Dahua's cameras, monitors and switches provide surveillance of city centre in Lincoln

A 300-plus camera city centre video surveillance scheme in Lincoln has been installed and commissioned using cameras, monitors and switching equipment from Dahua Technology.

The previous analogue-based CCTV system was more than 20 years old and had become expensive to maintain, so City of Lincoln Council decided to replace the analogue cameras and transmission equipment with HD digital equipment. The total cost of ownership has been reduced by the savings made on legacy fibre lease costs, as well as reduced energy consumption and the ability to configure and maintain the cameras remotely.

Installation of IP full HD system

The design of the new all-wireless encrypted system was based around delivering flexible technology, reducing the total cost of ownership, ease of installation, lower maintenance requirements, smart edge analytics and remote connectivity. Environmentally friendly aspects of the project included specifying lower-energy equipment, integrating remote support and recycling hardware wherever possible. The council employed independent consultants Lever Technology Group to help them ensure they had a robust and future-proof radio network design.

The installation of the new IP full HD system and network is part of Lincoln's smart city strategy – Vision 2020 – which seeks to drive innovation in the city and harness new technologies to improve the lives of citizens. One of the results is the provision of free Wi-Fi in the city, working alongside the Dahua cameras using the same IP wireless network.

Bandwidth efficiency using H.265 compression

A combination of fixed and PTZ cameras were installed over a new 1GB duplex network. These include cameras from the Dahua Pro series, which features high image quality, bandwidth efficiency using H.265 compression and excellent low-light performance. Bullet cameras from the Ultra series – with powerful optical zoom, IR distances of up to 50 metres and software which supports people-counting and heat-mapping – were also installed.

The bandwidth efficiency of the cameras meant that multiple cameras could be installed in any given position, providing 360° coverage of locations and up to 20 Megapixels of video capacity per location – compared with less than 400,000 pixels with the previous analogue cameras.

The design of the scheme incorporated both camera and server-side analytics, including video content analytics, facial recognition, ANPR, heat maps and pedestrian counting, as well as legacy motion and audio detection. The objective of the facial recognition aspect is to support operators in areas such as the search for missing and vulnerable individuals.

PoE switches for providing power

The superior image quality of the new system is borne out in figures which show an increase in 'actionable' images from 5% with the previous system to 60% successful reviews with the new one. Dahua PoE switches were also installed to provide power to the cameras, which are then connected to a layer-2 network.

A new video wall comprising ten Dahua DHL49-4K LED backlit 49-inch 4K Ultra HD video wall display units featuring industrial level wide-viewing LCD panels, was fitted into a newly refurbished control room in City Hall and connected to i-Comply wonderwall video display drivers.

Supplied through authorised distributor Mayflex, the entire system was installed by public space CCTV specialists Videcom Security, which worked with other partners to provide a high-performance, efficient and feature-rich system.

Cost-effective and reliable equipment

Bill Mead, Managing Director at Videcom Security, said that working largely with Dahua video equipment meant it was easier for engineers in terms of configuration, as well as being cost-effective and representing good value for money. "*Working with the Dahua product range has been great. The products have proved to be reliable and we experienced very few problems, from the initial configuration through to installation and commissioning.*

"*This is a great collaboration of key project partners that have a tried-and-tested pedigree and working relationship with Videcom Security. We broke new ground with the development of 4K H.265 decoding, the support through Luxriot for camera-side analytics and edge recording, and the development by Dahua of camera-to-camera communication, allowing for non-connected systems to communicate locally.*"

Infinet 5GHz and Siklu E and V band radios

Dahua is a solution provider in the global video surveillance industry and associated technology and has a keen focus on innovation by investing heavily in research and development. For the Lincoln city scheme, its products were selected based on their performance and cost-effectiveness to meet project budgets. Videcom Security is a certified Dahua Integration Partner, training for which was delivered both by Dahua and the Mayflex Academy. This helped Videcom negotiate key firmware enhancements, which added to many of the analytical features available in each of the cameras.

The wireless network is built with Infinet 5GHz and Siklu E and V band radios. Resilience and diverse routing has been built into the network design, which supports video surveillance as well as public Wi-Fi and capacity for smart city services. Luxriot have worked closely with Dahua, supplying their Evo Global video management system and supporting edge analytics integration through their 'events and actions' management, which has also been integrated through to i-Comply's VTAS CRVMS software (now rebranded as Viewscape).

Real-time control and video streaming

The introduction of H.265 compression was ground-breaking for such a project, with the system capable of displaying 4MP and 6MP H.265 to the operator's spot monitor with real-time control and video streaming. "*The Dahua system implemented by Videcom Security provides the main elements of our tier-1 solution,*" said Martin Byrne, CCTV Team leader at Lincoln City Council. "*The police are extremely pleased with the system and we've had very positive feedback from them.*

"*There is really no comparison from how we operated previously to how we can now. It revolutionises how we manage the CCTV systems and data. The potential for what we can achieve going forward is remarkable. We have now started to get real results from the investment in analytics; in particular vehicle and people-counting has been deployed and data is used to enhance other city projects.*"

Martin added: "*Dahua has taken time out to visit and discuss with us our ambitions for smart city services. We have adopted Dahua as our brand of choice for CCTV cameras and have so far been very pleased and impressed with their reliability, low-light performance and overall image quality.*"