSSI Ocularis Video Management Software (VMS) system to give security greater control over live video and instant replay.

Result

On game days, the 49ers' security staff and San Francisco Police Department survey stadium activity from a video wall in the Security Operations Center– keeping an eye on everything from parking lots and gate entrances to the bleachers and concession stands. With the map-driven interface, they've been able to locate and resolve problems quickly – apprehending seat jumpers, defusing fan confrontations, responding to medical emergencies and redirecting guest services staff to ensure a positive game day experience for all. On non-game days and in the off-season, City of San Francisco park rangers command a second Security Operations Center to monitor and protect property and visitors to the stadium grounds during special events.

AXIS COMMUNICATIONS

Building a winning game day strategy

Candlestick Park opened in 1960 as a baseball park. A decade later it was retrofitted to accommodate the National Football League, where it's been home to the San Francisco 49ers since 1971 with capacity crowds reaching nearly 70,000. In mid-2000, stadium operators installed an analog surveillance system to help security staff protect fans and players enjoying the game.

"Even though the analog system was only four or five years old, we were already having issues with retrieving stored data," says Jim Mercurio, vice president of stadium operations and security for the San Francisco 49ers. Because of heavy read/write cycles, the DVRs used for video storage were prone to failure. Another shortcoming was image quality. The stadium's layout put many analog cameras – the majority of which are pan/tilt/zoom cameras – quite a distance from the head end. With long cable runs to the data closets, video clarity tended to degrade.

"We monitor over 150 cameras at a time. We needed a better strategy for managing them," explains Mercurio. The security team was looking for a number of features that the legacy analog-based system couldn't deliver, such as motion sensor alerts, instant replay of events, clustering views from disparate cameras to quickly review an incident from multiple angles, and the potential to monitor video from wireless mobile devices.

Putting network surveillance into play

Instead of benching its legacy cameras, IPVision called for a conversion: connecting the analog cameras to Axis video encoders to digitize the video streams. In addition to network-enabling the cameras, IPVision replaced the proprietary DVRs with an open network video recording (NVR) solution from OnSSI utilizing robust Hitachi Data Systems servers.

The 1-channel AXIS Q7401, 4-channel AXIS Q7404, and 6-channel AXIS Q7406 Video Encoders proved a real surveillance game changer for the 49ers. They provided the ability to distribute the video encoding around the stadium and de-interlace the video to solve some of the video quality issues stemming from the long cable runs while boosting image quality throughout the stadium.

They also enabled a number of intelligent features – from motion detection to tampering alarms – that were previously lacking with the analog system. Designed to deliver full frame rate video across all channels, the Axis video encoders support highly-efficient H.264 compression to minimize bandwidth consumption and storage strain on the Hitachi/OnSSI system.

"The old legacy analog system was purely a video recording solution," shares Ben Green from IPVision. "Incident resolution often relied on he-said, she-said word-of-mouth from the fans. In migrating to this IP-based system, stadium security acquired a whole new set of tools for smarter live monitoring and faster forensic searches of the video archives."

After further review, instant replay is a winner

IPVision used a map interface in the OnSSI VMS system to make it easier for security to monitor hot spots at Candlestick.

"On game day, there's a lot of motion throughout the stadium. But if you want to focus on a particular area, you can now dynamically create a camera view on the fly for all the cameras covering that section of the stadium," explains Ben Green.

"What's especially convenient is once you select a set of cameras to view, you can simultaneously playback and/or review video from those cameras while continuing to monitor those same cameras in real-time," continues Green. In the analog system, security had to select each camera individually and manually isolate the time when the incident occurred, and didn't have the ability to continue to monitor the camera in question in real-time while reviewing video archives.

"Network-enabling our cameras with Axis video encoders and migrating to the OnSSI VMS has made it possible to coordinate our security and operations activity across the board so we can provide the best possible game day experience for our fans, our players and our staff."

Jim Mercurio, vice president of stadium operations and security for the San Francisco 49ers.

With the new network system, security operators can also bookmark video on the fly for later review. "This is a great feature," says the 49ers Jim Mercurio. "Because with all the cameras streaming video at once, something might catch your eye but your attention is being divided by all the other activity going on. If you bookmark the video, you can instantly replay the event from multiple angles just like they do during game broadcasts, or save it for after the game."

If the video does catch an incident, control room staff can hit an instant replay button and email a still image or video clip of the perpetrator to security staff patrolling the grounds.

Scoring big with fans

The 49ers strive to make the game day experience as positive as possible for everyone. "This network upgrade gives us amazing flexibility, not just in reactively investigating an incident but proactively spotting situations," claims Mercurio. "We can scan an area of the stadium from multiple camera angles and dispatch the appropriate resources immediately."

Mercurio's team uses the network-enabled cameras to manage the entire spectrum of stadium operations – from sending extra staff to alleviate bottlenecks at stadium gates to directing ushers to eject rowdy fans before anyone gets hurt.

They also use the cameras in concert with the text messaging and security complaint hotline system provided to fans. If a fan reports that someone is out of hand, 49ers staff can instantly replay video to identify the incident, and then use live video to direct stadium security to the unruly fan.

"Network-enabling our camera system has made it possible to coordinate our security and operations activity across the board," states Mercurio. "Whether it's handling a safety hazard, a crowd control problem or other issues, we now have some great tools in place to help us create the best possible game day experience for our fans, players and staff."

CANDLESTICK

IPVISION

OnSSI
IP To The Core

"What's especially convenient is once you select a set of cameras to view, you can simultaneously playback and/or review video from those cameras while continuing to monitor those same cameras in real-time. This way is extremely more user-friendly, efficient and effective than the analog system, which was a very manual process that would lose ability to view in real-time during video archive review."

Ben Green, IPVision.

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About Axis Communications

As the market leader in network video, Axis is leading the way to a smarter, safer, more secure world – driving the shift from analog to digital video surveillance. Offering network video solutions for professional installations, Axis' products and solutions are based on an innovative, open technology platform.

Axis has more than 1,000 dedicated employees in 40 locations around the world and cooperates with partners covering 179 countries. Founded in 1984, Axis is a Sweden-based IT company listed on NASDAQ OMX Stockholm under the ticker AXIS. For more information about Axis, please visit our website www.axis.com

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