

Hybrid IP & Analog PTZ Video Camera Solutions

Historical Perspective

Since the early 1990s, state and county Departments of Transportation (DOT) have invested significant time and money in deploying CCTV cameras, communication infrastructures and Traffic Management Centers (TMCs). The intentions of this investment were to improve traffic flow and situational awareness, as well as raise the effectiveness of dispatching roadway assistance and life safety services.

Much of this investment was driven and funded by the Intermodal Surface Transportation Efficiency Act (ISTEA). DOTs throughout the United States took advantage of this funding and began deploying video cameras as part of their strategic plan for improving traffic flow efficiencies.

Technology of the Times

During this time, the technology for CCTV cameras, transmission equipment and TMC video display walls was overwhelmingly based on standard definition analog video. Much of this initial equipment and infrastructure is still in use today.

Since then, CCTV video camera technology has evolved from standard-definition (SD) analog to high-definition (HD) digital. This presents DOT agencies with difficult decisions when considering system expansions, new camera installations or replacements of defective cameras.



Difficult Decisions

The challenges in making these decisions are primarily a result of the CCTV video system communication infrastructure and TMC monitoring systems, which were designed for standard-definition analog formats. To perform a global replacement of the communication infrastructure and Traffic Management Center to support IP HD video and camera control would require a large investment. Such a project is frequently not feasible until funding is appropriated.

Deferring investment in the HD and IP technology only prolongs purchasing outdated and soon-to-be-obsolete camera equipment. The result is increased cost when the transition to network-based video eventually occurs.

As a result of this reality, the most logical approach for investment in expansion and replacement video cameras is evolving a video system over time. This evolution brings in the latest video imaging technology, adding the new features and flexibility of high-definition network video, while still maintaining full compatibility with legacy analog video system.

The Solution

The need today is to use the latest-technology IP networks and HD cameras. The challenge is integrating IP network and HD camera technologies into the existing legacy infrastructure.

For Traffic Incident Surveillance and Management, the majority of cameras are of the pan/tilt/zoom (PTZ) type. Ideally, a user selects PTZ cameras that support both analog video with serial PTZ control, as well as

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high-definition network IP video streaming. Doing so will resolve the challenges of continuing to use legacy systems while also bringing in forward-looking network HD video capabilities.

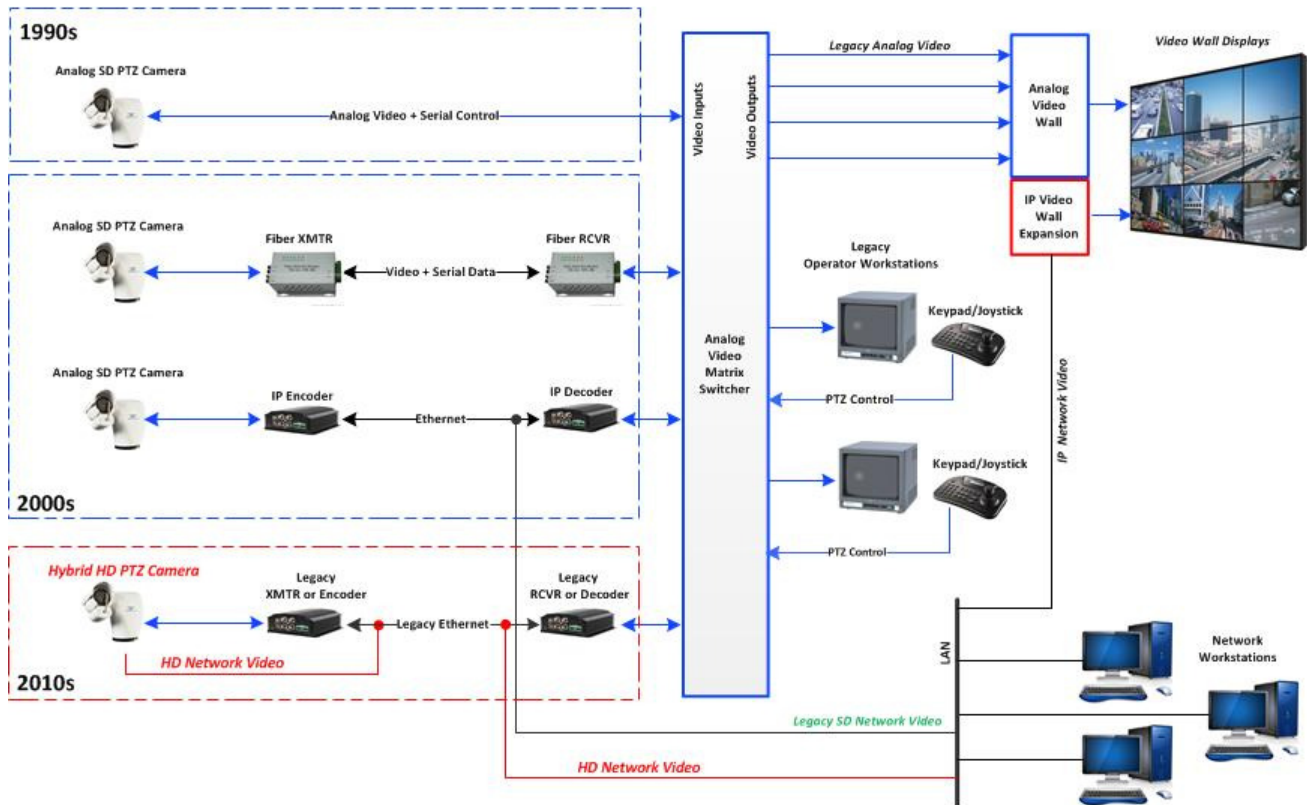
CohuHD's Helios™ family of products provides the most cost-effective solution for migrating Intelligent Transportation System (ITS) video systems from yesterday to today and beyond!

Evolution of the ITS Video System

The diagram below depicts a typical migration path of CCTV video cameras used for ITS Incident Surveillance and Management from the 90s to today. During the decade of the 1990s, analog standard-definition cameras were primarily used, as were the large video matrix/routing switches which delivered selected video streams to the common video wall display system.

The use of IP video encoders and decoders has bridged the gap from standard-definition analog video system designs to the IP world. A key limitation of such a CCTV system is that the video image resolution remains at standard-definition. Video encoders and decoders enable using the new IP network, but the delivered video is analog quality.

Hybrid HD PTZ cameras, such as CohuHD's Helios™ product line, provide complete interoperability with legacy ITS management system. This is achieved by using the analog video and serial control signals for the existing infrastructure and Traffic Management Center, and having the capability of HD IP video for immediate or eventual use. This strategy works for replacing defective legacy cameras, as well as for adding new cameras in system expansions.



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The Must Haves in a Hybrid HD PTZ Video Camera System

To ensure a smooth and successful technology transition from legacy standard-definition PTZ to the latest high-definition camera and network technology, the selected camera system must have the following capabilities:

Analog Video

The CCTV video camera system must have analog video output, and be configurable for either NTSC or PAL format. This sources a compatible signal to the existing legacy video system, and delivers it through the transmission equipment to the video management system. This enables seamless integration for displaying video on the existing video management system monitors and display walls.

Serial PTZ control

The majority of CCTV video cameras deployed for ITS incident detection and surveillance applications have been, and continue to be PTZ. In order to evolve a video system seamlessly, the hybrid PTZ video camera must have a serial data port connection, for remote control of the camera's pan/tilt/zoom functions.

In addition, the Hybrid PTZ video camera's serial port must support the major 3rd party protocols, such as CoHuHD, Pelco D, Ultrak, and Bosch. This **eliminates** the integration difficulty of matching the Legacy Analog Video Management System protocol to the Hybrid cameras.

Without this critical capability in the hybrid video camera, the migration path **will not** allow the legacy video management system to control the PTZ functions of the camera. Beware of IP PTZ video cameras that advertise analog video support. The majority **do not** provide the serial port for PTZ control.

Ethernet

Ethernet is the *secret sauce* of future-proofing an investment in expansion and replacement cameras in a video system. With the impending obsolescence of standard-definition video, choosing high-definition video is strongly recommended to future-proof cameras and safeguard investments. To ensure the interoperability of the digital video and camera control functions delivered over Ethernet, the HD IP camera must support non-proprietary open source protocol standards, such as ONVIF, RTSP, NTCIP and H.264 encoding.

Conclusion

CohuHD's 3920HD, 3960HD and 3930HD series cameras provide superior quality and high-performance in both the analog and IP worlds. These camera systems provide the ability to seamlessly bridge systems from analog to IP technologies in the most cost-effective manner.

As the ITS industry quickly accelerates its adoption of HD video over IP technology, obsolescence of the analog video format accelerates. As the older cameras are replaced and new cameras are added at system expansion sites, the best approach for future-proofing video system and minimizing long-term costs is to use CoHuHD hybrid technology cameras.

About CoHuHD Costar™

[CohuHD Costar™](#) is a leading manufacturer of high-definition video surveillance camera systems designed for the performance requirements associated with critical infrastructure applications and is now part of [Costar Technologies, Inc.](#)

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CohuHD Costar solutions integrate the latest high-definition video imaging and compression technologies into our ruggedized camera products. CohuHD Costar is a high-value, solutions provider for monitoring in the most critical, sensitive environments. We focus on providing the most reliable, rugged, outdoor PTZ cameras in the market.

For more than 50 years, we have manufactured in the U.S. the most reliable, rugged video cameras available.

For more information on CohuHD's products, please visit www.cohuHD.com. Follow us on [youtube.com/cohuhd](https://www.youtube.com/cohuhd), twitter.com/cohuhd, [linkedin/company/cohuhd](https://www.linkedin.com/company/cohuhd), and [facebook.com/cohuhd](https://www.facebook.com/cohuhd).